The prevalence of twice exceptional students in the GAT
Academic programs: the near miss phenomena

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The prevalence of twice exceptional students in the GAT Academic programs: the near miss phenomena


A thesis submitted in fulfilment of the requirements for the
Doctor of Philosophy
School of Education,
Edith Cowan University
Perth, Western Australia

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ABSTRACT

Twice exceptional (TE) students often experience barriers to their participation in gifted academic programs that contribute to their marginalised status amongst the school gifted population. The prevalence of TE students in gifted programs worldwide varies according to the location, identification means and definition with little agreement reached between researchers in the field. This research was made up of three interrelated studies. Firstly, six years of longitudinal quantitative cohort data from the Western Australian Department of Education (DoE) database on selected students for the GAT programs including GAT Academic programs and TE students to determine TE prevalence. Secondly, disability prevalence data in government schools of Western Australia were collected and a comparison made of TE prevalence to disability was also investigated to establish trends. Additionally, survey data collected from coordinators of the GAT Academic programs (N = 5) was used to triangulate TE prevalence. Qualitative analysis of closed and open-ended survey data were undertaken to determine the GAT Academic coordinators’ knowledge of the definition and identification means used by the DoE and their knowledge and perceptions of TE students’ needs. Lastly, a qualitative analysis of a closed and open-ended survey was undertaken to determine the perceptions of parents of TE students (N = 8) of the GAT Academic programs when considering application for their children. This was set in the context of the research literature and framed by the DoE’s practices, policies and adoption of Gagné’s Differentiated Model of Gifted and Talent (DMGT) to investigate the relationship between TE prevalence and disability and the barriers to their inclusion. TE prevalence in the GAT Academic programs is the core project and the second project is the knowledge and perceptions of the GAT Academic coordinators and perceptions of parents of TE students, that accesses data pertinent to understanding TE prevalence.

Results showed that TE prevalence at 1.6% was low when compared to disability prevalence across two educational settings despite the identified marked escalation of disability prevalence over this same time period. The qualitative data indicated that coordinators had limited knowledge of the GAT definition and testing adopted by the DoE, learning disabilities and associated accommodations and perceived that the TE had more negative learning characteristics than positive. Parents of TE students perceived the major barrier to TE participation as the Academic Selective Entrance testing as well as absence of inclusion, lack of support and no alternative testing option available. This research highlighted the significant impact that inequitable and anti-
inclusion practices had on TE prevalence in the Western Australian GAT Academic programs which only now aligns with Gagné’s DMGT 2.0 model, that all contributed to the perpetuation of TE underrepresentation. This transformative mixed method research provides an overarching framework to address issues of social justice and the need for change for TE students.
DECLARATION

I certify that this thesis does not, to the best of my knowledge and belief:

i) incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of higher degree;

ii) contain any material previously published or written by another person except where due reference is made in the text of this thesis; or

iii) contain any defamatory material.

Signed: Dated: May 1, 2017
ACKNOWLEDGEMENTS

A PhD does not come to fruition without experiencing much angst along the way and while it is quite a solitary pursuit, a support network is essential.

I would like to thank my supervisor Dr. Lorraine Hammond for her encouragement and support over this long and somewhat daunting research journey. It was our fortuitous meeting many years ago that inspired and helped me, in my own quest for knowledge and expertise in the area of learning disabilities and later twice exceptionality. This one critical event in my life would set into motion such an amazing and life changing set of events and initiate a life-long friendship. I am eternally grateful to have such a wonderful mentor.

I am also very grateful to my original co-supervisor, Dr. Tony Fetherston for his reassuring patient guidance and time over these years and also Dr. Jo McFarlane who painstakingly helped me shape and craft my research questions. I would also like to thank Dr. Mark Hackling for his insightful expertise with my results section and Dr. Neil Ferguson for his knowledge and interest in my study that reignited my belief that I was headed in the right direction. To Dr. John O’Rourke, I appreciate your contributions in the final stages of my PhD.

Thank you to my two families. My four children are probably quite unaware of what an important role they have played in plunging me, out of necessity, into the world of academia in 1990. This has definitely shaped my life and career for the better. I also think myself very lucky to have a large second family who have been such wonderfully supportive people.

Finally, my PhD was truly an endurance test, but also a labour of love and worth the hundreds of days that I sat at my computer with Sabrina asleep at my feet to reach completion.
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CHAPTER ONE

1.0. Introduction

This thesis investigates aspects related to giftedness in children, particularly those aged from 10 to 13 years old who will enter secondary school in Year 8. Any such investigation must concern itself with the meaning of giftedness and according to François Gagné, an expert in the field of gifted education, approximately 10% of any school population is gifted (1998). This means that of the 291,280 full-time students enrolled at Department of Education Government schools in 2015 (Department of Education, 2015), approximately 29,128 are gifted. Gifted students have distinct learning needs which require tailored learning strategies as well as the opportunity to link with like-minded peers (Parliament of Victoria, 2012). Wellisch and Brown (2012), Bees (2009) and Yssel, Prater, and Smith (2010) also emphasise that intellectually gifted students need to be with like peers to foster their intellectual potential and ensure they have the best opportunity to achieve. Gifted students have “a right, as a matter of equity, to access an education that meets their specific needs” as failure to meet these needs potentially has the impact of underachievement, disengagement and mental health issues (Parliament of Victoria, 2012, p. 51). This study is predicated on the view that gifted students must be identified and supported in order to develop their talents.

Not all gifted students are the same and Betts and Neihart (1998) identified six types of gifted students: Type I The Successful, Type II The Challenging, Type III The Underground, Type IV The Dropout, Type V The Double Labelled and Type VI The Autonomous. In relation to this study it is the double labelled sub-group, termed twice exceptional (TE) who are gifted and also have a disability (Foley Nicpon, Allmon, Sieck, & Stinson, 2011) that are under investigation. In particular, the TE cohort within the Gifted and Talented (GAT) cohort at the Department of Education’s Gifted and Talented (GAT) Academic programs of Western Australia. These students can have a range of impediments to learning and these restrictions can impact on their giftedness. The three most commonly explored in the literature are: gifted students with attention deficit hyperactivity disorder (ADHD) (Foley Nicpon, Rickels, Assouline, & Richards, 2012; Fugate, Zentall, & Gentry, 2013; Hartnett, Nelson, & Rinn, 2004), Autism Spectrum Disorder (ASD) (Assouline, Foley Nicpon, & Doobay, 2009; Foley Nicpon, Doobay, & Stinson, 2010; Niehart, 2000) and specific learning disabilities (SLD) (Assouline, Nicpon, & Whiteman, 2010; Crepeau-Hobson & Bianco, 2011; Foley Nicpon, Allmon, Sieck, & Stinson, 2011).
There is a stereotypical notion of giftedness that assumes students who are intellectually gifted will have a high intellectual quotient (IQ), score well on achievement tests, exceed norms in all areas of development and be motivated and mature (Cline & Schwartz, 1999). These scholarly attributes are, however, the exception rather than the rule (Winner, 1996). Similarly Singh and Ghai (2009 cited in Ronksley-Pavia, 2015, p. 320) take up this point with regard to the construct of an individual with disability as being “inexperienced, passive and intellectually immature”. Baum, Omdal, and Pereles (2015, p. 224) state that for the twice exceptional “student to be successful, educators need to set aside preconceived notions of giftedness and disability”. Underrepresentation of students with disability in gifted programs has been consistently documented as a major issue that persists despite over 30 years of research and practice in understanding problems related to their identification (Baum & Owen, 2003; Brody & Mills, 1997; Kokot, 2003; McCoach, Kehle, Bray, & Siegle, 2004; Morrison & Rizza, 2007). In addition, Ronksley-Pavia (2014), an Australian researcher, contends that the prevalence issue is at the centre of the field of gifted and talented and TE research.

Students who meet the criteria for intellectual giftedness, yet at the same time also meet the criteria for disability, are classified as twice exceptional. This is due to learning characteristics that denotes they possess an IQ in the intellectually gifted range as well as a significant discrepancy in their level of performance in a particular academic area (McCoach, Kehle, Bray, & Siegle, 2001). Conservative estimates suggest that at least 1% to 5% of populations with disability, with considerable variation between categories of disability, are intellectually gifted (McCoach, Kehle, Bray, & Siegle, 2004; Nielsen, 2002; Silverman, 1989). That it is possible, and relatively common, to have students who meet the criteria for both ‘intellectually gifted’ and ‘disabled’ contradicts traditionally held views of giftedness and disability (Baum, Omdal, & Pereles, 2015) and is at the heart of this study. Reis, Baum, and Burke (2014, p. 217) contend that TE students “often have educational journeys that are fraught with challenges, as they do not fit the traditional definitions of either exceptionality” and “have seemingly paradoxical sets of needs that often result in a denial by some educators that children with specific disabilities can actually be gifted and talented (Foley Nicpon, Allmon, Sieck, & Stinson, 2011)” (Reis, Baum, & Burke, 2014, p. 217).

The implications of being a twice exceptional student when it comes to accessing gifted and talented (GAT) secondary Academic programs in Western Australian government secondary schools, is that their disability creates a barrier to entry. To receive gifted
services in these programs, students must excel in all components of the GAT Academic testing.

In Western Australia, a child applying for entry into Year 8 (in 2014) would be competing for one of only 519 GAT Academic places. Only the top 2.5% of all assessed applicants is eligible for GAT Academic placement (Department of Education, 2014a). While discussion about the shortfall of places falls outside the scope of this research, the limited number of places means only a small subset of gifted students can access specialist services. It this small subset of gifted students in this particular sample that are under investigation. One over-riding question of this study relates to the prevalence of TE students in the Department of Education’s (DoE) Gifted and Talented (GAT) Academic programs in Western Australia and how this compared to the level of disability in the DoE’s schools, given that in the international literature, numbers are small (Trail, 2010) and under-representation commonplace (Barnard-Brak, Johnsen, Pond Hannig, & Wei, 2015; Clark, 2008; Crepeau-Hobson & Bianco, 2011; Davis & Rimm, 2004; Morrison & Rizza, 2007; Nielsen, 2002; VanTassel-Baska, Feng, Swanson, Quek, & Chandler, 2009). Empirical investigation of twice exceptionality is very important as literature remains sparse (Lovett & Sparks, 2013; Nielsen, 2002) and educational professionals’ knowledge and experience with this population of students is very limited (Foley Nicpon, Allmon, Sieck, & Stinson, 2011), especially in Western Australia.

1.1. Context

This study is situated in a school system in Western Australia (WA), where the place of gifted education and the reviews and inquiries that have taken place over time in Australia, highlight the decisions made and the position adopted by the WA Department of Education for their GAT Academic programs. This position focuses attention on the definitions used, and inclusions and exclusions to their definitions that are important when considering a minority group such as the TE in the GAT Academic programs. Davis and Rimm (2004) contend that definitions can discriminate against and deny services to minority groups such as the disabled, underachieving and gifted. These marginalised minority groups based around the relatively permanent and unchanging status of being different, often visibly from the majority group, are assigned an inferior status, enjoy less than their proportionate share of scarce resources and are discriminated against (Goldmann, 2001).
These marginalised minority groups, including the TE that are differentiated from others in society by race, culture or disability, are subject to certain exclusions, discriminations and other differential treatment with negative connotations (Rose & Rose, 1972). Grissom, Rodriguez, and Kern (2017, p. 397) add that minority “is shorthand for groups historically disadvantaged in public policy processes” which is also a focus of this study.

Given data on the international representation of TE students in gifted programs, and motivated by the lack of empirical data in Western Australia, this unique study explores the previously unknown prevalence of TE students in the nine DoE designated GAT Academic programs in Western Australia, with one being an on-line program, hereafter termed nine GAT Academic programs (as at 2011). These nine programs that have selective entry, were situated at eight secondary schools in the Perth metropolitan area. One school is fully Academic and close to the Perth central business district (CBD), with the other seven being within a 60 kilometre radius from the CBD.

The DoE (2011, p. 9) notes that supplementary provision is provided through the GAT Academic programs to enable “the most gifted and talented students to interact with their gifted and talented peers in specific curriculum fields at higher levels than can normally be provided in the regular classroom or school. . . . At the secondary level, the Department of Education supports numerous high schools with a range of selective programs. These include academic, arts and languages”. These eight designated GAT Academic schools make “Full-time provision for identified students, selected through rigorous assessment processes provide whole-school environments for talent development” (DoE, 2011, p. 13).

How gifts and talents are defined impacts on who is included and excluded from a gifted and talented program. The DoE takes their gifted and talented definition from the work of Professor Françoys Gagné and his Differentiated Model of Giftedness and Talent (DMGT). In the Department of Education’s Gifted and Talented Policy (Department of Education and Training, 2011, p. 3) the definitions are:

**Giftedness** designates the possession and use of outstanding *natural* abilities, called aptitudes, in at least one ability *domain*. **Talent** designates the outstanding mastery of *systematically developed* abilities, called competencies (knowledge and skills), in at least one *field* of human activity. Talent emerges from ability as a consequence of the student’s learning experience. (Gagné, F. See Appendix A.) These definitions reflect the distinction between ability and
performance and recognise other factors in the development of a person's giftedness into talents [their italics].

Gagné contends that giftedness and talent are two different stages in a highly able student's journey from high potential to high performance (Gagné, 2003). This then implies that the WA GAT Academic programs are framed by Gagné's delineation between giftedness and talent as being two parts of the 'journey' from gifted to talented and yet requires entry through "rigorous assessment processes" (DoE, 2011, p. 13) that requires candidates to be proficient in all components of the GAT Academic testing for entry to the programs. This does not take into account the profile of students with disability. While the GAT Academic programs align with the sentiment of Gagné's DMGT model, citing the importance of the environment as a catalyst for talent development, it is implied through the entry processes that the GAT Academic programs are for intellectually gifted and demonstrably academically talented students, which is inconsistent with the definition the DoE has chosen. The student's demonstrated talent is then further developed through the DoE's “whole-school environments for talent development” (DET, 2011, p. 13).

What then are TE students who cannot demonstrate their academic talent to make of a system that excludes them due to a disability? The implication is that only those who are already high achievers are capable of high achievement (Dracup, 2011). This puts in place a paradoxical situation where there has to be a choice between having excellence or equitable goals for the limited number of GAT Academic program places. That is, providing opportunities for those students who are already performing at a high level because the goal of the program is to achieve excellence as a priority, or to provide opportunities for students with disabilities under an equitable system where excellence may not be so sure. Gifted programs that are ill-prepared and not resourced to cope with TE students who have readiness needs, places the TE student in a very vulnerable and stressful educational environment that may ultimately influence the success of those programs (Duke, 2003; Fullan, 2001; Schroth, 2007). Hence the implication is that such is the predictive power of the rigorous assessment processes, that all students selected, will be high achievers with no 'needs' similar to those of TE students which will exclude those students with promise and potential (Wellisch & Brown, 2011). Allowing a more equitable entry pathway for TE students would allow entry for students who will have 'needs'. Schroth (2007) maintained that TE students have the potential to benefit from specialised instruction. Therefore, a barrier exists to equitable provision for students with disabilities who possibly would thrive in this GAT
academic environment. Expecting demonstration of high performance in all areas, due to the perceived predictive power for success, knowingly raises the ‘bar’ far too high for many students with disabilities.

1.1.1 Significant National Reports

The Senate Select Committee on the Education of Gifted and Talented Children carried out the first major national report on the state of gifted education in 1988 (Commonwealth of Australia, 1988). When it was released, it was revealed that most Australian schools did not appear to have made any provision for gifted students and that there was an Australian ethos that discouraged individual academic excellence (Wilson, 1996). As a result the Commonwealth Government was directed to provide special education strategies for these gifted students (Wilson, 1996). There was no mention in this report of gifted children with disabilities and the report’s reference to children who were accorded special assistance, appeared to not include those commonly thought of as disabled. This confirmed, at that time, that giftedness was not thought to exist in populations of students who were disabled. In 1993, 1994 and 1995 the Department of Education, Employment and Training (DEET) provided $1 million for schools and systems to enrich the learning experiences of gifted and talented students, with mention of those disadvantaged by difficulties with English or disability. Therefore, disability was signposted as a sub-category of gifted and talented students.

A second Senate Inquiry into the Education of Gifted Children (Commonwealth of Australia, 2001) was initiated in 2001 when it was found that none of the recommendations presented in the 1988 report had been implemented (Geake, 1999). The second Senate Inquiry (2001) found that:

All interest groups agree that there are continuing problems. Gifted children have special needs in the education system; for many their needs are not being met; many suffer underachievement, boredom, frustration and psychological distress as a result. . . . Negative community attitudes to giftedness are widely reported. Many of these are based on misconceptions. Consciousness raising to improve the acceptance of giftedness should be an important part of the national strategy for education of the gifted, which the Committee recommends. The aim should be to have giftedness recognised as a characteristic of some children, and acknowledged as requiring particular interventions. As the Committee notes, ‘Equity should be viewed as equal access to an appropriate education . . . The idea of a fully humane society is to treat all individuals and groups with concern and understanding - in other words, to be responsive to diversity. Senator Jacinta Collins, 2001, xi. (Commonwealth of Australia, 2001, p. 2)
This statement by Senator Collins (Commonwealth of Australia, 2001, p. 2) detailing that "equity should be viewed as equal access to an appropriate education . . . be responsive to diversity" while applicable to TE students, was in response to gifted students who have needs that were not being met, not students with disabilities.

The 2001 Senate Inquiry (Commonwealth of Australia, 2001) put forward a total of 20 recommendations that relate to the inclusion of gifted education within undergraduate teacher education courses. The report also was particularly concerned that untrained teachers were more likely to ‘see’ giftedness in well-behaved children of the dominant culture and less likely to ‘see’ it in disadvantaged groups. Recommendation Four suggested “Training for teachers to identify giftedness should pay particular attention to the need to identify gifted children who have disadvantages such as low socioeconomic status, rural isolation, physical disability or Indigenous background” (Commonwealth of Australia, 2001, p. 10). It was also recommended that there needed to be a national policy on the education of gifted and talented students. The shift in thinking from 1988 to 2001, while still tackling the same issues of teacher training and knowledge, and meeting the needs of gifted students generally, now included physical disability for the first time. Unfortunately, despite the recommendation that there be a uniformity in approach, no national policy on the education of gifted and talented students has been adopted (Education & Training Committee, 2012).

In 2011, the Victorian Parliament’s Legislative Assembly gave the Education and Training Committee terms of reference to conduct an inquiry into the education of gifted and talent students. The Committee was to consider programs and provisions, educational opportunity and possibilities to enhance support for these students, their parents, school leaders and teachers (Parliament of Victoria, 2012). Much of what was found was similar to issues presented in the Select Senate Reports of 1988 and 2001, but the concept of twice exceptionally was identified for the first time. One of the 65 recommendations relates directly to TE students and in particular to their Select Entry Accelerated Learning (SEAL) Program which is the equivalent to the Western Australian GAT Academic programs:

students face particular barriers to accessing learning opportunities in their sphere of giftedness. The evidence is clear that twice exceptional students need to be provided with tailored learning opportunities that support them in their area of disability, while simultaneously challenging them in their area or areas of strength (Education & Training Committee, 2012, p. 146).
It is significant that no similar comprehensive report has been undertaken in Western Australia focusing on gifted and talented education and more particularly the GAT Academic schools other than a review that took place in 2001.

The 2008, *Melbourne Declaration on Educational Goals for Young Australians* (Barr, Gillard, Firth, Scrymgour, Welford, Lomas-Smith, Bartlett, Pike, & Constable, 2008) set out a ten year vision for the direction of school education across Australia and was endorsed by all Australian Education Ministers. The Declaration does not directly refer to gifted and talented students, but asserts a commitment to providing equitable learning opportunities for students and ensuring that all students are provided with the opportunity to reach their full potential. The Australian National Curriculum, is founded on the principles set out in the *Melbourne Declaration*, and focuses on equity and excellence in education (Australian Curriculum Assessment and Reporting Authority [ACARA], 2012). At the 2012 Education and Training Committee Inquiry into agricultural education and training in Victoria, Ms L. Redley, Curriculum Manager, Australian Curriculum, Assessment and Reporting Authority stated that the Australian National Curriculum "does talk about the need for inclusivity and diversity but does not specifically identify gifted and talented students. What it does is it talks about the flexibility of the curriculum to cater for diversity across the board" (Redley cited in Education and Training Committee Inquiry, 2012, p. 6). Townend, Pendergast, and Garvis (2014, p. 77) state that “there exists in Australia no legislation or generalised policy covering twice-exceptional students as a discrete category” just as there is no national policy on the gifted and talented.

1.1.2 Focus on Western Australia

In Western Australia, students who have a temporary or permanent disability, illness and/or specific learning disability can apply through the School Curriculum and Standards Authority (SCSA) for special examination provisions for the Western Australian Certificate of Education (WACE) examinations based on categories that include specific learning disability. This is unlike the DoE’s *Schools Plus* model of funding that does not include the category specific learning disability, only – Global Developmental Delay, Autism Spectrum Disorder, Intellectual Disability, Physical Disability, Severe Medical Health Condition, Severe Mental Health Disability, Hearing Impairment, and Vision Impairment (Department of Education, 2014) and additionally only collects census data in these categories. Through this model a funding allocation can be provided to the school for eligible students to help schools address the learning
needs of students with a disability that is based on categories of educational need and teaching and learning adjustments (Department of Education, 2013). As this study is focused on the GAT Academic programs of Western Australia, it is appropriate that SCSA's (2014, p. 7) definition, used for Western Australian special examination provisions for the WACE examinations be used. The definition is:

Students with a learning disability will have reading, written expression or mathematics skills significantly below expectation in relation to their present year level and/or cognitive ability. In most cases evidence of a processing impairment, frequently phonological in nature, will be present. Learning disabilities are presumed to be intrinsic to the individual and long term, but they are not considered to be the direct result of intellectual disability, physical disability, sensory impairment, or a primary emotional difficulty. Neither do they appear to derive directly from inadequate environmental influences, or from the lack of an appropriate educational experience (School Curriculum & Standards Authority, 2014, p. 7).

The task of identifying TE students in Western Australia is difficult and complex due to the differing definitions used and inclusions and exclusions for funding and examination provision. Hence, this study will focus on learning disabilities and other disability conditions as detailed by SCSA as requiring the provision of special examination provisions due to a permanent or temporary disability hereafter termed learning disability and disability respectively, unless otherwise specified, both of which impact on the learning of TE students.

1.2. Problem

The WA GAT Academic programs has only one method of entry – through the GAT Academic Test, which is a testing regime comprising tests of achievement and potential that are combined to give Humanities and Numeracy indices. These indices are the sole indicators from which students are chosen for the programs. The expectation that a TE student would manifest a talent from their gift through their performance on the DoE’s GAT Academic Test, would ‘fly in the face’ of the documentation that would support the diagnosis of a disability for many. This expectation is in contradiction to Gagné’s model that views giftedness (potential) as being a first step of identification of a gift, and talent (achievement) as the second step of turning that gift into a talent. This draws our attention to the intended population of students for the GAT Academic programs and whether it includes those students with the potential to benefit from such instruction (Schroth, 2007) - those with a disability.
Western Australia’s DoE has a performance based excellence model for identification of gifted and talented students. This model is further reinforced when diagnostic documentation of a disability, such as the *Wechsler Intelligence Scale for Children* (WISC) IV (Wechsler, 2003) or WISC V (Wechsler, 2014) will not be accepted in lieu of the GAT Academic testing, as it will not fulfil the talent/achievement/performance component of the testing. Great strengths and weaknesses are the characteristics of the TE student (Assouline, Nicpon, & Huber, 2006; Besnoy, 2006; Hannah & Shore, 1995; Neumeister, Yssel, & Burney, 2013; Winebrenner, 2003); therefore, expecting global giftedness to gain entry to the GAT Academic programs would be virtually impossible and inconsistent with the definition adopted by the DoE. Students have varied learning needs and inclusive leaders make it explicit that diversity is about differences, and inclusion is our capacity to include these differences (Gerstandt, 2007; Gordon, 2010) as evidenced by the inclusion of TE students into the GAT Academic programs. Therefore, there is a mismatch between the identification practice and the theoretical model adopted of expectation and demonstration of high academic achievement by the twice exceptional against Gagné’s (2003) model that contends that giftedness and talent are two different stages in a highly able student’s journey from high potential to high performance. This creates a barrier to entry for TE Academic students by the very nature of their disability that hampers their ability to be identified through the sole criteria of the GAT Academic Test. Pfeiffer (2003) concurs that the definition of giftedness and identification measure are the most frequently stated barriers to the identification, placement and provision of appropriate services to gifted children.

The implication of the DoE’s testing regime is that such is the predictive power of the GAT Academic testing that students selected will be high achievers and have no academic needs similar to those of TE students. Dracup (2011) asserts that by limiting our gifted and talent candidates to those who demonstrate good chances of future success, we are stating that only selected high achievers are capable of high achievement. Therefore, a barrier exists to equitable provision for students with disabilities.

In Western Australia, definitions of disability by the DoE and SCSA do not align and twice exceptionality is only mentioned in DoE documents as further information in an appendix. Inclusion is about removing barriers to access and participation for marginalised groups, specifically any who may be at risk of exclusion or underachievement (Ainscow & Miles, 2008). The inclusion of TE students within the
GAT Academic programs is made more difficult by their omission from DoE definitions. Prior (2013) contends that the challenge for inclusion of TE students in gifted programs would be in them being recognised at all. This is the situation in Western Australia where the TE are made to feel and be an ‘invisible’ minority (Mertens, Bledsoe, Sullivan, & Wilson, 2010). This study has used a transformative framework to determine whether equity and inclusion for TE students in the program is evident and to advocate on their behalf.

For TE students to be identified and represented adequately within gifted academic programs, greater knowledge and awareness of TE students and their needs by teachers needs to occur. It has been identified that classroom teachers, both special education and mainstream rarely have the training to address the needs of gifted and talented students (Kennedy, Higgins, & Pierce, 2002) let alone the TE. In the 2001 Senate Inquiry (Commonwealth of Australia, 2001) it was recommended that training be provided to teachers to identify giftedness in children who have disadvantages. Foley Nicpon, Assouline, and Colangelo (2013) assert that while it is a positive step forward and educators are gaining more experience working with the TE population, they believe it is not enough. Freeman, Raffan, and Warwick (2010) maintain that it is essential to take a multi-faceted approach to discovering hidden potential, and teachers are well placed to uncover potential when they have knowledge and perceive giftedness to be likely in underrepresented populations.

To address underrepresentation in the WA Academic programs of Western Australia there needs to be an understanding by the DoE of how the GAT Academic testing creates a barrier for TE students and how this process does not align with the intent of Gagné’s DMGT model of talent development. The role of teachers to identify and support TE students is critical to raise the profile of these students and provide a multifaceted approach to reverse underrepresentation systematically. This study explores the underrepresentation of TE students in the GAT Academic programs, the relationship to disability as collected by the DoE and SCSA, the perceptions and knowledge of coordinators of these programs and the perceptions of parents of TE students of the GAT process and its barriers.

1.3. Rationale

Twice exceptional students have disabilities across a number of categories such as a specific learning disability (Dyslexia, Dysgraphia, Dyspraxia), Attention Deficit
Disorder/Attention Deficit Hyperactive Disorder (ADD/ADHD), psychological (Obsessive Compulsive Disorder, Autism, psychiatric conditions), fine motor disability (handwriting difficulties), vision impairment, hearing impairment, significant physical disability (Cerebral Palsy, Muscular Dystrophy) or severe health impairment (Chronic Fatigue Syndrome, Diabetes) (School Curriculum and Standards Authority, 2014). These students who have a disability and yet are intellectually gifted represent a particular challenge to education systems in terms of identification and equitable access to gifted programs (King, 2005).

The nature of the identification tools used for entry to gifted programs can act as a barrier to the very students they seek to attract. The paradox of the TE students’ learning characteristics and of the gifted programs’ identification process creates an underrepresentation. Of those students who gain entry into gifted programs the stereotypical belief that intellectually gifted students will excel in all areas, and have deficiencies in none is perpetuated. This assumption that gifted students will have a high IQ, score well on achievement tests, exceed norms in all areas of development and are motivated and mature (Cline & Schwartz, 1999) is the exception rather than the rule (Winner, 1996). TE students usually exhibit remarkable talents or strengths in one area and disabling weaknesses in others (Assouline, Foley Nicpon, & Huber, 2006; Baum, 1990; Beckley, 1998; Foley Nicpon, Allmon, Aieck, & Stinson, 2011; Foley Nicpon, Assouline, & Colangelo, 2013) and in many cases, one exceptionality will mask the other (Assouline, Foley Nicpon, & Huber, 2006; Blacher & Reis, 2002; McCoach, Kehle, Bray, & Siegle, 2001). These weaknesses can leave TE students side-lined outside the gifted program, as they do not always have a consistent profile to enable them to be successful at the initial GAT Academic program identification entry stage.

Misconceptions about TE students are common amongst educators and act as a further barrier to identification. Gilger and Hynd (2008, p. 214) believe there has been a “long-standing predilection in the field to talk of learning disabilities (LD) or abilities, and gifts or high-end exceptionalities as if they were completely phenotypically, etiologically, and statistically independent.” To improve the identification and therefore participation of TE students in gifted education programs, there is a need to move away from two stereotypical ideas: one equating giftedness with overall high achievement, and the other equating learning disabilities with overall weakness (Rivera, Murdock, & Sexton, 1995), when in reality they coexist. Preconceived notions and stereotypes of how disabilities affect cognition negatively colour educators’ academic expectations of these students (Bianco & Leech, 2010; Cline, 2001; Lovett, 2013). As a result, TE
students’ cognitive profile, asynchronous development and underachievement leaves many vulnerable to exclusion from gifted programs without forethought how to remove potential barriers to their inclusion. This contributes to their continued underrepresentation in gifted academic programs.

Typically TE students will have a weakness in at least one area, creating a challenge for teachers of the gifted who must tailor their programs and provide resources to accommodate these learners (VanTassel-Baska, Feng, & Evans, 2007). VanTassel-Baska, Feng, and Evans (2007) contend that an expected high-level performance in all areas is like having the ‘sword of Damocles’ hanging over the TE student’s head. Therefore, identifying more TE students for inclusion in gifted programs without appropriate programming and support mechanisms in place will be counterproductive to their success if accommodations and support are not in place to address their learning characteristics. TE students need an educational program that allows them to develop their strengths fully without being hindered by their difficulties, and while adaptations and accommodations to established programs will generally suffice, it may be necessary to individualise teaching and service delivery, which is time-consuming and requires much energy and effort (Jeweler, Barnes-Robinson, Shevitz, & Weinfeld, 2008). Assouline, Foley Nicpon, and Huber (2006) believe that professionals need to understand the unique attributes which TE students present that require specialised and targeted educational interventions. The role of the teacher in identifying TE students and catering for their learning needs cannot be underestimated. Knowledgeable teachers are necessary (Brody & Mills, 1997; Wormald, 2011) if interventions are to be put in place for TE students, therefore identifying TE students is the first step and being able to meet their learning needs is the next.

Much of the research on the TE population parallels that of culturally, ethnically and linguistically diverse gifted populations, including Aboriginal Australians regarding assessment and participation in gifted programs (Chinn & Hughes, 1987; Ford, 1995; Ford, Harris, Tyson, & Trotman, 2002; Ford & Webb, 1994; Harris, Brown, & Richardson, 2004; Harry, 1994; Maker, 1996; Masten, 1985; Serwatka, Deering, & Stoddard, 1989) with Delisle and Galbraith (2002) terming the TE as the ‘unseen minority’. These minority groups face the same issues as the twice exceptional surrounding recruitment/screening and identification as well as support mechanisms - planning and resources that may be necessary for their participation in a gifted program (Duke, 2003; Fullan, 2001). The parallels to the issues of equity and inclusion are also strong. Therefore, understanding identification issues and support that will be
required, will allow these students a greater chance for inclusion in the GAT Academic programs and provision and accommodation supports to be in place.

Makel, Putallaz, and Wai (2012) maintain that the chief goal of gifted education and regular education should be the same, which is to ensure that all students receive the education appropriate for them by maximizing the match between the individual student’s educational experiences with their educational needs. For Subotnik, Olszewski-Kubilius, and Worrell (2011) the argument is economic. Students who are highly motivated but have low opportunity are our “most important societal responsibility,” and those with low opportunity and low or undetermined motivation is not only the “greatest challenge to society” but also “worthy of investment in opportunity” (Subotnik, Olszewski-Kubilius, & Worrell, 2011, p. 7).

1.4. Purpose of the Study

The primary purpose of this study is to determine the prevalence of twice exceptional students in the GAT Academic programs in Western Australian secondary schools over a six year period and how this relates to the general level of disability prevalence in Government schools. Additionally, a secondary purpose was to identify the knowledge and perceptions of GAT Academic coordinators and the perceptions of parents of TE students of the GAT Academic programs and process.

1.5. Sample Choice

The study involves data of gifted students who accepted a GAT Academic placement (N = 2,783) and TE students who accepted a GAT Academic placement (N = 44) from 2007 to 2012. While quantitative empirical evidence exists as to TE prevalence in American states and schools, there is no empirical evidence on prevalence in the Western Australian DoE’s schools that has been made available, therefore this is the first study to have access to longitudinal data. While experts in the field agree that the TE population exists, prevalence rates differ due to variability in criteria, definitions and assessments (Lovett & Sparks, 2011). There is agreement that the population is very small (Trail, 2010) due to difficulties in identification. Therefore, the purpose of this research is to collect quantitative data from the DoE to investigate the prevalence of TE students in the Western Australian GAT Academic programs to determine whether the population is small and under-represented as reported by experts in the field, and how this compares to disability in Government schools of Western Australia.
Additionally, the knowledge and perceptions of coordinators of the GAT Academic programs regarding the learning characteristics and needs of TE students was gathered to determine the level of knowledge of coordinators of the gifted regarding disability and their perceptions as to the appropriateness of placement and support available. Also, the perceptions of parents of TE students (other than those enrolled in the GAT Academic programs) about the GAT Academic programs were gathered as access to any identifying information and access was not permitted.

1.6. Research Questions

This study was specifically designed to focus on four questions related to TE student representation in Western Australia’s GAT Academic programs, GAT Academic coordinator knowledge and perceptions and the impact that the GAT process has on parent decisions to enrol their child in the programs.

1. What is the prevalence of twice exceptional (TE) students in the GAT Academic programs and how does the prevalence of twice exceptional (TE) students in the GAT Academic programs relate to the prevalence of disabled children in Government schools in Western Australia 2007 to 2012?

2. How knowledgeable are the GAT Academic program coordinators regarding the gifted and talented definition and identification means used by the Department of Education?

3. What knowledge and perceptions do the GAT Academic program coordinators have of TE students’ needs in gifted programs?

4. What perceptions do the parents of TE students have of the GAT Academic programs?

1.7. Significance

Kalbfleisch (2013) maintains that little is known about TE prevalence or incidence. This is the case in the DoE’s GAT Academic programs of Western Australia where TE prevalence in these programs and how it relates to disability prevalence in the Government schools of Western Australia is an under-researched and unknown
phenomenon. This study can influence change and prompt awareness of TE student inclusion by identifying existing barriers to inclusion and identification, understanding the systematic barriers to TE student participation and how their learning profile of a disability, contributed to their continued underrepresentation over time. Findings from the study may also contribute to the DoE reviewing policies and procedures that affect disproportionate representation of TE students in the GAT Academic programs.

When Lovett and Sparks (2011) conducted a quantitative review of 940 studies on giftedness and specific learning disability only 46 contained empirical data. The findings of this study will contribute longitudinal empirical data to the study of the twice exceptional student and further add to the growing literature on TE prevalence. In 1985, Whitmore and Maker contended that TE students were the most misjudged, misunderstood and neglected segment of the student population and twenty-five years later Barnard-Brak, Johnsen, Hannig, and Wei (2015, p. 74) reported that they “are still struggling as a severely under identified population”. This study contributes to raising awareness of TE students in the GAT Academic programs, an oft-neglected segment of the Western Australian student population.

Karnes and Shaunessy (2004) recommended that teacher training should include information about gifted students with disabilities, gifted child-find campaigns be initiated to increase identification, data collection on prevalence be instituted and that teacher knowledge of student abilities, as well as disability compensation and strategies for curricular modifications (Clark, 2002) be put in place. Employing a quantitative and qualitative approach enabled the researcher to explore gifted coordinators’ knowledge of the DoE’s gifted definition and identification means as well as their knowledge and perceptions of the needs of TE students. This research contributes to our understanding of teacher knowledge of how the gifted definition and identification is understood by those working in the field of gifted education, and how the knowledge and perceptions of those involved in gifted education can contribute to the support of TE students, and raising their profile within the gifted cohort. Additionally. This research added the further dimension of identifying barriers to entry to the GAT Academic programs from the viewpoint of parents of TE students, which contributed to our understanding of systemic hurdles that impact on TE underrepresentation.

This study holds significance for four stakeholders – TE and minority gifted students, teachers/coordinators of gifted education programs, the Western Australian
Department of Education and students with disabilities and their parents.

1.7.1. Twice Exceptional and Minority Students

The main benefactors of highlighting underrepresentation and inhibitory factors that pose barriers to TE students gaining entry to gifted programs and their marginalisation within the gifted cohort are TE students. TE students need an environment where they can be with like intellectual peers that will foster their strengths and provide positive social/emotional support (Bees, 2009; Jackson, 1998; Yssel, Prater, & Smith, 2010). Consequently, highlighting underrepresentation brings to the fore a systemic reminder and responsibility for the educational needs of TE and minority students.

1.7.2. Teachers/Coordinators of Gifted Students

Teacher knowledge of disability and giftedness is very important in being able to identify, advocate and support TE students at an individual and systematic level. Therefore, raising awareness that TE students should comprise part of the gifted cohort would raise concern if none were represented.

1.7.3. Western Australian Department of Education

Schroth and Helfer (2008) maintain that conceptions of academic talent and giftedness and the types of students these concepts focus upon are indications of the philosophies underlying their proponents’ actions, which then makes it apparent which population the model is designed to serve or exclude. Hence, scrutinising the processes of identification in light of prevalence rates of TE and disability, will inform decisions that need to be made to ensure that the philosophy of inclusion and equity is evidenced through the recruitment and identification of TE students for GAT Academic programs.

1.7.4. Parents of TE students and their children

Parents of TE students apply for placement on behalf of their children. Therefore, understanding their perceptions and experiences with the GAT process draws attention to identified deterrents or barriers that stop them from making application for their child. To discover and address any underrepresentation as reported in the literature field and give a ‘voice’ to their perceptions and experiences, will benefit future TE students and
their parents by drawing attention to the GAT process and how it is experienced by participants.

1.8. Definition of Terms

The following terms used in this research, have been conceptually and operationally defined to aid the understanding of the reader given the varying definitions adopted in Australia. Chronic Fatigue Syndrome (CFS) and Diabetes have been included in this section as they fall within the medical category where special examination provisions may be granted through SCSA and recently in Western Australia the provision of extra working time has been allowed for those with insulin dependent Diabetes.

**Attention-Deficit/Hyperactivity Disorder**

The current term to describe students with issues sustaining and inhibiting the focus of their attention is Attention-Deficit/Hyperactivity Disorder, however the terms ADD/ADHD and attentional disorders appear in this thesis and reflect changes to the nomenclature that have occurred over time. “The diagnostic criteria for attention-deficit/hyperactivity disorder (ADHD) in DSM-5 [Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition] are similar to those in DSM-IV. The same 18 symptoms are used as in DSM-IV, and continue to be divided into two symptom domains (inattention and hyperactivity/impulsivity), of which at least six symptoms in one domain are required for diagnosis. However, several changes have been made in DSM-5: 1) examples have been added to the criterion items to facilitate application across the life span; 2) the cross-situational requirement has been strengthened to “several” symptoms in each setting; 3) the onset criterion has been changed from “symptoms that caused impairment were present before age 7 years” to “several inattentive or hyperactive-impulsive symptoms were present prior to age 12”; 4) subtypes have been replaced with presentation specifiers that map directly to the prior subtypes; 5) a comorbid diagnosis with autism spectrum disorder is now allowed; and 6) a symptom threshold change has been made for adults, to reflect their substantial evidence of clinically significant ADHD impairment, with the cut-off for ADHD of five symptoms, instead of six required for younger persons, both for inattention and for hyperactivity and impulsivity (American Psychiatric Association, 2013, p. 2).

**Autism Spectrum Disorder (ASD)**

Autism Spectrum Disorder was defined in 2013 in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as persistent deficits in social communication and interaction across multiple contextual areas. Restricted and repetitive behaviours interests or activities. Symptoms were present in early development and current functioning and that they are not better explained by intellectual disability or global developmental delay (American Psychiatric Association, 2013).
Cerebral Palsy

Cerebral palsy (CP) is a physical disability that affects movement and posture. Cerebral palsy (CP) is an umbrella term that refers to a group of disorders affecting a person’s ability to move. It is a permanent life-long condition, but generally does not worsen over time. It is due to damage to the developing brain either during pregnancy or shortly after birth.

Cerebral palsy affects people in different ways and can affect body movement, muscle control, muscle coordination, muscle tone, reflex, posture and balance.

People who have cerebral palsy may also have visual, learning, hearing, speech, epilepsy and intellectual impairments (“What is Cerebral Palsy?”, 2015, p. 1).

Chronic Fatigue Syndrome (CFS)

Chronic fatigue syndrome (CFS) is a debilitating and complex disorder characterized by intense fatigue that is not improved by bed rest and that may be worsened by physical activity or mental exertion. People with CFS often function at a substantially lower level of activity than they were capable of before they became ill. The cause or causes of CFS have not been identified, and no specific diagnostic tests are available. Therefore, a CFS diagnosis requires three criteria:

1. The individual has had severe chronic fatigue for 6 or more consecutive months that is not due to ongoing exertion or other medical conditions associated with fatigue (these other conditions need to be ruled out by a doctor after diagnostic tests have been conducted)
2. The fatigue significantly interferes with daily activities and work
3. The individual concurrently has 4 or more of the following 8 symptoms:
   - post-exertion malaise lasting more than 24 hours
   - unrefreshing sleep
   - significant impairment of short-term memory or concentration
   - muscle pain
   - pain in the joints without swelling or redness
   - headaches of a new type, pattern, or severity
   - tender lymph nodes in the neck or armpit
   - a sore throat that is frequent or recurring

   These symptoms should have persisted or recurred during 6 or more consecutive months of illness and they cannot have first appeared before the fatigue (Centre for Disease Control and Prevention, 2012, p. 1).

Diabetes

In Type 1 diabetes the pancreas does not produce insulin because the cells that make insulin have been destroyed by the immune system. Insulin replacement therapy is critical for the person with Type 1 diabetes to live. In Type 2 diabetes, the body does produce insulin but the insulin is ineffective, or there is not enough insulin, or both
(Diabetes WA, 2014). People with Type 2 diabetes often “do poorly on measures of learning and memory, whereas deficits in these domains are rarely seen in people with Type 1 diabetes.” (McCrimmon & Ryan, 2012, p. 1) Both “disorders are associated with mental and motor slowing and decrements of similar magnitude on measures of attention and executive functioning” (McCrimmon, Ryan, & Frier, 2012, p. 1).

**Dyslexia**

Dyslexia is a language-based learning disability of neurological origin. It primarily affects the skills involved in accurate and fluent word reading and spelling. It is frequently associated with difficulties in phonological processing. It occurs across the range of intellectual abilities with no distinct cut-off points. It is viewed as a lifelong disability that often does not respond as expected to best-practice evidence-based classroom methods for teaching reading (Bond, Coltheart, Connell, Firth, Hardy, Nayton, Shaw, & Weeks, 2010, p. 8).

**Dysgraphia**

Dysgraphia is a specific learning disability that affects written expression.

Dysgraphia can appear as difficulties with spelling, poor handwriting and trouble putting thoughts on paper. Dysgraphia can be a language based, and/or non-language based disorder.

Many people have poor handwriting, but dysgraphia is more serious. Dysgraphia is a neurological disorder that generally appears when children are first learning to write. Experts are not sure what causes it, but early treatment can help prevent or reduce problems.

Writing requires a complex set of motor and information processing skills. Not only does it require the ability to organize and express ideas in the mind. It also requires the ability to get the muscles in the hands and fingers to form those ideas, letter by letter, on paper.

Dysgraphia that is caused by a language disorder may be characterised by the person having difficulty converting the sounds of language into written form (phonemes into graphemes), or knowing which alternate spelling to use for each sound. A person with dysgraphia may write their letters in reverse, have trouble recalling how letters are formed, or when to use lower or upper case letters. A person with dysgraphia may struggle to form written sentences with correct grammar and punctuation, with common problems including omitting words, words ordered incorrectly, incorrect verb and
pronoun usage and word ending errors. People with dysgraphia may speak more easily and fluently than they write.

Non-language based dysgraphia is caused by difficulties performing the controlled fine motor skills required to write (Dyslexia-SPELD Foundation, 2014).

**Dyspraxia**

Dyspraxia is a disability causing severe difficulty in performing drawing, writing, buttoning, and other tasks requiring fine motor skill, or in sequencing the necessary motor movements. Children who experience these difficulties can often manage a keyboard really well, even from kindergarten, as the motor skill factors of tasks have been removed, so they can then attend to the more cognitive aspects of the task. Articulatory verbal dyspraxia is a condition where the child has difficulty making and coordinating the précis movements, which are used in the production of spoken language although there is no damage to muscles or nerves (Learning Difficulties Australia, 2017).

**Fine Motor Disability**

Fine Motor Disability is a term used by the School Curriculum and Standards Authority (2014) to describe a disability that makes penmanship difficult as they have the inability to properly form letters and have unreadable writing. This is usually referred to as Dysgraphia, which has been defined previously.

**Gifted and Talented**

Gagné defines giftedness as designating

The possession and use of untrained and spontaneously expressed outstanding natural abilities or aptitudes (called gifts), in at least one ability domain, to a degree that places an individual at least among the top 10% of age peers.

Talent designates the outstanding mastery of systematically developed competencies (knowledge and skills) in at least one field of human activity to a degree that places an individual at least among the top 10% of ‘learning peers’ (those who have accumulated a similar amount of learning time from either current or past training) (Gagné, 2013, p. 5).

**Hearing impairment/Deaf Hard of Hearing**

Audiologists generally agree that individuals have normal hearing if their ability to detect sound falls within 0 and 15 to 20 dB HL (Bess & Humes, 1995). Categories of hearing loss have been described by a variety of specialists in the
area of hearing. The following categories of hearing loss (re: ANSI, 1989) are representative of those used routinely by audiologists in practice: 15-30 dB HL, mild hearing loss; 31-60 dB HL, moderate hearing loss; 61-90 dB HL, severe hearing loss; 90 dB HL or greater, profound hearing loss (Boothroyd, 1989). Hearing loss may be bilateral (two ears) or unilateral (one ear). Listeners with hearing losses in the mild, moderate, and severe categories are more likely to be called hard of hearing. Listeners with hearing losses in the profound category are more likely to be called deaf (Arlene & Moeller, 1998, p. 62).

Learning Disability

The term learning disability is operationally defined in the context of this study, as students who have:

reading, written expression or mathematics skills significantly below expectation in relation to their present year level and cognitive ability. In many cases evidence of a processing impairment, frequently phonological in nature, will be present. Learning disabilities are presumed to be intrinsic to the individual and long term, with the student failing to respond as expected to targeted intervention. They are not considered to be the direct result of intellectual disability, physical disability, sensory impairment, or a primary emotional difficulty. Neither do they appear to derive directly from inadequate environmental influences, or from the lack of an appropriate educational experience (School Curriculum & Standards Authority, 2014, p. 12).

SCSA uses specific learning disability and learning disability interchangeably to encompass such disabilities as Dyslexia, Dysgraphia, and Dyspraxia. Therefore in the context of this study, learning disability encompasses the above listed disabilities.

Motor Disorders

The following motor disorders are included in the DSM-5: developmental coordination disorder, Tourette’s disorder, persistent motor or vocal tic disorder, provisional tic disorder, other specified tic disorder, and an unspecified tic disorder (American Psychiatric Association, 2013).

Muscular Dystrophy

Muscular dystrophy is the term given to a group of hereditary, progressive diseases that cause the breakdown of muscle fibres leading to weak and wasted muscles.

The genetic defect is present from the time of conception but the signs are usually not evident until childhood, adolescence or adulthood, depending on the type of dystrophy.
As a group, the muscular dystrophies are characterised by three common features:

- they are hereditary;
- they are progressive; and
- each exhibits a characteristic, selective distribution of weakness (Alessandri, Blum, & Bower, 1996, p. 27).

**Obsessive Compulsive Disorder (OCD)**

OCD is characterised by recurring, persistent and distressing thoughts, images or impulses and the need to carry out repetitive behaviours, rituals or mental acts (Australian Psychological Society, 2014) and interfere with daily living and learning.

**Physical Disability**

This term refers to difficulty in mobility or movement especially in walking but can also refer to difficulty in the use of the hands or arms. Types of physical disabilities include spina bifida, cerebral palsy and muscular dystrophy (Foreman, 2008).

**Psychological Impairment**

Psychological Impairment is a collective term used by the School Curriculum and Standards Authority (2014) to encompass Autism and Obsessive Compulsive Disorder.

**Severe Health Impairment**

Severe Health Impairment is a collective term used by the School Curriculum and Standards Authority (2014) that encompasses chronic fatigue syndrome and diabetes.

**Significant Physical Disability**

A Significant Physical Disability is a collective term used by the School Curriculum and Standards Authority (2014) that encompasses such disabilities as cerebral palsy and muscular dystrophy.

**Specific Learning Disability**

A specific learning disability is a collective term used by the School Curriculum and Standards Authority (2014) for the disabilities of Dyslexia, Dysgraphia and Dyspraxia.
Vision Impairment

“Vision impairment is the reduced vision caused by eye disease, accident or eye condition present from birth (congenital). It can be partial or total loss of vision” (Disability Services Commission, 2006, p. 32). “The main causes of significant vision loss in Australia are: glaucoma, diabetes retinopathy, cataract, age-related macular degeneration and trauma to the eye through accident, injury or disease.” Disability Services Commission, 2006, p. 32).
CHAPTER TWO

2.0. REVIEW OF THE LITERATURE

In this chapter, literature relevant to this study of the prevalence of twice exceptional (TE) students in GAT Academic programs in Western Australia is presented. The literature field is broad and complex when considering TE prevalence, as it has many interlocking and overlapping issues focusing on historically small prevalence numbers. This therefore restricts the provision of an in-depth and exhaustive review in all areas, but does permit a broad sweep of areas of pertinence to this study.

The research field indicates that educationally, intellectually gifted students need to be with like peers (Wellisch & Brown, 2012) to foster their intellectual potential and ensure they have the best opportunity to achieve (Bees, 2009; Jackson, 1998; Yssel, Prater, & Smith, 2010). Many TE students remain unidentified within the education system due to lack of awareness of their potential and processes/programs that seem not able to understand or cope with their learning exceptionalities. Despite their complex educational needs (Assouline & Whiteman, 2011; Foley Nicpon, Allmon, Sieck, & Stinson, 2011; Pfeiffer, 2001, 2009) the TE student needs opportunities to be challenged to continue to grow academically at a rate commensurate with their ability (Trail, 2011). This literature review is organised into three broad sections:

- a historical perspective of gifted theory, education, learning disabilities and definitions in America and Australia;
- TE prevalence, identification, assessment and underachievement, and
- the parallels to other gifted minority experiences that reflect a deficit perception about their abilities that limits their identification as gifted (Ford, Trenton, Blakeley, & Amos, 2014; Whiting, 2009, 2014).

The literature highlights the need for this study in terms of inclusion of, and equity for, TE students in the Department of Education’s (DoE’s) GAT Academic programs in Western Australia. Due to the historically low prevalence of TE students in gifted and talented programs overseas and the previously unexplored WA DoE context, there is a need to investigate whether a similar situation exists in Western Australia.
2.1. Gifted Theory a Historical Perspective

Decisions about the classification of giftedness and how best to delineate gifted individuals from others is in part a historical review with research paralleling changes in definitions and assessments. The following section is a brief review of the major influences taken from the literature that built gifted education from its early beginnings to where it is today and the theories of giftedness that underpin current decisions about how to identify, include and cater for gifted students that impact on the identification of the TE student. Additionally, the shift in research from giftedness to talent development will also be discussed through the influential and landmark studies, key models and conceptions of talent. While this study does adopt Gagné’s definition of giftedness and talent, as it has been adopted by the DoE, showcasing a variety of definitions provides an overview of the evolution and variety of the giftedness concept. This is a truncated history of giftedness and talent and its intersection with learning disabilities. A number of major theorists have been influential in pioneering the gifted field and while there is not total agreement as to the type and components of giftedness, these differences of opinion create the opportunity for exploration of the complexities of what it means to be gifted.

 Sir Francis Galton

Sir Francis Galton is credited with the earliest significant research and writing on intelligence and testing and was the first to attempt to quantify characteristics of intelligence. In 1959 Galton, a younger cousin to Charles Darwin, reasoned that intelligence was related to the keenness of one’s senses and therefore measured intelligence by testing visual and auditory acuity, tactile sensitivity and reaction time (Colangelo & Davis, 2003). Galton’s observations confirmed a hereditary basis of intelligence as he noted, “distinguished persons seemed to come from distinguished families” (Colangelo & Davis, 2003, p. 6).

 Alfred Binet

At the turn of the century in America, Alfred Binet and his colleague Theodore Simon were employed to devise a test to measure the intelligence of children who were perceived to be dull so that they could receive special training, as children who were “too quiet, too aggressive, or had problems with speech, hearing or vision” were being placed in schools for the retarded (Colangelo & Davis, 2003, p. 6). While many initial
tests failed to measure intelligence, scores on tests of memory, judgment, reasoning, comprehension and the ability to pay attention tended to agree with teachers’ judgments of intelligence (Colangelo & Davis, 2003).

Henry Goddard

Henry Goddard studied in France with Binet and translated the Binet-Simon test into English to be used by American psychologists (Colangelo & Davis, 2003). He successfully identified the intelligence of 400 ‘feebleminded children’ with the Binet-Simon test and went on to evaluate 2,000 ‘normal’ children that were successfully measured to have average and above-average levels of intelligence (Colangelo & Davis, 2003). From the necessity to identify more accurately and access those children who would not benefit from regular classes, led to the development of a tool which also could identify those children of higher intellect.

Lewis Terman

Lewis Terman, a Stanford psychologist, made two major contributions to gifted education that earned him the title “father of the gifted education movement” (Stanley, 1990, p. 167). First, he supervised the modification of the Binet-Simon test, producing the Stanford Binet Intelligence Score in 1916 that was revised in 1937, 1960 and 1986 (Colangelo & Davis, 2003). This test created the now familiar concept of mental age where the greater the discrepancy either positive or negative, between chronological age and mental age, the greater the need for alterations in educational programming. Second, he carried out a longitudinal study of 1,528 gifted children and published the results in four volumes (Terman, 1925b, Terman, Burks, & Jensen, 1930; Terman & Oden, 1947 & 1959). Terman and his colleagues began administering the Stanford-Binet test to students initially identified by teachers as intelligent, which largely excluded cultural minority children such as Native Americans and Asians who attended special Asian schools at that time (Colangelo & Davis, 2003).

Terman’s longitudinal study dispelled the myths that gifted children were frail, ill at ease socially, lost in lofty thoughts and tenuously holding on to their sanity (Terman, 1925a, 1925b). At the same time his study gave rise to another myth that all gifted children were happy and well-adjusted, requiring little in the way of special attention; consequently, they were thought of as near perfect children (Davis & Rimm, 2004). The study was unfortunately flawed in that no child entered the study unless nominated by
a teacher as one of the best and brightest, and in all probability, teachers overlooked those children who were thought to be misfits, loners and problematic to teach (Winner, 1998).

Leta Hollingworth

Leta Hollingworth was a pioneer in supporting gifted education and gifted students in the New York area, and is thought by many to be the “nurturant mother of gifted education” (Colangelo & Davis, 2003, p. 7). Hollingworth was born in 1886 and received her Ph.D. from Columbia University in 1916 where she began her career focusing on ‘subnormal’ children. While Terman’s writings often contained references to some gifted children’s bad attitudes and habits of laziness, Hollingworth concluded that gifted children were often bored and unmotivated as they received daily practice in idleness and daydreaming when given class work that they had mastered, sometimes years earlier than their classmates (Hollingworth, 1942). Hollingworth conducted longitudinal studies, some of which were for twenty years, in order to look at the make-up, origin, education and destiny of bright children (Hollingworth, 1940). She looked beyond the gifted child to the interconnectedness of their educational experiences and the impact this was having on their lived experiences (Hollingworth, 1940). Hollingworth’s use of an intellectual quotient (IQ) score of 130 or above to define gifted children was followed by many schools (Sumption & Luecking, 1960), although for her own experimental work she defined gifted students as those in the top 1% in general intelligence (Pritchard, 1951). She used individual intelligence scales as it was felt that this was the single best way to identify gifted students and democratic for determining who should qualify for special services in schools (Pritchard, 1951). However, she also took into account other criteria besides IQ tests, selecting students for her own classes on the basis of social adaptability, emotional maturity and physical ability.

Raymond Cattell

One of the most influential theories of intelligence is Raymond Cattell’s theory (1941, 1943) of fluid and crystallised intelligence. Fluid intelligence refers to the processing of information and the ability to reason with the aim to understand relationships and abstract propositions (Stankov, 2000), whereas crystallised intelligence refers to the acquisition, storing, organisation and conceptualisation of pieces of information (Chamorro-Premuzic & Furnham, 2005). Cattell proposed that intelligence is not a unitary construct; rather it assumes two broad but distinct types – fluid intelligence (Gf)
and crystallised intelligence (Gc). John Horn, Cattell's doctoral student was involved in refining and empirically testing the Gf-Gc theory and it was then referred to as the Cattell-Horn Theory of Intelligence. Fluid intelligence represents novel or abstract problem solving capability and is believed to have a physiological basis. The fluid nature of the intelligence reflects Cattell’s construct to be directed to almost any problem that is assessed with items of a nonverbal or graphical format. Crystallised intelligence is associated with learned or acculturated knowledge and is a result of learning and knowledge acquired over one's lifetime. According to Gf-Gc Theory, fluid intelligence causes crystallised intelligence, and Cattell’s (1971, 1987) Investment Theory proposed that individuals have a fixed amount of Gf that they can choose to invest in, or apply to learning in specific crystallised skills or domains. Gc is measured with verbal items, in particular those assessing vocabulary.

**Joseph Renzulli**

Professor Joseph Renzulli looked at a number of studies including the thirty year study of 1,400 highly gifted individuals initiated by Terman in 1921 to determine what these studies can teach us about giftedness (Renzulli, 1978). Renzulli (1978) found from these studies that gifted individuals who had been most successful in life had not only possessed high levels of ability, but had also displayed high levels of creativity and task commitment that Renzulli suggested were an interlocking cluster of traits that defined giftedness. Renzulli then proposed a three-ring definition in which above average intellectual ability, creativity and task commitment interact to produce giftedness (Renzulli, 1978, 1986). According to Renzulli:

> giftedness consists of an interaction among three basic clusters of human traits – these clusters being above average general abilities, high levels of task commitment and high levels of creativity. Gifted and talented children are those possessing or capable of possessing this composite set of traits and applying them to any potentially valuable area of human performance. (Renzulli, 1978, p. 261)

Renzulli’s above average general abilities refers to the top 15 to 20% of people in any area of human endeavour (Renzulli, 1986). It is emphasised by Renzulli that none of the three clusters of traits by themselves are sufficient to define a child as gifted, as it “is the interaction among the three clusters that research has shown to be the necessary ingredient for creative/productive accomplishment” (Renzulli, 1978, p. 182). That is, there exists the potential for gifted behaviour where the three converge in the concentric circle model and Renzulli sees giftedness itself as a behaviour rather than
as an attribute. This concept has implications for schools where a child’s behaviour is influenced by their environment and the support offered to foster gifted behaviour.

This theory has been refined over thirty years of research and is known as the Schoolwide Enrichment Triad Model (Renzulli, 1986). The major principles of the model are supported by the use of interest and learning style inventories to assess inter and extra-curricular abilities, provision of curriculum compacting and accessing an appropriate triad level based on students’ abilities, interest and task commitment (McCollin, 2011). There are three enrichment levels: Level 1 – general exploratory experiences, Level 2 - instructional strategies designed to promote thinking and Level 3 - analytical activities and creative productions that support primary enquiry and thinking (McCollin, 2011).

Howard Gardner

In 1983 Howard Gardner conceptualised Multiple Intelligence (MI) Theory suggesting that intelligence is not a unitary concept and that humans’ possess at least eight intelligences – bodily/kinaesthetic, naturalist, logical mathematical, musical/rhythmic, verbal/linguistic, visual/spatial, interpersonal and intrapersonal and that individuals are predisposed to developing each of the intelligences to different levels of competence (Gardner, 1983). Each of these intelligences has equal value to the other and each of us possesses all of these intelligences. Gardner posited that the “intelligences represented ways of processing information and of thinking” and were the “product of the interaction between genetic predisposition and the environment” (Sousa, 2003, p. 35). He suggested that this was a nature-nurture combination, not one or the other, but both (Sousa, 2003).

As Gardner (1983) suggested that traditional measures for identifying gifted students relied too heavily on IQ tests (that focus on linguistic and logical/mathematical skills), many schools resorted to MI as a tool to identify gifted students due to its simplicity, convenience, and egalitarian theme (Delisle, 1996). Therefore, MI focused on developing every learner’s intelligence rather than the exceptionalities of the gifted (Sousa, 2003). The main criticisms of MI theory are the belief that each of the multiple intelligences is in fact a cognitive domain (content) (Storfer, 1990) or cognitive style (process) (Morgan, 1996) rather than a standalone construct. Further confusion surrounding Gardner’s intelligences stems from his assertion that these ‘intelligences’ are semi-autonomous, working in tandem, harmony or consorting to produce a
particular competency (Gardner, 1983; Ramos-Ford & Gardner, 1997; Storfer, 1990). Porter (2002, p. 330) maintained that, "content areas cannot work in tandem or harmony, although, perhaps cognitive styles can". Therefore, Porter (2002) concluded that Gardner’s ‘intelligences’ are fields of knowledge (content areas) and that some individuals possess the skill to use particular cognitive processes efficiently in more than one content area, which in turn could lead to a proficient performance in one or more domains.

Benjamin Bloom

In 1985 Bloom and his team conducted the Development of Talent Research Project in order to understand the process by which accomplished individuals in varying fields attained their high level of success (Bloom, 1985). For this study, Bloom defined talent as “an unusually high level of demonstrated ability, achievement, or skill in some special field of study or interest. This is in contrast with earlier definitions, which equated talent with natural gifts or aptitudes” (Bloom, 1985, p. 5). From the interviews of over 120 talented individuals under the age of forty in three different fields: athletics, aesthetics and cognitive or intellectual, as well as interviewing participants' parents and teachers/coaches, generalisations about the talent development process were drawn (Bloom, 1985).

It was found that talent develops in three stages throughout the individual's life and similarly the talented individuals had three noted kinds of teachers throughout their talent development process: a local teacher, an advanced teacher and a master teacher (Bloom, 1985). Bloom (1985) also noted generalisations about the role of parents: providing a positive supportive home environment, a positive work ethic through role modelling and holding high expectations for their child, consistently emphasising the importance of always doing one’s best and encouraging their child in the specific talent field. Chance and time spent in the particular field were crucial elements in the talent development process, with the participants in the study demonstrating significant achievement and contributions after at least ten years (Bloom, 1985). Bloom (1985, p. 544) also noted three general qualities that were constant throughout all fields of talent development “strong interest and emotional commitment to a particular talent field, desire to reach a high level of attainment . . . and willingness to put in the great amounts of time and effort needed to reach very high levels of achievement.” While Bloom was in the process of conducting his study
another researcher, Abraham Tannenbaum published a conception of giftedness that repeated many of the generalisations that emerged from Bloom’s 1985 study.

Abraham Tannenbaum

Calderon, Subotnik, Knotek, Rayhack, and Gorgia (2007) credit Abraham Tannenbaum (1983) as one of the initial researchers to document the process of talent development. Tannenbaum focused his model on children, defining giftedness as “potential for becoming critically acclaimed performers or exemplary producers of ideas in spheres of activity that enhance the moral, physical, emotional, social, intellectual or aesthetic life of humanity” (Tannenbaum, 2003, p. 45). In 1983 Tannenbaum identified five elements that contributed to the translation of childhood gifts into adult talent: general ability, special ability, non-intellective factors, environmental factors and chance factors. For the first element of general ability, he noted that a static threshold for IQ was not appropriate for all areas of talent as there needed to be a higher threshold for academics, but lower for others such as performing arts (Tannenbaum 1983). The second element of special abilities, related to skills in the core domain with the child needing to express both general and special abilities to excel in their field as well as the final three elements to be truly gifted (Tannenbaum, 1983). Non-intellective factors or personality traits such as motivation and creativity are two examples of the psychosocial traits that energise the child’s general and special abilities towards giftedness (Tannenbaum, 1983). Environmental factors include supportive parents, teachers and peers as well as the school and community and acting in conjunction with the other elements in transforming childhood gifts into demonstrated achievements is chance – being in the right place at the right time (Tannenbaum, 1983). When Tannenbaum revised his conception in 2003 he noted, “chance factors should never be trivialized or neglected in the study of giftedness, especially given that so many eminent people emphasize unpredictable events that helped them reach the top” (Tannenbaum, 2003, p. 55).

Robert Sternberg

Robert Sternberg formulated the Triarchic Theory of Human Intelligence in 1985. This theory went against the psychometric approach to intelligence. Sternberg’s theory distinguished three distinct types of intelligence – analytical, synthetic, and practical (Sternberg, 2003). People with “giftedness in analytic skills involves being able to dissect a problem and understand its parts” (Sternberg, 2003, p. 89) and those who are
strong in this area will do well on conventional tests of intelligence (Sternberg, 2003). Synthetic giftedness is seen in people who are insightful, intuitive, creative, or adept at coping with novel situations and these people will not necessarily do well on conventional measures of intelligence (Sternberg, 2003). Practical giftedness involves applying whatever analytic or synthetic ability one may have to everyday situations (Sternberg, 2003). Sternberg (2003) states that the practically gifted person specialises in applying their strong analytic or synthetic abilities to everyday situations. People have a blend of the three, and it is a very important part of giftedness to be able to coordinate the three and know when to use them (Sternberg, 2003). Sternberg and his associates carried out a number of research studies to show that the theory of successful intelligence can make a difference to school performance (Grigorenko, Jarvin, & Sternberg, 2002; Sternberg & Clinkenbeard, 1995; Sternberg, Ferrari, Clinkenbeard, & Grigorenko, 1996; Sternberg, Ferrari, Clinkenbeard, & Grigorenko, 1999; Sternberg, Torff, & Grigorenko, 1998a, 1998b).

Françoys Gagné

Gagné’s Differentiated Model of Giftedness and Talent (DMGT, 2005) differentiates between gifts and talent, arguing that gifts correspond to the ideas of aptitude and talent to achievement. His first DMGT model was produced in 1985, which then evolved into the DMGT 2005 (Figure 2.1) version:
Figure 2.1. Gagné’s Differentiated Model of Giftedness and Talent (DMGT) 2005 version (Gagné, 2013).

**GIFTEDNESS = top 10%**

**NATURAL ABILITIES (NAT) DOMAINS**
- Intellectual (IG): Fluid reasoning (induct./deduct.), crystallized verbal, spatial, memory, sense of observation, judgment, metacognition.
- Creative (CG): Inventiveness (problem-solving), imagination, originality (arts), retrieval fluency.
- Socioaffective (SG): Intelligence (perceptiveness), Communication (empathy, tact), Influence (leadership, persuasion).
- sensoriMotor (MG): S: visual, auditory, olfactory, etc. M: strength, endurance, reflexes, coordination, etc.

**CATALYSTS**
- **INTRAPERSONAL (IC)**
  - Physical: characteristics, handicaps, health, etc.
  - Motivation: needs, interests, values, etc.
  - Volition: will-power, effort, persistence.
  - Self-management: concentration, work habits, initiative, scheduling, etc.
  - Personality: temperament, traits, well-being, self-awareness & esteem, adaptability, etc.

**SYSTEMATICALLY DEVELOPED SKILLS (SYSDEV)**
- **FIELDS**
  - Academics: language, science, humanities, etc.
  - Arts: visual, drama, music, etc.
  - Business: sales, entrepreneurship, management, etc.
  - Leisure: chess, video games, puzzles, etc.
  - Social action: media, public office, etc.
  - Sports: individual & team.
  - Technology: trades & crafts, electronics, computers, etc.

**DEVELOPMENTAL PROCESS**
- Informal/formal learning & practicing (LP)

**ENVIRONMENTAL (EC)**
- Milieu: physical, cultural, social, familial, etc.
- Persons: parents, teachers, peers, mentors, etc.
- Provisions: programs, activities, services, etc.
- Events: encounters, awards, accidents, etc.

**TALENT = top 10%**

**CHANCE (CH)**
In the DMGT (Gagné, 2003) there are four aptitude domains. These are: intellectual (IG): fluid reasoning, crystallised verbal, spatial, memory, sense of observation, judgement and metacognition, creative (CG): inventiveness (problem-solving), imagination, originality (arts), retrieval fluency, socioaffective (SG): intelligence (perceptiveness), communication (empathy, tact), influence (leadership, persuasion), sensorimotor (MG): sensory – visual, auditory, olfactive, etc., motor – strength, endurance, reflexes, coordination, etc. (Gagné, 2003). Giftedness is the above average natural ability in one or more of these domains (see Figure 2.1).

This progression from gifts to talents is facilitated through the Developmental Process, which is either assisted or hindered by factors that Gagné describes as catalysts. While these abilities (gifts) are developed, intrapersonal and environmental catalysts act upon the person (Gagné, 2003). These intrapersonal catalysts include behaviours such as motivation, volition and self-management traits such as personality and physical characteristics. Environmental catalysts include the events in the individual’s life, provisions that are offered to the individual through programs and activities and the milieu, that is the physical, cultural and social environment and persons around them such as teachers, mentors, family and peers (Gagné, 2003). Gagné introduced the chance factor into the DMGT as he acknowledged that chance played a large part in the control of environmental and intrapersonal catalysts that would directly affect their natural abilities (gifts). This is similar to the importance that Tannenbaum (2003) gives to chance, which he states should not be trivialised or neglected in the study of giftedness.

In Gagné’s model, natural abilities or aptitudes (gifts) act as the ‘raw material’ or the constituent elements of talents. It follows from this relationship that talent necessarily implies the presence of well above average natural abilities; one cannot be talented without first being gifted. It is possible for well above natural abilities to remain simply as gifts, and not to be translated into talents, as is “witnessed by the well-known phenomenon of academic underachievement among intellectually gifted children” (Gagné, 2012, p. 65). The process of talent development manifests itself when the child or adolescent engages in systematic learning and practice, the higher the level of talent sought, the more intensive these three activities (Gagné, 2003).
The Talent Development Trio – Gifts (G), Talents (T) and Learning and Practicing (LP)

- **Gifts**
  The DMGT proposes four aptitude domains: intellectual, creative, socio-affective, and sensorimotor. Natural abilities can be observed through the tasks that children come across in the course of their development such as when learning to read, speak, understand new mathematical concepts, solving technical problems or producing original work (Gagné, 2003). There are also the physical abilities that are involved in sports, music and social abilities that children use when interacting with peers, teachers and parents. Natural abilities manifest in all children to a varying degree and it is when the level of expression becomes outstanding that the ‘gifted’ label may be used (Gagné, 2003). These gifts can be observed in young children, older children and even in adults through the facility and speed that individuals acquire these new skills and as Gagné (2003) states, “the easier or faster the learning process, the greater the natural abilities” (Gagné, 2003, p. 62). The intellectual domain is measured by IQ tests, the psychomotor by batteries of tests that assess the physical fitness of children (Australian Sports Commission, 1994; President’s Council on Physical Fitness and Sports, 2001), the creative has tests but are far below the psychometric qualities of IQ tests, and the socio-affective domain is assessed predominantly by self-assessments or peer judgements (Gagné, 2003).

- **Talent**
  Talents progressively emerge from the transformation of high aptitudes into the well-trained skills that are characteristic of a particular field of human activity that can be quite diverse (Gagné, 2004). Gagné (2003, p. 62) states that any individual “whose outstanding skill mastery places them among the top ten per cent within their occupational field should be recognised as talented.” Measuring talent corresponds to outstanding performance in the specific skill or occupational field (Gagné, 2004) and is a developmental construct. That is, soon after children have begun learning a new set of skills it is possible to assess their performance normatively, that is comparing them with others who have been learning for approximately equal amounts of time (Gagné, 2003). Normative assessment can take place through exams, achievement tests and competitions (Gagné, 2004).

- **Learning and Practicing (LP)**
  The talent development process transforms specific natural abilities into the skills that define competence or expertise in a given occupational field, with competence
corresponding to levels of mastery ranging from minimally acceptable to well above average, but below the threshold for talented or expert behaviour (Gagné, 2003). Gagné (2003) maintains that ‘talent’ is to gifted education what ‘competence’ is to general education. Developmental processes can take four different forms – maturation (growth and transformation of all biological structures: bones, internal organs, brain, etc.), informal learning (knowledge and skills acquired during daily activities), formal non-institutional learning (self-taught learning) and formal institutional learning (going to school, joining sports teams) (Gagné, 2003).

The Trio of Catalysts – Intrapersonal, Environmental and Chance

Catalysts contribute to a reaction without being constituents of the final product. That is, the constituent elements are the natural abilities that are slowly transformed into specific skills (Gagné, 2003). Neither the type of contributing catalysts nor the strength of their contribution has relevance to the measured level of skill mastery – talent (Gagné, 2003). Each of these catalysts will either have a positive/facilitating direction or a negative/hindering direction and a causal impact strength on the developmental process (Gagné, 2003).

- Intrapersonal Catalysts
Intrapersonal catalysts are divided into physical – height, slenderness, leg length and psychological factors such as motivation, volition, self-management and personality.

- Environmental
The environment will have a positive or negative impact and in the DMGT, there are four distinct environmental inputs, the milieu – size of family, socio-economic status, demography and geography, persons – significant people such as parents, friends, educators or lack thereof, provisions – enrichment and acceleration or lack thereof and events – death of a parent, major illness or winning an award (Gagné, 2003). These environmental catalysts can markedly influence both positively and negatively the course of talent development (Gagné, 2003).

- Chance
Gagné (2003) attributes Tannenbaum (1983) with the first extensive examination of the role of chance as a contributing factor in talent development and has ‘borrowed’ from this model for the revised DMGT. Chance influences all the environmental catalysts, as children have no control over their socio-economic status or the quality of parenting...
Gagné (2003) believes that chance plays a part in all of the causal components of the DMGT except the learning and practicing (LP) process.

Toward a Talent Development Theory

Gagné (2003) believes that there are five causal components active as agents of talent emergence, in decreasing order of causal impact – Chance, Gifts, Intrapersonal catalysts, Practice and Environmental influences (C.GIPE). No causal component stands alone as they all interact with each other and with the learning process in complex ways that differ from one person to another (Gagné, 2003). Talent therefore, emerges from complex and unique interactions between the five groups of causal influences.

Gagné's (2003) position is that Chance has a significant influence over all aspects of the talent development process, due to the role of chance in two of the most significant contributing factors of our lives – the random assignment of our genetic make-up and the family and social background into which we are born (Atkinson, 1978).

Gifts (natural abilities) are the ‘raw materials’ or constituent elements of talents and the presence of talent implies the possession of well above average natural abilities (Gagné, 2003). However, the reverse is not true in that gifts can remain potentialities, as in underachievement.

Intrapersonal catalysts (IC) and Environmental catalysts (EC) act through the learning and practice (P) process (Gagné, 2003). The moderator role of the LP process is quite normal and confirms that talent does not manifest itself overnight as the skills have to be built, even when very high natural abilities make first achievement seem almost instantaneous and effortless (Gagné, 2003). Interactions can be bi-directional, that is, in both directions such as G → IC or IC → G (Gagné, 2003).

In 2008 Gagné updated his model to the DMGT 2.0 to reflect the evolving nature of his talent development model and labels the people who are being mentored through the talent development process as ‘talentees’:
Figure 2.2. Gagné's Differentiated Model of Giftedness and Talent (DMGT) 2.0, update (Gagné, 2013).
In the DMGT 2.0 Gagné has now reorganised the Natural Abilities (G) domains into two distinct categories – Mental and Physical as well as a division in the physical domain between muscular and motor control facilities. Therefore, a more expanded field of natural abilities has now been included. He has also expanded on the Developmental Process by explicitly itemising all aspects involved in this process. Intrapersonal Catalysts have now been delineated into two categories – Traits and Goal Management. The Talents – Competencies have been somewhat expanded to include Games. Chance has now been placed in the background to the model, no longer represented visually, as much of ‘chance’ is outside of our control therefore, has been moved to the background as an acknowledgement of its presence in the transformation of gifts into talents (Gagné, 2013). The DMGT 2.0 is far more explicit than the previous model and consequently offers a more comprehensive view of how all components interact and aid in the Talent Development Process.

Various researchers and studies have identified or agreed with aspects and themes from Gagné’s model as being important in the talent development process. Porter (2003) supports Gagné’s (1995) differential definition of giftedness and talent because it: acknowledges that young children can be gifted; clarifies the confusion between content areas, processes and outcomes; and, allows educators to focus on the development of talented behaviours rather than debating the difference between a gift and a talent (Braggett, 1997). Several aspects of Gagné’s (2008) model are recurring themes in the talent development process devised by other theorists. Intrapersonal catalysts – motivation, volition and personality characteristics are seen in Tannenbaum’s (1983), and Bloom’s (1985) concept of giftedness as well as the importance of people such as parents and teachers in the talent development process and chance. Gagné (1995) notes that he was influenced by Tannenbaum’s ideas of the importance of chance when creating his model. Subotnik, and Arnold (1994) published a volume of longitudinal studies of giftedness and talent entitled Beyond Terman where they sought studies that collected current data from individuals over time, rather than retrospectively. The studies presented shared consistent themes with Bloom (1985), Tannenbaum (1983) and Gagné (1985) in the talent development process namely the influence of parents and mentors, the importance of personality characteristics and the role of motivation and a desire to persevere in the field.

Research by Piechowski (1998) investigating historical and contemporary cases of talented individuals, assessed the role of a supportive environment in the context of talent development. Piechowski found several commonalities to the DMGT 2.0 in
talent development such as the importance of personality characteristics that were a greater influence than the environment similar to Gagné’s intrapersonal catalysts and the reliance on will and unrelenting effort to succeed in the face of obstacles similar to Gagné’s volition and self-management. Piechowski (1998) also echoed the importance of chance and the presence of the environmental catalyst of people in terms of family support, but found that a supportive family environment was not a prerequisite for talent development and success in life.

Gagné and St. Pere (2001) conducted a study at an all girl’s high school to determine whether motivation predicted achievement even when intelligence was controlled. In the DMGT, intellectual aptitude is a facet of talent development and Gagné and St. Pere (2001) found that the strength of cognitive abilities did act as a predictor for achievement but that the gifted students were neither more or less motivated than the general school population. While their findings contradicted the importance of motivation as an intrapersonal catalyst in the DMGT (Gagné, 1995, 2005) there were methodological problems with the study that impacted on the generalisability and external validity of the study. Research by Burton, VanHeest, Rallis, and Reis (2006) found support for the characteristics of motivation, perseverance and resilience but the limited sample of talented female Olympic athletes affected the generalisability of the study.

Calderon, Subotnik, Knotek, Rayback, and Gorgia (2007) studied eminent scholars, rising starts in the field and high-achieving high school students in Science and Music and created a program that brought all three together based on their model of development. Their research offered support for aspects of the DMGT finding characteristics such as intrinsic motivation, parental support, self-management and persistence important in transforming abilities into competencies and those competencies into expertise (Calderon et al., 2007).

According to VanTassel-Baska (1998, p. 762) “Contrary to popular belief, talented individuals do not make it on their own. Not only is the process of talent development lengthy and rigorous, but the need for support from others is crucial for ultimate success”. Fraser-Seeto, Howard, and Woodcock (2015, p. 2) also concur that research by the Commonwealth of Australia (2001), DeBuhr (2011) and Plunkett (2002) “shows this to be a myth (albeit a widely accepted one), instead showing that gifted and talented students are unlikely to achieve on their own”. The process of talent development for TE students is often even lengthier; hence their need for support from
others, in particular educators is even more crucial for their ultimate success. Therefore, the timeline for success maybe extended and in that process, exclusion from gifted academic programs will occur unless support from educators and educational systems acknowledge this reality.

In an article written in 2011 Gagné stated that underachievers “need a special alternative pathway, distinct from the highly challenging course offered in the academic talent development programs. I will leave to experts the task of engineering that pathway” (Gagné, 2011a, p. 145). This article generated 32 comments from around the world, with Gagné writing a rejoinder to address expressed concerns about equity in minority representation in gifted programs.

In 2013 Gagné again expanded on his model to include a developmental model for natural abilities (DMNA) that includes the causal input of biological underpinnings and then integrated the DMNA and DMGT into an *Expanded Model of Talent Development* (EMTD). The DoE has not adopted this revised model. No mention was made as to underachievement/underachievers, but Gagné (2013, p. 5) has reiterated that the DMGT was created to take advantage of the fact that scholars and practitioners almost unanimously acknowledged that the concept of ‘giftedness’ represented two distinct realities: early emerging forms of giftedness with strong biological roots on the one hand, as opposed to fully developed adult forms of ‘giftedness’. Scholars expressed that distinction through pairs of terms like potential/realisation, aptitude/achievement, or promise/fulfilment.

![Figure 2.3. Gagné’s Expanded Model of Talent Development (EMTD) (Gagné, 2013).](image-url)
Gagné again confirms that, “gifts are not innate, that they develop during the course of childhood, and sometimes continue to do so during adulthood” (Gagné, 2013, p. 12). He further asserts that describing talent as innate only makes sense metaphorically, as children go through the “same developmental stages as any other child, the difference resides in the ease and speed with which they advance through these successive stages” (Gagné, 2013, p. 13). The higher their intellectual giftedness will be, the faster, thus earlier, these successive stages will be mastered, before the vast majority of their learning peers (Gagné, 2013). Gagné (2013, p. 16) concludes by maintaining, as he has done for the last two decades that “Talent development results from a complex series of interactions between the four groups of causal components; it becomes a choreography unique to each individual”.

Summary

Studies of giftedness, in the early twentieth century focused on the methods and instructional practices for the gifted, the inheritance of mental ‘incompetence’ and the less than normal academic achievement of children. The development of assessments to initially measure below average intelligence were also found to measure above average intelligence when there was the realisation that the needs of children whose work was vastly different to the average student was being unmet (Coleman & Cross, 2005). This opened up the field of gifted education. Many scholars such as Terman (1925a, 1925b) and Hollingworth (1942) pioneered work with exceptional children while others concentrated on distinguishing between real world and academic giftedness (Renzulli, 1986), the concept of multiple intelligences as a model (Gardner, 1983), types of gifted abilities (Sternberg, 1985) and Gagné’s (1985, 2005, 2008, 2013) models of a Differentiated Model of Talent Development. The gifted field is constantly evolving as scholars such as Gagné, further refine their theories and models and expand on the research of those that pioneered this field.

2.2. A Historical Perspective of American and Australian Gifted Education and Definitions

In order to fully understand the gifted field, an examination of the history, growth and changes that occurred in gifted education follows the individuals who lead this growth through their work, and the context of the time period that influenced the standing and place of gifted education overseas and in Australia. Detailed information on how gifted education reached its present position, particularly in Western Australia, as well as
highlighting the ideas, hurdles, educational practices and streams of research that impacted the field is presented below.

- 2.2.1. Gifted Education in America

Between the seventeenth and nineteenth century there was little focus placed on the education of gifted students as people in America subscribed to the philosophy “which held that all men are created equal” (Pritchard, 1951, p. 1). Until the passing of compulsory schooling laws few gifted students were accommodated based on their abilities and while students could attend secondary school and college, their attendance was based on their academic achievement and ability to pay for that schooling (Newland, 1976). Although gifted programs were not commonly found in all cities during the twentieth century, by 1911 the United States Bureau of Education noted that six per cent of cities did have some kind of special classes for gifted children (Nazzaro, 1977).

By 1920 almost two thirds of large cities across the country had some form of a program to educate bright students (Colangelo & Davis, 2003) and it was during this same period that Columbia University started preparing teachers to teach gifted students, the first higher education program offered in gifted education (Nazzaro, 1977). However, the 1920s and 1930s were a time in America’s history where people strived to be alike and educating the nation’s brightest students was a relatively low priority and took a back seat, especially when people were more concerned about day-to-day survival due to the Great Depression (Colangelo & Davis, 2003).

Research undertaken up to the 1950s set the scene for the emergence of gifted education as a catalyst for social change when in 1957 the Soviet satellite Sputnik, the first Earth satellite, was launched, beating America into space (Colangelo & Davis, 2003). This resulted in a “total talent mobilization” (Tannenbaum, 1979, p. 12) in schools throughout America so that bright students could fulfil their potential and develop their abilities for service to the nation (Tannenbaum, 1979). The aftermath of Sputnik led to a focus on academic coursework in schools that was condensed for bright students, college courses were offered in high school and foreign languages were taught in primary classes (Colangelo & Davis, 2003). It was a time when acceleration and ability grouping became popular with an intensified focus on mathematics and science with an emphasis on fulfilling national need rather than the needs of gifted students (O’Connell, 1991). Unfortunately a Darwinian attitude still
prevailed, where it was thought that those who were gifted would emerge on their own, and the definition of giftedness persisted with the demonstration of superiority (Newland, 1976). This great interest in gifted education then dissipated five years later with the success of the American space program (Colangelo & Davis, 2003).

In the 1960s and 1970s attention shifted to civil rights and to the economically and socially disadvantaged (Kitano & Kirby, 1986). Major support for poor and educationally disadvantaged students was initiated as part of the Great Society legislation that came to be known as Title I (America) to assist the disadvantaged to meet high standards (O’Connell, 2003). In 1972 Congress asked for a study on the status of gifted and talented education in the nation. The ensuing Marland Report (Marland, 1972) authored by Sydney Marland, then Commissioner of Education, profoundly influenced how giftedness was conceptualised and defined, with the first formal definition of giftedness including, leadership ability, visual and performing arts, creative or productive thinking and psychomotor ability (National Association for Gifted Children, 2005). Marland saw the gifted as a “deprived group whose talents were in danger of serious impairment unless appropriate intervention strategies were planned” (Tannenbaum, 1993, p. 19). The report found that gifted youth were left to languish in schools and that some school personnel were antagonistic toward gifted children (Wilson, 1996). In the Marland Report (1972) American states were encouraged to identify a minimum of three to five per cent of the school population as gifted, which in Borland’s (2003) opinion was to prevent any superintendent from claiming that their district had no gifted students. Pfeiffer (2003) contends that this upper limit for defining gifted students became, in the minds of many including education policymakers, something real and continues to be used as the cut score on IQ tests forty years later (McClain & Pfeiffer, 2012).

As a result of Marland’s findings, Congress appropriated $US2.5 million for gifted education and with the passage of the Gifted and Talented Education Act 1978 (America) funding was increased to $US50 million (Kitano & Kirby, 1986). Superintendent Marland modified the federal definition and after several revisions, the United States Department of Education, Office of Educational Research and Improvement (1993) published a definition that reflected contemporary understanding of gifted students (McClain & Pfeiffer, 2012, p. 26):
Children and youth with outstanding talent perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience, or environment. These children and youth exhibit high performance capability in intellectual, creative, and/or artistic areas, possess an unusual leadership capacity, or excel in specific academic fields. They require services or activities not ordinarily provided by the schools. Outstanding talents are present in children and youth from all cultural groups, across all economic strata, and in all areas of human endeavour.

In 1983 *A Nation at Risk* (United States Department of Education, 1983) was released that documented that over half of the gifted population’s achievement did not match their tested ability. This finding was linked to the states using funding at their own discretion (O'Connell, 2003). Congress re-established a small federal program on gifted and talented education and the *Jacob K. Javits Gifted and Talented Students Education Act* of 1988 (America) specified that there be a special emphasis on economically disadvantaged students, those with limited English proficiency, and students with disabilities who are gifted and talented (O'Connell, 2003).

In 1993 the United States Department of Education published a national report on the status of gifted and talented education – *National Excellence: A Case for Developing America’s Talent* (United States Department of Education, 1993). This ‘portrait’ of how America was serving gifted and talented students ‘painted a picture’ of limited scope and substance with most spending their time in school in regular classrooms where limited if any provisions were made for them (O'Connell, 2003). Recommendations were made that included establishing challenging curriculum standards with high level learning opportunities, access to early childhood education and the expansion of opportunities for disadvantaged and minority children, appropriate teacher training and technical assistance and matching world performance (O'Connell, 2003).

The *No Child Left Behind Act of 2011* (America) while building on the emphasised high standards and challenging opportunities for at-risk students, goes far beyond prior legislation by insisting on accountability and results, choice for parents and students, flexibility in the use of federal funds and placing a strong emphasis on reading for young children (O'Connell, 2003). This Act was designed so that a “coordinated program of scientifically based research, demonstration projects, innovative strategies, and similar activities designed to build and enhance the ability of elementary schools and secondary schools nationwide to meet the special education needs of gifted and talented students” (*No Child Left Behind Act of 2011*, America) was established. Ford and Russo (2014, p. 219) state that the NCLB does not address the needs of the students it purports to service because the “creation of programs for gifted students are
not mandated, it does not offer sufficient assistance to develop widespread programs, especially for communities where children have long been under-represented” and fails to include procedures similar to that available under the *Individuals with Disabilities Education Act 2004* (America) which is a federal law that requires schools to meet the educational needs of students with disabilities.

- **2.2.2. Gifted Education in Australia**

The theoretical base adopted by Australian education in colonial times was founded on the premise that the faculties of the mind were essentially the same in all normal minds (Wilkins, 1886). Uniformity and conformity in education was desirable with individual differences downplayed or not accepted, as the one teaching method was applicable to the entire class (Briggett, 1985). In the 100 years that followed there was a gradual acceptance of individual differences among children that stemmed from the pioneering work of Binet (Briggett, 1985). Educators in New South Wales, Western Australia and Victoria introduced to trainee teachers the idea that the mental qualities of children could be measured with reference to variations between one individual and another (Cunningham, 1972) and consequently, individual differences were increasingly accepted and intelligence tests were introduced into education.

Australian practice was informed by the research reported in the international community and mirrored much of what had happened in other parts of the world (Frydenberg & O’Mullane, 2000), for the most part America. In 1924 the six state Directors of Education in Australia evaluated the provisions made for gifted children in their own systems based on the work carried out in America and the problems that gifted children were encountering (Briggett, 1985). They concluded that it would be sound educational policy to gather children of the same above average mental ability and educate them in special classes where they would have a better chance of full development rather than their powers becoming atrophied and laziness resulting (Briggett, 1985). The move to provide for individual differences at both ends of the intellectual spectrum was spearheaded by training institutions and newly created Divisions of Guidance (Briggett, 1985). Catering for individual differences in learning capacity to allow students to progress in specific subjects was facilitated during the 1920s and 1930s by the theoretical knowledge of overseas methods, the growing practice of ability grouping and the use of standardised testing at the classroom level (Cleverley, 1972; Cunningham, 1972).
During the period 1920 to 1945 there was a slow pace of educational change (Cleverley, 1972) as it was noted that there was a continuing influence on education from the nineteenth century that was characterised by sameness, uniformity, lack of challenge, the influence of examinations and acceptance of older methods and ideas (Cunningham, 1972). In 1937, when world educational authorities visited schools and tertiary institutions in all Australian states, they found Australia to be so traditional in terms of ideas and methods, that subject matter still dominated over children’s needs, and that inspection, uniformity, lack of encouragement or incentive had stifled teacher and school innovation (Cunningham, 1972). This was believed to be a result of the Australian droughts, depressions and war that hindered educational development during this time period (Braggett, 1985). Even as late as 1955 uniform policy was still apparent in teaching methods used, standards which were required of students, and the question was still being asked whether it was necessary to insist upon uniform policy, curriculum and teaching standards of achievement in order to achieve equal educational opportunities for all children (Butts, 1955). By the mid 1950s it was widely acknowledged that teachers needed to respond to individual differences and to provide for a wide range of abilities, and while schools slowly adapted and new ideas crept into practice, the advances were slow and the gulf between theory and practice was marked.

While every state in America in the 1970s and 1980s had established some kind of policy with national leadership initiatives that grew and expanded as a result of state educational funding, Australia had not at that stage adopted a gifted definition or policy. While the Marland Report (Marland, 1972) was very influential in Australia and other western countries (Wilson, 1996) the Australian attitude that gifted children would succeed at school without special help (Radford, 1961) was the prevailing attitude throughout the 1960s and early 1970s. When writing on education in Australia in 1961, W.C. Radford, Director of the Australian Council for Educational Research (ACER) claimed that there was little evidence of informed concern about giftedness and a perfectly proper concern for the less able, the below-average and the handicapped which had not been matched by an equal concern for the more able, the well-above average and the exceptionally talented (Radford, 1961). The establishment of the Schools Commission by the Federal Government in 1973 provided official recognition and support for gifted children but had no influence over policy design and implementation. However, this official recognition and support for gifted students highlighted the scarce formal provisions for gifted education which then saw the establishment of the Australian Association for the Education of the Gifted and
Talented (AAEGT) (Kronborg, 2002) and provided a stimulus for a more focused view on gifted and talented education in Australia (Fraser-Seeto, 2013).

In 1978, Miriam Goldberg, Professor of Columbia University was invited to Australia to speak on gifted education (Wilson, 1996). She stated that the modest work of the few individuals involved with the intellectually gifted in Australia was neither encouraged nor impeded (Wilson, 1996) and that the Australian educational community lagged behind America in their concern for the education of gifted children (Goldberg, 1981).

In the 1980s the Schools Commission reported ambivalence towards gifted education with attitudes ranging from no special services/programs being required, to the belief that a separate and segregated educational program was required for the gifted (Schools Commission, 1980). The initiatives of the Schools Commission (1980) were acted upon through positions being created in New South Wales, the Northern Territory, South Australia, Western Australia and Victorian Education Departments to advise and coordinate programs for the gifted (Wilson, 1996). As each state had relative autonomy in terms of how they spent their funds, and as almost thirty per cent of Australian children were educated in non-government schools, the ad hoc nature of this initial work became the hallmark for policy development by each state into gifted education (Wilson, 1996). When a national report compiled by the Senate Select Committee in 1988 was released it was found that most Australian schools did not appear to have made any provision for the gifted and that there was an Australian ethos that discouraged individual academic excellence and as a result the Commonwealth Government was directed to provide special education strategies for these children (Wilson, 1996). However, due to a lack of government backing, none of the recommendations were ever formally implemented (Kronborg, 2002).

When applying for funding through the National Equity Program for Schools, the Australian Federal Department of Education, Employment and Training (DEET), adopted a definition from part of the widely known Marland Report (1972): “Gifted and talented students means students who have been identified by schools/systems as capable of high performance with demonstrated achievement and/or potential ability in one or more specific areas” (Commonwealth Programs for Schools, 1995, p. 72). The definition did not specify that gifted and talented students would encompass a minimum of three to five per cent of the school population or areas of giftedness nominated in the Marland Report (1972). Consequently, the definition was very broad with an emphasis on high performance with demonstrated achievement as an identifying characteristic despite the definition including “or potential ability” (Commonwealth Programs for
Schools, 1995, p. 72). The DEET provided $1 million in 1993, 1994 and 1995 for schools and systems to enrich the learning experiences of gifted and talented students, particularly “those disadvantaged by poverty, isolation, difficulties with the English language or disability” but was not continued into 1996 (Wilson, 1996, p. 36). Unlike the Schools Commission, which undertook a leadership role in developing education for the gifted and talented, DEET’s funding was simply part of a National Equity Program that lacked a coordinated approach to gifted education (Wilson, 1996).

A second Senate Inquiry into the Education of Gifted Children (Commonwealth of Australia, 2001) was initiated when it was found that none of the recommendations presented in the 1988 report had been implemented (Geake, 1999). A total of twenty recommendations were put forward that emphasised gifted education within undergraduate teacher education courses as with no formal requirements for teachers to engage in gifted education subjects or programs, there was a continuing lack of gifted and talented training for teachers (Fraser-Seeto, 2012). In 2005 as a national response to the professional development needs of teachers, all government schools across Australia were issued with the Gifted and Talented Education: Professional Development Package for Teachers from the Gifted Education Research, Resource and Information Centre (GERRIC), University of New South Wales (Gross, McLeod, Bailey, Chaffey, Merrick, & Targett, 2005). This package offered interactive modules that covered gifted and talented education from early childhood through to the secondary level of schooling, and is available from the University of New South Wales website: https://education.arts.unsw.edu.au/. However, there remained a continued lack of awareness and understanding of the nature of giftedness and talent as well as the needs of these learners amongst the teaching community despite the availability of professional development (Taylor & Milton, 2006).

More recently, Pendergast and Garvis (2014) summed up the state of gifted education in Australia where they argued that there is no legislation establishing or protecting the rights of gifted children or how to meet their needs. As a result most state gifted policy is not mandated and seemingly more aspirational, which means the policy can be ignored with impunity.

- 2.2.3. Gifted Education in Western Australia

The establishment of special classes for the gifted in 1927 was influenced by R.G. Cameron, Professor of Education at the University of Western Australia and Principal
of the Training College (Mossenson, 1955). While these classes did not receive official
departmental approval, they did exist in a number of primary schools such as Subiaco
and Highgate Primary Schools, but by the end of the 1940s they had closed
(Mossenson, 1984). Perth Modern School had developed a strong academic tradition
over half a century by accepting the best students in the state who were scholarship
winners at the competitive examinations held at the end of primary school, with the
remaining half being selected based on the same examination results (Braggett, 1985).
The last selective intake to Perth Modern School was admitted in 1961 (Braggett,
1985).

There grew a suspicion that the top 15 to 20% of students, who were believed to be the
academic leaders of the future, might not be receiving the intellectual challenge that
they required (Education Department of Western Australia, 1969a; Mossenson, 1984).
Consequently, before the last selective student graduated from Perth Modern School,
the Director of Secondary Education A. Boylen, set up a committee to study the
problem of bringing the achievement of academically talented students to as close to
their potential as possible, through a trial in schools, such as Perth Modern School,
Mount Lawley and Applecross Senior High Schools in 1965 (Biggins, 1968). The
Director’s scheme to provide for the needs of superior students operated for only a few
years and then collapsed due to the heavy demands on staff who worked
conscientiously with little organisational support (Braggett, 1985).

In 1967 Dr. Mossenson was appointed Director of Secondary Education whereupon he
proposed the creation of specialist centres for Music and Art, based along similar lines
to that which had operated earlier at the old Perth Boys’ School in St. Georges Terrace,
Perth. This was quickly acted upon in 1967 by the creation of a Special Music Centre
at Perth Modern School and a Special Art Centre at Applecross Senior High School for
Years 8 to 12 (Education Department of Western Australia, 1969a). Such was the
success of these projects that the Annual Report of 1969 (Education Department of
Western Australia, 1969a) recommended an increase in the number of selected
schools for students with gifts in specific subject areas (Braggett, 1985). As a result, a
special class for mathematically talented students commenced at Hollywood Senior
High School in 1969 (Education Department of Western Australia, 1969b, 1970), a
language enriched program at Mt. Lawley Senior High School in 1971, a Music School
at Churchlands Senior High School in 1972, Art/Craft at Balcatta Senior High School in
1974, Dance/Drama classes at John Curtin Senior High School in 1972 and Tuart Hill
Senior High School in 1975 (Braggett, 1985).
In 1976 Mossenson was appointed Director-General of Education in Western Australia. Upon attending his first meeting of the Australian Educational Council, the Victorian Director-General requested that the issue of the education of gifted children be put on the agenda for the next meeting, which required Mossenson to investigate and compile a position paper for gifted children in Western Australia (Braggett, 1985). A position paper was developed by a committee for the Director-General emphasising instrumental music classes in ninety primary schools, special classes in Japanese, German, Italian and French in forty primary schools, specialised classes in high schools as well as vacation and Saturday morning seminars in mathematics for advanced secondary school students (Australian Education Council, 1977). The committee continued to meet over the next two years whereupon its eventual report was submitted to Mossenson, discussed, modified and finally published as Policy No. 15 (Education Department of Western Australia, 1978) from the Director-General's Office. Generally this policy advocated for the education of intellectually gifted children within their own schools without recourse to continuous segregated provision and based on identification by the teacher, not by extensive testing programs, which were considered socially and educationally undesirable (Braggett, 1985). Hence, Policy No. 15 (Education Department of Western Australia, 1978) was the first policy in Australia on the education of gifted students that located the education of gifted and talented students in traditional neighbourhood school settings deemphasising widespread testing for identification purposes and affirming school-based programs (Braggett, 1985).

A number of pilot programs were begun in the period 1977 to 1979 with varying degrees of success such as the interest centres in the Bunbury District and specialist seminars in the North-West Metropolitan Region of Perth (Braggett, 1985). With the discontinuation of the selective system at Perth Modern School and the introduction of the neighbourhood school concept in the 1960s, the school-based approach was clearly enunciated by Goodridge (1979) Education Officer at the Second International Congress on the Education of Gifted Children in San Francisco and again in the eastern Australian states in 1978 and 1979 when he was on an official visit (Goodridge, 1978, 1979). In 1979 after Professor Goldberg visited Australia her report reached Mossenson in Western Australia who read that while each of the Directors’ General expressed interest in the area of gifted education as well as reservations, she saw little evidence that any one of them were actively fostering educational efforts on behalf of the intellectually gifted (Goldberg, 1979). The committee that Mossenson originally
formed to develop a policy statement, rejected his scheme to commence a full time class for outstanding children in Years 6 and 7 in the City Beach area (Braggett, 1985).

During the last weeks of 1979, the Director General appointed a Superintendent of Education with responsibility for gifted children’s programs and established in February 1980, the Gifted and Talented Children’s Programme Project Group (Braggett, 1985). This group was located within the Department’s central office. The principles underlying the Department’s new program were outlined in Policy No. 31 (Education Department of Western Australia, 1981) which articulated that:

- gifted and talented students exist and there is a responsibility to provide for them;
- they exhibit personal and learning characteristics that are various and that there needs to be a different organisational structure from those usually adopted in schools;
- identification is a complex task involving various kinds of staff such as teachers and guidance personnel;
- provision of programs is a priority;
- staff will be provided with resources sufficient to develop adequate programs for these children;
- concern for these students should extend from early childhood through to the tertiary undergraduate level;
- the educational programs touch all areas of human intellectual and creative activity, and
- the organisational structure appropriate to the exceptional needs of the gifted and talented will consist of school-based programs from pre-primary through to the early primary years, with partial withdrawal programs for the middle primary years and withdrawal programs for upper primary years, and special placement with provision for acceleration in the secondary years (Braggett, 1985).

For teachers and administrators there were three aspects of concern that impinged on the working of the new program (Braggett, 1985). First, there was no attempt to define the terms gifted and talented and it was not until the second half of 1980 that the first identification instruments – standardised tests of intellectual ability were used (Braggett, 1985). Second, there was a conscious attempt to widen the concept of giftedness to include both intellectual performance and potential, which was influenced by the Director-General’s concern for gifted children from disadvantaged groups in
so society (Braggett, 1985). Third, the Department’s new structure had to incorporate existing programs that had begun over the previous fourteen years such as Dance and Theatre Arts (Braggett, 1995).

Western Australia was the first state to add secondary specialist subject departments onto existing schools (Braggett, 1985). Art was offered at Applecross, Balcatta and Kalamunda Senior High Schools, Languages were studied at Mt. Lawley, Rossmoyne and Scarborough Senior High Schools, Music at Churchlands Senior High School and Perth Modern School and Dance and/or Theatre Arts at Balcatta, Girrawheen and John Curtin Senior High Schools (Braggett, 1985). In order to develop a state-wide approach at the secondary level, a Talent Search began in 1980 where nominated children were screened on the basis of a group intelligence test and subsequently identified by an individually administered Slosson Intelligence Test (Slosson, 1963), while other disadvantaged students were administered the Raven’s Advanced Progressive Matrices (Raven, 1962) (Braggett, 1985). Since this time, testing programs have been modified and continually refined with a greater emphasis on abilities in specific subject areas (Braggett, 1985). Three years later a revised policy statement was issued advocating new initiatives in the field of gifted children, and SSPP’s were established for the top 1.5% of secondary school students with incorporation of existing secondary specialist departments in Music, Art, Dance, Theatre Arts and Languages (Senate Select Committee, 1988). In 1980, a centralised testing program was introduced to identify students for selection to the special programs. The SSPP inspired other schools to develop their own approaches to the gifted and talented and while in 1984, 4,000 children nominated for the annual Talent Search, many had no intention of attending one of the SSPP classes in Perth, but chose to enter local school-based programs throughout the state (personal communication from Hopkins cited in Braggett, 1985).

In 1983 the Western Australian Government set up a committee chaired by the Honourable Kim Beazley Senior to inquire into the adequacy of provision for gifted children in relation to curriculum and the needs of children and the community in Western Australian education (Beazley, 1984). The Beazley Committee concluded that there was a case for special provision for gifted children which recommended including special classes at primary, secondary, technical and further education (TAFE) levels, individualised programs, flexible timetabling, acceleration, broadening identification procedures to detect talent in disadvantaged populations and the development of resources (Beazley, 1984). This was in contrast to the Kelly Report commissioned by
the Education Department (Education Department of Western Australia, 1983) presented to the Western Australian Minister of Education six weeks prior to the *Beazley Report* (1984) which accepted that special educational provision should be made for gifted children, but attacked the policy of catering for only a specific percentage of students and was against centralised testing (Commonwealth of Australia, 1988). The report also recommended that there should be school-based provision but that full time primary and SSPP classes should be abandoned (Education Department of Western Australia, 1983). Consequently, the policy that emerged in Western Australia in 1984 recommended school-based provision for gifted children that was supplemented by SSPP programs and part-time withdrawal programs such as Primary Extension and Challenge (PEAC) and Secondary Extension and Challenge (SEAC) based on cluster groups of schools (Braggett, 1985). The PEAC program utilised part time cluster grouping for students in Years 5 to 7, and the SSPP offered specialist support to gifted secondary learners in both academic subjects and the arts (Freebody, Watters, & Lummis, 2001) where students were grouped together for academic subjects and then joined regular classes for electives (Plunkett & Kronborg, 2007).

The original SSPP classes for Music, Art, Languages and Dance/Theatre Arts together with special classes for the academically talented still relied on an annual Talent Search for identification and selection of students, but departed from a heavy reliance on intelligence test performance to a matrix being employed, confined to the appropriate curriculum area (Academic Extension Branch, 1984).

In 1985 a Western Australia draft policy statement was released by the Education Department that referred to gifted children in the following terms: “There are exceptional students who have educational needs because of outstanding potential or performance in one or more curriculum areas” (Commonwealth of Australia, 1988, p. 188). The policy released in 1994 distinguishes between giftedness and talent and proposed the following definition: Giftedness refers to a student’s outstanding ability in one or more domains (i.e., intellectual, artistic or sensory motor domains) and talent refers to outstanding performance in one or more fields within these domains (Wilson, 1996). This definition is undoubtedly inspired by Gagné (1985) as the Western Australian concept of giftedness draws the distinction between giftedness and talent. New South Wales made a similar distinction but referred to gifted students as those with potential (capable of performance) which is consistent with Gagné (1985) whilst Western Australia referred to giftedness as outstanding ability (demonstrated
achievement rather than potential achievement) (Wilson, 1996). In a policy document and paper presented by the Chairperson J. Harslett, Western Australia State Advisory Committee for the Education of Gifted and Talented Students, he stated that the Western Australian Department viewed ability and potential as one and the same (Wilson, 1996).

In 1994, the Department initiated a three-year strategic plan for the education of its gifted and talented students to support the implementation of the new policy, to consider recommendations made by the State Advisory Committee for Gifted and Talented Students, and to review the development of programs for gifted and talented students (Bailey, 2001). The term SSPP had evolved during the previous three years, to include all special program schools – Languages other than English (LOTE), Music, Art, Dance, Theatre Arts, and the schools providing what was described as “Academic Extension” were renamed Academic Talent Programs (ATP) with their focus on developing talent (Bailey, 2001). New testing procedures for student selection were developed and new programs created (Bailey, 2001). The ATP schools began offering special placement to year 8 students in either a Science/Maths or a Humanities program. Thus, gifted year seven children who were offered a place in ATP had to choose one or the other, but could not receive special provision in both areas (Bailey, 2001).

The Department’s strategic plan emphasised that the most important provision is that which must occur within the classroom and therefore school-based provision was seen as the key to provision for all students (Bailey, 2001). Programs such as PEAC and ATP, were seen as important but supplementary to that which must be provided in all classrooms on an ongoing basis, and as a result School Development Plans which were required in all schools, were to make provision for children of high ability, and principals and superintendents were required to monitor the development of such provision (Bailey, 2001). It was seen as essential to the success of the plan that both principals and superintendents acted if appropriate provision was not occurring, but in reality only occurred when principals or superintendents accepted the philosophical and educational basis for arguing that gifted children had special needs and needed a modified curriculum if they were to achieve to a level commensurate with their potential (Bailey, 2001). A subsequent review recommended that Science and Math programs be combined with Humanities. Colin Barnett, then Leader of the Parliamentary House, stated that while some members might disagree, roughly 60% of students who were talented in Math and Science were also talented in the Humanities and were bright
“irrespective of their focus” (Western Australian Parliament, Record of Proceedings, October 28, 1998, p. 2791). This decision then created a barrier to entry for the TE, who more often than not evidence a literacy based disability.

The name for the GAT programs changed to GAT Academic program for the top 2.5% of applicants and in 2005 the Premier of Western Australia announced that once again, Perth Modern School would become a selective school for academic excellence to serve Western Australia’s most brilliant high school students and after major refurbishment and construction, students enrolled in 2007. In 2016 the GAT programs are now called Selective Academic Programs.

Summary

The pioneering work carried out in America profoundly influenced Australia’s fledgling gifted educational practice and policy. While the Marland Report (Marland, 1972) was very influential in Australia it was not until a national report compiled by the Senate Select Committee in 1988 was released that found that most Australian schools did not appear to have made any provision for the gifted that the Commonwealth Government was directed to provide special education strategies for gifted children (Wilson, 1996).

Western Australia’s history of special classes for the gifted started unofficially in 1927, but over the next 80 years, these programs were closed, reconfigured many times and reopened. From these rocky beginnings, Secondary Specialist Placement Programs (SSPP) were initiated for the top 1.5% of students, which inspired other Western Australian schools to develop their own approaches to the gifted and talented. It was in the mid-1990s the SSPP academic extension programs were renamed Academic Talent Programs (ATP) with their focus on developing talent and this resulted in new testing procedures for student selection and new programs created (Bailey, 2001). The current name is GAT Academic program for the top 2.5% of applicants (Department of Education, 2014), and adopts Gagné’s definition of gifted and talent, which delineates between giftedness and talent as being two parts of the ‘journey’ from gifted to talented, and not talent programs as previously signified. This is one of the major issues explored in the study, whether the GAT Academic programs are for gifted students who have already manifested their talent or for gifted students who are at the first stage of the ‘journey’.
2.3. Learning Disabilities a Historical Perspective

The development of terminology and definitions in the field of learning disabilities evolved from the historical study of the brain. This then led to the study of children with learning problems to devise assessment instruments and teaching practices to better identify and educate these students. Through this early research, scholars found that they could also identify intellectual giftedness, which led to the identification of students who were twice exceptional. How learning disabilities are identified and defined influences the provisions and funding for these students. These issues have ramifications for students, educators and parents who realise students with learning disabilities will need special programming, resources and accommodations, at some point in their schooling to enable them to achieve. Therefore, the definitions adopted and the categorisation as to who fits into the definition’s criteria has ramifications as to who will be able to access scarce educational resources. McLaughlin et al. (2006, p. 46) contend that the classification of disability “in school systems is a messy process influenced by many individuals and conducted in an environment of rationed resources”. This is best understood from a historical perspective of the evolution of the international field that then saw Australia, and in particular the Western Australian DoE take their own stance on funding of learning disabilities and how the complexities of having a learning disability along with intellectual giftedness puts these students at risk for exclusion from the GAT Academic programs.

- 2.3.1. Historical Perspective in America

Starting from a foundation phase from 1800 to 1930 many theories, concepts and research findings have shaped and advanced the thinking within the field of learning disabilities (Lerner, 2003). In the early 1900s basic scientific research was carried out on the functions and disorders of the brain and it was widely believed that abnormal behaviour and brain function could be predicted by examining the shape of the skull (Lerner, 2003). Paul Broca in 1860 refuted this belief when he discovered that certain areas of the brain, in particular the left frontal lobe, when damaged, can cause these dysfunctions (Broca, 1879). Further research extended knowledge about the location of certain brain functions and the ramifications when specific areas of the brain were defective or damaged (Goldstein, 1939; Hinshelwood, 1917). In the 1930s there was a move forward from studying the brain to the clinical study of learning problems in children (Lerner, 2003).
During the 1930s up to 1960, scientific studies of the brain were applied to the clinical study of children and translated into teaching methods where instruments for assessment and teaching were developed (Lerner, 2003). Neurologists, educators and physicians such as Orton, Fernald, Montessori, Cruickshank, Barsch, Frostig, Kephart, Kirk, and Myklebust played very important roles in the development of the field of learning disabilities. Terminology changed many times over this period to describe the problems that children were experiencing, such as: brain-injured, Strauss syndrome, minimal brain dysfunction and finally learning disabilities, all reflecting the historical progress of the field (Lerner, 2003). Terms used to classify these children generally fell into two groups: terms that identified the biological causes of the condition and terms that identified the behavioural consequences, with none receiving general acceptance (Lerner, 2003).

Samuel Kirk first proposed the term ‘learning’ as a compromise because of the confusing variety of labels then used to describe the child with relatively normal intelligence who was having learning problems (Hallahan & Kauffman, 2003). Kirk focused on unanticipated learning problems in a seemingly capable child and posited learning disabilities as an amalgam of disabilities all grouped under a single label (Lyon & Fletcher, 2003). Although the term ‘learning disabilities’ was given immediate approval, developing a definition was a formidable challenge as was formulating a definition that was acceptable to all (Lerner, 2003).

Kirk’s definition of learning disabilities was incorporated into Federal legislation in 1977 (United States Office of Education, 1977, p. 65083), wherein it was specified that those with specific learning disabilities are those who have:

A disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems, which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, or emotional disturbance, or of environmental, cultural or economic disadvantage.

The Interagency Committee on Learning Disabilities (1987, p. 1) that comprised representatives from eight national organisations that had a major interest in learning disabilities, reviewed the earlier definition and felt it could be improved (Hammill, 1990, p. 336) and after several years of study and debate the definition was amended to:
Learning disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, presumed to be due to central nervous system dysfunction, and may occur across the life span. Problems in self-regulatory behaviours, social perception, and social interaction may exist with learning disabilities but do not by themselves constitute a learning disability. Although learning disabilities may occur concomitantly with other handicapping conditions (for example, sensory impairment, mental retardation, serious emotional disturbance) or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences.

Therefore, the definition was amended to make it quite clear that a learning disability did not result from extrinsic influences or handicapping conditions.

The term learning disabilities became established in schools throughout the United States due to several factors: parental pressure, the increase in professional information, teacher training programs and the incorporation of the need for services to children with learning disabilities being written into law (Lerner, 2003). For the first time the area of learning disabilities was acknowledged in Federal law and funding was provided for teacher training and the development of learning disability practices throughout the United States (Lerner, 2003).

The most commonly used definition in current American research is that of the Individuals with Disabilities Education Improvement Act ([IDEA] 2004, America), which was formerly the Education for All Handicapped Children Act 1975 (America, p. 602):

The term ‘specific learning disability’ means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself imperfect ability to listen, think, speak, read, write, spell or do mathematical calculations. The term includes such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia. Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, of emotional disturbance, or of environmental, cultural or economic disadvantage.

Scott (2004) believed that most of the definitions up to and including the IDEA (America) did not give a specific description of the characteristics of a learning disability, but rather gives more information about what a learning disability does not entail. Stanovich (1999) states that the term learning disabilities is a confusing mix of scientific theory, political advocacy and service delivery, which is further extended upon
by Sternberg and Grigorenko (2001), who write that the current system for dealing with learning disabilities reflects, political rather than educational or scientific considerations.

- 2.3.2. Historical Perspective in Western Australia

In Australia, Elkins (2002, p. 15) noted “the Australian state and territory education systems do not generally distinguish between learning difficulties and learning disabilities, using the former term to cover all students with high incidence education problems.” The term learning disabilities is increasingly used to describe those students who have not responded to remedial intervention (Elkins, 2002). The major problem with these broad and interchangeable definitions is reflected in The Australian National Health and Medical Research Council’s (1990) definition which states that learning difficulties is a generic or umbrella term encompassing students for example with low incidence disabilities such as intellectual, vision and hearing impairment as well as those students with specific learning disabilities. Louden et al. (2000) in Mapping the Territory stated that the prevalence rates for learning disabilities varied from 6 to 30%.

The definition and language use suggested for a learning disability and learning difficulty as used by the DoE varies subtlety in a number of documents depending on its context and time period. In the Making the Difference: Students at Educational Risk package – Students at Educational Risk Who Are They? (Department of Education & Training, 1998, p. 3) when writing about student populations and the strong association with being at risk, the term learning difficulties is listed amongst “low socio-economic and non-English speaking backgrounds; race or, more specifically in Australia, Aboriginality; gender; geographic isolation” and disability. Additionally, the terms specific learning difficulties/disabilities appears in relation to monitoring students at educational risk and comparability with the whole population, seemingly, an either or use of the difficulties/disabilities terminology. There is no definition of learning difficulty given in the package.

The Minister for Education in 2001 announced a comprehensive review of special educational services for students with disabilities in Government schools which was broadened to include other students having special educational needs including learning difficulties and a range of learning impairments. This expanded special educational needs population was estimated to comprise 18% of the student population (Department of Education and Training, 2004). During the review it became apparent
that the *School Education Act 1999* (Western Australia) was insufficient to ensure that the Department of Education and Training (DET) would be able to meet its potential obligations under the Commonwealth *Disability Discrimination Act (DDA) 1992* (Australia). Within the *School Education Act 1999* (Western Australia), disability means a condition:

(a) is attributable to an intellectual, psychiatric, cognitive, neurological, sensory or physical impairment, or a combination of these impairments

(b) is permanent or likely to be permanent

(c) may or may not be of a chronic or episodic nature

(d) results in
   - a substantially reduced capacity of the person for communication, social interaction, learning or mobility; and
   - a need for continuing support services (DET, 2004, p. 32).

The *DDA 1992*’s (Australia) description of disability encompassed a larger proportion of students with more diverse characteristics than was used in Western Australia (DET, 2004).

- total or partial loss of the person’s bodily or mental functions or
- total or partial loss of a part of the body or
- the presence in the body of organisms causing disease or illness or
- the presence in the body of organisms capable of causing disease or illness or
- the malfunction, malformation or disfigurement of a part of the person’s body or
- a disorder or malfunction that results in the person learning differently from a person without the disorder or malfunction or
- a disorder, illness or disease that affects a person’s thought processes, perception of reality, emotions or judgement or that results in disturbed behaviour and includes a disability that:
  - presently exists or
  - presently existed but no longer exists or
  - may exist in the future or
  - is imputed to a person (DET, 2003, pp. 58-59).

The need for clarity regarding which conditions constituted a disability had been reinforced at a national level when the Senate Inquiry in 2001 had recommended that common descriptions and definitions of the disabilities contained in the *DDA 1992* (Australia) be established (DET, 2004).

The findings of the review were published in *Pathways to the Future: A Report of the Review of Educational Services for Students with Disabilities in Government Schools* (DET, 2004a) where no definition of learning difficulties or learning disabilities were
included. More often than not the phrase ‘learning difficulty’ or ‘learning disability’ had connotations of a difficulty with learning or a disability of learning that is unspecified.

The definitions provided in the *Building Inclusive Schools: a professional learning package* (DET, 2003, p. 154) range from:

**Students experiencing difficulty with learning, learning disability, specific learning disability**

There is no universally accepted definition. Educators and parents often use the terms interchangeably, leading to some confusion. It is accepted that the term [learning disability] describes a condition occurring in students of average or above average intelligence who experience marked delays in one or more areas of learning that cannot be explained by other causes. For example, dyslexia, dyspraxia, dysphasia.

to:

**Learning difficulties** A wide range of characteristics, ranging from academic difficulties to cognitive and socio-emotional problems. A learning difficulty may result from environmental factors, from a difficulty in perception, vision or hearing, or be of unknown origin. A student presenting with a learning difficulty functions within the normal range of intellectual ability (DET, 2003, p. 170).

and

**Learning disability** A variety of disorders that affect the acquisition, retention, understanding, organization or use of verbal and/or non-verbal information. These disorders result from impairments in one or more psychological processes related to learning, in combination with at least average abilities essential for thinking and reasoning. Learning disabilities are specific not global impairments and as such are distinct from intellectual disabilities.

Learning disabilities range in severity and invariably interfere with the acquisition and use of one or more of the following important skills:

- oral language: listening, speaking, understanding
- reading: decoding, comprehension
- written language: spelling, written expression
- mathematics: computation, problem solving

People with learning disabilities may also have difficulties with organizational skills, social perception and social interaction. The impairments are generally life-long (DET, 2003, p. 170).

with this final definition being adapted from the University of Tasmania’s website (DET, 2003). The inconsistency of definitions with the acknowledgement that there is no universally agreed upon definition by the DET, due possibly to the populations marginalised status, makes for definitional irregularity and misunderstanding.
On the DoE’s information website in 2015 for the School of Special Educational Needs Disability (SSEND) under Learning Disabilities Education Service there is also no definition of a learning difficulty or a learning disability, but on the Flyer for Services (DoE, 2014b, web document) it is written:

The Learning Disabilities Education Service (LDES) supports schools with strategies and professional learning developed in response to evidence based research, national policies and reports. The service supports schools state wide in relation to the 3-5% of students who are not accessing the curriculum according to expectations and for whom their learning disability cannot be attributed to intellect disability or autism. These students require extensive intervention to address the learning disability. The interventions are Third Wave or Third Tier in the literature.

Again, the use of the phrase ‘learning disability’ on the DoE’s website, has connotations of a disability of learning, unspecified, which continues with a long tradition of vague and intangible usage.

The DoE allocates resources and funding to schools for students with disabilities through their Schools Plus process. The categories for funding are: Global Developmental Delay, Autism Spectrum Disorder, Intellectual Disability, Physical Disability, Severe Medical Health Condition, Severe Mental Health Disability, Hearing Impairment, and Vision Impairment (Department of Education, 2014) and additionally only collects Census data in these categories. Consequently, students with a learning disability such as Dyslexia, Dysgraphia, Dyspraxia and AD/HD are not included in the above categories, therefore outside of the scope of the DoE’s disability resourcing. This tends to confirm the DoE’s usage of the phrases learning disability and learning difficulty being a disability or difficulty of learning related to any of the above Schools Plus categories, not as defined in the international literature.

The definition adopted for this study is the definition given by the School Curriculum and Standards Authority (SCSA, 2014) of Western Australia for special examination provisions for the Western Australian Certificate of Education (WACE) examination that has links to Hammill’s 1990 definition:

Learning disabilities are presumed to be intrinsic to the individual and long term, but they are not considered to be the direct result of intellectual disability, physical disability, sensory impairment, or a primary emotional difficulty. Neither do they appear to derive directly from inadequate environmental influences, or from the lack of an appropriate educational experience (School Curriculum & Standards Authority, 2014, p. 7).

This definition is relevant to the present study in that students who have learning disabilities can apply in Year 12 for special examination provisions based on the criteria
as set down by SCSA. Therefore, learning disabilities such as Dyslexia, Dysgraphia, Dyspraxia and AD/HD do not fit within any disability category for resource funding by the DoE, but are included under the SCSA definition, which adheres most closely to international definitions and criteria. As this study was carried out in secondary schools, it is appropriate that the definition adopted falls within these boundaries as there is a likelihood that the twice exceptional student will want to apply for special examination provisions in Year 12, therefore, falling under the provisions of SCSA that works in association with secondary schools in Years 11 and 12.

Summary

The nuances of definitions and the resulting resourcing and provisions granted with the diagnosis of a learning disability vary from America to Australia. In Australia there still remains confusion as to the terms learning difficulty and learning disability with many believing the two to be interchangeable; similarly to the terms gifted and talent. Lack of definition acknowledgement and funding to schools of students with learning disabilities such as Dyslexia, Dysgraphia, Dyspraxia and AD/HD, places these students at extreme risk due to lack of resourcing to provide for their unique learning characteristics. In 2014, 33% of successful applications were under the category of specific learning disability and 7% under ADD/ADHD (SCSA, 2014). Foley Nicpon, Assouline, and Colangelo (2013) report from their study that the categories of specific learning disabilities and Attention Deficit Hyperactivity Disorder are the largest categories for frequency of diagnosis in American schools. This is a similar situation to that of Western Australia where definitional anonymity makes these students quite invisible as a population until the SCSA gathers their data.

2.4. Twice Exceptional a Historical American and Australian Perspective

The concept of twice exceptionality grew from the fields of gifted and special education. Much of the foundation literature focused on gifted students with handicaps (Maker, 1977), which then broadened to students with learning disabilities, as it was realised that gifted students could evidence some form of learning disability as well as students with disabilities evidencing giftedness (Daniels, 1983; Fox, Brody, & Tobin, 1983). This challenged stereotypical beliefs about what it was to be gifted as well as what it was to have a disability, and highlighted the need to identify twice exceptional students so that appropriate educational provision could be made. Identification, provision and inclusion are issues that remain problematic even today for the TE student.
2.4.1. Twice Exceptional American Perspective

Before the 1970s little reference was made of students who were gifted and disabled in America, with the majority of educators believing the two exceptionalities to be mutually exclusive (Blancher-Dixon & Turnbull, 1978). Significant interest in children with the two exceptionalities of giftedness and learning disability began in the 1970s by researchers such as Maker (1977) who referred to them as the ‘gifted handicapped’, and Whitmore (1980) however, there was little sustained work on the characteristics and needs of these children (Fox, Brody, & Tobin, 1983; Johnson & Corn, 1989). In 1975 separate Acts of American Congress dealt with the education of students who had a learning disability or are gifted, and professional training programs for teachers similarly focused on either disability or giftedness (Yewchuk, 1985).

During the 1970s, definitions of both gifted education and special education broadened as the Marland Report (1972) definition included general intellectual ability, specific academic aptitude, leadership ability, creative and productive thinking, visual and performing arts and psychomotor abilities and the special education definition was expanded to include more students with less severe disabilities. Scholars began to extend their interest to students with learning disabilities with the earliest articles describing eminent individuals such as Thomas Edison, Albert Einstein (Thompson, 1971) and Winston Churchill (Elkind, 1973) as examples of gifted individuals with learning disabilities (Lovett & Lewandowski, 2006). The Council of Exceptional Children formed a committee in 1975 to discuss TE students, a term coined by Gallagher (Coleman, 2004), and that year, two TE projects received Federal funding. In 1977 students who are gifted and have a learning disability, were finally acknowledged as existing by the inclusion of the category Gifted/Handicapped being added to the indices of The Education Resource Information Center (ERIC) database, but with no empirical studies having been published up to 1981 (Whitmore, 1981). In 1980 an ERIC search would have netted fewer than 12 listings, with superior IQ and learning disabled students only occasionally being discussed in the literature (Abroms, 1976; Elkind, 1973; Maker, 1977).

Whitmore (1981) indicated that a new area of specialisation was beginning when she calculated that between 120,000 and 180,000 handicapped students were gifted. No doubt this came about as a result of the mainstreaming movement that allowed these children to show talents that might have been ignored in special education classrooms (Lovett & Lewandowski, 2006). John Hopkins University was the only research body
undertaking research in the TE field at this time with the first two major works being published in 1983. One was an edited volume entitled Learning-Disabled/Gifted Children: Identification and Programming (Fox, Brody, & Tobin, 1983) and the other Teaching the Gifted/Learning Disabled Child (Daniels, 1983). Whitmore and Maker (1985, p. 204) opined, “gifted individuals with specific learning disabilities are the most misjudged, misunderstood, and neglected segment of the student population.” Whitmore and Maker (1985, p. 204) contended that we “should be familiar with identified strengths and vulnerabilities [of G/LD individuals] . . . in order to facilitate the development of potential.”

Vaughn (1989, p. 124) was the first scholar to critique the TE field and noted that many of the published papers describing the TE child relied on “case studies, observations by teachers and clinicians, self-reports from persons who are gifted/LD, and intuition” rather than on systematic empirical investigation (Lovett & Lewandowski, 2006). Five years later Cohen and Vaughn (1994, p. 93) reached largely the same conclusion that “there is little doubt that students who are both gifted and learning disabled exist” but that research has yet to provide reliable and valid ways of identifying such students (Lovett & Lewandowski, 2006). Case studies and observations by teachers and clinicians still comprise a large segment of the TE field today.

In 1988, Dr Elizabeth Nielsen in collaboration with the Albuquerque Public School District and the University of New Mexico received the first of two Jacob-Javits Educational Grants to address underrepresented populations of gifted and talented children (Nielsen, 1993). The researchers’ examined the school records of 315 gifted/learning disabled students in order to identify their universal characteristics (Nielsen, 2002) and then developed a distinctive system for collecting and analysing the combined characteristics of these students. From this research a characteristics profile for TE students was established (Nielsen, 1993).

Studies of TE students up to 1990 concerned the learning problems experienced by highly intellectual students and how these problems adversely affected academic performance and behaviour. Research emphasised the appropriate methods for identifying these students (Daniels, 1983; Maker, 1977; Senf, 1983) and largely explored their academic performance, self-concept and behaviour at school and home (Maker, 1977; Waldron & Saphire, 1989; Winne, Woodlands, & Wong, 1982). In the mid-1990s researchers at the University of Connecticut began the first intensive study
of TE students, focusing on identifying characteristics and intervention strategies (Lovett & Lewandowski, 2006).

From predominantly clinical practice and professional judgement a large body of research existed on the identifying characteristics of the gifted learning disabled child as well as procedures used for identification. Heath and Kush (1991) and Cohen and Vaughn (1994) questioned researchers’ inability to provide empirically based procedures or guidelines to identify this sub-group of students, while Brody and Mills (1997) believed that trying to find one defining pattern or set of scores to identify all gifted students with learning disabilities was probably futile. Due to the varying definitions of giftedness, criteria and identification tools used in the literature as well as the varying gifted program specifications and cut off points, providing unanimously agreed guidelines continues to be highly debated amongst researchers (Preckel, Holling, & Wiese, 2006; Rimm, Gilman, & Silverman, 2008).

The 2012-2013 State of the States in Gifted Education National Policy and Practice Data (The National Association for Gifted Children, 2013) survey conducted in conjunction with the Council of State Directors of Programs for the Gifted, examined policy and practice affecting the education of gifted and talented students. It was found that half the states did not collect data or it was not available and only five responding states listed disability in their definition. Therefore, TE participation in gifted programs remains relatively undetermined even though in 2004, twice exceptionality was written into legislation in America (Assouline & Whiteman, 2011).

- 2.4.2. Twice Exceptional Australian Perspective

By the 1980s in Australia, giftedness was viewed as a multifaceted concept, but few Australian research studies on the “disabled gifted” existed (Ashman & Elkins, 2005, p. 364). In 1988 a Senate Inquiry on the Education of Gifted and Talented Children (1988) identified groups of gifted students who were at particular risk for non-identification with one such group being children with a learning disability. In a second Senate investigation it was reported that little had changed in thirteen years with this group still remaining at risk of non-identification.

The Disability Standards for Education in Australia (Attorney-General’s Department, 2005) does not make mention of TE or gifted learning disabled students at all, therefore they continue to run the risk of not being identified due to their ‘invisibility’ as a sub-
Prior (2013) stated that searching the database of the *Australasian Journal of Gifted Education* in 2012, produced fifteen articles relating to ‘gifted learning disabled’ from 1995, and in the *Australasian Special Education* research journals from 1987 to 2012 no reference to TE students was discovered. Townend, Pendergast, and Garvis (2014, p. 77) commented that there “is little Australian-based research to date which investigates twice-exceptional students” and in particular TE prevalence.

The development of policy in Australian states has occurred at different time periods and contains disparate information. Many of these policies now include reference to gifted students with disabilities, but there is no uniformity amongst the states.

The Australian Capital Territory’s (ACT) current *Gifted and Talented Students Policy* (Department of Education & Training, 2008) uses Gagné’s (2007) definition of giftedness and Gagné’s (2003) definition of talent. It is also detailed in the policy under identification “Identifying gifted and talented students should be a systematic, inclusive, equitable and culturally fair process” (ACT Department of Education and Training, 2008 p. 3) and “Gifted and talented students can also include students who are underachieving, those with disabilities and those with specific learning difficulties” (p. 4). Gifted students with disabilities or specific learning difficulties are also noted as needing an Individual Learning Plan:

Students identified as exceptionally or profoundly gifted, as identified by Feldhusen (1993) and those being accelerated will require an individual Learning Plan (ILP). Those gifted students who are underachieving, have disabilities or specific learning difficulties will also have an ILP (ACT DET, 2008, p. 1).

The South Australian Department for Education and Child Development (DECD) updated their *Policy Statement Gifted and Talented Children and Students* in 2012 and again in 2016 and use Gagné’s (2003) DMGT and also mention that gifted and talented students may also have disabilities:

Giftedness is not always visible and easy to identify. Its visibility can be impacted by cultural and linguistic background, gender, language and learning difficulties, disability, socio-economic circumstance, location and lack of engagement in curriculum that is not matched to their abilities (DECD SA, 2012, 2016, p. 5).

Queensland’s (QLD) *Framework for Gifted Education* (Department of Education, Training and Employment, QLD, 2014) details the curriculum provision for gifted and
talented students in their P-12 Curriculum Assessment and Reporting Framework – Curriculum provision to gifted and talented students (DETE QLD, 2014). They use Gagné’s (2003) definition of gifted and talented, but no mention is made to learning difficulties or disabilities and twice exceptionality. In the additional material it is written:

**Identification**

Teachers plan for the fact that students who are gifted or talented in one or more domains are present in every school. These students are identified, using data from a range of sources. The identification process ensures gifted and talented students are not educationally disadvantaged on the basis of racial, cultural or socio-economic background, physical or sensory disability, geographical location or gender (DETE QLD, 2014, p. 2).

On page 4 it is written:

**Characteristics of gifted and talented students**

Students who are gifted and talented in one or more domains are present in every school and across all groups of learners, including:

- underachievers
- students requiring learning support
- students with disability
- students from non-English speaking backgrounds
- students from culturally diverse backgrounds
- socio-economically disadvantaged students
- geographically isolated students.

In New South Wales (NSW) the Department of Education’s Policy and implementation strategies for the education of gifted and talented students (DoE NSW, 2004, p. 5) under context contains the wording:

Gifted and talented students are found in all communities regardless of their ethnic, cultural or socio-economic backgrounds. The gifted population includes students who are underachieving and who have disabilities. It is imperative that school communities develop effective, equitable and defensible identification programs that avoid cultural bias and provide developmentally appropriate programs for gifted and talented students.

The NSW DoE uses Gagné’s (2003, p. 6) gifted and talented definition and goes on to further clarify:

Gagné’s model recognises giftedness as a broad concept that encompasses various abilities including intellectual, creative, leadership, social and physical skills. Gifted and talented students vary in terms of the nature and level of their abilities. It is critical that gifted and talented students be given appropriate opportunity, stimulation and experiences to develop their potential. The translation of giftedness into talent results from application to appropriate opportunities for learning, training and practice.
It is important for school communities to be sensitive to catalysts and impediments that can help or hinder the recognition of giftedness and the development of talent in young people. These include intra-personal and environmental factors:

Intra-personal factors
• motivation
• self-management
• self-esteem
• self-efficacy
• poor health and disability
• learning difficulties
• language proficiency

Under Procedures and Standards, school communities have a responsibility to identify their gifted and talented students (DoE NSW, 2004, p. 8):

Specialised approaches may be needed to recognise gifts and talents in relation to the following groups:
• underachievers
• students with learning difficulties
• students with disabilities
• conduct-disordered students
• students from non-English speaking backgrounds
• students from culturally diverse backgrounds
• socio-economically disadvantaged students
• students disadvantaged by gender inequity
• geographically isolated students.

While the policy has been revised in 2016 and includes under context:

Gifted and talented students are found in all communities regardless of their ethnic, cultural or socio-economic characteristics. The gifted population includes students who are underachieving and who have disabilities (DoE NSW 2016, p. 1).

the 2004 documentation is still used in conjunction with their Policy. Therefore, disability has been included in the gifted policy, which indicates that there is acknowledgement that TE students are recognised as part of the gifted cohort.

There is no current Victorian policy on the education of gifted and talented students despite all other states of Australia having one. *Bright Futures* (Directorate of School Education, Victoria 1995) was an initiative under the Government's new youth policy framework and was in place until 2001. After a parliamentary review took place in 2012 a recommendation was made that a policy be developed involving representatives of all stakeholders. On the Victorian Department of Education and Training’s website (DET VIC, 2016) it is written under definitions of gifted and talented that they adopt Gagné’s 2004 definition, but there is no mention of disability, learning disability or twice exceptionality.
The Northern Territory’s (NT) Department of Education and Children’s Services, *Policy Gifted Education* (NT DECS, 2016, p. 1) makes no mention of disability, learning disability or twice exceptionality.

The Tasmanian Department of Education updated their policy and renamed it *Extended Learning for Gifted Students Procedures* (2012). There is no mention of gifted students with disabilities, learning disabilities or twice exceptionality in the document.

Western Australia’s *Gifted and Talented Policy* (DET, 2010a, p. 1) under background, notes:

Gifted and talented students are represented in all socio-economic and cultural groups and are part of the population of almost all schools. For varied reasons many of these students are at risk of not achieving to their full potential. For example:
- student abilities are not fostered through appropriate educational provision;
- identified students do not achieve to their potential due to physical, emotional, motivational and social factors or specific learning difficulties;
- some students are not identified; and
- gifts and talents may be masked by cultural or other background factors.

On page 3 under Identification it is noted:

Principal will plan and implement strategies to identify gifted and talented students.

*Guidelines:*
Identification measures are especially necessary for those who, for various reasons of disadvantage, may not be recognized. Early identification is important, as is intervention.

Identification processes for gifted and talented students should:
- Be inclusive, so that gifted and talented students are not educationally disadvantaged on the basis of racial, cultural or socio-economic background, physical or sensory disability, geographic location or gender.

The word disability or twice exceptional does not appear in the policy. While there is information in the guidelines with reference to twice exceptional students, they are non-mandatory. This was the point of Pendergast and Garvis (2014) that policy is not mandated and seems more aspirational pronouncements that are not being consistently implemented. While the Western Australian gifted policy has one reference to learning difficulties but no mention of disability, it is far from comprehensive compared to the policies of the Australian Capital Territory, New South Wales and
South Australia. Therefore, in Australia there is a varied acknowledgement and commitment, be it seemingly aspirational, to students with disability in gifted policy.

**Summary**

While there is no unanimous agreement as to policy and guidelines that is inclusive of twice exceptional students, just as in the gifted field, there continues to be slow progress around Australia to raise the profile of TE students’ existence and needs. Western Australia was one of the states that does not explicitly include the words disability or twice exceptional in their policy and is lagging behind other states who have an extensive and expanded policy. Very little research on gifted students with disabilities has been carried out in Western Australia compared to New South Wales where the majority of research has occurred.

**2.5. Definitions**

The language used and definitions adopted guides the identification process and determines who will receive services. A clear definition supports a shared understanding while an incomplete definition can lead to misunderstandings (Moon, 2006), discriminate against students and deny services to special populations of students such as minority, poor, underachieving, disabled and gifted students (Davis & Rimm, 2004). Therefore, to be effective a definition not only should reflect current theory and research, but also should provide the foundation for identification and be linked to programming and services (Moon, 2006).

- **2.5.1. Giftedness**

Theorists in gifted education continue to generate definitions of giftedness as our understanding of giftedness changes and grows (Moon, 2006). Terman (1925a) defined giftedness as a score over 135 on the Stanford-Binet IQ test, while Gardner (1999) developed Multiple Intelligence Theory and Sternberg the Triarchic Theory of Human Intelligence (1985a), both neurobiological/cognitive definitions. Renzulli’s (1978) three-ring conception of giftedness is a creative-productive definition while Tannenbaum (1986) and Gagné (2000) produced psychosocial definitions. The modern model of giftedness acknowledges that there is diversity within the population and has shifted from a purely psychometric perspective to promoting a multi-dimensional view (Bianco, 2005; Feldman, 1991). In the United States composite
definitions comprise multiple theoretical perspectives and are the most widely adopted definitions by states and school districts. The *Marland Report* (1972) and the *National Excellence Report* (United States Department of Education, 1993) are examples of composite definitions that are usually operationalised with separate identification procedures for each talent area. With the passing of the *No Child Left Behind Act* (America) the definition began to move in the direction of defining giftedness in more holistic terms as opposed to confining it to intelligence test results (NAGC, 2005). Pfeiffer (2002) contends that vague or unstated definitions of giftedness have plagued the field and have created a complex and challenging conundrum for teachers, counsellors and administrators. Kaufman and Sternberg (2007) maintain that there are as many definitions of giftedness as there are theories. Consequently, the issue of a definition of giftedness is complex and widely varying.

In 1992 Cassidy and Hossler conducted a nationwide survey of United States definitions of giftedness that showed that the majority of states defined giftedness using a one-dimensional model and single criterion (e.g., the IQ score). Later when Stephens and Karnes (2000) also conducted a survey to analyse state definitions they found that there was a wide discrepancy among state wide definitions for gifted and talented students with some adopting definitions from the *Jacob K. Javits Act* (1988), Renzulli’s (1978) three-ring model of giftedness and others providing no definition of giftedness at all (McClain & Pfeiffer, 2012). In 2012 McClain and Pfeiffer again conducted a survey and found that in 54% of the states the terminology ‘gifted and talented’ was used, whereas in 36% of states the term ‘gifted’ alone was used and in 6% of the states the term ‘high-ability student’ was used in the state definition.

Carman (2013) highlights that due to a lack of agreement on the operationalisation of giftedness among the studies, it is quite possible that one experiment’s gifted participants would not be considered gifted in another experiment. Ziegler and Raul (2000, p. 129) contend, “There is absolutely no guarantee that these studies deal with the same sub-populations.” This was a similar viewpoint to that of Pfeiffer (2001) where he found that there were two competing perspectives on how to conceptualise giftedness – outstanding potential ability and demonstrated productivity. Therefore, a vastly differing conceptualisation of giftedness was in use. In Pfeiffer’s (2001) survey of experts in the gifted field, 94% of the experts highlighted consensus on how to conceptualise or define the gifted and talented as among the three greatest identification issues in the field. Other responses highlighted “lack of nationally agreed-on definition, vague terminology inconsistently applied across states, imprecision in the
use of the term gifted” (Pfeiffer, 2001, p. 176). These findings are all relevant to the present study where there is no Australian nationally agreed upon definition, vagueness of terminology and imprecision in the use terms.

Both Gagné (2004) and Coleman (2004) suggested a unified definition would have far reaching effects on the field and clarify the differences between the gifted and non-gifted, increase ability to describe this target population and measure its size, and a better ability to select measures for the identification of gifted students.

In Australia, each state has its own gifted policy or statement that varies in definition.

The New South Wales Department of Education and Training’s Gifted Policy (2004, p. 6) states:

The policy adopts definitions of giftedness and talent based on Gagné’s (2003) Differentiated Model of Giftedness and Talent (DMGT). Gifted students are those whose potential is distinctly above average in one or more of the following domains of human ability: intellectual, creative, social and physical. Talented students are those whose skills are distinctly above average in one or more areas of human performance.

The use of the word ‘potential’ in the definition of gifted students closely follows Gagné’s definition as noted. In 2016 (DET NSW, p. 1) this policy was amended to read:

Giftedness refers to potential distinctly beyond the average for the student’s age and encompasses a broad range of abilities in the intellectual, creative, socio-emotional and physical domains. Talent denotes achievement distinctly beyond the average for a student’s age as a result of application to training and practice.

Although there are obvious links to Gagné, there is now no acknowledgement of the theorist.

In the Australian Capital Territory (ACT), the Department of Education and Training in their Gifted Policy Statement (DET ACT, 2008, p. 3) note:

Giftedness refers to a student’s outstanding, innate ability in one or more of the following domains: intellectual, creative, socioaffective or sensorimotor (Gagné, 2007). Feldhusen (1993) identifies five levels of giftedness: mild, moderate,
high, exceptional and profound. A student may display particular abilities at any stage or point in their schooling.

Talent refers to outstanding performance in one or more of the following fields: academic, the arts, business, leisure, social action, sport and technology (Gagné, 2003). Talent emerges from giftedness as a consequence of the students learning experiences.

The Queensland Department of Education, Training and Employment’s Framework for Gifted Education (DETE QLD, 2004, 2016 p. 1) under Curriculum Provision for Gifted and Talented defines gifted and talented as follows and acknowledges Gagné’s model:

**Defining ‘gifted’ and ‘talented’**
The following definitions reflect the distinction between potential and performance. They recognise the factors involved in developing a student’s giftedness into talent.

Gifted students are those whose potential is distinctly above average in one or more of the following domains of human ability: intellectual, creative, social and physical. Giftedness designates the possession and the use of outstanding natural abilities, called aptitudes, in at least one ability domain, to a degree that places an individual at least among the top 10% of age peers in the school.

Talented students are those whose skills are above average in one or more areas of performance. Talent designates the outstanding mastery of abilities over a significant period of time. These are called competencies (knowledge and skills). Outstanding mastery is evident in at least one field of human activity to a degree that places an individual at least among the top 10% of age peers in the school who are or have been active in that field.

While Gagné’s (2003) DMGT clearly informed The South Australian Department for Education and Child Development’s updated Policy Statement Gifted and Talented Children and Students (2012, 2016), there is no direct reference to Gagné or attempt to define gifted and talented students.

The Tasmanian Department of Education’s policy Education for Students who are Gifted (2012, p. 2) describes:

**Gifted students**
Students who are gifted have the capacity for advanced development relative to their age peers in at least one ability domain (intellectual, physical, creative or social) to a degree that places them at least among the top 10% of their age peers.

**Talent**
Talent refers to outstanding performance in one or more areas of aptitude. Talent emerges as a consequence of the learning experiences with which a
student engages. Significant modification to the educational program of gifted students is often necessary to develop their gifts into talents.

The Northern Territory Department of Education and Children’s Services’ Gifted Education Policy, under definitions (DECS NT, 2013, p. 1) offers this explanation:

**Gifted students**
Students who are gifted, excel or are capable of excelling, in one or more areas including academic studies, visual and performing arts, physical ability, creative thinking, interpersonal and intrapersonal skills. Common characteristics of giftedness are an exceptional ability to reason, learn and think in comparison to their peers.

Gagné (1985) proposes that giftedness refers to the possession and use of untrained and spontaneously expressed natural abilities and or systematically developed superior mastery of at least one ability domain to a degree that places a child among the top ten per cent of his or her age peers. Renzulli (1978) states that gifted behaviour occurs when there is an interaction among three basic clusters of human traits; above-average general and/or specific abilities, high levels of task commitment and high levels of creativity.

This has since been updated to:

Gagné’s Differentiated model of Giftedness and Talent (2008) shows that **gifted** students are those potential is distinctively above average in one or more of the domains of human ability such as intellectual, creative, social and physical; and **talented** students are those whose skills are distinctively above average in one or more areas of human performance. According to Gagné, talent emerges from giftedness through a complex developmental process and through a number of influences including teaching and learning opportunities.

**Giftedness from an Australian Aboriginal perspective**
Giftedness from an Australian Aboriginal perspective needs to incorporate intellectual strength that is innate in their worldviews. It is suggested that Aboriginal concepts of giftedness should include Linguistic, Spatial, Interpersonal, Intra personal, Naturalist and Spiritual intelligences (DECS NT, 2016, p. 1).

Wellisch (2016, p. 21) believes this change to be a reflection of the Northern Territory distancing themselves from “Gagné’s firm stand against the issue of the underrepresentation of socio-economically and culturally disadvantaged students amongst identified gifted children in gifted education programs” (Gagné, 2011) that now also includes a definition from Gibson and Vialle (2007).

The Department of Education and Training in Victoria, at the time of this study, had no policy, but does have the gifted and talented definitions on their website which is acknowledged as that of Gagné (VIC DET, 2016).
The Western Australian *Gifted and Talented Policy* (DET, 2010a, p. 5) notes under definitions:

**GIFTED**
The possession and use of outstanding natural abilities, called aptitudes, in at least one ability domain.

**TALENTED**
Outstanding mastery of systematically developed abilities, called competencies (knowledge and skills), in at least one field of human activity. Talent emerges from ability as a consequence of the student’s learning experience.

It is this definition that forms the framework of this research that twice exceptional students can have untrained and spontaneously expressed superior natural abilities (gifts), but also need superior mastery of their gifts to be successful in their application for the GAT Academic programs. In the *Gifted and Talented Education Professional Development Package for Teachers* (Gross, MacLeod, Bailey, Chaffey, Merrick, & Targett, 2005) which is available on line, and is the professional development that is approved and delivered by the Department of Education, but was developed in New South Wales, this explanation is given:

The key to Gagné’s view of giftedness is that it defines outstanding potential [their bold] rather than outstanding performance. This model recognises the existence, and the dilemma, of the gifted underachiever - the student who may have well above average ability but who has not yet been able to translate this into above average performance (Gross, MacLeod, Bailey, Chaffey, Merrick, & Targett, 2005, p. 4).

The GAT selection process is therefore somewhat in contradiction to Gagné’s intent of developing a gift (potential) into a talent (achievement) as there is a presumption that this has already occurred in the years prior to secondary school and is therefore not the intent of the GAT Academic programs that already require mastery. Further in the *Gifted and Talented Education Professional Development Package for Teachers* (Gross, MacLeod, Bailey, Chaffey, Merrick, & Targett, 2005, p. 7) it is also written that:

Within the Gagné model, the school and community's responsibility is to seek out students who are gifted but *not yet talented* [their bold] and assist them to develop their abilities into achievements, as well as recognising and further assisting those talented students who are already performing at high levels. For this to happen, the school must identify positive personal and environmental catalysts and harness them to assist the talent development process. Equally, however, the school must work to lessen or remove negative personal and environmental catalysts, which may be hampering the gifted student's progress towards talent.
Therefore, for the TE student to gain entry into a GAT Academic program, demonstration of the gift (potential) should be enough. Hence, the choice of identification tool should match the definition adopted, as this will determine whether the TE student will be successful in their identification as a student eligible for inclusion in GAT Academic programs. Clasen, Middleton, and Connell (1994), Maker (1996) and Pfeiffer (2003) all agree that the definition of giftedness and an appropriate identification measure are the most frequently stated barriers to the identification, placement and provision of appropriate services to gifted children.

- **2.5.2. Disability**

In 1975 the *Education for All Handicapped Children Act (America)* and *Individuals with Disabilities Education Improvement Act (America)* broadened the definition of children with disabilities to identify specific categories of disabilities. In the IDEA definition the term ‘child with a disability’ includes children with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairment (including blindness), serious emotional disturbance, orthopaedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities who need special education and related services (United States Office of Education, 2004). All with the exception of mental retardation are diagnostically applicable to the TE student (Council of State Directors and Programs for the Gifted, & National Assessment for Gifted Children [CSPDPG] & NAGC, 2009).

The learning disability concept has been in a constant state of evolution for the past forty years (Fletcher, Lyon, Fuchs, & Barnes, 2007). A child with a learning disability may demonstrate a marked discrepancy between their academic performance and general intellectual ability (McCoach et al., 2001) and are identified as having a learning disability if the student’s achievement performance is lower than his or her cognitive test scores. This discrepancy approach has been used through the United States (Mercer, Jordan, Allsop, & Mercer, 1996) and Australia. However, several researchers (Fletcher, Foorman, Boudousquie, Barnes, Schatschneider, & Francis, 2002; Stanovich, 1991; Stuebing, Fletcher, LeDoux, Lyon, Shaywitz, & Shaywitz, 2002) have contested using the discrepancy hypothesis as an assessment procedure while others have challenged the reliability and validity of using an aptitude-achievement discrepancy model (Fletcher, Lyons, Fuchs, & Barnes, 2007; Hoskyn & Swanson, 2000; Sternberg & Grigorenko, 2002).
In Australia the *Disability Standards for Education* (Attorney-General's Department, 2005) does not mention twice exceptionality. Also in Western Australia’s, *Pathways to the Future: A Report of the Review of Educational Services for Students with Disabilities in Government Schools* (DET, 2004a) does not mention giftedness or twice exceptionality on any of the 124 pages. Research by Barnard-Brak, Johnsen, and Pond (2009) found that only 11% of students in America with a disability who were potentially gifted were participating in programs for gifted and talented students. This could be presumed to be a similar situation in Australia where giftedness or twice exceptionality was not mentioned in the *Disability Standards* or the *Pathways to the Future* report. Therefore, when disability definitions and documentation do not encompass the TE, this relegates the students to an ‘invisible’ minority.

Ainscow (2005) reminds us of the necessity to tackle assumptions relating to expectations about certain groups of students, their capabilities and behaviours. The omission of wording including TE students in relation to disability implicitly reinforces that they do not have ‘disability’ needs and if the student is “truly gifted, their giftedness will emerge” (Johnson, Karnes, & Carr, 1997, p. 516).

- **2.5.3. Twice Exceptional**

With the *Marland Report’s* (1972) definition expanded to include general intellectual ability, specific academic aptitude, leadership ability, creative and productive thinking, visual and performing arts and psychomotor abilities, and the special education definition expanded to include more students with less severe disabilities came the realisation that gifted students could have disabilities and the categories of gifted and disabilities were not mutually exclusive (Davis & Rimm 2004; Grimm, 1998). Using separate definitions for giftedness and disabilities was problematic as frequently the gifted characteristics can mask the disability and the disability can mask the giftedness (Maker & Udall, 1997) therefore, the student is not eligible for services in either area.

Concern has been expressed that there is no agreed upon definition (Assouline, Foley Nicpon, & Huber, 2006; Blacher & Reis, 2002; McCoach, Kehle, Bray, & Siegle, 2001). Tannenbaum and Baldwin (1983, p. 359) described the TE as paradoxical learners with the dynamic hallmarks of twice exceptionality – “students who underperform on sensory or rote tasks, yet can perform and do achieve at high levels of skills and expertise in domains that are oriented toward the visual and performing arts, design, science, music, and mathematics” (Kalbfleisch, 2004, 2009). Brody and Mills (1997) added to the definition, that the disabling condition actively suppresses the capability of
the individual, thus undermining their perception of themselves and their abilities. When Vaughn in 1989 surveyed the extant literature in a search of consensus on a definition, identification and intervention with the TE population, she was concerned that American states tended to develop their own TE definitions. In a follow-up literature review by Cohen and Vaughn (1994) five years later, they reached a similar conclusion.

According to Assouline, Foley Nicpon, and Huber (2006, p. 14) a student should be “considered twice exceptional when he or she is identified as gifted/talented in one or more area while also possessing a learning, emotional, physical, sensory, and/or development disability”. Ronksley-Pavia (2015, p. 330) highlights that many researchers begin discussing the TE, when in reality they are only writing about a subset of this group, which is often those with learning disabilities, which implies that this “is the only area of twice-exceptionality”. This was also reinforced by Wood and Estrada-Hernández (2009, p. 12) when they called for “a workable and global definition of twice exceptionality that encompasses the diverse range of the individual experience”.

Giftedness is rarely mentioned in the inclusive education literature (Smith, 2005), however, the United Nations Educational, Scientific and Cultural Organization’s (UNESCO, 1994, p. 6) Salamanca Statement Framework for Action on Special Needs Education was clear that inclusion also meant giftedness wherein it states “This should include disabled and gifted children”. In 2004, twice exceptionality was written into legislation in America (Assouline & Whiteman, 2011) but as gifted education is not mandated at the federal level and mandates and funding are limited or non-existent at the state level, TE learners’ needs were not being addressed (Roberts, Pereira, & Knotts, 2015). Roberts, Pereira, and Knotts (2015, p. 216) believe that “legislation needs to be specific to the needs of the special population of twice-exceptional learners”. Ronksley-Pavia (2015, p. 332) also states “inadequately defining or failing to define twice-exceptionality makes it problematic to acknowledge and consider students’ educational needs related to their distinctiveness”.

Unlike America, in Australia there is no legislation or generalised policy covering TE students as a discrete category (Townend, Pendergast, & Garvis, 2014). Using Gagné’s (2010) interpretation of giftedness, the TE student would be defined as possessing superior natural abilities, called aptitudes or gifts and at the same time would possess impairment in the processes that are related to learning, processing,
remembering or perceiving (Wormald, 2011). Western Australia takes its definitions of the TE from the international literature, but does not have a formal definition of TE students in any policy. TE definitions lie outside of official documents, relegated to websites and website links where information is taken directly from the international literature.

Summary

Gifted and TE definitions, and who is included or excluded, is a debate that has not reached agreement due to the diverse learning characteristics of TE students and rigid criteria that suits some TE students but not all. Endeavouring to be equitable and inclusive in the identification of TE students has made some organisations explore beyond the definition itself, to include acknowledgement of the learning strengths and weaknesses of these students. When no mandated explicit definition exists for TE students, this places them in a position of invisibility and marginalisation forming an ‘unseen minority’ (Borland, 1989) that remain uncounted, named or catered for in gifted programs.

2.6. Twice Exceptional Prevalence

There is very little empirical data regarding the prevalence of learning disabilities in the gifted population (Nielsen, 2002), but according to Silverman (2003) the majority of disabilities do not preclude giftedness. Prevalence rates of TE students vary widely and as learning disabilities such as Dyslexia, Dysgraphia and Dyspraxia fall under the umbrella of special education in America there is a greater degree of accountability. Data on TE students in America is not always collected, which makes determining prevalence rates difficult. This is not the case in Australia, where TE data is not collected by the DoE, nor does Dyslexia, Dysgraphia and Dyspraxia fall within their special education or model of funding. Hence discovering prevalence rates in Australia is difficult, and using the research literature comparatively, based predominantly on the American system, complex. Ronksley-Pavia (2014) an Australian researcher, believes that the prevalence issue is at the centre of the field of gifted and talented and TE research.
2.6.1. Twice Exceptional Prevalence in America

Maker in 1977 hypothesised the incidence of giftedness should occur at the same rate in the population of handicapped students as it did in the non-handicapped students, estimating that 3% of special education students were gifted (Maker, 1977).

In 1988, Dr Elizabeth Nielsen in collaboration with the Albuquerque Public School District and the University of New Mexico received the first of two Jacob-Javits Educational Grants to address underrepresented populations of gifted and talented children (Nielsen, 1993). The researcher’s examined the school records of 315 gifted/learning disabled students in order to identify the universal characteristics of these learners (Nielsen, 2002) and then developed a distinctive system for collecting and analysing the combined characteristics. As a result of this study, TE students were identified within the general population, a prevalence rate of 2 to 5% was calculated and a characteristics profile for TE students was established. In 1993 the National Gifted and Talented Research Centre reported that 2 to 7% of the special education population were TE, based on data collected through the TE Child Project (Nielsen, 1989, 1993).

It is estimated by American researchers that the prevalence of giftedness and a learning disability ranges from 2 to 15% of the general population (Dix & Schafer, 1996; Fine, 2001; Whitmore, 1981) with a further 10% reading two or more years below grade level and 30% showing a discrepancy between their mental age and reading achievement (Winner, 1996). Learning disabilities, in particular literacy-based learning disabilities are just as prevalent in the gifted population (Winner, 1996). Little (2001) estimated that 120,000 to 180,000 students who have a learning disability with IQs in the gifted range were enrolled in the American school system in 2001. Several years later, Baum and Owen (2004) estimated 300,000 TE students and the National Education Association (2006) 360,000. Assouline and Whiteman (2011) estimated that up to 7% of school-aged children may be TE, although the exact prevalence is uncertain, as can be illustrated by the numbers reported above.

Feiring and Taft (1985) contended that 30% of gifted adolescents experience a reading difficulty and in an early study by Mauser (1981) it was found that 2.3% of over 5,000 learning disabled students who had a learning disability were gifted and have a verbal or performance IQ in excess of 120. Miller and Terry-Godt (1996) stated that the highest incidence of giftedness among students with disabilities is most likely among
students with learning disabilities as a result of the increased attention in identifying characteristics of this population of TE learners (Bianco & Leech, 2010). Further Geschwind (1982), Baum and Owen (1988), Geschwind and Galaburda (1987), Brody and Mills (1997), McCoach et al. (2004), von Karolyi and Winner (2004), Ruban and Reis (2005) and Schneps, Rose, and Fischer (2007), all maintain that learning disabilities are anywhere from 1% to 36% in the gifted student population when including severe cases of disabilities such as Autism. Nielsen (2002) additionally states that 2 to 5% of gifted students will have disabilities and 2 to 5% of students with disabilities will be gifted. Trail (2010) and Lovett and Sparks (2010) put prevalence in the special education population at 2 to 5%.

When Lovett and Sparks (2011) conducted a quantitative review of 940 studies on giftedness and specific learning disability only 46 contained empirical data. They concluded that the TE population exists but challenge prevalence based on the category gifted/learning disabled in particular, due to variability in criteria, definitions and assessments. Nevertheless, Trail (2010) contends that most experts agree that the TE population is very small due in part to the difficulties in identifying these students.

Foley Nicpon, Assouline, and Colangelo (2013) maintain that there is a need to more accurately document prevalence in American schools as numbers maybe low due to disabilities not being identified in schools (Assouline & Whiteman, 2011; Foley Nicpon et al., 2011). Therefore the data gathering of prevalence of TE students in America is still haphazard due to where the disability is diagnosed and tracking issues (Foley Nicpon et al., 2013). Foley Nicpon et al. (2013) conclude from their study that 1% to 10% of all gifted learners is TE.

The 2012-2013 State of the States in Gifted Education National Policy and Practice Data (The National Association for Gifted Children, 2013) survey conducted in conjunction with the Council of State Directors of Programs found that states reported TE prevalence anywhere from 0.02 to 14%.

- 2.6.2. Twice Exceptional Prevalence Western Australia

In Western Australia, it is difficult to establish prevalence rates for TE students or the categories of disabilities. This is because the DoE does not track all students with disabilities or TE students. In addition, some TE students are ineligible for resource
funding through Schools Plus and historical data from the GAT Branch on TE students’ disability types is not tracked.

These issues delay and/or exclude some students with disabilities from being included due to their seemingly invisibility from data collection. While there is little agreement on the prevalence of TE students, a common comment by researchers is that all estimates are very conservative, therefore possibly not a true representation of the numbers of TE students due to the use of varying criteria and identification tools. Therefore, this study provides a means to identify, for the first time, the prevalence of TE students in the GAT Academic programs of Western Australia to raise the ‘veil of invisibility’ that ‘cloaks’ their participation.

**Summary**

While the prevalence of TE students is widely varying depending on setting and location, prevalence rates confirm that TE students do exist. The invisibility of most TE students in the Western Australia education system due to systemic processes and exclusions leaves prevalence rates unknown, which does nothing to lift the profile of this student group and further their need to be included in GAT Academic programs. Therefore, it is important to investigate through an empirical study; the prevalence of these purported underrepresented minority students.

**2.7. Twice Exceptional Identification and Assessment**

The difficulties with the identification of TE students are well documented in the literature and many identification processes are seen to be a process of dividing ‘winners’ from ‘losers’ and the sheep from the goats (Adler, 1984; Callahan, 1982; Schroth & Helfer, 2008). Tannenbaum and Baldwin (1983) labelled TE students as paradoxical learners; the harder the task the better they do; it is the easy work they cannot master (Silverman, 1989). VanTassel-Baska (1992) believes that due to the variety of characteristics that may manifest, multiple assessment measures are required for the TE student to be identified.

There are those who favour limiting gifted education services to students who score sufficiently high on a certain test that envisions a model that services students who are already performing at a high level such as Brody, Assouline, and Stanley (1990), and Gottfredson (2003) such as in the GAT Academic programs, and those who advocate
for the use of multiple measures to identify gifted students – portfolios, observations, teacher or peer or parent nominations, and test scores, who are interested in serving students who have potential for high performance (e.g., Renzulli & Reis, 1997; Sternberg, 2002, 2003). Krochak and Ryan (2007) and Nielsen (2002) believe that standards for giftedness should be relaxed for the TE since their learning disability is thought to artificially suppress the students’ IQ scores. Shore, Cornell, Robinson, and Ward (1991) question whether proactive identification or reduction in hurdles would be effective in selecting underserved populations of gifted children. Appropriate identification of gifted students with learning disabilities is an issue that has proven difficult and controversial in all the empirical research, with regard to limited student numbers to study and also selection criteria for gifted and learning disabled status.

- 2.7.1. Teacher perceptions and knowledge

In a study by Minner (1990), 197 teachers of gifted students read a descriptive vignette of a hypothetical gifted student who was either learning disabled or non-handicapped and from a low, middle or high socio-economic status background and were asked to rate their willingness to refer the student for placement in a gifted program. The results of the study highlighted that teachers had stereotypical views about teaching disabled and/or gifted students which influenced whether they would even consider a learning disabled student eligible for placement in a gifted program. These findings were similar to those reported previously by Minner, Prater, Bloodworth, and Walker (1987) in relation to TE students. Bianco and Leech (2010) also conducted a study where they wanted to examine the differences in referral recommendations among three teacher groups – general education, special education and teachers of the gifted and examined the influence that the disability labels of learning disability and emotional behavioural disorders had on these referrals. They found that teachers’ decisions for referral to a gifted program were significantly influenced by their teaching credentials and by the presence or absence of a disability label (Bianco & Leech, 2010).

Coleman (2005) and Rinn and Nelson (2009) maintain that deconstruction of the characteristics and learning needs of the TE student must became an integral part of teacher education training and a deepening and broadening conceptual understanding of dual diagnoses woven into professional development (Schultz, 2012; Willard-Holt, Weber, Morrison, & Horgan, 2013) for all levels of the profession. This has been a constant theme throughout the years in America and Australia, that teacher training and professional development must be established to be able to identify and serve the
In fact, Guskey (cited in Gubbins, 2008, p. 4) stated “notable improvements almost never take place in the absence of professional development”.

Therefore, teacher perceptions and knowledge of students who have a learning disability and gifted students are vitally important if TE students are to be placed in an appropriate educational setting.

2.7.2. Assessment means for Identification in Schools

Research by Boodoo, Bradley, Frontera, Pitts, and Wright (1989) across school districts in Texas was carried out in two settings – gifted and talented programs and special education centres. A survey was sent out to 353 Special Education Centres focusing on finding out whether any learning disabled students were in gifted programs, the characteristics of such students, who nominated these students and the reasons why they were/were not admitted to the gifted program. A second survey form was sent to the directors of gifted and talented programs requesting the district’s definition of giftedness, the types of gifted programs available, and the criteria used for selecting students for the program, by whom, and what modifications were made in the criteria to allow such students into the gifted program.

The major findings of these surveys indicated that in 77% of districts there were no gifted learning disabled students participating in the gifted programs and in 91% of the districts there were no gifted learning disabled students in the special education centres in Texas. With regard to the gifted programs, 7% of the districts gave modifications in their selection processes for learning disabled students; 6% altered the admission process to accommodate the special needs of the learning disabled child, and 1.5% of students were accepted on the recommendation of special education personnel (Boodoo et al., 1989). Other findings from the study confirmed the varied definitions of gifted and talented – 21 in all, assessment procedures and criteria and general lack of awareness of this group of students. While there was a poor return rate that limited the validity of the results, the findings did identify barriers to identification of TE students for participation in gifted programs from the gifted and learning disabled educational settings.

A similar study was conducted by Grimm (1995) in Minnesota, which found that many gifted students with disabilities were included in gifted programs. Seventy-seven percent of responding coordinators of special education programs reported that gifted
students with disabilities were included in the gifted program and 81% of the responding coordinators of the gifted and talented program indicated that gifted students with disabilities were served in the gifted program. Students were referred or selected by achievement tests, ability and aptitude tests, comparison to other students with the same disability and teacher and parent referral (Grimm, 1995). The large increase of services and heightened awareness of the needs of gifted students and gifted students with disabilities from 1989 to 1995 was due to the Minnesota Department of Education in 1988 publishing standards for the education of the gifted and talented and in 1991 publishing a guide with specific identification procedures for identifying these students.

Similarly to Boodoo, Bradley, Frontera, Pitts, and Wright (1989), Tallent-Runnels and Sigler (1995) reported a similar study where gifted program coordinators from 1,066 school districts were surveyed for identification and delivery of services to TE students. Of the 386 surveys returned, they found that 75 had identified gifted students with learning disabilities, 305 had none and six respondents did not answer. They concluded that identification state wide had dropped from 23% in 1989 as reported by Boodoo et al. (1989) to 19.7% in 1993 when their study was conducted despite new guidelines being put in place. Therefore, having a policy with explicit guidelines is the first step, but regular reviews are necessary to determine whether they are being adhered to, otherwise they are policies in principle only.

In 2004, Karnes and Shaunessy (2004) surveyed 149 directors of public school district programs for the disabled in the state of Mississippi who monitor the identification and services of disabled students. In 60% of school districts that responded to the survey, 5.9% of the reported enrolled students were gifted, and 12% had disabilities. Categories of giftedness included intellectual, academic, artistic and creative. In the intellectually gifted category, only one TE student with a developmental delay was reported – 0.4% of students reported as having a developmental delay, four students with emotional disabilities – 0.9% of those with an emotional disability, and one student with a visual impairment. In the intellectually gifted category 1.3% evidenced a disability and in the academically gifted category 0.49% also had a disability. Hence, few gifted students with disabilities in Mississippi had been identified.

Nicpon, Allmon, Sieck, and Stinson (2011) believe that TE students are difficult to evaluate because the diagnostic presentation will be different for each child. Atypical learning styles and rigid cut off scores make it difficult for TE students to qualify for
either gifted or special education programming (Trail, 2006). This was also the viewpoint of Pfeiffer (2001, p. 178) who maintained that many gifted students have a learning disability, ADHD or suffer from painful and troubling psychological problems that “require psychological testing at the hands of skilled clinicians equipped to make difficult differential diagnoses”.

McClain and Pfeiffer (2012) examined the gifted decision-making models used by the American states, which was relatively new at that time. Previously, research by Sternberg and Subotnik in 2000 was unable to locate even one published article on this topic in the gifted field. McClain and Pfeiffer (2012) were interested in finding out whether American states recognised or considered using one or more gifted identification decision-making models (McClain & Pfeiffer, 2012). More than half of the states endorsed a multiple cut-off or averaging approach that considers an IQ score, a creativity test score and a teacher rating on motivation with a student needing to reach a certain threshold on all of the measures (McClain & Pfeiffer, 2012). This approach differs from the multiple cut-off model in permitting differential weighting of test scores. The advantages of this model are that a very high score on one test can compensate for a less impressive score on a second measure, which can increase student diversity (McClain & Pfeiffer, 2012). Seven states used the single cut-off: flexible model for gifted identification which considers just a single piece of diagnostic information, however, will be flexible if the student can demonstrate their gifts by obtaining a high score on one of a number of alternative tests or measures (McClain & Pfeiffer, 2012). McClain and Pfeiffer’s (2012) findings indicated that approximately half of the states mandated specific policies and procedures for identifying typically underrepresented groups of minority gifted students which was a substantial change over the past ten to fifteen years (Bernal, 2003; Ford, 2005; Pfeiffer, 2012; Swanson, 2006).

Most importantly in relevance to this study, McClain and Pfeiffer (2012) found in their study that slightly more than half the states mandated specific policies for identifying culturally diverse students, whereas the remaining 48% had no current mandate or policy for identifying underrepresented gifted students (McClain & Pfeiffer, 2012). Several states noted that TE students were an underserved group that required flexible identification procedures, with half of the states recognising “that some groups of students in United States schools are less likely to do as well on traditional gifted identification methods and benefit from flexible and non-traditional gifted identification procedures” (McClain & Pfeiffer, 2012, p. 75). In the 20 years from one survey to
another, no state now endorsed or recommended using the single cut off score for
gifted identification (McClain & Pfeiffer, 2012).

In Carman’s (2013) research she investigated ways to identify the methods used in
current research to differentiate gifted from non-gifted participants. Although there had
been a previous study published in 2000 by Ziegler and Raul that was limited in scope
to two years of research (1997-1998), five journals specialising in gifted research and
did not specifically examine papers comparing gifted to non-gifted participants,
Carman’s research was far more extensive covering a fifteen year span starting in
1995 and more than 35 peer-reviewed journals from areas of education and
psychology (Carman, 2013). Nine categories of identification method were found:
intelligence test; achievement test; academic achievement; teacher, parent, counsellor
and committee recommendation; extracurricular activities, and additional sources of
evidence such as portfolios, interviews and school nomination, with the most commonly
used method being the intelligence test (Carman, 2013). The use of an IQ score was
the only identification method endorsed by more than half of those reporting their
methods and was the only method used to identify gifted participants for 33.7% of
articles reporting identification methods (Carman, 2013).

The most commonly reported IQ score cut off for inclusion into the gifted subject pool
was a score of 130 (97th percentile), being used by 52.5% of those reporting a cut off
score and an additional 22.5% used a cut off score of 120 (90th percentile) (Carman,
2013). Similar to the findings of Ziegler and Raul (2000), Carman (2013) found that
there was no common definition of giftedness used that compares outcomes in
characteristics of gifted and non-gifted individuals and the most common method used
by three-quarters of the articles surveyed to identify gifted participants, was prior
identification by the school, that is, use of existing groups or persons already labelled
as gifted or not gifted with the method not fully described. Carman (2013) states that an
IQ score is not the only way of determining giftedness (Renzulli & Reis, 1997), but is
still the most common way of identifying gifted participants for research and more than
60% used some measure of intelligence as part of the identification method.

• 2.7.3. Cognitive Profiling

The largest body of research in this area investigates the cognitive profiles of TE
children as a means of better understanding their learning strengths and weaknesses
using a variety of identifying tools in the hope that their findings can be generalised to
either the gifted, learning disabled or TE population of children. The following studies have relevance to the general understanding of the multi-faceted nature of the learning and cognitive characteristics of the TE students which is pertinent to this study.

Waldron and Saphire (1990) investigated the cognitive factors characterising the TE student. Twenty-four TE students and a control group of gifted students were administered the WISC-R to determine the students' strengths and weaknesses (Waldron & Saphire, 1990). While earlier studies, such as that carried out by Fox (1981) found that 50% of his sample had a 15 point discrepancy between verbal and performance scores and relied on this discrepancy as indicating a learning disability, many children have this large a discrepancy without having a learning problem, and many children with a learning disability may not have this large a discrepancy (Anderson, Kaufman, & Kaufman, 1976; Tannenbaum & Baldwin, 1983; Vance, Gaynor, & Coleman, 1976). The major finding was that there was no significant difference noted between WISC-R Verbal and Performance IQ scores which supported Kaufman’s (1979) earlier contention that a 15-point discrepancy between Verbal and Performance scores may not be the best indicator of the existence of a learning disability and for this population of students may not be useful. The gifted learning disabled students were strongest in their use of verbal conceptualisation and reasoning in processing information, and they were especially strong in their categorical thinking skills. They were significantly weaker in their rote recall of verbally presented information and sound symbol correspondence, but may be masking their problems with rote short-term memory by their ability to verbally conceptualise.

Hannah and Shore (1995) investigated the metacognitive performance of gifted, TE, learning disabled and average achieving primary and secondary students at three schools in West Virginia. Unlike previous studies that did not control or detail the criteria for the identification of a gifted, gifted learning disabled or learning disabled student, schools were chosen who had been through a rigorous selection criteria that included use of the WISC-R or Stanford-Binet and met the federal guidelines for gifted and talented students (Hannah & Shore, 1995). The central issue under investigation was whether metacognition is a component of giftedness regardless of the student also having a learning disability. Research on the metacognitive abilities of students with a learning disability suggests that their general learning disabilities are due in part to deficiencies in metacognitive processes (Borkowski, Estrada, Milstead, & Hale, 1989; Jacobs, 1984; Kneedler & Hallahan, 1981; Kotsonis & Patterson, 1980; Simmons, Kameenui, & Darch, 1988; Slife, Weiss, & Bell, 1985; Wong, 1985; Wong & Jones,
This research suggests that metacognition will be weak due to a learning disability, whereas research in the gifted area suggests metacognitive strength due to their giftedness (Borkowski & Peck, 1986; Shore, 1982; Sternberg, 1984). The findings of the study were that TE students performed more like their gifted peers than their learning disabled peers at both the primary and secondary year levels.

McCoach, Kehle, Bray, and Siegle (2001) proposed ‘best practice’ guidelines for identifying TE students for school psychologists which entailed, IQ tests, achievement tests, and other tools such as curriculum-based assessments and portfolio reviews. They endorsed the discrepancy model between potential and achievement as identifying a learning disability and defined giftedness as “an outstanding ability to grapple with complexity” (McCoach et al., 2001, p. 404).

Nielsen (2002) produced a set of assessment recommendations based on the assessment files of more than 300 TE students. Nielsen “stressed the need for comprehensive psychoeducational batteries, an examination of discrepancies between performance on different measures, and flexibility in identification criteria such as cut-off scores” (Lovett & Lewandowski, 2006, p. 518). Silverman (2003) provided an overview of different types of TE students and described modifications to standard assessment protocols for giftedness when students may be twice exceptional. Silverman (2003) argued that the inspection of separate subtest scores is imperative for TE students as giftedness and learning disabilities can mask each other in a variety of ways.

McCallum, Bell, Coles, Miller, Hopkins, and Hilton-Prillhart (2013, p. 211) contend that “traditional criteria may not be sensitive enough to identify” TE students because “some of their cognitive skills may be relatively less well developed” to justify service. In standardised tests a large discrepancy between ability and achievement may never be revealed nor may they exhibit an identified academic deficit related to cognitive limitations to meet the criteria recommended by experts such as Flanagan, Ortiz, and Alfonso (2013) and McCallum et al. (2013). TE students may fall into one of three categories: identified gifted who have subtle learning disabilities, unidentified students whose strong abilities and yet disabling weaknesses produce average achievement, and students identified as having a learning disability but who are also gifted (Baum, 1990). Lovett and Sparks (2011) believe that principles need to be developed that would enable more uniform identification to take place including IQ scores as a cut-off point for determining intellectual giftedness and demonstrated achievement below
average. While many agree that achievement must be below average (Flanagan et al., 2013; Lovett & Sparks, 2011; Stanovich, 1999) others such as Assouline, Foley, Nicpon, and Whiteman (2010, 2011) and Reynolds and Shaywitz (2009) disagree contending that achievement may be in the average range and still be a weakness for students who are TE.

Many of these studies have not generally been conclusive nor agreement reached by researchers in the field, nevertheless, Rose (2009) believed that TE students may be overlooked because entry to gifted programs is through a total score rather than subscale scores as in the GAT Academic testing, with Assouline et al. (2009) contending that they can also be missed due to the unusual testing patterns with extreme dips on certain sub-tests. Therefore, profiling of TE students is a very complex process.

**Summary**

Students sitting the GAT Academic Test cannot produce their WISC or Stanford-Binet and associated assessments in lieu of the testing battery. This ‘flies in the face’ of the recommendations made by researchers in the field who have made it very clear that many TE students will have great strengths but also great weaknesses therefore cannot break through the barrier for entry as they are kept out by gatekeepers who have decided that stereotypical ‘winners’ (Adler, 1984; Callahan, 1982) are only eligible. While accommodations will be put in place for the testing day, such as extra working time or use of a laptop, not accepting the psycho-educational assessment and taking into account that the student will have strengths and weaknesses, is to disregard that they have a learning disability which is the antithesis of inclusion.

**2.8. Underachievement**

There are a complex set of causes for underachievement in gifted students including social and economic influences (Freeman, 1992), race (Baker, 2011), culture (Freeman, 2011; Sternberg, 2007), twice exceptionality (Silverman, 2009), lack of motivation due to socio-emotional problems (Reis & Renzulli, 2004), lack of interest, absence of educational challenge, engagement and support (Reis & Renzulli, 2009) and the factor of gender influencing the level of achievement (Gross, 1993). Vialle and Rogers (2012) state that in Australia, as in other parts of the world, the slump in achievement may begin as early as Year 4 but definitely be in place for large numbers
of students by Year 5 and in full force by early high school. Studies have speculated that the number of underachieving gifted students is somewhere between 10% (Wills & Munro, 2001) and 50% (Hoffman, Wasson, & Christianson, 1985; Seeley, 1993) with the 2001 Senate Inquiry on the Education of Gifted and Talented Children (Commonwealth of Australia, 2001) estimating that up to 75% of gifted students underachieve and 40% leave school before completing year 12 (Fraser-Seeto, Howard, & Woodcock, 2015). Rubenstein (2012) maintains that intervention research aimed at reversing students’ underachievement remains scarce and despite decades of research, no effective solutions have been developed to address the problem (Figg, 2012).

2.8.1. Socioemotional

Studies have found that gifted children as a group have high social status, are preferred companions, better emotionally adjusted, more independent, show leadership ability and tend to be precociously aware of morality and justice issues (Clark, 2008). In Neihart, Reis, Robinson, and Moon’s (2002, p. 268) review of the research they found that there was “no evidence that gifted children or youth – as a group – are inherently any more vulnerable or flawed in adjustment than any other group”. This was followed up by Martin, Burns, and Schonlau (2010) who reported that the gifted were at least as well balanced as any others. Wellisch, Brown, and Knight (2012) found in their study of 80 families that there was no significant difference in clinical or borderline externalising or total problems as assessed by the parent participants of children with IQs at or over 120 and children with IQs below 120.

Research has established that generally gifted children are not more vulnerable or flawed in adjustment than any other group (Neihart et al., 2002) but Wellisch and Brown (2012) contend that gifted students can feel different from other students due to their unique behaviours and unusual style of communication and more so if they also have learning difficulties. This can be further compounded by being socially mismatched with same-aged peers (Wellisch & Brown, 2012) and then experiencing an unresponsive and unsupportive education system throughout their schooling life (Amend & Beljan, 2009; Morawska & Sanders, 2009). Peters, Grager-Loidl, and Supplee (2000) have identified peer relationships as a critical school factor in the underachievement of gifted children along with poor social skills (Robinson & Nobel, 1992) and peer rejection (Dauber & Benbow, 1990) and despite decades of research on gifted underachievers, underachievement has yet to be eliminated (Flint, 2007).
The importance of being grouped with true like-minded peers is discussed by Wang and Neihart (2015) where they found that external supports from parents, teachers and peers were enablers of academic success for TE students. This was also suggested by Schunk and Pajares (2002), as possibly affecting students’ academic self-efficacy through modelling and peer networking. Therefore, having access to true peers who are their intellectual equal enables the academic achievement of TE students (Wang & Neihart, 2015). For the TE student, not being grouped with mentally similar students in GAT Academic programs, due to their performance not matching their intellectual capacity places them at risk socially and emotionally when they feel different to their possibly same performing but not intellectual peers. Therefore, the mixture of learning and social skills factors makes TE students very at risk for underachievement in the school environment and continues to be a complex problem yet to be fully understood or addressed.

2.8.2. Motivation

Reis and Renzulli (2009) state that there is no non-cognitive trait more influential on high levels of performance than effort or motivation and Renzulli (1978) considered a high level of task commitment associated with motivation to be so significant that it is one of the three identifying factors in his three-ring definition of giftedness (Wellisch & Brown, 2012). Other scholars such as Winner (2000), Perry and Szalavitz (2006) and Sternberg (2005) observed that gifted children are naturally motivated to ensure that their never-ending need for information and challenges are met, but Adelman and Taylor (2000) found that family dysfunction and socio-emotional problems, known for their negative effects, interferes with motivation, planning, attention, memory and high achievement resulting in severely disrupting children’s learning and achievement (Reis & Renzulli, 2004). Dai, Moon, and Feldhusen (1998) found that deficits in achievement motivation or achievement-related thoughts, feelings and actions are associated with a variety of issues including – unrealistic self-expectations, harsh self-criticism, low self-confidence, a tendency to harbour self-defeating beliefs and a lack in integration of goals and personal standards. Thus, these self-defeating attributes and attitudes appear to be related to poor socio-emotional adjustment.

The three key factors in achievement for gifted children can be summarised as good socio-emotional adjustment (Terman & Oden, 1959), positive achievement motivation (Dai et al., 1998) and high ability (Renzulli, 1978). Therefore, if gifted children who have high ability fail to achieve they will struggle with adjustment and motivation and
eventual loss of ability (Wellisch & Brown, 2012). Gagné’s DMGT also includes motivation as an intrapersonal catalyst for turning a gift into a talent with Calderon et al. (2007) offering support for aspects of the DMGT including intrinsic motivation in transforming abilities into competencies and those competencies into expertise.

- 2.8.3. Dropping out

A number of scholars (Irvine, 1987; Matthews, 2006; Renzulli & Park, 2000, 2002) have identified a phenomenon of dropout among our most academically exceptional students who for at least their early formal schooling years achieved at a high level, but when dropping out of secondary school go from demonstrating achievement at a greater level than the vast majority of their same age peers then failing to obtain a minimal level of formal education (Landis & Reschly, 2013). Landis and Reschly (2013) stated that the percentage of gifted dropout increases as definitions become less rigid such as the results found by Matthews (2006) that less than 1% of students participating in a private summer enrichment program requiring achievement or aptitude test scores at or above the 95th percentile dropped out, whereas the number increased to 5% when a larger more economically diverse group of students were considered gifted (Renzulli & Park, 2000, 2002). The risk factors for dropping out are largely the same as for the general population: poor attendance, school failure, drug and alcohol use/abuse, dislike of school, school failure, pregnancy and family conflict (Cramond, Kuss, & Nordin, 2007; Hansen & Toso, 2007; Matthews, 2006; Renzulli & Park, 2000, 2002). Landis and Reschly (2013) assert that underachievement is important in determining dropout risk among gifted students and appears to precede decisions to drop out of high school.

An underlying theme in much of the literature regarding underachievement and dropout among gifted students is lack of engagement (Landis & Reschly, 2013). Hansen and Toso (2007, p. 38) noted in a summary of their research that “All dropouts admitted they emotionally gave up at school long before they dropped out” tracing their frustration with school to their elementary school years (Cramond, Kuss, & Nordin, 2007; Hansen & Toso, 2007; Matthews, 2006; Renzulli & Park, 2000, 2002). Dropouts, including gifted dropouts, appear to undergo a process of emotional, cognitive and behavioural disengagement from school before they drop out (Landis & Reschly, 2013). Homework completion was also an indicator of academic engagement and appeared to be a struggle for many gifted students who underachieve and/or choose to leave high school with McCoach and Siegle’s (2003) study of gifted high school students finding that
homework completion and effort significantly predicted whether students were achieving as expected or underachieving.

Behavioural engagement such as attendance, truancy, preparation for school, participation in extracurricular activities and discipline referrals (Appleton, Christenson, Dongjin, & Reschly, 2006; Christenson, Reschly, Appleton, Berman, Spanjers, & Varro, 2008; Reschly & Christenson, 2006) are the most robust in predicting student outcomes particularly when a student is exhibiting low engagement (Christenson et al., 2008) with research demonstrating a strong link between behavioural engagement and academic achievement (Landis & Reschly, 2013). Finn's (2006) longitudinal study of students at risk, found behavioural engagement in high school was related to completion of postsecondary school and employment outcomes, therefore the behaviours encompassed in behavioural engagement “appear vital to academic and life success” (Landis & Reschly, 2013, p. 232). Kanevsky and Keighley (2003) found that skipping classes was common amongst underachieving gifted high school students who left school at some point due to suspension or dropout. Extracurricular involvement also appears low among gifted underachievers and/or dropouts at high school (Colangelo, Kerr, Christensen, & Maxey, 1993; Cramond et al., 2007) and a final indicator of behavioural engagement is student preparation for class and school (Landis & Reschly, 2013).

Students’ perceptions of their relationships with teachers and support for learning from peers and parents are considered indicators of the construct of affective engagement (Appleton et al., 2006), that is, a sense of belonging at school (Appleton, Christenson, & Furlong, 2008; Christenson & Anderson, 2002; Christenson et al., 2008; Reschly & Christenson, 2006). Although apparent support from parents and teachers has been linked to achievement (Finn, 1993) and academic effort (Wentzel, 1997), the findings regarding affective engagement and dropout have not supported a significant relationship. Furrer and Skinner (2003) found that students’ sense of relatedness decreased the likelihood of dropping out in students with and without disabilities (Reschly & Christenson, 2006). Resnick, Bearman, Blum, Bauman, Harris, Jones, Tabor, Beuhring, Sieving, Shew, Ireland, Bearinger, and Udry (1997) found that the higher the students’ perceived closeness with family members, school personnel and sense of belonging at school, the less likely they were to engage in risky behaviours. Therefore, these are all protective mechanisms for TE students (Schunk & Pajares, 2002; Wang & Neihart, 2015). Parental, peer and teacher support are all important factors for gifted students who underachieve and/or drop out of high school and a
A common theme from seven studies was that students reported that they did not feel respected or cared about by school personnel (Crammond et al., 2007; Hansen & Toso, 2007; Kanevsky & Keighley, 2003), no one at school cared if they dropped out (Crammond et al., 2007) and they generally had unfavourable relationships with teachers (Seeley, 2004).

Cognitive engagement refers to the goals and aspirations students have for their future and the relevance they perceive their schoolwork has for those goals (Appleton et al., 2006; Christenson, Reschly, Appleton, Berman, Spanjers, & Varro, 2008) as well as the degree of boredom in school and use of self-regulated learning strategies, and time and effort students are willing to expend in academic pursuits (Appleton et al., 2006; Archambault, Janosz, Fallu, & Pagani, 2009; Fredericks, Blumenfield, & Paris, 2004; Reschly & Christenson, 2006a). In relation to gifted underachievers and dropouts, boredom was a prominent theme in a number of studies (Cramond et al., 2007; Hansen & Toso, 2007; Hebert, 2001; Kanevsky & Keighley, 2003; Seeley, 1988) with gifted dropouts describing the lack of challenge in non-advanced high school courses and irrelevant busywork as a contributing factor to them dropping out of school (Cramond et al., 2007; Hansen & Toso, 2007). This was also echoed by Hebert’s (2011) study. Overall both gifted underachievers and dropouts perceived little value in their schoolwork and were often bored in school (Landis & Reschly, 2013).

Landis and Reschly (2013) sum up their and other researcher’s studies by putting into context that as many as a quarter of previously high achieving students will drop out of school (Renzulli & Park, 2000, 2002). Student engagement, incorporating academic, behavioural, affective and cognitive components is a significant theme in the school experiences of gifted students who underachieve and/or drop out. They are not academically engaged, seldom on-task, choosing to sleep through classes or engage in otherwise off task behaviour, put less effort into homework and assignments, fail assignments due to absences or insufficient effort, miss class, have attendance and behaviour problems and less extracurricular involvement (Landis & Reschly, 2013). The evidence for affective engagement amongst gifted dropouts and underachievers was mixed with peer affiliation often not optimal for learning; gifted underachievers and dropouts spent time with peers who had also dropped out, used illegal drugs and alcohol and encouraged them to skip class and underachieve (Landis & Reschly, 2013). Not fitting in at school was a concern for some students (Landis & Reschly, 2013) and while a perceived lack of caring from teachers and school personnel was raised, it was also reported that some students did have close relationships with caring
teachers and that parental support for learning was evidenced through their high expectations and encouragement for them to remain in school (Landis & Reschly, 2013). Finally, cognitive disengagement was reported by students as: boredom in courses they perceived to be irrelevant, frustration at meaningless busywork and unchallenging and intellectually insulting work (Landis & Reschly, 2013). It is in this one area of cognitive engagement that Landis and Reschly (2013, p. 239) assert “maybe a more prominent variable in academic outcomes among gifted students than in the general population”.

**Summary**

Underachievement is caused by many factors both internal and external to the child. External factors that are within the control of education systems such as children being placed with like intellectual and supportive peers and teachers who can put in place anticipatory supportive mechanisms will reduce the chance that underachievement and drop out occurs. A GAT Academic program would be the ideal location for TE students who would have the benefit of inclusion with their like intellectual peers, knowledgeable and supportive gifted teachers, and parents who had chosen this option for their child to add further support. Therefore, TE students are more susceptible to being excluded from a GAT Academic program due to their unique learning characteristics (VanTassel-Baska, Feng, Swanson, Quek, & Chandler, 2009). Consequently, the provision provided outside of a GAT Academic program for those students who became a false negative through the GAT testing, could never match that within such a highly specialised gifted environment.

**2.9. Gifted Culturally, Ethnically and Linguistically Diverse (CALD) Populations**

An increasingly popular area of research is in minority culturally, ethnically and linguistically diverse (CALD) gifted populations and the effect that assessment has on the identification of this sub-group of gifted students for gifted programs. Harris, Brown, and Richardson (2004) believe that educators must adopt definitions and programs that centre on potential and talent development so that ‘doors’ can be opened that have been historically closed to marginalised populations. Ford (2012) states that the underrepresentation of these students in gifted programs, as suggested by the general consensus within the literature, indicates that the ‘system’ is failing them in some way. Similar issues regarding underrepresentation and participation of minority sub-groups (Chinn & Hughes, 1987; Ford, 1995; Ford, Harris, Tyson, & Trotman, 2002;
2.9.1. Underrepresentation

The underrepresentation of minority American students in American classes for the gifted is noted by Ford (1998) and Ford, Grantham, and Whiting (2008) as one of the most important problems facing educators of gifted students. In a thirty-year period from 1966 to 1996 a total of 9,801 articles on the ERIC database focused on gifted students, with 795 focusing on gifted minority students (African American, Hispanic American and American Indian), which equates to 8% on gifted minority students (Ford, 1998). In that same thirty year period few articles in special education journals had focused on gifted students – 170 articles (3.8%) and even fewer focused on gifted minority students – five in total (Ford, 1998). Artiles, Trent, and Kuan (1997) noted that this lack of data on minority students can have serious consequences for researchers and practitioners, making reversing their underrepresentation difficult (Ford, 1998). In 1993 it was reported by the United States (U.S.) Department of Education that African American, Hispanic and Native American students were underrepresented by 50 to 70% in gifted education programs. The majority of explanations for this underrepresentation can be categorised as recruitment issues/screening and identification, personnel issues and retention issues (Ford, 1994, 1998; Ford & Feist, 1993; Ford & Harris, 1995; Ford & Webb, 1994; Gallagher, 1996; Henfield, Owens, & Moore, 2008; Maker, 1996; Masten, 1985; Serwatka, Deering, & Stoddard, 1989) all applicable to the present study of underrepresentation of TE students.

Borland and Wright (2000, p. 587) using data from the National Educational Longitudinal Study, point out that “almost half of the eighth grade students identified as gifted and placed in gifted programs were from families in the top SES [socioeconomic status] quartile, whereas about nine per cent were from the bottom quartile” representing a 5:1 ratio between the two extreme quartiles (Gagné, 2011). Ford, Grantham, and Whiting (2008) noted that for decades, underrepresentation nationally has hovered at an average of 50% for African Americans and 40% for Hispanics. Erwin and Worrell (2012) found that while African American students make up 17% of the American school population, they only comprise 9% of gifted and talented students. Similarly, Hispanic American students comprise 20% of the total school population but
only 12% of gifted students and American Indian students 1.26% of the general population but only 0.97% of the gifted population (Erwin & Worrell, 2012).

Margolin (1994a, 1994b) asserted that gifted education in America was conceived during a time of intense racism, sexism, and classism in the early 1900s and according to Latz and Adams (2011) the underrepresentation of various oppressed groups and poor and working-class children in gifted education programs still persists. Gagné (2011a) believes, based on statistics of representation by Ford (2003) and using a simpler way to assess degrees of under and over representation, that program coordinators would need to identify nationally 75% more African American and Hispanic students, and that Asian students show an opposite effect of overrepresentation of 75%.

- 2.9.2. Identification

Many reports have attributed the problem of underrepresentation to standardised tests, contending that the tests fail to assess the strengths and abilities of culturally, ethnically and linguistically diverse populations (Frasier, Martin, Garcia, Frank, & Krisel, 1995). Erin and Worrell (2012) contend that it is a well-established finding that the best predictor of current or future academic achievement is previous achievement (Antonak, 1988; Au, Watkins, & Hattie, 2010; Conklin & Ogston, 1968; Lunneborg, 1977; Salanova, Schaufeli, Martinez, & Breso, 2010; Scannell, 1960; Tai, Liu, Maltese, & Fan, 2006) and the second best is intelligence tests that predict academic achievement, as well as job performance, social-economic status, and other important life outcomes (Duckworth, Matthews, Kelly, & Peterson, 2007; Neisser et al., 1996; Rushton & Jensen, 2010). However, minority students obtain lower scores on both of these measures (Ford, 1998; Worrell, 2009). This is not the problem according to Erin and Worrell (2012), as in reality the tests reflect accurately the students' lower level of attained academic competencies than their peers that leads to lower placement rates in gifted programs.

Erin and Worrell (2012) maintain that using three measures of student achievement – report cards, state standardised tests and a work product completed within the past year, allows the Academic Talent Development Program that they are affiliated with to choose students who are: (a) at the top end of the distributions for their groups and (b) have the potential to be successful in the program and if a student has a mixed profile they will contact them for supplemental information. Even then, they found that
underrepresented populations continue to be underrepresented and that on average, their achievement is lower across multiple indicators (Erin and Worrell, 2012). Erin and Worrell (2012, p. 84) conclude that equity, defined as proportional representation in gifted education by racial/ethnic group is a noble aspiration for the field but will only be "fully achieved when the achievement gap itself is eliminated". As it stands, disproportionally low numbers are a reflection of the intractable and long-standing achievement gap in the United States (Pfeiffer, 2012).

Naglieri and Ford (2003) state that policies and procedures have a disparate impact on the participation of diverse students in gifted programs, especially the common procedures used by schools: teacher referral. Fraser, Martin, Garcia, Frank, and Krisel (1995) also found that under referral is a problem for parents as well and that few minority parents require an evaluation of their child for possible gifted and talented programming (Scott, Perou, Urbano, Hogan, & Gold, 1992). This same study again questions the provision for gifted minority students from identification to curricular provision and illustrates how a nonverbal test can be used to evaluate and uncover minority student's cognitive ability and subsequently, provide access to gifted education programs (Naglieri & Ford, 2003). The study further supports Naglieri and Ronning’s (2000) suggestion that a nonverbal measure can be a more appropriate measure of general ability for minority students than a measure of general ability that contains both verbal and nonverbal content (Naglieri & Ford, 2003).

Flanagan and Ortiz (2001) reviewed assessments used for identification in relation to cultural loading and linguistic demand for diverse groups that presume a given level of language proficiency that then gives a biased result. Skiba, Knesting, and Bush (2002) stated that assessment must also consider the extent to which students have not had an equal opportunity to learn because of inadequate schooling or poor instruction and learning experiences so that individuals will not be penalised for their cultural and linguistic differences by being denied access to challenging curriculum and gifted education programs (Pfeiffer, 2012). Flanagan and Ortiz (2001, p. 25) go on to state:

The greater the difference between an individual's cultural or linguistic background and the cultural or linguistic background of individuals comprising the norm group, the more likely the test will measure lower performance as a function of this experiential difference as opposed to being due to actual lower ability.
Valdes and Figueroa (cited in Whiting & Ford, 2006, p. 8) contend “that no matter how much a test developer might want to emphasise the fairness of a given test by illustrating the inclusion of racially or ethnically diverse individuals, claims about equity can be highly misleading and inaccurate”. Whiting and Ford (2006) list twelve non-discriminatory assessment principles, of which six relate directly to this study: principle 1: tests have limitations and should be used with caution, principle 2: a comprehensive analysis must be conducted, principle 3: adopt measures with the least amount of linguistic demand, principle 5: consider factors that depress test scores when interpreting results, principle 6: consider social injustices when interpreting results, and principle 9: consider different group norms, when interpreting results. Skiba, Knesting, and Bush (2002) state that culturally competent assessment is much more than ensuring that tests are unbiased it is about identifying and eliminating sources of bias throughout the education process. Joseph and Ford (2006) recommend that school districts examine the demographics of their gifted programs in relation to economic, racial and linguistic diversity and conduct studies on variables that contribute to underrepresentation. TE students experience similar issues and struggles to that of diverse students as discussed above with regard to the GAT Academic programs.

Bonner (2000, p. 654) advocated a happy medium between rigid nomination and selection methods with a more global approach so that the approach “does not promote under-identification of any student group” and raises the question how to cater for the needs of students who will need a differentiated curriculum due to a high nonverbal score but lower levels of achievement. This is particularly relevant to the proposed study, as the TE student typically will have areas of strengths as well as weakness.

Maize (2009, p. 21) contends that churning out graduates from elite specialised schools with only a “handful of blacks and Hispanics is to reproduce and exacerbate the very inequalities that helped to keep most students of color in less demanding schools in the first place”. He further contends that elites are much more likely to understand the needs of underserved communities and to be responsive to them, if some of their ranks come from these segments of the population and if they grew to know people from diverse backgrounds in classroom settings during their formative years. Therefore, Maize (2009, p. 21) maintains that a multifaceted admissions policy is necessary. Maize’s discussion of New York City’s specialised high schools mirrors that of Western Australia’s GAT Academic schools where a more thoughtful and
nuanced admissions policy needs to be enacted to counter the underrepresentation of TE students in this scarce educational resource.

- 2.9.3. Equity

While there is no doubt from the research that underrepresentation of minority groups exists within gifted programs, Gagné (2011a) states that some researchers such as Borland and Wright (2000), Ford (2003) and Gentry, Hu, and Thomas (2008) see this as a moral issue. Gagné asserts that the implication from Ford (2003, p. 518) when she asks, “How many more diverse children must suffer while we debate this issue?”, Borland and Wright’s (2000, p. 588) use of strong language “the serious and destructive consequences of this state of affairs” and Gentry, Hu, and Thomas’ (2008, p. 199) “actions necessary to solve the problem of underrepresentation” all confirms that there is a common perception that there is no justification for minority underrepresentation in gifted programs (Gagné, 2011a, p. 6). Borland (1997) places blame for this situation on a socially constructed gifted concept while Ford (2003) places the blame for this situation on the educational system, and yet Gagné (2011a) contends that neither acknowledges the overrepresentation of Asian students who seemingly can overcome these barriers.

In Gagné’s (2011a) discussion of other cases of ethnic disproportionality, he cites the 2007 percentage of American twenty-five year-olds who had completed at least four years of college as showing a clear underrepresentation of African American and Hispanics and an overrepresentation of Asian college graduates, a ratio of four (Asians) to one (Hispanic). Gagné (2011a) argues that this underrepresentation does not give rise to teachers or school administrators being accused of any morally objectionable selection practices as occurred for the above statistics, thus the equity issue does not even arise in this instance.

Gagné details another example focusing on the ethnic distribution of California’s population in 2006 and the ethnic distributions for the newly admitted undergraduates at the four largest University of California campuses, where the underrepresentation is similar but stronger than that of the college statistics above. Asian students are overrepresented again, but interestingly, white students are also underrepresented (Gagné, 2011a). Gagné (2011a, p. 8) noted that Californians “apparently accept this extreme situation with equanimity” that resulted from an amendment to the state Constitution in 1996 that stated “the state shall not discriminate against, or grant
preferential treatment to, any individual or group on the basis of race, sex, color, ethnicity, or national origin in the operation of public employment, public education, or public contracting”. The extreme disproportions that resulted are judged to be a fair application of a strict performance-based admission policy and according to Egan (cited in Gagné, 2011a) Berkeley’s Chancellor, he insists that his university has a strict-meritocracy, confirmed by law, and that even if the percentage of Asians were to increase to 70%, there would still not be an attempt to reduce their numbers.

Gagné (2011a) then focuses on talent development in music, in particular those students enrolled or having graduated from a doctoral program in 2006 to 2007. In this field there was a fifteen-fold disparity in representation between the African American population and Asian population at a doctoral level. In one example for the specialisation combination of piano and violin there were only eight African American students in the database as opposed to 483 Asian students and in another example Asian students outnumbered White/Hispanic students although the American Asian population is almost nineteen times smaller (Gagné, 2011a). Again Gagné (2011a, p. 9) questions that there are no complaints from minority groups and like his two previous examples, “everyone accepts the fairness of the selection system and the offered curriculum”.

In Gagné’s (2011a) final example he focuses on sports, namely the statistics from three major spectator sports in the United States during the 2006 to 2007 season (Lapchick cited in Gagné, 2011a) compared to ethnic ratios in America in 2005. African Americans and Asians are underrepresented in baseball; however, African Americans dominate both the sports of football and basketball – thus an underrepresentation of whites and Asians. Gagné (2011a) again asserts that there is general acceptance for these disproportions due to the search for the most talented athletes.

The research reported thus far, illustrates how under/over representation appears almost everywhere in general educational attainments, in specialised educational fields as well as in most sports and the disproportions are often larger than those in gifted education and yet do not give rise to accusations of biased access procedures (Gagné, 2011a). Gagné (2011a) contends that all parties accept these ethnic disproportions, whatever their directions as fair representations of performance differences because all the above examples are based on meritocratic ideology that is focused on the here and now of achievement. A meritocratic ideology gives priority to performance and this
observable performance creates an equitable comparison basis, thus “silencing inequity accusers” (Gagné, 2011a, p. 10).

Merit literally means talent, in other words ‘demonstrated high aptitudes’ in a given occupational field; past achievements prove that candidates or talentees possess not only the raw high potential or giftedness to face a high level challenge, but also the personal qualities, especially perseverance (Gagné & St. Pierre, 2002), that contribute significantly to success (Gagné, 2011a, p. 13).

In the examples presented, it is Gagné’s (2011a, p. 14) belief that respect for demonstrated high abilities (talent) make the disproportions immune to accusations of inequity as the administrators of these programs adopted objective criterion “because they judged it to be the most relevant predictor of future achievement in their excellence-oriented talent development program”.

It is Gagné’s (2011a) assertion that most current gifted programs Kindergarten to Year 12 have little to do with ‘real’ talent development, and consequently open the door to the equity issue. In 1991 Renzulli and Reis (1991, p. 34) closed their critical review of an ongoing educational reform by stating, “Talent development is the ‘business’ of our field, and we must never lose sight of this goal, regardless of the direction that reform efforts might take”. Gagné (2011a, p. 18) slightly modified this statement by describing “our ‘business’ as ‘academic talent development’” as he believes that academic pursuits are the core mission of schools, and academic talent development as the school system’s specific mission with regard to its academically talented students. Gagné (2011a, p. 18) concludes that the current label of “gifted education” should be revised to “academic talent development” as this perfectly reflects the “business” of our field. While Gagné does not have a main focus on identification/selection, he does pinpoint that while minority groups do have access to the same Advanced Placement courses, gaps in academic achievement are large; therefore a stronger focus on achievement measures would possibly increase ethnic disproportions. This contention by Gagné (2011a) foreshadows the present study with regards to TE students, where the number of students with disabilities from 2007 to 2012 in the GAT Academic programs has decreased over time despite the number of students with disabilities increasing.

From Gagné’s (2011a) article on academic talent development and the equity issue in gifted education discussed above, scholars participated in a discussion of his article.
From the thirty-two articles, the following seven have the most bearing on the present study and in particular the equity question.

Balogh (2011) from the University of Debrecen, replying from the Hungarian perspective states that while the academic talent development program alone is valuable, it does not solve the problem of equity in talent development. Balogh (2011, p. 29) believes that the “key solution is applying an identification procedure different from the one typical today” and Gentry, Hu, and Thomas (2008) concur that broadening definitions and conceptions of giftedness and the associated identification procedures as well as professional development, have been recommended as actions necessary to solve the problem of underrepresentation. Balogh (2011) concludes that there is no hope of solving underrepresentation while the sole criteria is performance tests and academic achievement. This is a continual issue for TE students due to their learning characteristics and one that is at the ‘heart’ of selection through the GAT Academic testing.

Cobley and McKenna (2011) from Leeds Metropolitan University provides the perspective from the United Kingdom, of local schools, and contend that any form of selection generates powerful motivation forces within schools which can lead to systematic under or over representation or enduring inequality. They believe that to achieve a closer approximation of what we understand as equity, there needs to be a stronger understanding of what and how to measure indicators of true giftedness and/or talentedness reliably in respective fields (Cobley & McKenna, 2011).

Dimaano (2011, p. 41) from the University of the Philippines, in her response to Gagné’s redefinition of gifted programs for academic development as academic talent development, championing meritocracy based on past performance as the framework of recruitment in the hope of making inequity irrelevant, questions whether using achievement rather than potential as the criterion of merit creates possible false negatives as “it eliminates high potential, late-blooming or underachieving gifted students from development programs.” She further goes on to state that even though defining giftedness as performance in the top 10% range among age peers is generous, given the rigor of Gagné’s proposed program concept, this is likely to result in false positives; “more mildly gifted accepted but weeded out later because they are unable to rise to the challenge.” (Dimaano, 2011, p. 41). This again does not address the issue of “highly gifted individuals disqualified due to less than stellar achievement who may [italics in original] shine if placed in the program” (Dimaano, 2011, p. 41).
This is a similar scenario regarding the GAT Academic testing for TE students where false negatives due to their learning characteristics acts as a barrier to their entry. Dimaano (2011) also mentions that the evaluation of achievement is susceptible to training therefore this can make a less gifted candidate seem more qualified than a more gifted but lesser trained applicant.

Dimaano (2011) believes that the change of terminology from “gifted program” for the intellectually gifted to “academic talent development” limits the concept of intellectual giftedness. Therefore, going to a meritocracy based system would exclude a chunk of the gifted population who would most benefit from gifted programs and create an even greater inequity (Dimaano, 2011). Dimaano (2011) points out that Gagné is not entirely adverse to using potential as a primary factor of admission to an Academic Talent Development program as he cites in his article early schooling in Quebec where learners are assessed for intellectual precocity to enter kindergarten or first grade ahead of their age peers. At the University of California admissions to theatre and music auditions and recruitment in sports is open to “anyone willing to take the risk of failure, knowing and accepting the standards by which they will be judged”, but they will also invite anyone it deems worthy by the same standards, thus shielding these examples of selection for gifted programs from charges of inequity, as it is more open and not based on meritocracy alone (Dimaano, 2011, p. 42). As a solution to the problems of using a meritocratic system, Dimaano (2011) proposed that a variety of measures and pathways for admissions be used.

Dracup (2011), a retired policy maker from England who played a significant part in the development of the national policy on gifted and talent, questions Gagné’s (2011a) assertion when concentrating on minority ethnic representation in American gifted programmes, that underrepresentation in talent development programs extends to any country where the equity issue has been brought up. Dracup (2011) asserts that England until recent times saw the equity issue in terms of ethnic minority underachievement but now many minority populations have ‘narrowed the gap’, but the poor white working class have not. He believes that identification for gifted and talented students should be about spotting ability rather than merely confirming it (Dracup, 2011).

Dracup (2011) continues, that he doubts that Gagné could substantiate his claim that all concerned parties in America are convinced that ethnic imbalances are entirely fair representations of performance differences, as this is not the case in England where
equity issues are raised whenever access to a relatively scarce educational opportunity or support service is under scrutiny. Dracup (2011) then goes on to explore the degree of underrepresentation in America using more recent statistical evidence, which is pinpointed by Perez (2010) a U.S. Government representative, that African Americans comprise 17% of the student population yet only 4% of students enrolled in gifted classes. In England the data (Department for Education, United Kingdom, 2010) shows that socio-economically disadvantaged learners and some ethnic minorities are underrepresented, and while Dracup (2011) believes that the gifted and talented population is gradually becoming more representative, he also believes it is not moving quickly enough. He believes that England is doing much better in terms of representation of ethnic minority populations or lower socio-economic groups when compared to America even though their efforts to address underrepresentation started much more recently (Dracup, 2011).

Dracup (2011) contends that Gagné’s approach to identification seems unnecessarily restricted to measures of IQ and achievement and while these maybe the most common, are not necessarily the best. He goes on to state that when developing England’s national gifted and talented programme, they were clear that they wanted to focus on ability rather than achievement as they accept that attainment measures were useful, but irrelevant for those whose high potential was not yet translated into high performance against the measures set (Dracup, 2011). They adopted a multi-faceted approach encouraging schools to consider the full range of qualitative and quantitative evidence before reaching a judgement and advocated identification through provision as part of this, as some learners may never have had the opportunity to demonstrate some abilities and suggested identification should be an on-going process rather than a one-off selection (Dracup, 2011). Schools were asked to start from the premise that ability, not achievement is evenly distributed within the population, so that the gifted and talented population broadly reflects the gender, ethnic and socio-economic balance of their intake, which puts more focus on the “hard-to-spot underachievers” (Dracup, 2011, p. 48). Dracup (2011) concludes that policy-makers should be eclectic in their taste as no one theorist has the perfect solution and that by limiting our gifted and talent candidates to those who demonstrate good chances of future success, we are stating that only selected high achievers are capable of high achievement. While Dracup (2011) believes that Gagné may have been intentionally provocative in order to prompt discussion and debate; in relation to this study, TE students fit into this debate of minority representation.
Fiebig (2011), an Associate Professor of Psychology at Loyola University Chicago, believed that Gagné’s proposal goes beyond an incremental improvement of contemporary assessment and selection methods and lays out a new vision for gifted education. Gagné proposes that the program would start in kindergarten or first grade for children who manifest emerging talent and by focusing on students’ natural abilities in a meritocratic context, a more dynamic interaction between curricula, academic excellence goals and the active growth and enlargement of talent would take place (Fiebig, 2011). The similarities between Gagné’s model and some European educational systems, in particular, the German system, are drawn where only high achievers have access to Gymnasium which is the highest educational branch preparing students for entering university (Fiebig, 2011).

Harder (2011), from the German Institute of Psychology and Education, contends that applying the same meritocratic selection principles to gifted programs as used in higher education and in sports offers no solution to the inequity issue as the examples that Gagné used comprised (young) adults whereas we are discussing children who depend heavily on their environment to provide them with good instruction and learning possibilities unlike adults who are self-responsible. Therefore, the ‘silence’ that Gagné points out surrounding these practices could be largely explained in the context of adults having a voice, being responsible for themselves and able to self-advocate whereas children do not have the same power to speak out and effect change. Therefore educators, need to act in the best interests of children in general, not some children.

Wellisch and Brown (2011), from Macquarie University in Australia, discuss how Gagné (1985, p. 105) included underachievers within his original model and yet twenty-five years on, he has reversed his position on underachievers. They assert that the real equity issue is that academic talent development is only for high achievers and that there is not an alternative pathway for underachievers (Wellisch & Brown, 2011). Focusing on the limited assessment criterion of performance excludes many who may be gifted but have no current capacity to achieve (Wellisch & Brown, 2011).

In response to the thirty-two articles, Gagné constructed a rejoinder to his colleagues and the following most closely relate to the issues of this study. Gagné (2011b, p. 31) clarifies the equity issue for his colleagues:
1. Advocates for some U.S. ethnic (and/or SES groups) frequently complain about significant inequitable under-representation in typical gifted programs, which they attribute to inequitable selection procedures. This is how the expression *equity issue* is specifically defined here.

In Gagné’s (2011b, p. 137) explanation of ex-ante inequalities:

unequal opportunities takes many forms that can be grouped into two main categories: (a) inequalities that ensue from selection procedures (e.g., the equity issued defined in #1, inappropriate instruments or criteria, improper definitions), and (b) inequalities that precede the selection procedure itself, and contribute directly to the etiology of ethnic or SES disproportionate representations in educational situations (e.g. familial upbringing, income level, parental educational values).

Gagné (2011b) then goes on to clarify and summarise issues from his article and those that have the most relevance for this study have been chosen.

Procedural inequalities (EP) - Candidates for educational or occupational situations usually are more numerous than places and forces the adoption of selection procedures, and good selection procedures always aim to identify candidates most apt to succeed (Gagné, 2011b). Gagné (2011b) likens this to the talent development programs where to achieve that goal program coordinators try to choose instruments that offer the best predictive power with regard to excellence outcomes. Therefore, an effective selection procedure depends on clear expected outcomes and psychometrically valid predictors of these outcomes (Gagné, 2011b). Gagné (2011b) states that the first situation – clear expected outcomes, is the focus of his equity issue discussed in the 2011 article. He goes on to state that in most talent development situations the goals talentees seek are clear, to be in at least the top 10% of excellence in a chosen field as defined in the DMGT, but the goals of most typical gifted programs in elementary and middle schools are not clear (Gagné, 2011b). Gagné’s (2011a) focus is on regular classroom teachers or special teachers in pull-out programs, not selective schools as in this study, but states that the type of enrichment adopted rarely includes any enrichment in density (curriculum compacting) of the regular daily curriculum. Consequently opponents to the exclusive entry of intellectually gifted and talented students (IGAT) are correct when they question whether you need an IGAT profile to perform in and benefit from these type of gifted programs which leaves the door open to accusations of inequity based on the “doubtful relevance of the two most common predictors, IQ scores and achievement measures, used to identify participants for these programs” (Gagné, 2011b, p. 138).
Predictor-Based Inequity - Gagné (2011b) believes that shortly after entering a systematic talent development program, talentees begin to manifest performance behaviours that will progressively evolve over the months and years ahead and that this performance growth will tell more about the future chances of talentees to attain progressively higher levels of talent than any aptitude test battery. Gagné (2011b) maintains that if you want to predict which students will be the best achievers in Year 5, you should look at their Year 4 academic performance and even though this is far from perfect as numerous factors can intervene during a school or over a few years, all in all, “nothing comes close to current or past high achievement as a predictor of future excellence” (Gagné 2011a, p. 138). Talent results from the complex interaction between the four causal components – gifts, developmental process, intrapersonal and environmental catalysts and any effect associated with one of them including sub-components or facet-level effects will directly influence performance (Gagne, 2011b). Therefore, good measures of performance will reflect with strong reliability, these causal impacts such as anxiety, accidents, disease, personal trauma (Gagné, 2011b). While Gagné (2011a) listed other causal impacts such as change of interest, will power, parental or teacher support, the TE student can evidence many of these causal impacts as a result of their disability or a comorbidity with their disability, therefore lessening their chance of high performance but not eliminating it totally. Again, in the context of this study, is it appropriate that knowingly the GAT Academic testing criteria will more than likely exclude many students with disabilities? This harks back to the moral and equity issue that Gagné is endeavouring to address and clarify, which still seems to allude to the fact that academic talent development is meant for high performing students past, present and future.

Gagné (2011b, p. 143) discusses correcting inequity and uses VanTassel-Baska’s (2011, p. 107) assertion that “Schools should try to make up for the inequities of birth, of poverty, and of educational disadvantage to the extent that they can” and questions whether the “should try” means that they are not really doing it, which Gagné believes confirms his “own judgement that ‘making up’ for these deeply rooted sources of inequalities represents an extremely difficult challenge, especially at the local level”. Gagné (2011b, p. 145) finally concludes in regards to underachievers, that whether or not they are from minority groups they “need a special alternative pathway, distinct from the highly challenging course offered in the academic talent development programs. I will leave to experts the task of engineering that pathway”. Gagné (2011b) believes that underachievers require help to overcome their unequal opportunities and bring their achievement up to the level of their gifted potential. He states that he would
never ‘dismiss’ a sub-group that was in the DMGT from the very beginning (Gagné, 1985, p. 108) and yet raising our awareness of the differentiation between giftedness and talent and a clear definition of gifted underachievement being: intellectual giftedness without academic talent, then finally concluding that underachievers need a special alternative pathway and are outside of ATD, must then put the onus back onto the education system to establish a pathway. What Gagné (2011b) is suggesting is perfectly logical, but in reality who will help the TE students overcome their unequal opportunities through an alternative pathway rather than the GAT Academic programs? The DMGT is a talent development model/theory (Gagné, 2011b), therefore developing the talent of the TE student that can only be met by the provision of a special or modified curriculum, presumably in Western Australia’s GAT Academic programs, is a realistic and appropriate goal.

Summary

The underrepresentation of minority groups in gifted programs brings to the fore the same issues experienced by TE students. The heated debate brought upon by Gagné’s 2011 article highlights there is much concern around the world that culturally and linguistically diverse gifted students are coming up against barriers to their inclusion in gifted programs. Underrepresentation of minority groups in gifted programs despite greater representation in the general population highlights their precarious position for inclusion in these programs. As Valdes and Figueroa (1994) pointed out, if different groups have different group norms on intelligence tests, then those subgroup norms should be considered when making decisions regarding placement. Balogh (2011) goes on to further reinforce that while identification procedures for gifted programs remain the same, false negatives will eliminate high potential, late-blooming or underachieving gifted students from entry. Limiting our gifted and talented candidates to those who demonstrate good chances of future success sends the message that only high achievers are capable of high achievement (Dracup, 2011). These issues all relate to the TE student and the GAT Academic programs, where only highly achieving students are selected which will exclude many gifted children with promise and potential (Wellisch & Brown, 2011) and presumes that the selection process has the predictive power to ensure that underachievement or underperformance will not occur.
2.10. Gifted Aboriginal Australians

There is a limited amount of Aboriginal empirical research in the field of gifted and talent, which highlighted similar issues experienced by gifted minority groups in America. In 2001, it was identified that Aboriginal Australians were not well represented in the gifted and talent cohorts and tend to be “absent from program [sic] as a proportion of the population” (Education Department of Western Australia, 2001, p. 3). Particular populations are deemed at risk of underachievement and amongst those acknowledged to be at risk are Aboriginal students (Ritchie & Edwards, 1996) and gifted students (Rimm, 1997, 1999). Therefore, gifted Aboriginal students are a “‘high risk’ group because their cultural and intellectual characteristics are generally not well accommodated in our school system” (Cronin & Diezmann, 2002, p. 12). Cronin and Diezmann (2002) contend that minority groups can be disadvantaged in mainstream processes that seek to identify gifted students and as a result there is a disparity in the participation of minority students in gifted programs. This is confirmed by Chaffey (2011) who states that Aboriginal students are grossly underrepresented in gifted programs in Australia which has not been helped by over thirty years of sporadic research that “has attempted to address the underrepresentation of Aboriginal students in gifted programs” (Thraves & Bannister-Tyrrel, 2017, p. 18).

Joseph and Ford (2006) in their discussion of gifted students from culturally and linguistically diverse (CALD) backgrounds maintain that these students should not be penalised for their CALD differences by being denied access to gifted programs. The greater the difference between an individual’s cultural or linguistic background and the norm group’s background, the more likely testing will measure lower performance as a function of that experienced difference as opposed to this being due to lower ability (Flanagan & Ortiz, 2001). A very similar situation to many Aboriginal gifted students and the TE.

Cronin and Diezmann (2002) carried out two case studies that presented an insight into ways teachers can support gifted Aboriginal students. They concluded that gifted Aboriginal students have the potential to contribute to society and achieve personal satisfaction, but may also require considerable support and guidance to realise this potential which will necessitate the development of culturally sensitive identification of and response to giftedness, including a culturally sensitive home-school relationship (Cronin & Diezmann, 2002).
Garvis (2006, p. 42) maintains that based on the United Nations Educational, Scientific and Cultural Organisation's (UNESCO, 2000) "Education for All goals, appropriate programs need to be in place for all children, especially gifted Aboriginal students therefore all educational institutions in Australia have an obligation to provide involvement and commitment opportunities for all gifted and talented Aboriginal students." Aboriginal and Torres Strait Islander children comprised 4.9% of the total child population in the age groups five years to nine and also ten years to fourteen in 2011 (Australian Bureau of Statistics, 2009), therefore a similar percentage of the gifted population should reflect the prevalence of these Aboriginal students in the GAT Academic programs.

Chaffey (2011) asserts that gifted Aboriginal children have been grossly under-represented in programs for the gifted (Braggett, 1985; Chaffey, 2002; Taylor, 1998) and that underachievement in the gifted cohort is far greater than the rest of the Aboriginal population, a trend that is also reflected in a sample of Canadian Aboriginal children (Chaffey, McCluskey, & Halliwell, 2005). Chaffey (2008) poses the question, should academically able Aboriginal students 'act white' and risk alienation from their cultural peers or retain peer acceptance and shun academic excellence (Colangelo, 2002; Ogbu, 1994) and responds that for most Aboriginal children the answer is simply that community is the most powerful force in their lives.

To provide appropriate gifted education programs for Aboriginal children two issues need addressing – identification and provision (Chaffey, 2008). The identification method must assess learning potential rather than current achievement levels as many of the children are academic underachievers (Chaffey, 2002; Chaffey, Bailey, & Vine, 2003) and provision must overcome the raft of socio-emotional barriers that can act as a talent mask (Chaffey, 2008). Chaffey (2008) holds the view that a deficit model has dominated Aboriginal education with an emphasis on remedial approaches with little focus on children with high learning potential. The issue of teacher expectations, role modelling and community are raised as factors that need addressing to reverse underachievement with Chaffey (2008, p. 39) cautioning that the "academic underachievement and 'invisible' underachiever status of many academically gifted Aboriginal children means successful inclusion in traditional gifted education provision is unlikely". This closely aligns with the deficit model and status of the TE.

Bousnakis, Burns, Donnan, Hopper, Mugavero, and Rogers (2011) assert that while increasingly numbers of Aboriginal students are achieving tertiary academic success,
statistics show that Aboriginal students as a group, achieve at rates far below that of other students (Grigg, 2004) and gifted underachieving Aboriginal students represent a high proportion of this population and are also disproportionally underrepresented in school programs for the gifted (Braggett, 1985; Chaffey, 2008). Aboriginal students may not be identified when standardised tests or intelligence tests are the main forms of identification that can then result in their test performance being artificially lowered (Bousnakis et al., 2011) similar to the TE. It is suggested by Tzuriel and Feuerstein (cited in Chaffey, Bailey, & Vine, 1992) that this is a result of socio-emotional issues and inefficient metacognition, rather than lower cognitive potential. Therefore, Aboriginal students are quite likely not to be included in gifted enrichment programs (Kaniel & Reichenberg, 1990). Borland and Wright (1994) maintain that multiple forms of objective and subjective tools cast a wide net to find special abilities and then are less likely to miss the atypical gifted student. Bousnakis et al. (2011) in the discussion of their Achievement Integrated Model (AIM) as a holistic approach to cater for the needs of all underachieving students, state that profiling is important as underachievement may be caused by a number of factors such as personality traits, family and home characteristics, school and curriculum related variables, a mismatch between students’ learning style and classroom demands and teacher expectations (Kolb & Jussim, 1994).

**Summary**

Just as culturally and linguistically diverse groups across the world are underrepresented in gifted problems due to issues of identification and provision, so too are Aboriginal Australian students who are an underrepresented minority group within gifted programs and face similar barriers to entry to gifted programs as the TE.

**2.11. Populations of Gifted Students who have Autism, Cerebral Palsy, Vision or Hearing impairment**

Case studies have been undertaken of students who experience extreme deficiencies combined with the potential for extreme proficiency (Cooper, Ness, & Smith, 2004). Areas of research have focused on case studies that identify specific characteristics that indicate the cognitive abilities and the lived experiences of gifted students who have handicapping conditions such as cerebral palsy (Willard-Holt, 1998), profound hearing loss (Ford, 1998; Konza & Moroney, 1990; Vialle & Paterson, 1998; Willard-Holt, 1998), vision impairment (Besnoy, Manning, & Karnes, 2005) and Autism (Gupta
& Maitra, 2002) who all form minority groups within mainstream education. Gallagher (2015, p. 9) contends that children with hearing and vision impairments “often are educated in a disability setting and their special talents overlooked”.

2.11.1. Autism Spectrum Disorder

Students with Autism Spectrum Disorder (ASD) typically display general deficits in higher order thinking, problem-solving skills as well as stronger rote memory skills (Meyer, 2001). They also have lower processing speed scores than verbal, non-verbal and working memory (Calhoun & Mayes, 2005; Mayes & Calhoun, 2007), executive functioning, and abstract reasoning scores (Ozonoff & Griffith, 2000). Students with Autism who had an average to above average IQ were found to have verbal and non-verbal abilities better than working memory and processing speed abilities (Mayes & Calhoun, 2003). Additionally, students with ASD have social problems that include difficulty using appropriate social skills, generating solutions to social problems, and interpreting social cues (Stormont, Stebbins, & Holiday, 2001). Students with Asperger’s syndrome or nonverbal learning disabilities cannot read nonverbal social cues and therefore need instruction in social thinking that focuses on understanding how to interact with others, using appropriate body language, gestures, facial expressions, physical proximity and tone, pitch and loudness of voice (Nielsen & Higgins, 2005). Consequently, TE students need help to learn how to think about others and to anticipate what people think about them (Winner, 2002). All these characteristics make the student with Autism, likely to have an irregular learning profile that places them in a vulnerable position for entry to a gifted program and being provided with support in the academic environment.

The 2012 Australian Bureau of Statistics (ABS) showed an estimated 115,400 Australians (0.5%) had Autism. This was a 79% increase on the 64,400 people estimated to have the condition in 2009. Sattler and Hogue (2006) also confirm that the prevalence rate of Autism Spectrum Disorders has risen with Klinger, O’Keeley, Mussey, Goldstein, and DeVries (2012) estimating that the prevalence of high-functioning Autism may be between 40 and 60% of the population.

In 2011, Estes, Rivera, Bryan, Cali, and Dawson found that in 30 children with high functioning Autism, 90% had an intellectual and achievement discrepancy and that social skills may positively influence academic achievement. Foley Nicpon, Assouline, and Stinson (2012) reviewed the cognitive and academic profiles of individuals with
very high cognitive ability (IQ120+) and ASD that gave a fuller understanding of the broad cognitive range of individuals with ASD, addressing their cognitive strengths and weaknesses as they relate to the different ASD diagnoses (Assouline, Foley Nicpon, & Dockery, 2012). Assouline et al. (2012) then went on to examine the cognitive and educational variables that are related to achievement in gifted students with ASD.

Research into the cognitive and educational variables related to achievement in gifted students with ASD as part of the TE population, is important when considering the barriers to their inclusion in the GAT Academic programs due to an achievement discrepancy and/or social difficulty. Assouline, Foley Nicpon, and Dockery (2012) contend from their case studies that the presence and degree of social difficulties varies amongst gifted students and have identified and represented three types of gifted students that evidence these varying degrees. Type A represents gifted children who have high cognitive ability and adequate to well-developed social skills therefore will only need minimal intervention and counselling and therefore evidence a single exceptionality (Assouline et al., 2012). Type B has high cognitive ability but also exhibits some behaviours that may be regarded as indicative of social-emotional difficulty and which could be attributed to profound giftedness or a disability such as ASD but responds to adjustments to the learning environment in a way which precludes ASD (Assouline et al., 2012). Type C has high cognitive ability and severe social impairments, which unlike Type B does not respond to adjustments to the learning environment which reflects the severity of the social impairment and is internal to the student, not a product of their environment and represents a disability (Assouline et al., 2012). Consequently, the variability of social difficulties across the gifted cohort creates confusion for educators as to the presence of a disability or evidence of profound giftedness. Foley Nicpon, Assouline, Amend, and Schuler (2010) and Huber (2007) found multiple cases of missed diagnoses of Autism as well as giftedness, where many students with very high IQs were found to have social deficits as a result of ASD rather than the consequence of their high cognitive abilities.

Similarly to other disability types of the TE, students with ASD should be viewed as gifted first and disabled second as is confirmed by Barton and Starnes (1989, p. 29) who maintain “knowledge should be presented at the level of cognitive ability, not skills. . . . a learning environment is provided that incorporates principles of gifted education with the most effective instructional techniques for the particular area of disability”. Like other TE students, a focus on remediating weaknesses while ignoring the development of strengths can result in poor academic outcomes, depression and stress (Carrington
& Graham, 2001; Humphrey & Lewis, 2008). Hence, ASD does not disqualify the student from being “deserving, and indeed needing, a differentiated curriculum appropriate to their gifts” (Norris & Dixon, 2011, p. 43).

• 2.11.2. Vision Impairment

Johnsen and Corn (1989) believe that children with visual impairments may be one of the most underserved student populations in our educational system. The American Foundation for the Blind reported that 94,000 students with visual impairments were served in special education programs in America with Friedrich’s (2001) estimating that 5% of the total population of blind and visually impaired students were gifted. In Australia it is estimated that visual impairment, including blindness, in Australia is around 1% of the population (Australian Bureau of Statistics, 2002).

Corn (1986) contends that giftedness amongst these students generally goes unidentified which can be attributed to teachers not being knowledgeable of their characteristic traits (Besnoy, Manning, & Karnes, 2005). One of their basic traits is the ability to learn facts quickly but due to the absence of visual experiences, they may be slower in fully understanding abstract concepts and their learning may initially seem somewhat superficial (Little, 2001). As they rely heavily on processing auditory information (Hull & Mason, 1995) children with visual impairments may possess superior concentration skills which is observed as great persistence and commitment to tasks that interest them (Besnoy, Manning, & Karnes, 2005). Additionally they may exhibit a good memory for sounds and sensitivity to changing tones in musical notes (Friedrichs, 2001).

Hammill, Crandell, and Colarusso (1970) adapted the Slosson Intelligence Test (Slosson, 1963) for use with students who were blind and visually impaired by omitting eight questions that required a visual stimulus. They found high correlations between the Slosson Intelligence Test ([SIT] Slosson, 1963), the WISC-IV (Wechsler, 2003) and Hayes-Binet (Hayes, 1950) causing them to conclude that the adoptions to the SIT were appropriate for children with visual impairments that did not affect the test’s validity or reliability (Besnoy, Manning, & Karnes, 2005). Unlike Hammill et al.’s (1970) study that was focused on the validity of the assessment tool for students with a visual impairment, Besnoy, Manning, and Karnes’ 2005 study sought to screen students in a specialised school for students with visual impairments for intellectual giftedness by using a brief and easy-to-administer assessment of cognitive ability. The Slosson
Intelligence Test – Revised, Third Edition ([SIT-R3] Slosson, 2002) was used to screen visually impaired students for potential giftedness and teachers in the specialised school completed the Scales for Rating the Behavioral Characteristics of Superior Students-Revised ([SRBCSS-R21] Renzulli, Rizza, & Smith, 2002) for each student participant. While the small sample cannot be generalised to all students with visual impairments, the results highlighted that lack of visual input in early childhood is difficult to overcome without appropriate interventions with possible parity between chronological and mental age on the SIT-R3 indicating giftedness amongst this population (Besnoy, Manning, & Karnes, 2005).

Besnoy, Manning, and Karnes (2005) contend that their study supports comparing students with visual impairments to their visually impaired peers rather than to the general student population when screening for giftedness. This issue of comparing visually impaired students to their visually impaired peers for identification of giftedness, is one that aligns with the TE research where students who evidence a disability, have very different learning characteristics to their peers, therefore the chance of them being able to compare favourably to those without a disability is quite small.

• 2.11.3. Cerebral Palsy

Cooper, Ness, and Smith (2004) not unlike numerous other researchers highlight the necessity to undertake research into identification of TE students and curricular practice so that the gap between disabilities and giftedness is bridged, with identification being the major hurdle for these students. Konza and Moroney (1990) documented the experiences of gifted students such as Luke who was eventually identified as gifted after coming to the attention of teachers and professionals due to his extreme behaviours, Sarah with severe athetoid cerebral palsy which resulted in involuntary movements and Amanda who had a profound hearing impairment. Similarly, to Cooper et al. (2004), Konza and Moroney (1990) also found that identification procedures needed to be broadened with parents playing an important role as an advocate and that knowledgeable teachers are vital for the strengths of the child to be developed given that these may be hidden by enormous. Further research on a child with cerebral palsy who was also gifted was undertaken by Willard-Holt and reported in three papers (1993, 1994, 1998) and by Eade and Merrotsey in 2013.
Baldwin and Vialle (1999), Whitmore (1980), and Willard-Holt (1994) maintain that the fact that a child has cerebral palsy does not mean that the child is not intelligent, but that their high ability may be overlooked because the hindered motor control is often misinterpreted as retardation (Silverman, 2003). Baldwin and Vialle (1999, p. 175) suggest that “cerebral palsy creates some of the most difficult barriers to the recognition and development of giftedness” with the expression of their cognitive ability hindered or negligible due to their condition which may also limit their ability to produce the quantity or quality of work expected of high achievers (Eade & Merrotsky, 2013). Their intelligent ability may also not be displayed because of lack of opportunity as the student’s educational placement may not be sufficiently stimulating or may not include content conducive to the expression of higher cognitive abilities (Willard-Holt, 1994).

- 2.11.4. Hearing Impairment

Research is very sparse in relation to deafness combined with other factors such as giftedness, with only a few articles, chapters or books during the past 20 years addressing gifted deaf children and many of these are out of print or not available on line (Glidden Prickett, 2009). Despite the sparse research, 10.6% of Australians reported a hearing impairment in 2001 (Australian Bureau of Statistics, 2002) and the Australian Bureau of Statistic’s Survey of Disability, Ageing and Carers (ABS, 2003) determined that two in every 1,000 children have a hearing loss.

Research by Maker (1981) highlighted that for the purpose of identifying a child who has a hearing impairment, as one who needs special provisions because of their talents; they should be compared to other hearing-impaired children. A child’s lack of hearing will have slowed the development of verbal labels to attach to abstract or concrete concepts causing a slower rate of vocabulary development as the primary means of vocabulary development is reading and listening to others (Maker, 1981). Hence, expressions of ability and talent in a school setting can be impaired by the difficulty in understanding the nature and requirements of the task, the difficulty in making the required response and a lack of information based on experience that can be used to make a quality response.

The child with a hearing impairment should be considered gifted or talented if the abilities being measured were higher or more developmentally advanced than those of their peers. Maker (1981) contends that the ability patterns on individual subtests and parts of tests, rather than one score which is an average of the individual ones, should
be considered for possible giftedness. The influence of a hearing impairment makes across-the-board superiority highly unlikely (Maker, 1981), which is a similar scenario to the TE student sitting for the GAT Academic testing who must be able to demonstrate across-the-board superiority. Similarly to the TE student who has a visual impairment, the student with a hearing impairment should also be compared to their like peers, otherwise their disability will provide a barrier to entry to gifted programs.

In 1994, Braden carried out a meta-analysis of over 300 studies of IQ and deafness. Braden (cited in Emmorey, 2002) concluded that a normal range of intelligence existed within the population of deaf individuals. Blough, Rittenhouse, and Dancer (1997) studied eleven students in an American school for the deaf and concluded that identification of gifted students by teacher ratings is insufficient. Vialle and Paterson (1996) in Australia discussed gifted deaf individuals’ experiences and proposed developing programs that are culturally sensitive and will provide experiences for the gifted that enhance the child’s identity as a deaf person and identity within the deaf community.

**Summary**

Much of the research on students with disabilities such as visual and hearing impairments, and cerebral palsy are based on case studies of the lived experiences of these children. A focus has emerged on the validity and reliability of identification means to determine whether these students are also gifted. For those children with a vision and hearing impairment, the research clearly identifies that results should be compared to their like peers, not to the general population. This is a continuing problem for children in all categories of disability within the TE population, where their ‘disabled’ achievement level in one or multiple areas is ‘rolled’ into one composite score where it is compared to those who evidence no disability. This process then creates a barrier to entry to gifted programs.

**Chapter Summary**

The founding work carried out in America influenced Australia’s gifted educational practice and policy. However, it was not until 1988 when a national report compiled by the Senate Select Committee was released identifying that most Australian schools did not appear to have made any provision for the gifted that the Commonwealth Government was directed to provide special education strategies for gifted children.
(Wilson, 1996). While Western Australia’s special classes for the gifted started unofficially in 1927, it was not until the establishment of Secondary Specialist Placement Programs (SSPP) that other Western Australian schools began to develop their own approaches to the gifted and talented. In the 1990s the SSPP academic extension programs were renamed Academic Talent Programs (ATP) and more recently GAT Academic programs for the top 2.5% of applicants (DET, 2014), and adopting Gagné’s definition of gifted and talent.

In Australia, there is much confusion as to the meaning of the terms learning difficulty and learning disability with many believing the two to be interchangeable. With the DoE not providing funding to schools for students with learning disabilities these students remain at risk due to lack of resourcing to provide for their unique learning characteristics. Australia is making slow progress to raise the profile of TE students’ existence and needs but little research on TE students has been carried out in Western Australia. With no mandated explicit definition for TE students in Australia, this places them in a position of invisibility and marginalisation.

TE student prevalence is widely varying depending on setting and location, but the invisibility of most TE students in the Western Australia education system due to systemic processes and exclusions leaves prevalence rates unknown. Therefore, it is important to investigate the prevalence of these purported underrepresented minority students in Western Australia.

TE students will have great strengths but also great weaknesses therefore many cannot break through the barrier put up by the GAT Academic Test for entry and are more susceptible to being excluded from a GAT Academic program due to their unique learning characteristics. This mirrors the experience of other minority groups such as culturally and linguistically diverse groups and Aboriginal Australians in gifted programs and places them in a precarious position for inclusion in GAT Academic programs.

This literature review highlighted a number of factors and barriers that originate from historical and more recent practices, that intertwine to influence the prevalence of TE students in the Western Australian GAT Academic programs. With little research in this area in Western Australia the necessity for this study is crucial if TE underrepresentation is to be addressed. In Chapter 3 the theoretical underpinnings and context for this research are explored.
CHAPTER THREE

3.0. THEORETICAL FRAMEWORK

Gagné’s Differentiated Model of Gifted and Talented (DMGT), in particular, the evolution of his understanding and definition of what it is to be gifted and talented, theoretically underpins this study. An examination of Gagné’s model in relation to the DoE’s adherence to the principles of the DMGT model and its definitions is needed to provide a basis for understanding the issues surrounding twice exceptional (TE) student participation and prevalence in the Gifted and Talented (GAT) Academic programs described in this study. This forms the major part of the chapter and relates the theoretical to the practical context as implemented by the Department of Education. This chapter concludes with examples that highlight the lack of a consistent application over time and hence disconnect between Gagné’s DMGT and assumptions of the DoE with regard to inclusion of TE students in the GAT Academic programs. This disconnect arises from, and is based on the gifted and talented documentation and identification process.

Currently in Western Australia, the Department of Education’s (DoE) teachers are guided by system wide documents that espouse an approach to gifted education founded on Françoys Gagné’s DMGT model and definitions of giftedness and talent. Schools are not prevented, however, from using other models and definitions, but the predominant implemented theoretical basis of gifted education in Western Australia remains that of Françoys Gagné’s (Bailey, 2001; Cramer, 2012) and is the identified theoretical basis of the GAT programs. The differences between Gagné’s theoretical position, and the DoE’s position in identifying gifted and talented students, both using the same model and definitions, are significant and have direct implications for this study in relation to TE students participation in the GAT Academic programs. These are discussed below.

Data were collected for the research reported here and included prevalence numbers of TE and non-TE students over a six year period, disability prevalence collected by the DoE and SCSA, perceptions and knowledge of coordinators of the GAT Academic programs and the perceptions of parents of TE students of the GAT Academic programs.
3.1. Introduction

Many scholars such as Terman (1925a, 1925b) and Hollingworth (1942) pioneered work that focused on exceptional children, and others concentrated on distinguishing between real world and academic giftedness (Renzulli, 1986), the concept of multiple intelligences as a model (Gardner, 1983), types of gifted abilities (Sternberg, 1985) and Gagné’s (1985, 2005, 2008, 2013) models of a Differentiated Model of Talent Development.

American theorists, researchers and practitioners continually grapple with, and debate, the plethora of definitions of giftedness, with Western Australia’s Department of Education being cognisant of many of these definitions. Historically, international definitions ranged from Terman’s (1925a, 1925b) conservative one, of the top one percent of general intellectual ability, with a threshold of IQ 135, to the liberal concept developed by Witty which is based on consistently remarkable performance (Witty, 1958). Sternberg and Davidson (1986) published a collection of definitions in which 17 concepts of giftedness were discussed by the researchers who proposed them (Robinson & Clinkenbeard, 1998). The range was diverse with some concentrating on the psychological aspects of intellectual giftedness (Sternberg, 1986) while others included the social context as the development of giftedness is culturally fostered in some domains, but not recognised in others (Csikszentmihalyi & Robinson, 1986; Tannenbaum, 1986). Feldhusen (1986) included general intellectual ability and achievement motivation in his conceptualisation, while Jackson and Butterfield (1986) concentrated on variables that contribute to superior cognitive performance (Robinson & Clinkenbeard, 1998). Renzulli proposed a three-ring definition in which above average intellectual ability, creativity and task commitment interact to produce giftedness with a threshold of the top 20% creating a talent pool (Renzulli, 1978, 1986). A review of the definitions of giftedness and talent by Feldhusen and Jarwan (1993) noted that they fell into six categories: psychometric, trait, social needs, educationally oriented, special talent and multidimensional definitions.

While giftedness and talent are often used interchangeably, Gagné (1985, 1991, 2011, 2012) has differentiated between the two concepts by defining giftedness as above-average competence in human ability and talent as above-average performance in a particular field (Robinson & Clinkenbeard, 1998). Therefore, while Australia has been influenced by many of the above theorists, it was Gagné’s definition that has been adopted by the Western Australian DoE to underpin their gifted policy.
Alan Carpenter, the then Minister for Education, in his submission to the Senate Inquiry into the Education of Gifted and Talented Students (Commonwealth of Australia, 2001) explained that Gagné’s model was chosen after identifying the importance of differentiating between potential and performance:

Gifted “and talented education is rich in academic research that is used to guide and influence processes of identification, models of program provision and monitoring methodology. In 1996 the Education Department of Western Australia used this research to inform the development of its current policy and the implementation of its programs.

Françoys Gagné’s model is used in the Department's Policy Statement in regard to identification and provision. It is from this model that the terms “giftedness” and “talented” are defined. The distinction between ‘gifted’ and ‘talented’ is articulated in the Department’s Policy, Teaching TAGS Kits and on its website: (Education Department of Western Australia, 2001, p. 1)

The distinction between ‘potential’ and ‘performance’ is of significance to all students, and gifted and talented students in particular. The Plan for Government Schools states “Our Purpose as being “to ensure that all government school student develop the knowledge, skills and confidence to achieve their individual potential and contribute to society”. EDWA’s definitions and measurement of giftedness and talent are based in the importance of the distinction between ‘potential’ and ‘performance’ (Education Department of Western Australia, 2001a, p. 2).

This separation of the terms by the DoE clearly signalled that giftedness and talent are two different attributes: outstanding ability and outstanding performance. Gagné’s gifted and talented model was included as an Appendix in the Policy and Guidelines of Gifted and Talented Students (DET, 2004, 2010b & 2011), which are noted as being not mandated. Therefore, while it is not explicitly stated that the DoE follows Gagné’s model, it is implicitly implied by the inclusion of the model in the Appendix. Alan Carpenter then State Minister for Education in 2001 further reinforced this by stating in his submission to the Senate Inquiry into the education of gifted and talented children that “Françoys Gagné’s model is used in the Department’s Policy Statement in regard to identification and provision. It is from this model that the terms ‘giftedness’ and ‘talented’ are defined. The distinction between ‘gifted’ and ‘talented’ is articulated in the Department’s Policy, Teaching: Talented and Gifted Students (TAGS) Kits and on its website” (EDWA, 2001a, p. 2).

Gagné’s Differentiated Model of Giftedness and Talent (DMGT) (2000) provides a foundation upon which to investigate the prevalence of TE students in the GAT Academic programs. In particular the impact of the DoE’s interpretation of the DMGT and Gagné’s gifted and talented definitions that impedes the identification of many TE
candidates for GAT Academic programs is investigated. Identifying barriers to the inclusion of TE students in the GAT Academic programs will generate a conceptual framework for this research that mainly investigates factors that impact on TE students and their participation in the GAT Academic programs. Therefore, it is a beginning position of this research that the definition of giftedness and talent, and identification tools can impact the number of TE students served in these programs.

Assouline, Foley Nicpon, & Doobay (2009) recommend that any identification process for TE students should include comprehensive assessment measures of both the student’s gift and their disability. Reducing the amount of information collected will negatively impact the decision-making process and recommendations. Crepeau-Hobson and Bianco (2011) and Nielsen (2002) additionally recommend that a multidisciplinary team is essential for this decision making process that should use multiple criteria, sources and methods for assessing both giftedness and learning deficits (Volker, Lopata, & Cook-Cottone, 2006) in order for accurate identification to be made, for educational placement and for service decisions. TE students need a comprehensive evaluation that will be sensitive to their intellectual and academic strengths and weaknesses (McCoach, Kehle, Bray, & Siegle, 2001, 2004; Volker, Lopata, & Cook-Cottone, 2006) as well as their culture and language (Rizza & McIntosh, 2001) rather than being ‘blind’ to their learning differences and needs. Hertberg-Davis and Hallahan (2008) contend that who is enrolled or does not enrol mirrors a school and community’s commitment to equity and excellence.

Gagné’s Differentiated Model of Giftedness and Talent (DMGT 2.0)

Gagné was a major inspiration for the Western Australian concept of giftedness that draws the distinction between giftedness and talent. Gagné’s DMGT is a talent development theory anchored on distinct definitions for the two concepts of giftedness and talent (Gagné, 2011). Gagné (2008, p. 1) contends that the existence of the two terms does not necessarily mean two distinct concepts to many scholars, as the terms “gifted and talented” are used as synonyms as in the common expression “the gifted and talented are . . .” which is commonly used in the DoE literature. Understanding the development of outstanding knowledge and skills, and differentiation between potentialities and realisations, promise and fulfilment, permits a much clearer understanding of underachievement - the non-transformation of high natural abilities into outstanding systemically developed skills (Gagné, 2012).
Gagné's DMGT 2.0 evolved from his earlier DMGT (2003). In the DMGT 2.0 Gagné has now reorganised the Natural Abilities (G) domains into two distinct categories – Mental and Physical as well as a division in the physical domain between muscular and motor control facilities. Therefore, a more expanded field of natural abilities has now been included. He has also expanded on the Developmental Process in the DMGT 2.0 explicitly itemising all aspects involved in this process. Intrapersonal Catalysts have now been delineated into two categories – Traits and Goal Management. The Talents – Competencies, have been somewhat expanded to include Games. Chance has now been placed in the background to the model, no longer represented visually, as much of ‘chance’ is outside of our control therefore, has been moved to the background as an acknowledgement of its presence in the transformation of gifts into talents. The DMGT 2.0 is far more explicit than the previous model and consequently offers a more comprehensive view of how all components interact and aid in the Talent Development Process.

While containing similar elements, the DMGT 2.0 expands on and clarifies a complex interrelatedness between giftedness and talent, which is pertinent to this study.

According to Gagné’s DMGT 2.0, “giftedness designates the possession and use of outstanding natural abilities, called aptitudes, in at least one ability domain, to a degree that places a person at least among the top 10 per cent of age peers.” (Gagné, 2012, p. 11). “Talent designates the outstanding mastery of systematically developed abilities, called competencies (knowledge and skills), in at least one field of human activity to a degree that places a person at least among the top 10 per cent of age peers who are or have been active in that field” (Gagné 2012, p. 11). Gagné (2012, p. 11) likens the concepts of giftedness and talent as: “aptitude vs. achievement, potential vs. performance, naturally developed vs. systemically trained, or origin vs. outcome.” Therefore, these differentiated definitions conceive “talent development as the progressive transformation of outstanding natural abilities (gifts) into outstanding knowledge and skills (talents) in a specific occupational field” (Gagné, 2012, p. 11). These natural abilities (gifts) serve as raw materials for the “progressive construction, through the talent development process, of the systematically acquired outstanding knowledge and skills (talent) characteristic of a particular occupational field or sub-field.” (Gagné, 2012, p. 11). The two concepts share the characteristics of referring to human abilities and both target individuals who differ from the norm or average because of outstanding behaviours (Gagné, 2012). Gagné asserts that both definitions concretise the meaning of ‘outstanding’ with precise estimates of prevalence based on
the bell curve distributions “as the DMGT states that gifted and talented individuals occupy the top 10 per cent of any such ability distribution” (Gagné, 2012, p. 57). The choice of 10 per cent places the threshold for both giftedness and talent in the DMGT model at the 90th percentile (Gagné, 2012). This applies to those who are gifted with unrealised talents and also those who are gifted and talented. The DoE’s interpretation that TE students must concurrently demonstrate they are gifted and talented is at the heart of this study.

A detailed examination of Gagné’s DMGT 2.0 (2008), that highlights the components of this model, follows.

The Five Components of Gagné’s DMGT 2.0

- **Gifts**

In Gagné’s DMGT 2.0 model the Natural Abilities (Gifts) domains have been divided into two groups Mental and Physical. In the Mental domain grouping: intellectual (GI), creative (GC), social (GS) and perceptual (GP). These encompass the intellectual abilities needed to speak a foreign language or understand new mathematical concepts, the creative abilities involved in writing a short story or composing a song, the social abilities that children use in their daily interactions with others and the perceptual and physical natural abilities guiding activities in sports, dance or craft (Gagné, 2012). Physical abilities are subdivided into two major groups: muscular (GM) – large physical movements and motor control (GR) representing fine motor control and reflexes (Gagné, 2012).

Natural abilities are not innate as they develop over the whole course of a person’s life, but much more so during the early part of that life (Gagné, 2012). Gifts are manifested more easily and directly in young children because only limited systematic learning activities have begun to transform them into specific talents but can be observed in older children and adults through the ease and speed with which they acquire new knowledge and skills (Gagné, 2012). It is therefore presumed that the easier and faster the learning process the higher the natural abilities (Gagné, 2012) and while there is still disagreement on how to define intelligence there is largely agreement that it reflects the ability to reason, solve problems, think abstractly and acquire knowledge (Gottfredson, 1997, p. 93). Carroll (1997, p. 44) also affirms “that IQ represents the degree to which, and the rate at which, people are able to learn . . . ”. Gagné’s
assertion that abilities develop over the whole course of a person’s life separates the

time frame from only the early part of life. In the context of this study, a disability can
easily become the focus rather than the gift, making recognition of the gift more difficult
by the student as well as by others. Therefore a complex interplay of factors, as listed
below by Gagné, would need to occur, which may take much longer for the TE student,
to have their gift identified.

• **Talent**

Gagné (2012) likens talent to performance, such as talented musicians possessing an
outstanding mastery of their instrument or talented mechanics and electricians who are
among the top 10% in their trade in terms of mastery of their knowledge and skills in
their occupation. Talents are observed in school subjects and are observed more
easily during the training phase such as in achievement tests, competitions and
scholarships (Gagné, 2012). The very nature of TE students evidencing a disability,
may preclude their inclusion in many of these activities, as they are thought least likely
to evidence talent. Gagné (2012) has defined the concept of talent to ensure the
presence of individuals in the top 10%, in almost every human occupation, thus the
inclusion of almost every human occupation in the DMGT 2.0 and games.

• **The Talent Development Process (D)**

Gagné (2012) states that the DMGT addresses and maps the talent development
process from two very distinct perspectives – the sub-components and facets involved
and an operational definition of the process itself that has six defining characteristics.
These sub-components are: Activities (DA), Investment (DI) and Progress (DP).

**Activities (DA)**

The talent development process begins when a child accesses the DAA (Development
Process, Activities – sub component) through identification or selection, to a
systematic, talent-oriented and long-term program of activities (Gagné, 2012, p. 60).
Such a program might look like GAT Academic programs where talent development
activities including specific content and curriculum, are offered within a specific learning
environment or format (Department of Education, 2016; Gagné, 2012). In the context
of this study, the activities and environment of the GAT Academic programs provides
the equitable provision of a curriculum and environment with like-minded intellectual
peers to foster the development of the TE’s talent.
Investment (DI)
The DI sub-component focuses on the intensity of the talent development process in terms of time (DIT), money (DIM) or psychological energy (DIE) (Gagné, 2012). These three usually lead to “longitudinal curves (evolution over weeks, months, years) showing increases or decreases over time, as well as comparison curves between talentees” (Gagné, 2012, p. 60). Gagné (2012, p. 60) maintains that the energy construct is less easy to operationalise as it could be assessed as passion, concentration during practice or determination to achieve.

Progress (DP)
The progress of talentees, from access to the development process to peak performance can be broken down into a series of stages (DPS) – novice, advanced, proficient and expert (Gagné, 2012). The quantitative measurement of pace (DPP) represents talentees’ progress within and between developmental stages with trainers being able to assess pace with both ipsative and normative measures (Gagné, 2012). Thus talentees can measure their ipsative progress so they improve on previous achievements or ‘personal bests’, but usually normative assessments are the rule i.e. comparing talentee progress against average or like peers (Gagné, 2012). Gagné has noted the stages to peak performance as a tool to understand the journey that students make to strive for peak performance to become expert.

Gagné (2012, p. 60) provides a formal definition of this process: “Talent development is the systematic pursuit by talentees, over a significant period of time, of an enriched program of activities aimed at a specific excellence goal” and when it is academic talent development the above generic definition refers to: “the systematic pursuit by talentees, over a significant period of time, of an enriched K-12 curriculum aimed at a specific academic excellence goal”. All too often the TE excellence goal is non-specific or a goal associated with their disability, when in reality TE students’ need, is for a curriculum aimed at an academic excellence goal. This can only come about from their inclusion in the GAT Academic programs where the level of academic excellence matches their intellect.

The six essential characteristics of the talent development process according to Gagné (2012, p. 61) are:

a. an accelerated curriculum/training program;
b. a clear and challenging excellence goal;
c. selective access criteria;

d. systematic and regular learning/training activities;

e. regular performance-based assessment of progress; and

f. personalised-accelerated, off course-pacing.

Gagné (2005) acknowledges that grouping talentees together does not mean that individual differences in learning aptitude have disappeared. Therefore, Gagné’s model acknowledges diverse learning differences will still be evidenced, such as those of the TE, even though grouped together in a gifted program, which is a central theme in this study.

- **Intrapersonal (I) and Environmental (E) Catalysts**

Gagné (2012) refers to intrapersonal and environmental catalysts as the supporting cast and borrows the concept of a catalyst from chemistry as referring metaphorically to a facilitating or hindering role-play by elements indirectly involved. In the context of talent development the main ingredients are the gifted inputs acting as building materials and their talented outcomes (Gagné, 2012). Gagné’s two major types of catalyst are: (a) characteristics that define the talentees themselves – intrapersonal, such as being TE and (b) characteristics that define the environment in which the talent development process will occur, such as the GAT Academic programs (Gagné, 2012).

In the DMGT 2.0 intrapersonal catalysts are now subdivided into two main dimensions – relatively stable physical traits such as racial or ethnic traits, disabilities and chronic illnesses, all relevant to the TE student, and mental traits and more mobile goal-oriented processes. Gagné’s inclusion of the stability of disabilities highlights that disabilities will be life long and therefore forms part of the gifted profile and talent development process, similarly to racial or ethnic traits. Highlighting disability in his model signals that Gagné has an expectation that students with disabilities would be identified and go through this talent development process.

The goal-management dimension includes three sub-components: Awareness (IW), Motivation (IM) and Volition (IV). Being aware of one’s strengths and weaknesses within the Gifts (G) and Intrapersonal (I) components plays a crucial role in the way talentees plan their developmental planning activities (Gagné, 2012). The goal-oriented process may be differentiated according to the goal identification activities (IM) as opposed to goal attainment activities (IV), which equates to what we want to achieve and how we will go about reaching that goal (Gagné, 2012). The motivation (IM) sub-component includes identification and reassessment of an appropriate talent
development goal with talentees examining their values and their needs as well as
determining their interests or passion. Gagné (2012, p. 62) contends that the “loftier
the goal, the more difficulties talentees will encounter in their efforts (IV) to reach it” as
high level long term goals require intense dedication as well as daily acts of willpower
to maintain practice through obstacles, boredom and occasional failure. Therefore,
Gagné astutely points out that for all gifted students the ability to cope with obstacles
and failure is an issue not unique to the TE. This is one of the central arguments of this
study, that being stereotypically gifted does not ensure that students will be able to
cope with obstacles any better than TE students who have already faced them
throughout their lives and will continue to do so.

- **Environmental (E) Catalysts**

In the DMGT 2.0 version Gagné (2012) has moved the catalysts up and partially
behind the intrapersonal catalysts to signify the crucial filtering role that the
Intrapersonal (I) component plays with regard to environmental influences. The narrow
arrow at the left of the model indicates some limited direct Environmental (E) influence
on the developmental process, but the bulk of environmental stimuli have to pass
through the sieve of an individual’s needs, interests or personality traits as they
continually pick and choose which stimuli will deserve their attention (Gagné, 2012).

**Milieu (EM)**

This sub-component can be examined both at a macro (geographic, demographic,
sociological) and micro (size of family, socio-economic status, neighbourhood services)
level (Gagné, 2012). For the TE student, the GAT Academic program would provide a
protective mechanism to cater for their intellectual and curriculum needs amongst like
intellectual peers. Therefore, the milieu of the GAT Academic program forms a very
important part of the talent development model for TE students.

**Individuals (EI)**

The Individuals (EI) sub-component focuses on the psychological influence of
significant people in the talentee’s social environment that includes parents/caregivers,
siblings (as family) and teachers, trainers, peers, mentors, role models (the larger
family) (Gagné, 2012). Therefore, participation in the GAT Academic program provides
a TE student a social network of significant others.
Provisions (EP)
Provisions refers to all forms of talent development services and programs such as
enrichment and administrative provisions paralleling the Developmental Processes
Activities (DA) – content (DAC) and format (DAF) facets of the developmental process
examining provisions from the strict perspective of a talentee’s talent development
course. Enrichment (EPE) refers to specific talent development curricula or
pedagogical strategies that are best exemplified by “enrichment in density” or
“curriculum compacting” (Gagné, 2012, p. 62). Administrative (EPA) provisions are
traditionally subdivided into two main practices – part-time or full time ability grouping
and acceleration (early entrance to school, grade skipping, Advanced Placement)
(Gagné, 2012). Environmental Milieu (EM) is a complex of social influences,
Environmental Individuals (EI) is a complex of psychological influences and
Environmental Provisions (EP) is a complex of educational influences (Gagné, 2012).
In the context of this study, the GAT Academic programs are equipped to provide
provision for TE students through their talent development program as they have the
necessary environment, individuals and educational environmental provisions.

• Chance

Chance represents the degree of control that talentees have over the causal factors
affecting their talent development (Gagné, 2012). Genetic endowment received at
conception cannot be controlled but this does affect our natural abilities (Gifts), our
temperament, as well as other elements of the Intrapersonal component. The chance
factor plays an important role in “sowing the bases of a person’s talent development
possibilities” through family and social environment (Gagné, 2012, p. 63). While in
Gagné’s early DMGT model Chance was represented visually, it now is represented as
a background component that influences other aspects of the DMGT 2.0 and has been
retained due to its popularity as well as Gagné’s attachment to it (Gagné, 2012). For
the TE student, chance plays an important part in their likely participation in the GAT
Academic programs.

Gagné bases the threshold for both giftedness and talent in the DMGT model at the
90th percentile and it allows us to use the metric system to create levels within the
gifted or talented population (Gagné, 2012). He explains that this threshold might
appear unduly generous to some, but is counterbalanced by the levels of giftedness or
talent that are hierarchically structured into five levels – each new level comprising the
top 10% of the preceding level (Gagné, 2012). Therefore, within the top 10% of mildly gifted or talented persons, the four progressively more selective subgroups are respectively labelled moderately (top 1:100), highly (top 1:1,000), exceptionally (top 1:10,000) and extremely or profoundly (top 1:100,000) gifted or talented (Gagné, 2007 & 2012). The DoE in the GAT Academic programs targets students in the top 2.5% of those who sit the GAT Academic Test (DET, 2014), which is two standard deviations above the mean or the equivalent of intellectual quotient (IQ) 130 not Gagné’s broader top 10%.

Gagné (2012) contends that he has only included elements in the DMGT talent development model that have a significant influence on a talentee’s developmental process. Natural abilities or aptitudes act as the ‘raw materials’ or constituent elements of talent and therefore it follows from this relationship that talent necessarily implies the presence of well above average natural abilities (Gagné, 2012). Gagné (2012) explains that in most situations you cannot become talented without first being gifted or close to the top 10% threshold, but the reverse is not true – high natural abilities may simply remain gifts and not be translated into talents as in the phenomenon of academic underachievement amongst intellectually gifted children. As gifts can be considered the raw materials and there is a dynamic relationship between gifts and talents, these generic abilities can be moulded into very distinct skills such as manual dexterity can be moulded into the skills of a pianist, a typist or video game player (Gagné, 2012). Similarly, analytic reasoning can be moulded into the scientific reasoning of a chemist or the strategic planning of an athlete (Gagné, 2012). Consequently, it is important for TE students to have their gifts moulded into talents through the opportunities available through the GAT Academic programs.

In most talent development situations each of the four causal components – Gifts, Intrapersonal, Environmental and the Developmental Process all contribute positively to the emergence of talents and it is presumed that this positive contribution will become more intense and more needed as talentees attempt to reach higher talent goals (Gagné, 2012). These contributions can vary considerably in intensity and continuity from one talentee to another, therefore no two developmental paths look alike (Gagné, 2012).

Talent development is a very complex process where the four causal components modify their interactions over the course of a talentee’s developmental path (Gagné, 2012). Gagné (2012) gives the example of this where parents greatly supervise their
children’s homework in primary school and its virtual disappearance by the time the student reaches secondary school. It is not rare to observe academically talented students in the classroom investing little more in their schooling than their high natural intellectual gifts, hence investing little time in their schooling beyond their presence in the classroom and occasional cramming for examinations (Gagné, 2012). Conversely, a few students in that classroom with barely above average natural intellectual abilities may reach the bottom rung of the metric based system of levels – mildly academically talented due to their intense dedication and effort (IV), long hours of deliberate study (DI) and continuous support from both parents and teachers (EI). The “emergence of talent results forms a complex choreography between the four causal components, a choreography unique to each individual” (Gagné, 2012, p. 66).

3.2. Theory into Practice

The Department of Education's view of and comparison to Gagné's DMGT Model – a Historical Critique

It was Gagné's theoretical framework that was chosen by the DoE to underpin the development of its policy and the implementation of its programs (Education Department of Western Australia, 2001a) due to the importance placed on ensuring that identification processes are inclusive, flexible and continuous, that they utilise information from a variety of sources and assist in identifying a student's intellectual strengths, talents, social and emotional needs. Current data shows that Indigenous Australians and students who have English as a second language or dialect are not well represented in the gifted and talented student cohort (Education Department of Western Australia, 2001a, p. 2) and forms the framework of this research. The concept of giftedness that is adopted has implications for educators in the field, in particular school administrators working to develop programs for gifted students (Miller, 2008). This concept is the “foundation for all subsequent decisions made about issues such as identification, curricula, and programming” and is the compass that guides the program (Miller, 2008, p. 115). It is in this vein that a historical 'snapshot' of the DoE’s gifted and talented policy and guidelines, and GAT information to applicants is framed against Gagné’s DMGT model. It is acknowledged by the DoE that twice exceptional students do exist in the classroom even though not explicitly stated in the Policy and Guidelines for the Education of Gifted and Talented Students (DET, 2004b) by the inclusion of the wording “specific
learning difficulties” (p. 3) under at risk factors in the Rationale, “physical or sensory disability” (p. 5) under Identification and in Appendix C (p. 12) “special needs students”. In the Policy and Guidelines for the Education of Gifted and Talented Students (DET, 2004b, p. 3) the definition used is:

Giftedness refers to a student’s outstanding potential and ability in one or more domains, (e.g. intellectual, artistic or sensorimotor). Talent refers to outstanding performance in one or more fields of human activity. Talent emerges from ability as a consequence of the student’s learning experience (DET, 2004b, p. 3).

It is also stated that:

Schools, districts and central office will plan and implement procedures to identify gifted and talented students and provide the necessary teaching and learning adjustments to ensure that these students achieve optimum educational outcomes. Identification processes and the effectiveness of provision will be monitored to ensure that the educational needs of gifted and talented students are being met (DET, 2004b, p. 2).

In 2010 the Policy Gifted and Talented (DET, 2010a) used the definition:

GIFTED
The possession and use of outstanding natural abilities, called aptitudes, in at least one ability domain.

TALENTED
Outstanding mastery of systematically developed abilities, called competencies (knowledge and skills), in at least one field of human activity. Talent emerges from ability as a consequence of the student’s learning experience (References Committee: The Education of Gifted Children, October 2001 DET, 2010a, p. 5).

In 2011 the Policy and Guidelines for the Education of Gifted and Talented Students was updated, but largely remained the same with few additions other than the definition change. The definition adopted closely aligns with Gagné’s definition for which he has been acknowledged as the author:

Giftedness designates the possession and use of outstanding natural abilities, called aptitudes, in at least one ability domain.

Talent designates the outstanding mastery of systematically developed abilities, called competencies (knowledge and skills), in at least one field of human activity [sic] Talent emerges from ability as a consequence of the student’s learning experience (Gagné, F. See [. . .])
These definitions reflect the distinction between ability and performance and recognize other factors in the development of a person’s giftedness into talents (DoE, 2011, p. 3).

In a six year period, while still using Gagné’s DMGT model the definition of gifted changed from using “potential and ability” to “outstanding natural abilities, called aptitudes” (DET, 2004b & DoE, 2011).

The guidelines also detail under Context and Rationale:

It is important that students with exceptional potential are able to have this fostered during their Early Childhood and Middle Childhood phases to ensure that the development of specific gifts and talents continues as the students make their educational transition into the secondary school. At all levels of schooling there should be ongoing monitoring to ensure that new or emerging talents are discovered (DoE, 2011, p. 3).

This implies that the fostering of exceptional potential (giftedness) occurs in early and middle childhood, meaning ‘fostering’ is then beyond the scope of the secondary GAT Academic programs. In the context of this study, the rewording of Gagné’s (2012) intent that natural abilities are not fixed as they do develop over the whole course of a person’s life, but much more so during the early part of that life, legitimatises the DoE’s intent of continuing on with the development of gifts and talents in the secondary school but not concentrating on turning a gift into a talent. Worrell, Olszewski-Kubilius, and Subotnik (2012, p. 227) maintain that increasing within and outside school opportunities for students who are underrepresented in gifted programs needs to be “available beginning in early childhood but also continuously so as to catch children whose abilities emerge later”. The use of the word “potential” does not now form part of the DoE’s definitions and yet this acknowledgement of exceptional potential alludes to students who are gifted but not necessarily talented which can be the case with TE students.

One of the key principles of the Curriculum Framework is “that of inclusivity, which means ensuring that all groups of students are included and valued” (DET, 2004b, p. 4). In the 2011 policy guidelines (DoE, 2011, p. 5) under Inclusive Education, it is indicated that the “principles of inclusive education present a means of determining the pathways toward an inclusive system of education”. Two principles that are listed to enact inclusivity are: providing access and participation and valuing diversity (DoE, 2011, p. 5). These are two principles that are essential for equitable inclusion in GAT Academic programs. Gagné (2012, p. 60) asserts that academic “talent development is the systematic pursuit by talentees, over a significant period of time, of an enriched
K-12 curriculum aimed at a specific academic excellence goal" which for many TE students can only occur by being a part of a GAT Academic program where the environmental catalysts of milieu and significant individuals can be found. Gagné (2012) has acknowledged that even though talentees may be grouped together this does not mean that individual differences in learning aptitude have disappeared, which speaks to the heart of inclusion where learning differences are understood, catered for and provision is made for these differences.

Identification of gifted and talented students is given prominence in the policy guidelines (DoE, 2011) with principals being urged to “implement strategies to identify all gifted and talented students, particularly those who for various reasons of disadvantage, may not be recognized” (DoE, 2011, p. 8). “Identification processes should be inclusive, to ensure gifted and talented students are not educationally disadvantaged on the basis of racial, cultural or socio-economic background, physical or sensory disability, geographic location or gender” with a reference to see Appendix C for an identification process (DoE, 2011, p. 8). In the Appendix (DoE, 2011, p. 15) under standardised assessments - achievement tests for identifying gifted and talented students in classrooms “Previous learning is required as is a level of reading ability in most cases. Under-achieving or special needs students may not be identified”. This clearly explains and acknowledges how achievement tests can disadvantage students with disabilities and yet forms part of the GAT Academic testing. While much of the above is targeted at schools that are not GAT Academic, the issues presented must also inform school-based as well as GAT schools.

The policy guidelines detail how GAT schools provide full-time provision for identified students, who have been selected through rigorous assessment processes that “provide whole-school environments for talent development” (DoE, 2011, p. 9). The absence of the word gifted in the sentence and the use of “identified” creates an obscurity or non-commitment as to who has been identified – gifted or gifted and talented students, or students with exceptional potential. What is made clear is that the GAT schools are for talent development, but seemingly for further talent development of the already talented.

In the 2009 and 2010 GAT Brochure (DET, 2009, p. 4 & DET, 2010b, p. 2), “Gifted and Talented programs, developing the talents of gifted children”, when addressing parents, it is stated, “Gifted children in these programs receive an education that develops their talents and helps them reach their full potential”. Information on the GAT Academic
programs promotes bringing “together highly able students with like-minded peers” (DET, 2009, p. 9).

The presentation used in 2014 to promote and inform parents of Gifted and Talented Secondary Selective Entrance Programs informs parents that the Academic Selective Entrance Test has four equally weighted components: reading comprehension, communicating ideas in writing, quantitative reasoning (Mathematics & Science) and Abstract/Non-verbal reasoning (which replaced the Raven’s Advanced Progressive Matrices [Raven, 1962]). In 2009 the Academic Selective Entrance Test comprised the same four components: quantitative reasoning, reading comprehension, abstract reasoning and written expression. Therefore a mixture of achievement and potential tests, which as detailed in the policy guidelines (DET, 2011, p. 15), puts TE students at a disadvantage, as “special needs students may not be identified”.

On the GAT application form in 2009 and 2010 learning disability is noted, “Does your child have a learning disability that may affect test performance? Yes No If yes, please telephone . . .” (DET 2009, p. 27). This also appeared in the 2014 on-line GAT application form and the current 2017 application form, where once Yes for disability is marked a pop-up message states: “Please contact 9264 . . . to discuss with a GTSU consultant”. Therefore, the indirect message given to applicants by ticking the yes box is that there is an expectation that students with disabilities will apply.

Part of the information package on the DoE’s Gifted and Talented website in 2014 (DoE, 2011) under inclusivity – disability and learning difficulty, is devoted to gifted students with dual/twice exceptionalities, their characteristics and research in this area. They are described as coming in all shapes, sizes, disabilities and backgrounds. The following statements about TE students appeared in 2015 but had not been updated since 2011:

Children can be intellectually, physically, academically, creatively or artistically gifted when they also have an autism spectrum disorder, learning or physical disabilities, vision, hearing or speech impairments, traumatic brain injuries or emotional disabilities.

These students defy the notion of ‘global giftedness’, a phrase that denotes ability or talent in all academic areas. Children who are both gifted and disabled simply exhibit remarkable talents and strengths in one area and disabling weaknesses in others (Baum, 1990). These children are often under-identified in the gifted and talented population” (DET, 2011, para. 2 & 3).
Twice Gifted web site

The purpose of this site is to bring to light some of the unique and phenomenal talents of those who are nothing short of extraordinary and unfortunately, many times overlooked in regards to their talents (DET, 2011, para. 4).

This site has since been updated in 2016, but the statements above are unchanged.

Gagné argues that giftedness and talent are two different stages in a highly able student’s journey from high potential to high performance (Gagné, 2003). A journey that for many Western Australian TE students has presumably already begun or nearing completion based on the requirements for selection into the GAT Academic programs. Despite the DoE’s website acknowledgement of the TE’s unique learning characteristics that puts them at risk of not being identified due to disabling weaknesses in some areas, the DoE continue on with a testing regime that insists as a prerequisite that students be all-rounders.

**Summary**

Procedures to identify and include those gifted students who have disabilities by the Department of Education is implied by the Policy and Guidelines of Gifted and Talented Students (DET, 2004, 2010a & 2011) with the acknowledgement that TE students exist as detailed on the Gifted and Talented website (DoE, 2011, 2016) and the enrolment form. Despite the acknowledgement that students with disabilities can also be gifted, the selection process anticipates that TE applicants will succeed on an equal footing with students who do not have a disability. This indirect institutional or structural discrimination has occurred because the procedural ‘rules’ represent obstacles to TE applicants’ inclusion in the GAT Academic programs (Doczi, Kammerer, Maijala, Nols, Pekkola, Strauch, & Theeboom, 2012). The TE applicant’s disability prevents them from competing on a ‘level playing field’ with other gifted students, hindering their ability to have the same opportunities for entry with their situation invisible and therefore remaining unaddressed. This is despite the push for inclusive education and practices.

Makel, Putallaz, and Wai (2012, p. 5) contend that the chief goal of gifted education and regular education should be the same and that is to “ensure that all students receive the education appropriate for them at any given time by maximizing the match between the individual students’ educational experiences with their individual educational needs.” Schroth and Helfer (2008) state that conceptions of academic talent and giftedness and the types of students these concepts focus upon are
indications of the philosophies underlying their proponents’ actions which then makes it apparent which population the model is designed to serve or exclude. In an age when schools are striving to enhance each child’s natural abilities and aptitudes, strict attention should be paid to what population a model seeks to serve, especially when it excludes others (North Central Regional Education Laboratory [NCREL], 2004).
CHAPTER FOUR

4.0. METHODOLOGY

The methodology selected for this study was based on a transformative epistemology.

4.1. Epistemology and Theoretical Perspective

Gray (2013, p. 19) explains epistemology as providing “a philosophical background for deciding what kinds of knowledge are legitimate and adequate” for a purpose or study, which clarifies the “kind of evidence that is being gathered, from where, and how it is going to be interpreted . . . which designs will work (for a given set of objectives) and which will not”. The transformative paradigm’s epistemological assumption is based on a meaning of knowledge, defined from a “prism of cultural lenses and the power issues involved in the determination of what is considered legitimate knowledge” (Mertens, 2014, p. 32). Similarly to the constructivist paradigm, “multiple versions of what is perceived to be real are recognised in the transformative paradigm” but does not accept that these “differences of perceptions are equally legitimate” as they are shaped by the “social, political, cultural, economic, ethnic, gender and disability lenses” adopted in the construction of reality (Mertens, 2014, p. 32). Congruent with this overall stance, a longitudinal cohort study research design was selected. This design was an appropriate choice as the study draws on six years of historical data from the Department of Education (DoE) from multiple cohorts of Year 6 students to determine TE prevalence and trends. This design, as outlined hereafter, increases the robustness of the findings.

The assumptions in this paradigm includes the importance of respecting cultural histories and norms and to be cognisant of the pervasiveness of discrimination and oppression in relation to the group and the imperative to effectively challenge the status quo and provide a basis for social change (Mertens, 2012). The transformative belief emphasises that what seems ‘real’ may instead be reified structures that are taken to be real due to historical situations and “what is taken to be real needs to be critically examined via an ideological critique of its role in perpetuating oppressive social structures and policies” (Mertens, 2014, p. 32). The transformative paradigm provides a framework that is used to raise questions about the assumptions that underlie research and its contribution to enhancing human rights (Mertens, 2007).
The ideological commonality across transformative studies is that the ultimate goal of any study is to advocate for change, with the transformative element being either “experienced by the participants as they participate in the research or follow the study’s completion when the research spawns changes in action, policy, or ideology” (Creswell, Plano Clark, Gutmann, & Hanson, 2003, p. 176) as is the case in this study. In relation to this study, the researcher sought to identify the prevalence of twice exceptional students in the GAT Academic programs and how this compares to disability prevalence in the context of the Department of Education’s (DoE’s) practices, policies and adoption of Gagné’s Differentiated Model of Gifted and Talented (DMGT) model. The research is transformative as it sought to construct an understanding of the barriers to twice exceptional students’ participation in the GAT Academic programs of Western Australia through the knowledge and perceptions of the GAT Academic coordinators and parents of TE students. Therefore, this research provides a ‘voice’ for TE students through their parents by raising “an agenda for change to improve their [child's] lives” and “becomes a united voice for reform and change” (Creswell, 2014, p. 38) which would lead to advocacy for change for TE student inclusion at the completion of the research. The issue of inequity frames the study.

Harding (1993, p. 56) recommends that a researcher’s methodology should be “starting off the thought from the lives of marginalized people” as this would reveal unexamined assumptions and generate critical questions. These critical questions generated for this study were from the researcher’s dialogue with TE students and parents of TE students over a 17-year time period in her professional capacity as an educator. While the researcher had built trust from working with TE students and their parents in a professional capacity (Mertens, 2007) and was influenced by the lived experiences of the researcher’s children to understand the ‘culture’ of disability, this gathering of ‘thought’ is in the context of the GAT Academic programs under investigation.

The researcher generally positions themself in a combined effort to both bring about change (Mertens, 2014) and recognise “inequalities and injustices in society and strives to challenge the status quo, who is a bit of a provocateur with overtones of humility, and who possess a shared sense of responsibility” (Mertens, 2007, p. 212). Symonette (2004) states that culturally competent researchers must understand the implications of power differentials regarding access to resources that are necessary to improve the quality of life. It is acknowledged that this critical examination takes place in the context of historical and cultural factors (Mertens, 2014). To develop understandings, this research is focused on the identified representation of
intellectually gifted and disabled students in the educational context of the DoE’s GAT Academic programs (Creswell, 2009) and framed by the historical, cultural and educational context of the DoE.

The philosophical basis of the transformative paradigm is diverse but provides a framework that addresses issues of power, justice and builds on an extensive and rich base of scholarly literature (Denzin & Lincoln, 2005; Tashakorri & Teddie, 2003; Tillman, 2006), Indigenous researchers (Chilisa, 2005; McCreanor Waton, & Denny, 2006; Smith, 2005) and disability researchers  (Mertens & McLaughlin, 2004; Sullivan, 2009). The paradigm’s assumption is “the recognition of power differences and the ethical implications that derive from these differences in terms of discrimination, oppression, misrepresentation, and being made to feel and be invisible (marginalized)” (Mertens, Bledsoe, Sullivan, & Wilson, 2010, p. 195). It is acknowledged that there is a ‘tension’ between the stakeholders associated with this study being the DoE who are in a position of power controlling the GAT process, and parents of TE children who have control over, and are advocating on behalf of their children for entry to these programs. Consequently in the context of this study, TE students have been ‘invisible’ as a group within the GAT Academic programs, thus marginalised, which highlights the need for this study.

Merten’s (2014, p. 21) reports the four characteristics representative of the transformative paradigm:

1. It places central importance on the lives/experiences of the diverse group that have traditionally been marginalised (women, minorities and people with disabilities). In the context of this study, the identification of the twice exceptional population in the GAT programs was gathered for the first time through DoE data to confirm the prevalence of an unidentified marginalised group of students who prior to this study, were ‘invisible’ in regards to prevalence and representation within the cohort.

2. Analyses “how and why inequities based on gender, race or ethnicity, disability, sexual orientation, and socioeconomic classes are reflected in asymmetric power relationships”. In the context of this study, a critical examination of the GAT definition and Gagné’s DMGT model that has been adopted, as well as policy and practices in relation to the GAT Academic programs of the DoE was carried out to identify barriers to TE inclusion.
3. Examines “how results of social inquiry or inequities are linked to political and social action”, such as the selection practices and policies of the DoE and their connection to past inquiries, initiatives and decision-making.

4. Uses a transformative theory to develop a program theory, which is a set of beliefs about the way a program works or why a problem occurs. A critical evaluation of the GAT Academic program’s selection process and criteria for entry and associated practices and documentation was carried out to understand the perceived barriers parents face in the application and selection phases.

4.2. Methodology and Method

4.2.1. Longitudinal cohort study

The epistemological and theoretical perspective adopted led the researcher to select a longitudinal cohort study as this was the best method for determining the prevalence over a six year period, and natural history of twice exceptional students in the GAT Academic programs, compared to students who did not indicate twice exceptionality in the programs (Mann, 2003). Burns and Grove (2001) define a 'cohort' as a set of people in a population that share a common attribute or who have experienced a common event. In the context of this study the cohort participants shared the characteristic of being identified as intellectually gifted, with a smaller sub-cohort of students also having the characteristic of indicating a disability and all having experienced the common event of completing the GAT Academic testing.

Cohort studies can be just observational studies because the researcher simply observes (Mann, 2003) and is generally concerned with information regarding prevalence distribution (Healy, 2011). The researcher collects information but does not manipulate it in any way, therefore is not experimental and is primarily descriptive or comparative (Healy, 2011) as it provides a picture of a phenomenon as it naturally occurs or shows how things are related to each other (Hendrick, Bickman, & Rog, 1993). Punch (2005) states that where a research area is relatively new or unexplored, as in the present study, descriptive studies may be adequate. Healy (2011) further explains that in descriptive studies data are examined to measure the frequency with which the outcome occurs and describe patterns of occurrence according to given characteristics. This information is useful for monitoring trends and also “for future planning to meet population needs. Typical measurements in descriptive studies are
‘prevalence’ and ‘incidence’” (Healy, 2011, p. 35). While the weakness of descriptive studies is that they cannot explain why an event has occurred (Blumberg, Cooper, & Schindler, 2005) this weakness was addressed by surveying coordinators of the GAT Academic programs and parents of TE students to find explanations for TE prevalence and how they are related to each other providing a meaningful story about this phenomenon.

The current study is retrospective as the data used was collected for other purposes and is being followed up after the event (Mann, 2003). One of the advantages of retrospective studies is that there is a “lack of bias because the outcome of current interest was not the original reason for the data to be collected” (Mann, 2003, p. 55). As the data were not primarily collected by the researcher, and independent of any hypothesis, observer bias is diminished (Mann, 2003).

A criticism of retrospective cohort studies is the inability to ensure that the groups being studied are “truly comparable at baseline” (Healy, 2011, p. 33). This is not the case in the present study, as all GAT Academic students sit, and will be assessed by the same testing – this is the sole criterion. Another criticism is that selection bias may occur, which is the sample being unrepresentative of the target population (Coggon & Barker, 2003). This is also not the case in the context of this study, as the whole population was included for the six years. Mann (2003, p. 54) contends that another weakness of retrospective cohort studies is that the original cohort was initially constructed for another purpose and therefore it is “unlikely that all the relevant information will have been rigorously collected” (Mann, 2003, p. 54). The DoE data were collected for record keeping of student numbers, scores, exemption from the GAT Academic Test – Arts only and provisions for the testing. The collection of disability documentation such as psychometric testing, occupational therapy, paediatrician, psychologist/psychiatrist reports for exemption or provision for the GAT Academic testing, were physically archived not data entered for disability type, therefore these data were not available. Consequently, the data collection had the limitation that disability types were not recorded, which would have been highly relevant to this study, and as disability prevalence was not the intent of the original data collection, the data may not have been rigorously documented.

Mann (2003) asserts that where there is little evidence on a subject, pre-existing databases provide an excellent and convenient source of data that is collected in a standardised way, which permits comparisons over time and is an efficient and
inexpensive way to construct a cohort. Mann (2003) also points out that when faced with a clear and significant association, a judgement has to be made whether this is a causal link or simply an association. Points to be considered when making this judgement in relation to this study are:

1. Consistency  If the association is observed at different times, places and by different researchers it is more credible.

2. Reasoning by analogy  Does the evidence mirror or match another cause and affect relation? (Mann, 2003, p. 59)

These cannot be used as indisputable evidence, but does allow the researcher to “answer the fundamental questions ‘Is there any other way to explain the available evidence?’ and is there any other more likely than cause and effect?” (Mann, 2003, p. 59). The researcher has sought out and included explanations and alternate viewpoints for the TE prevalence findings that are further explored for alternative causes and effects to explain the data findings. The findings mirrored the experiences of minority American groups such as Hispanic and African American intellectually gifted students who due to cultural and social difference formed a marginalised group within the gifted. Siegle, Gubbins, O’Rourke, Langley, Mun, Luria, Little, McCoach, Knupp, Callahan, and Plucker (2016, p. 104) contend that underrepresented populations such as Native American students (DeVries & Shires-Golon, 2011), African American students (Ford, 2007; Long-Mitchell, 2011), Hispanic students (Castellano, 2011) and twice exceptional students (Foley Nicpon, Assouline, Schuler, & Amend, 2011) “have fewer opportunities to acquire the background knowledge and academic skills necessary to be recognized as gifted.” They further contend that the “persistence of barriers that limit the full participation of underserved student populations in this process is a long-standing and critical issue in gifted education today” (Siegel et al., 2016, p. 104). Therefore, recognising, acknowledging and addressing barriers to excellence are imperative (Olszewski-Kubilius & Clarenbach, 2012) to bring about change for marginalised and thus underrepresented populations. Using six years of historical longitudinal quantitative data to identify TE prevalence makes it more likely that the evidence gathered is valid because the data was collected with the same intent by the DoE, focusing only on Year 6 groupings, taking the exact same tests over the six years, which then takes into account multiple occurrences to show a pattern over time.
This study involved six years of longitudinal quantitative cohort data from the DoE’s database on selected students for the GAT programs including GAT Academic programs and TE students. Second, disability prevalence data in the DoE Government schools of Western Australia were collected and a comparison made of TE prevalence to disability was also investigated to establish trends. Additionally, data were collected by a survey from five of the nine coordinators of the GAT Academic programs to triangulate TE prevalence and a qualitative analysis of a closed and open-ended survey was undertaken to determine the GAT Academic coordinators’ knowledge of the definition and identification means used by the DoE and their knowledge and perceptions of TE students’ needs. Lastly, a qualitative analysis of a closed and open-ended survey was undertaken to determine the perceptions of eight parents of TE students of the GAT Academic programs when considering application for their children. As the perceptions of parents were retrospective to the actual application time, there is the disadvantage that parents are “more likely to remember certain antecedents, or exaggerate or minimise what they now consider to be risk factors (recall bias)” (Mann, 2003, p. 55). As the parents were retrospectively reporting on an event that occurred between one and five years ago, it was likely that recall bias would occur, where the parents’ remembered notable occurrences that stuck in their mind, as they were either negative or positive. A ‘sameness’ of perceptions by differing parents indicates that certain events had a lasting impact on their memory.

4.2.2. Mixed methods

Newman, Ridenour, Newman, and DeMarco (2003) proposed nine categories of research purpose which can be associated with a mixed methods approach: to predict, add to the knowledge base, have a personal, social, institutional/organisational impact, measure change, understand complex phenomena, test or generate new ideas, inform the public and examine the past. The present study has five of the nine categories of research purpose: to predict TE prevalence; add to the knowledge base in this area; have an organisational impact on the DoE; understand the complex phenomena of twice exceptionality, and inform the public. Therefore, this research will benefit the marginalised TE students who are the focus of the research (Kelly, Burton, & Regan, 1994) by promoting “equity and justice for policies and practices so as to create a personal, social, institutional, and/or organizational impact” (Tashakkori & Teddlie, 2003). Using a mixed method approach will provide rich sources of data and disseminate the findings to encourage use of the results to enhance social justice for the TE and other minority groups (Mertens, 2009, p. 5), which underpins this study.
Creswell (2013, p. 32) maintains that mixed methods research “is an approach to inquiry involving collecting both quantitative and qualitative data . . . the core assumption of this form of inquiry is that the combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach alone” (Tashakkori & Teddlie, 2003). This design has the advantages of using strategies that enhance the comprehensiveness of the results and findings using different types of data from different groups (Morse, 2010; Tashakkori & Teddlie, 1998, 2003; Teddlie & Yu, 2007). As a result, there is often a core project and a second project consisting of different types of data or analysis, using strategies that are incomplete – not comprehensible or publishable, separate from the core project but allows access to other pertinent areas that cannot be included in the core project (Morse, 2010). This is the nature of the present study where TE prevalence in the GAT Academic programs is the core project and the second project is the knowledge and perceptions of the GAT Academic coordinators and perceptions of parents of TE students, that accesses data pertinent to understanding TE prevalence.

Mertens (2009, p. 214) states that the reason we need good mixed methods research “is that there are real lives at stake that are being determined by those in power” and provides opportunities for those whose “voices have been traditionally excluded”. The “basic beliefs of the transformative paradigm provides an overarching framework for addressing issues of social justice” and the need for change (Mertens, 2009, p. 214). Therefore, this transformative mixed method research is necessary to ultimately serve the needs, and improve the lives of the TE (Mertens, 2009).

The roots of mixed methods are based on the multi-trait, multi-method approach of Campbell and Fiske (cited in Teddlie & Tashakkori, 2009). It is considered a relatively new methodology that has evolved since the early 1990s (Tashakkori, 2003) and allows for the “opportunity to compensate for inherent method weaknesses, capitalize on inherent method strengths and offset inevitable method biases” (Greene, 2007, p. xiii).

Caracelli and Greene (cited in Harwell, 2011, p. 151) identified three uses of a mixed methods study:

1. testing the agreement of findings obtained from different measuring instruments, 2. clarifying and building on the results of one method with another method, and 3. demonstrating how the results from one method can impact subsequent methods or inferences drawn from the results.
Mixed methods use both quantitative and qualitative data gathering. Quantitative research methods “attempt to maximize objectivity, replicability, and generalizability of findings, and are typically interested in prediction” (Harwell, 2011, p. 149). There is an expectation that the researcher will set aside their experiences, perceptions and biases to ensure objectivity in conducting the study and the conclusions drawn (Harwell, 2011). This method is frequently characterised as “assuming that there is a single ‘truth’ that exists, independent of human perception” (Lincoln and Guba cited in Harwell, 2011, p. 149). Trochim and Land (1982, p. 1) define quantitative research design as the:

> glue that holds the research project together. A design is used to structure the research, to show how all of the major parts of the research project – the samples or groups, measures, treatments, or programs, and methods of assignment – work together to try to address the central research questions.

Qualitative research methods focus “on discovering and understanding the experiences, perspectives, and thoughts of participants” (Hiatt cited in Harwell, 2011, p. 148). It is also described as inductive in that the researcher may construct explanations from information provided by a participant and embeds their perspective based on their experiences, perceptions and biases (Harwell, 2011). Therefore, the researcher cannot pretend to be an objective bystander to the research (Harwell, 2011) with Christians (2005, p. 148) challenging the idea that only a “neutral, objective observer will get the facts right”. Consequently, through the inductive process of gathering data the researcher attempts to establish patterns, consistencies and meanings from the data gathered (Gray, 2013).

A mixed method approach was used to collect data from different DoE personnel. This is necessary in the case of the TE students to ‘cast a net’ wide enough to identify all possible TE students. As the average age for diagnosis of a learning disability is 14 years old (Greenbaum, Graham, & Scales, 1996), it is possible that numbers of TE students will have fluctuated or even declined after GAT selection in Year 6. Therefore, triangulation of data from the DoE and the survey from the GAT Academic coordinators, enables more accurate data collection of TE prevalence and draws on other possibilities (Creswell, 2014). Therefore, a mixed method approach allowed the gathering of data from a very broad base that will limit the likelihood of gaps in the research, or an inaccurate conclusion being made from that data. Using a qualitative survey highlighted the GAT Academic coordinators and parents of TE students’ perceptions and beliefs to assist the researcher understand the knowledge, motives
and barriers to TE participation in the GAT Academic programs. This built on the data collected on TE prevalence and allowed the researcher to make inferences from the quantitative and qualitative databases (Creswell, 2014). This optimises the interpretation of results and allows the researcher to incorporate conclusions from both approaches in addressing the research questions (Leech, Collins, Jiao, & Onwuegbuzie, 2011).

Equal priority was not given to both quantitative and qualitative data as the quantitative data was dominant and the amount of time needed to cover both data equally would have been beyond the capacity of a single researcher to carry out practically and in a reasonable timeframe. Instead, it was important that the quantitative data was examined in relation to twice exceptional prevalence and comparison to disability, before proceeding to the qualitative data. This is a dominant-less dominant model, where there is a substantive quantitative analysis and a limited qualitative data collection (Creswell, 2009) – Figure 4.1. Using two stages helps the researcher to better understand the population being studied in relation to prevalence and knowledge and perceptions of coordinators of the GAT Academic programs and perceptions of parents of TE children.

![Figure 4.1. Dominant-less dominant model (Miller & Crabtree, 1994)](image)

This study employed a sequential exploratory strategy that is characterised by a priority stage of quantitative data collection and analysis and a secondary stage of qualitative data collection and analysis with the findings of the two stages integrated during the interpretation stage (Creswell, Plano Clark, Gutmann, & Hanson, 2003). This strategy was used because as Morse (1991) contends, one purpose for choosing this strategy is to determine the distribution of a phenomenon within a chosen population. While Creswell, Plano Clark, Gutmann, and Hanson (2003) believe that it is possible to give equal weight to the quantitative and qualitative stages, this approach may be too demanding for a single study, which is applicable to this study. This study employed a
concurrent triangulation design, represented in Figure 4.2 with an emphasis on quantitative data.

Figure 4.2. Concurrent Triangulation Design (Adapted from Creswell, Plano Clark, Gutmann, & Hanson, 2003).

The design of this study varied slightly to that described by Creswell, Plano Clark, Gutmann, and Hanson (2003) in that the qualitative data was collected at the beginning and end of the study, and the quantitative stage, while dominant, was collected during the study.

4.3. Participants, Data Sources and Instruments

Creswell (2009) explained that only those people with key information on the phenomenon under investigation should be participants in the study, hence participants were purposively selected. One of the research objectives was to understand the participant’s perspectives and insights and from these views theorise what their responses and actions meant in relation to TE prevalence (Denzin & Lincoln, 2003). Therefore, it was important that only those people who had involvement and experience with the GAT process be included to reveal barriers to TE participation in the GAT Academic programs.

In relation to the qualitative data gathered from the GAT Academic coordinator’s survey, only those people with experience with the phenomenon of twice exceptionality
in the GAT Academic programs were participants in this part of the study (Merriam, 2009). While the coordinators do not have any involvement in selecting students for the GAT Academic programs, their knowledge and perceptions are invaluable when teaching, supporting and advocating for TE students. Additionally, only parents of TE students who had the experience of deciding whether to apply for a GAT Academic program placement for their child were participants in this part of the study (Merriam, 2009). There are three participants in this study, the DoE, GAT Academic program coordinators and parents of TE children.

The analysis of quantitative data can be categorised as descriptive or inferential statistics with descriptive statistics being summarised or displayed as tables, percentages and averages (Davies, 2007). Inferential statistics draws results from the data in relation to a theory, model or body of knowledge and frequently reaches a conclusion from the sample under investigation to generalise to a total population (Davies, 2007). This study generated both descriptive and inferential statistics.

**Participant 1: Secondary data DoE database**

Six years of longitudinal data collected by the DoE 2007 to 2012 were transferred electronically to the researcher as, and when, it became available. The data did not contain identifying details of applicants. Longitudinal data of disability numbers for the same years was also electronically transferred to the researcher as and when it became available. This pre-existing database provided an excellent and convenient source of data to construct the GAT Academic cohort (Mann, 2003) for this study. It had the advantages that the data were collected by people other than the researcher, which limits observer bias, is efficient, and data were collected in a standardised way from the same test, which permits comparison over time (Mann, 2003).

Instrument

TE students were identified from information that was gathered by the DoE from the Application Forms of students who have been nominated by their parent/caregiver to apply for entry into the GAT Academic programs and compiled into a database. This database is sent to all participating Academic schools detailing the information regarding each school’s selected Academic students. The online Gifted and Talented Applicant Information Guide (DET, 2009, p. 7) for parents/caregivers states that:
All students applying for Gifted and Talented education are required to sit the Academic Selective Entrance Test unless a disability exemption has been granted (ARTS only). Arts only applicants diagnosed with a learning disability may apply for an exemption from the Academic Selective Entrance Test by completing the *Request for Academic Selective Entrance Test Disability Exemption (Arts Only)* form and forwarding seven days prior to the testing date.

The designation of a Yes for disability is derived from the parent/caregiver’s acknowledgement on the Application Form that their child does “have a learning disability that may affect test performance” for the GAT Academic Test (DET, 2009). This information identified to the researcher the initial pool of TE applicants ($N = 263$ for the six years) and the number of TE students applying for entry into the GAT Academic programs ($N = 40$ for the six years) from schools across Western Australia or who may be interstate or overseas. Data from the last six years comprises the cohort of students who have applied under a consistent process thus ensuring reliability of data. This initial gathering of information from the database is the first means of identifying those students who are TE.

Disability prevalence for Year 6 students 2007 to 2012 was determined by the database compiled by the DoE that gathered Census data from all schools as to certain disability types, numbers and school setting. Disability prevalence of two types from mainstream education was gathered and formed into: Mainstream Conservative Disability (MCD) ($N = 2,089$) and Mainstream Disability (MD) ($N = 3,300$) to determine prevalence in Year 6, 2007 to 2012.

Figure 4.3 illustrates the data gathering process for the Department of Education data and the GAT Academic coordinator’s survey.
Figure 4.3. Data collection flow chart

Figure 4.4 illustrates the data gathering process for the parents of TE students

**Participant 2: GAT Academic Program Coordinators**

Before engaging in data collection processes, ethics clearance was obtained from the Edith Cowan University Human Research Ethics Committee, as well as the DoE. Once ethics approval was granted, a meeting was held between the researcher and the Manager of the GAT Branch to ask for permission to access longitudinal cohort data from the GAT database, and approach schools, through their principal, to participate in this study. The nature of the research and the participant’s involvement was outlined and a cover letter (Appendix A) and consent form (Appendix B) were given to the GAT Branch Manager. Permission was granted, in writing, for participation by the DoE in the study and also support for the involvement of the GAT Academic schools. It had
been agreed that the GAT Branch Manager would email all principals of the eight GAT Academic schools asking for their cooperation with the study, which he then carried out. Six principals responded that they would participate in the study and two did not respond. Subsequently, a survey (Appendix E) was mailed out to the nine coordinators of the Academic programs with a cover letter that explained the study (Appendix C). This also included a consent form (Appendix D) and stamped self-addressed envelope for return of the documents to the researcher. A copy of all documents was also sent to the principal at each school for their information and consent with a stamped self-addressed envelope for return to the researcher. After fourteen days a reminder email was sent to all coordinators who had not, at that point, responded to the initial mail out. This elicited further surveys. A further follow up email was sent after one month to those coordinators who had not responded, but no further surveys were forthcoming. Five GAT Academic program coordinators completed the survey and returned the consent form.

To verify numbers of TE students who had entered the GAT Academic programs, and determine subsequent numbers at the time of data collection through the coordinator’s survey in 2011, which could be at any point during Years 8, 9, 10 and 11 and 12, the decision was made to triangulate this data with the data from the five coordinators’ survey. This provided an opportunity for information gathering at different year levels and from diverse personnel. Drawing data from multiple sources allowed for the possibility of revealing atypical data such as increased or decreased numbers of TE students and the potential of identifying similar patterns across schools and time, thus increasing confidence in the findings (Fielding & Fielding, 1986). Using multiple sources across the five participating Academic programs allowed the researcher to gather credible information (Bowling, 2007).

The gathering of primary qualitative data allowed the researcher to obtain insights from the participants about their knowledge and perceptions in regards to the definitions and identification means used by the DoE and also TE participation in the GAT Academic program. Callahan and Moon (2007) maintain that qualitative inquiry is valuable when delving into complexities and processes, and when exploring where and why policy and practice are at odds. It can also be useful in providing insights about a group (Callahan & Moon, 2007).
Instrument

The survey used in this study was adapted and expanded upon from the survey used by Boodoo, Bradley, Frontera, Pitts, and Wright (1989), which was later adapted and used by Grimm (1995). These surveys were used to uncover procedures for identifying TE students in gifted and special education programs in America. Five of the sixteen questions were adapted from Boodoo, Bradley, Frontera, Pitts, and Wright’s (1989) survey, which was one of the first surveys used to focus on the identification procedures of TE students. Additionally the survey was also shaped by the work of Schroth and Helfer (2008) who surveyed 900 educators to determine their beliefs about giftedness and gifted education. Therefore, content validity was addressed by using Boodoo et al.’s (1989) research and researching similar survey instruments such as that of Schroth and Helfer (2008). To address face validity and ensure that each question avoided specialised vocabulary that may have been confusing to the respondents, a teacher who had previously coordinated one of the GAT Academic programs reviewed the survey whereupon feedback was received and incorporated on question structure and clarity. A selection of closed and open-ended questions, in total sixteen, was used in a survey that was answered by five coordinators from the GAT Academic programs. The entire population of coordinators is very small (\(N = 9\)) with only five participating, which is 56% of the population, therefore percentages were not calculated for the responses. The data was transcribed and descriptive data were gathered from the surveys and compiled into summaries for each question. A table detailing the survey data according to each respondent is attached (Appendix F).

The following table links the questions by category:

Table 4.1. Categories to Coordinator Questions on Survey

<table>
<thead>
<tr>
<th>To Determine</th>
<th>Question Asked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinators’ knowledge of the gifted and talented definition, identification and resourcing means used by the DoE.</td>
<td>2 and 3</td>
</tr>
<tr>
<td>Identification of TE students.</td>
<td>5 and 7</td>
</tr>
<tr>
<td>Resourcing.</td>
<td>13</td>
</tr>
<tr>
<td>Knowledge and perceptions of TE students in the GAT Academic programs and prevalence of TE students.</td>
<td>4, 6 and 14</td>
</tr>
<tr>
<td>Learning and achievement characteristics of TE students.</td>
<td>10, 11 and 16</td>
</tr>
<tr>
<td>Accommodating the needs of the TE student.</td>
<td>8, 9, 12 and 15</td>
</tr>
</tbody>
</table>
This study used mailed/emailed surveys to determine the GAT Academic program coordinators' knowledge of the definition and identification means of gifted and talented students and also their perceptions and knowledge of the TE students participating in the GAT Academic programs. Mail/email surveys are appropriate when the survey will require some time to complete and is low cost (Callahan & Caldwell, 1995; Cohen & Swerdlik, 2005; Creswell, 2009). Mail/email surveys are also useful when investigating knowledge and perceptions that the respondents may feel shy or sensitive about in a face-to-face interview (Callahan & Caldwell, 1995; Cohen & Swerdlik, 2005). The disadvantages can be that someone other than the intended recipient can fill in the survey or no response will be generated. Despite some drawbacks, mail/email surveys are one of the most useful tools for obtaining responses in relation to philosophical beliefs (Callahan & Caldwell, 1995; Creswell, 2009; Cohen & Swerdlik, 2005) and perceptions from a group of individuals.

**Participant 3: Parents of TE students**

This study investigated the experiences of eight mothers of TE students from Perth \((N = 8)\) of Year 7 to 11 twice exceptional students (four males and four females) who had the potential to have applied for the GAT Academic programs, but chose other educational options for their child. As the parents of TE students at the GAT Academic programs were not identified to the researcher, parents from one non-GAT Academic school were chosen as their children were identified as TE through appropriate testing documents, which identified giftedness as well as a learning disability – see Table 4.2.

**Table 4.2. Parent Survey – TE student intellectual gifted identification means**

<table>
<thead>
<tr>
<th>TE Student</th>
<th>High GAT score</th>
<th>School testing: NFER Nelson Verbal and Non-verbal (Hagues &amp; Courtenay, 1993; Smith &amp; Hagues, 1993) confirmed giftedness</th>
<th>Psychometric Assessment confirmed giftedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Exemption</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Exemption</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>No</td>
<td>-</td>
<td>Yes</td>
</tr>
<tr>
<td>6</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
Three of the students reached minimum GAT Academic program cut off scores, three did not reach the minimum cut off score and two obtained exemption (applying for Arts only). The following are the profiles of the TE children of the parents completing the survey, with four parents being in the selection years under investigation 2010 to 2012:

1. P1: Child was exempt from the GAT Academic Test (Arts only). School testing of potential and psychometric testing supplied indicated giftedness. Diagnosis of Autistic Spectrum Disorder. Currently achieving all A grades in extension classes on school report.

2. P2: Child scored highly on the GAT Academic Test. School testing of potential also indicated giftedness. Diagnosis of Autism with Asperger’s presentation and ADD. Currently achieving all A grades in extension classes on school report.

3. P3: Child did not meet minimum cut off score on the GAT Academic Test. School testing of potential indicated giftedness as well as psychometric testing supplied. Diagnosis of Autism and OCD. Currently achieving all A grades in extension classes on school report.

4. P4: Child was exempt from the GAT Academic Test (Arts only). School testing of potential did not indicate giftedness, but Psychometric testing supplied indicated giftedness. Diagnosis of Autism and ADHD. Currently achieving C grades in extension classes on school report. Application Year 6, 2012.

5. P5: Child did not meet minimum cut off score on the GAT Academic Test but was a near miss. Did not sit the school testing of potential. Psychometric assessment supplied indicated giftedness. Diagnosis of Dysgraphia of Written Expression. Currently achieving all A grades in extension classes on school report. Application Year 6, 2012.

6. P6: Child did not meet minimum cut off score on the GAT Academic Test, but was a near miss. School testing of potential indicated giftedness. Diagnosis of Autism, Dyslexia and ADD. Currently achieving all A grades in extension classes on school report. Application Year 6, 2012.

8. P8: Child scored highly on the GAT Academic Test. Did not score highly on school testing. Diagnosis of Bipolar Affective Disorder, Autism and ADHD. Currently achieving C, B and A grades on school report in ATAR (The Australian Tertiary Admission Rank [ATAR] which is the primary criterion for entry into most undergraduate universities in Australia) subjects. Application Year 6, 2010.

The participants were provided the opportunity to provide a retrospective perspective as a parent of a child who is twice exceptional, by reconstructing their experiences from the time when they were considering education options for their child going into secondary school. While structured phone interviews had been suggested to the parents, three declined and limited their involvement to answering questions electronically. Therefore, the decision was made to survey all eight parents for uniformity of data collection, which would also provide insights about this group (Callahan & Moon, 2007).

The non-probability technique of purposive sampling has been used for the parent participants of the survey because their children share the characteristic of being twice exceptional and the limited number of data sources that can contribute to the study due to the small sample of TE students. It would have been ideal to survey the population of parents of TE students at the GAT Academic programs, but the population was not made available to the researcher and was not the focus of the core project. A plethora of research has focused on student and parent experiences, primarily as case studies, but this was not the intent of the current study which was to locate TE students as a cohort within GAT Academic programs in Western Australia to determine prevalence in relation to disability and identify barriers to their inclusion. This sampling technique is useful in documenting and detecting relationships within a phenomenon that occurs within a sample, and this was the case with this study.

All parents were informed that a survey (Appendix I) would be required and an informational letter (Appendix G) describing the nature of the study, time commitment and contact information was supplied along with a consent form (Appendix H). For the purposes of this study, students were considered to be twice exceptional if they fulfilled the criteria of having either a high score on the GAT Academic Test, or had provided a
full psychometric profile indicating giftedness or a high NFER Nelson verbal and non-verbal score along with diagnosis of a disability formally diagnosed by a non-school based, independent disability specialist.

The data were transcribed and descriptive data was gathered from the surveys and compiled into summaries for each question. A summary was sent to each parent for the purpose of checking for accuracy and allowing opportunities for participants to make any modifications. A table detailing the survey data according to each response is attached (Appendix J).

Instrument

The majority of the survey contains open-ended questions to determine parents’ perceptions of the GAT Academic program at the time of application for an Academic or Arts program. The following table links the questions by category:

Table 4.3. Categories to Parent Questions on Survey

<table>
<thead>
<tr>
<th>To Determine</th>
<th>Question Asked</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of the GAT Academic programs and entry requirements. TE student recommended for the program by primary school teacher or principal.</td>
<td>1, 3 and 2</td>
</tr>
<tr>
<td>Perceptions of the advantages and disadvantages of the TE student being part of the DoE’s Academic programs.</td>
<td>4 and 5</td>
</tr>
<tr>
<td>Reasons and perceptions behind the decision to apply/not apply for a GAT Academic position.</td>
<td>7</td>
</tr>
<tr>
<td>Perceptions of barriers to TE student participation in the GAT Academic programs.</td>
<td>6</td>
</tr>
<tr>
<td>Other concerns.</td>
<td>8</td>
</tr>
</tbody>
</table>

This study used a mailed/emailed survey of eight questions to determine the perceptions of parents of TE students when they were thinking about applying for a GAT Academic program placement. Mail/email surveys are useful when investigating knowledge and perceptions that the respondents may feel shy or sensitive about in a face-to-face interview (Callahan & Caldwell, 1995; Cohen & Swerdlik, 2005), which was the case with some of the parents. The disadvantages can be that someone other than the intended recipient can fill in the survey or no response will be generated, but this was not the case.
Table 4.4 summarises the methods of data collection in relation to each research question of the study.

<table>
<thead>
<tr>
<th>Research Question</th>
<th>Data Collection Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ1. What is the prevalence of twice exceptional (TE) students in the GAT Academic programs and how does the prevalence of twice exceptional (TE) students in the GAT Academic programs relate to the prevalence of disabled children in Government schools in Western Australia 2007 to 2012?</td>
<td>• DoE Database – gifted&lt;br&gt;• GAT Academic Program Coordinators Survey&lt;br&gt;• DoE Database – disability</td>
</tr>
<tr>
<td>RQ2. How knowledgeable are the GAT academic program coordinators regarding the gifted and talented definition and identification means used by the Department of Education?</td>
<td>• GAT Academic Program Coordinators Survey</td>
</tr>
<tr>
<td>RQ3. What knowledge and perceptions do the GAT Academic program coordinators have of TE students’ needs in gifted programs?</td>
<td>• GAT Academic Program Coordinators Survey</td>
</tr>
<tr>
<td>RQ4. What perceptions do the parents of TE students have of the GAT Academic programs?</td>
<td>• TE Parent Survey</td>
</tr>
</tbody>
</table>

### 4.4. Researcher Subjectivity

The researcher is familiar with the schools, some teachers, parents and students discussed by participants therefore, may have preconceived notions about the school environments. To control for researcher bias, reflexivity, which is the purposeful process whereby the researcher constantly considers how their personal biases and research findings guide one another (Pillow, 2003) was used as a method for ensuring the validity of the qualitative research process (Kolb, 2012).

Reflexivity was practiced during all stages of the research in line with Alvesson and Sköldberg’s (2009, p. 273) four levels of reflexivity: “Interaction with the empirical material, interpretation, critical interpretation and reflection on text production and language use”. Therefore a reflexive researcher attempts to identify viewpoints and states what has been emphasised, downplayed or missed out in the research (Blaxter, Hughes, & Tight, 2001) after reflecting on and interrogating their own beliefs and biases.
This first level of reflexivity in Alvesson and Sköldberg’s (2009) model focuses on data collection. In this research, data were collected from the Department of Education, the coordinators of the GAT Academic programs and parents of TE students. Two different surveys were used that contained closed and open-ended questions to enable the coordinators and parents to anonymously and without inhibition answer the survey. The coordinators were the researcher’s professional peers and the parents of TE students had a professional but not personal relationship with the researcher.

The second level of reflexivity in research using the Alvesson and Sköldberg (2009) model considers reflexivity in the analysis of data. During this process, the researcher was mindful to report only what was in the data and to check her interpretation of the data. This included checking of all quantitative data and its interpretation with the researcher’s supervisors and using direct quotes from the surveys to support these interpretations. The researcher was mindful that she held certain assumptions about TE students, their parents and the DoE and their GAT Academic programs (Sparkes, 2002) and was therefore conscious of using a balance of closed and open ended questions both positive and negative to not ‘steer’ the participants in one direction. The researcher then looked for patterns in the data that could be interpreted as trends that would be reported as findings. There is always a risk that participants will respond how they believe the researcher wants, but in the case of the coordinators this did not occur as they shared their viewpoints and knowledge quite openly. In the case of the parents, most parents added a few sentences that had nothing to do with the present study but seemed an endorsement of the researcher’s professional work. The researcher therefore did not emphasise and/or include this information in the research.

Alvesson and Sköldberg (2009) then consider critical interpretation of the context as a level of reflexivity. The values and viewpoints that researchers bring to their research can affect the choices they make about what to investigate and how to design, carry out the research and interpret the findings. The researcher must examine their viewpoint, values and motivations for carrying out the research and role in the research process so that any potential for bias is stated (Meyer & Allen, 1997; Richardson, 1997). The researcher acknowledges that she has professional experience and insight into the phenomena being researched which was the impetus for the study to advocate for TE students. It is our professional insight and experience that provides the researcher with the ability to respond to data and also respond to the research findings not only from the data but also from the researcher and what they bring to the data analysis (Sandelowski & Leeman, 2012). Therefore, the researcher’s professional
experience can enhance sensitivity to the data and identify connections between the data or block differing understandings. The researcher cannot be fully aware of how their professional insight might influence understandings of the data, but by continually checking with others such as the researcher’s supervisors, preconceptions that are affecting the research is more likely to be noted. To aid this the researcher included alternate viewpoints of the data and phenomena to illustrate the tensions that exist between an education system, employees of that system and parents of TE students.

Finally, Alvesson and Sköldberg (2009) identify a fourth level of reflexivity related to text production and language use. Smaling (2003, p. 17) states that writers have an obligation to present their findings in ways that are transferable to the reader and also for the reader to assess whether the findings are relevant. Using quantitative data to determine TE prevalence as the core project and qualitative data from the two surveys as the second project allows the reader to understand TE prevalence from different perspectives which then leaves the reader to determine whether the findings are relevant to them personally and/or to marginalised groups. The language used in this study purposely positioned the TE as a marginalised and invisible group within the DoE’s student group.

The impetus for this study was the researcher’s work in the field of gifted and disability education with TE students. I constantly critically evaluated my context against the context of the GAT Academic programs to determine whether the data was sufficient to make valid findings and not biased due to my own professional context. I did feel that I was interacting with the quantitative data as though they were students rather than numbers, which made the analysis and text production quite personal as it dealt with marginalised students who needed an advocate. The very fact that this data had never previously been released made me constantly interrogate my own motives against the analysis of the data and the language I used.

At all stages of the process I felt an ethical and personal obligation to the DoE and TE students and their parents to constantly evaluate and clarify my data to present an accurate ‘picture’ of TE prevalence in the GAT Academic programs. Consequently, to bring about change I continually interacted with the four levels of Alvesson and Sköldberg’s (2009) model. Initially I progressed from one level to another in a linear fashion, then from one level to another in an interaction that allowed the checking, analysing and clarifying of data while questioning myself to ensure that I was not presenting a biased view of the data because I had lost objectivity.
4.5. Validity, Reliability and Ethics

The present study used a retrospective longitudinal cohort study design, which is best for determining prevalence and a natural history of the phenomena under investigation (Mann, 2003). All studies should be internally valid so that conclusions can be “logically drawn from the results produced by an appropriate methodology” (Mann, 2003, p. 55). In quantitative studies validity relates to whether a test measures what it is supposed to measure (Burns, 2000), while in qualitative studies, validity is measured by the trustworthiness, authenticity and credibility of the research (Creswell, 2005). Yin (2009) recommends that multiple sources of evidence are gathered and that informants review a draft of their survey reports. A range of data collection sources were used to gather evidence in the study, both quantitative and qualitative, and findings in relation to TE prevalence were confirmed through data triangulation (Merriam, 1998). The GAT Academic coordinator survey was based on a survey used successfully in two previous studies by Boodoo, Bradley, Frontera, Pitts, and Wright (1989) and Grimm (1995) and shaped by the work of Schroth and Helfer (2008). It is important that the details of the study are transparent to anyone reviewing or replicating it; therefore detailed information has been documented.

While quantitative researchers take into consideration reliability, objectivity and validity to ensure the trustworthiness of the findings, qualitative researchers consider that dependability, credibility, transferability and confirmability are trustworthiness are criteria that ensures the rigour of the findings (Guba, 1981; Schwandt, Lincoln, & Guba, 2007).

Credibility strategies were adopted in this study to establish rigour of the inquiry. These included:

- Prolonged engagement in the field or research site. The researcher had spent an extended time in the field of gifted, disability and TE education and data collection, which improved the trust of the respondents and provided a greater understanding of the participants’ culture and context (Onwuegbuzie & Leech, 2007) and the researcher’s understanding of the data collected. It also helped the researcher to understand the issues that might affect the quality of the data (Anney, 2014).

- Use of peer debriefing. The researcher sought support and guidance from supervisors, peers and DoE staff and when writing this PhD, comments and
perceptions from supervisors in developing and clarifying the conclusions of the study (Bitsch, 2005).

- Triangulation. The researcher used triangulation by gathering information from different informants of different GAT Academic programs both in terms of location, experience, gender and student cohorts and in the case of parents of TE students, from different year groupings, professional backgrounds and locations and whose children had differing intellectual and academic profiles.

- Member checks. The researcher checked with the respondents of the surveys about the analysis and interpretation of data and checked against the original documents that were used during data collection before producing the final document (Guba, 1981).

Transferability is the degree to which the results of the qualitative research can be transferred to different contexts with different respondents (Bitsch, 2005; Robin & Begley, 2004). This can be achieved by the use of thick descriptions. The researcher included thick descriptive data details which included noting all the research processes from the data collection, context of the study to production of the final report (Anney, 2014). This allows others to make comparisons to other contexts should they be contemplated (Guba, 1981).

Dependability refers to “the stability of findings over time” (Bitsch, 2005, p. 86). The researcher's supervisors evaluated the findings, interpretations and recommendations of the study to ensure that they supported the data received from the informants of the study (Cohen, Manion, & Morrison, 2011; Tobin & Begley, 2004). Discussions were held about the research process and findings with the researcher's supervisors, which helped to identify areas not covered by the research questions that generated a new question and a broadening of the scope of the research.

Confirmability is described by Tobin and Begley (2004, p. 392) as “establishing that data and interpretations of the findings are not figments of the inquirer's imagination, but are clearly derived from the data”. The researcher achieved this by triangulating the data between informants and carrying out an audit trail from the process to the product, checking with supervisors along the way (Bowen 2009).
4.5.1. Internal and External Validity

External validity relates to defining the area to which a study's findings can be generalised and internal validity as the rigour with which the study has been designed and executed – can the conclusion be replied upon and external validity to the usefulness of the findings with respect to other populations? (Mann, 2003, p. 60). To ameliorate the internal and external validity, triangulation of data allows the researcher to corroborate and support the findings relative to the same phenomenon using different methods (Denzin, 1978).

Using six years of longitudinal data from the DoE database permits generalisability to both the TE student population in the GAT programs, GAT Academic programs and disability in the DoE schools in Western Australia. The primary limitations of the study include self-reported data from both the GAT Academic coordinators and parents of TE students, and the response rate from the GAT coordinator survey was from only five of the nine GAT Academic Programs. As a result the data gathered from the five respondents may differ from the data from the non-respondents, therefore limiting the generalisability of the findings of the study. The purposive sample used for the parent survey has the limitation of generalisation and inference making to the entire population of parents of TE students and TE students in Western Australia. The retrospective nature of the parent surveys creates a validity issue due to discrepancies as the parents think back to their experiences and the small sample size of both parents and coordinators limits the ability to generalise to any other population than those being studied. Therefore, the findings of this study cannot ‘speak’ for the entire population but to the TE population of Western Australia and the GAT Academic Programs, which results in lower external validity. The findings from the parent survey do not form the core project of the study but allowed access to pertinent areas that were not included in the core project.

4.5.2. Ethics

The researcher was mindful to address issues such as privacy, informed consent and anonymity for participants. The researcher was also mindful of reciprocity in this study, as this is one of the major outcomes of the transformative paradigm that the participants and the TE population would benefit from this study. The coordinators of GAT Academic Programs and parents of TE students will have their perceptions shared with the DoE, as a means of advocating for change with regard to identification
of and support for TE students, for inclusion in the GAT Academic programs. Additionally, TE students, who had previously not been located as a group in the GAT Academic programs will benefit from a greater awareness of their needs and future TE students will benefit from more equitable and inclusive practices for entry to these programs.

- 4.5.3. Anonymity and confidentiality

No student, teacher, parent or school was identified through the research data and the participants of the surveys were coded so that only the researcher is aware of their identity. All research data are confidential and are stored securely for a period of at least five years after the completion of the research and publication of any papers.

- 4.5.4. Withdrawal rights

Consent letters were sent to all participants so that they were aware that they could choose not to participate in the study and contained the following statements:

- I understand that participation in the project is entirely voluntary.
- I understand that I am free to withdraw my participation at any time, without affecting the relationship with the research team or Edith Cowan University.
- Withdrawal from the study can occur at any time.

Summary

The purpose of this study is two-fold: a core project to identify the prevalence of twice exceptional students in the GAT Academic programs and examine this against disability prevalence in the DoE’s schools in Western Australia. A second project was to determine the knowledge and perceptions of the GAT Academic coordinators and perceptions of parents of TE students of the GAT Academic programs and process. A mixed method longitudinal cohort study and coordinator and parent surveys were used to examine TE and disability prevalence, knowledge and perceptions of the GAT Academic programs and barriers to TE inclusion in the programs which is framed by the DoE’s adoption of Gagné’s DMGT model. The adoption of a transformative mixed methods approach allows the researcher to gain insightful data that gives a ‘voice’ for change to the marginalised TE group and is “preferred for working toward increased social justice” (Mertens, 2009, p. 224).
CHAPTER 5

5.0. RESULTS

5.1. Chapter Overview

The data presented in this thesis were drawn from information provided by the Western Australian (WA) Department of Education (DoE), a survey completed by coordinators of Gifted and Talented (GAT) selective Academic programs, information collated from the School Curriculum and Standards Authority’s (SCSA) Special Provisions for the Western Australian Certificate of Education (WACE) examination candidates and a survey completed by parents of TE students. This Chapter summarises the prevalence data on twice exceptional students (TE) from these data sources.

5.2. Analysis of data for TE prevalence

Longitudinal quantitative cohort data were gathered from the DoE and reduced to summaries of useable data. These data were then displayed in organised tables from which patterns were identified and summarised as key findings. A descriptive analysis of the data then followed that allowed comparisons to be made between data collection pools. Additionally, triangulation of data was made between the quantitative analysis of DoE data and a qualitative analysis of a closed and open-ended survey completed by the GAT Academic program coordinators. Using multiple methods and sources of data counterbalances “the potential for flaws or weaknesses of one method, with the strengths of another” (Mitchell, 1986, p. 21; Morse, 1991).
5.3. Prevalence of twice exceptional students in Western Australian GAT Academic programs 2007 to 2012.

To determine the prevalence of twice exceptional students, the various stages of the Department of Education's process for selecting gifted and talented (GAT) students were examined. This was a complex process due to the various pools of potential and selected applicants that acted as a ‘hierarchal conduit’, or process that funnelled all applicants into a sorting process that eventuated in a pool of selected TE students. The complexity of identifying and comparing TE representation at each pool level was challenging, both statistically and for clarity. Ensuring that each stage was explored and summarised was important as this has implications for the number of TE applicants that were selected and admitted into GAT programs.

To help the reader, a brief explanation of the pool’s cohorts and terminology used follows for each stage of the process, with TE students being represented in each pool.

1. **Total pool of students**: the total number of students who potentially could apply for a GAT selective placement, including students from all schooling systems, Government and non-Government.

2. **Received applications**: the total number of applications received for placement in any GAT selective program: Academic, Language and Arts. Entry to any of these programs is by sitting the GAT Academic Test and/or audition through performance or portfolio.

3. **GAT students**: the total number of applicants that accepted placement for any selective program.

4. **GAT Academic students**: the total number of applicants that accepted placement in a GAT Academic program, which is a sub-set of all selective programs.

**Department of Education Data**

Data were gathered from the Gifted and Talented (GAT) Branch of the DoE (personal communication 31 October, 2011, 25 January, 2012, 30 April, 2013). GAT application numbers were examined in years 2007 to 2012 (which was the year that Year 6 students applied for entry into Year 8, 2009 to 2014 to determine how many students had indicated a disability and were requiring exemption from the GAT Academic Test – Arts only, or special test arrangements for any selective GAT program. Applicants applying for a GAT Art’s position can apply for exemption from the test as they are being assessed in Arts related areas, but not for GAT Academic positions, as the test is
the sole criterion for selection. Four sets of DoE data were examined in order to build a comprehensive picture of the prevalence of TE students:

- total pool of students;
- 1. received applications – all programs;
- 2. students that accepted a place in GAT – all programs, and
- 3. students that accepted a place in GAT Academic programs.

This acts as a means of establishing the prevalence of TE students at each stage of the application and selection process for all GAT programs to ultimately determine the prevalence of TE students in the GAT Academic programs of Western Australia. Examination of the data at each stage reveals the prevalence of TE students, beginning with the large pool of those who apply to the small pool that are ultimately successful in gaining a place in the GAT Academic programs. Each of these is now reported.

**The total pool of students Year 6, 2007 to 2012 and received applications**

Table 5.1 summarises the number of students in WA Government and non-Government schools comprising the total pool of students who potentially could apply for placement in GAT programs, including on-line programs in Perth, Western Australia. Additionally, the number of received applications applying for placement and numbers that indicated disability are provided. Numbers of received applications that indicated disability were calculated as a percentage of the total pool of potential students. The prevalence of TE students in the received applicant pool was determined from these data.
Table 5.1. Summary of the Year 6 student potential and received applications for entry to any GAT program and numbers indicating disability

<table>
<thead>
<tr>
<th>Year 6</th>
<th>2007</th>
<th>2008 HCY*</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
<th>Annual Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Number of students in Year 6 (Semester 2) at Government and non-Government schools in WA when selection was made for entry in Year 8</td>
<td>28,045</td>
<td>17,262</td>
<td>28,517</td>
<td>29,533</td>
<td>29,481</td>
<td>29,592</td>
<td>162,430</td>
<td>27,071</td>
</tr>
<tr>
<td>Number of received applications for GAT programs Year 6 (% of A)</td>
<td>2,074 (7.4)</td>
<td>1,671 (9.7)</td>
<td>2,285 (8.0)</td>
<td>2,117 (7.2)</td>
<td>2,182 (7.4)</td>
<td>2,755 (9.3)</td>
<td>13,084</td>
<td>2,181 (8.1)</td>
</tr>
<tr>
<td>Number of received applications - student indicated disability (TE) (% of A)</td>
<td>42 (0.1)</td>
<td>34 (0.2)</td>
<td>44 (0.2)</td>
<td>44 (0.1)</td>
<td>43 (0.1)</td>
<td>56 (0.2)</td>
<td>263</td>
<td>44 (0.16)</td>
</tr>
</tbody>
</table>

*HCY = Half Cohort Year

The number of students at Government and non-Government schools who formed the total pool of potential applicants for application and selection into GAT programs during their Year 6, 2007 to 2012 year was 162,430 with an annual mean of 27,071 students. In 2002, a half-year cohort entered the school system. This meant that, only those who had turned five by 30 June 2002 were eligible for Pre-year 1. In 2010, the half cohort year (HCY) was in Year 8, having applied for GAT positions in 2008.

Key Finding 5.1

Over the years 2007-2012, an average of 8.1% of Year 6 students enrolled in Government and Non-Government schools applied for entry to GAT programs. An annual mean of 0.16% of applicants indicated they had a disability and were twice exceptional.
The total pool of accepted applications

Table 5.2 summarises the numbers of applicants selected for all GAT programs in Year 6, 2007-2012 for entry into Year 8, 2009-2014 compared to the total pool of received applicants. The acceptance of places for TE applicants from the total pool is the second stage in the GAT process. The prevalence of GAT TE applicants compared to all applicants was determined from these data.
Table 5.2. *Summary of GAT applicants offered and accepted a place for all GAT programs 2007-2012 from the total received applicant pool*

<table>
<thead>
<tr>
<th>Year 6</th>
<th>2007</th>
<th>2008 HCY*</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
<th>Annual Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. GAT applicants for all programs</td>
<td>2,074</td>
<td>1,671</td>
<td>2,285</td>
<td>2,117</td>
<td>2,182</td>
<td>2,755</td>
<td>13,084</td>
<td>2,181</td>
</tr>
<tr>
<td>GAT applicants accepting offers of places for all GAT programs (% of A)</td>
<td>799 (38.5)</td>
<td>701 (42.0)</td>
<td>799 (35.0)</td>
<td>769 (36.3)</td>
<td>782 (35.8)</td>
<td>859 (31.1)</td>
<td>4,709</td>
<td>784 (36.5)</td>
</tr>
<tr>
<td>GAT applicants accepting offers of places for GAT Academic programs (% of A)</td>
<td>454 (22.0)</td>
<td>464 (27.8)</td>
<td>479 (21.0)</td>
<td>449 (21.2)</td>
<td>438 (20.1)</td>
<td>499 (18.1)</td>
<td>2,783</td>
<td>464 (21.7)</td>
</tr>
<tr>
<td>TE applicants accepting offers of places for all GAT programs (% of A)</td>
<td>15 (0.7)</td>
<td>15 (0.8)</td>
<td>21 (0.9)</td>
<td>6 (0.2)</td>
<td>14 (0.6)</td>
<td>20 (0.7)</td>
<td>91</td>
<td>15 (0.6)</td>
</tr>
<tr>
<td>TE applicants accepting offers of places for GAT Academic programs (% of A)</td>
<td>10 (0.5)</td>
<td>8 (0.5)</td>
<td>6 (0.3)</td>
<td>1 (0.05)</td>
<td>5 (0.2)</td>
<td>10 (0.4)</td>
<td>40</td>
<td>7 (0.3)</td>
</tr>
</tbody>
</table>

*HCY = Half Cohort Year*
Key Finding 5.2
Over the years 2007-2012 an annual mean of 36.5% of Year 6 applicants from the received applicant pool accepted offers of places in GAT programs. An annual mean of 0.6% of applicants who accepted places in GAT programs indicated they were twice exceptional.

Over the six-year period 2007-2012, an annual mean of 464 applicants accepted offers of places for GAT Academic programs, which is an annual mean of 21.7% of the total applicant pool. An annual mean of 7 TE applicants accepted offers for GAT Academic programs, which represents 0.3% of the total applicant pool.

Key Finding 5.3
Over the years 2007-2012 an annual mean of 21.7% of Year 6 applicants accepted offers of places in GAT Academic programs. An annual mean of 0.3% of applicants accepting offers of places in GAT Academic programs indicated they were twice exceptional.

Accepted GAT Academic places

Table 5.3 summarises the number of Year 6 TE students that accepted a place in all GAT programs and GAT Academic programs in 2007-2012 compared to all those who accepted places in these programs. The prevalence of GAT TE applicants – all programs and Academic compared to accepted applicants was determined.

Table 5.3. Summary of TE students accepting a place for all GAT programs and GAT Academic programs as a percentage of all students accepting places

<table>
<thead>
<tr>
<th>Year 6</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
<th>Annual Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE students accepting places/All students accepting places in all GAT programs (%)</td>
<td>15/799 (1.9)</td>
<td>15/701 (2.1)</td>
<td>21/799 (2.6)</td>
<td>6/769 (0.8)</td>
<td>14/782 (1.8)</td>
<td>20/859 (2.3)</td>
<td>91/4,709</td>
<td>15/784 (1.9)</td>
</tr>
<tr>
<td>TE Academic students accepting places/All students accepting places in GAT Academic programs (%)</td>
<td>10/454 (2.2)</td>
<td>8/464 (1.7)</td>
<td>6/479 (1.3)</td>
<td>1/449 (0.2)</td>
<td>5/438 (1.1)</td>
<td>10/499 (2.0)</td>
<td>40/2,783</td>
<td>7/464 (1.5)</td>
</tr>
</tbody>
</table>

*HCY = Half Cohort Year
Twice exceptional applicants selected for any GAT program ranged from 0.8 to 2.6% of the pool of selected GAT students, which represents an annual mean of 1.9% of those who accepted a place.

TE GAT Academic students ranged from 0.2 to 2.2% of those selected for the GAT Academic programs over the six-year period, which represents an annual mean of 1.5% of applicants who accepted an Academic place.

Key Finding 5.4
Over the years 2007-2012 an annual mean of 1.9% of students that accepted a place for all GAT programs indicated they were twice exceptional. An annual mean of 1.5% of students that accepted a place in GAT Academic programs indicated they were twice exceptional.

Survey responses

The survey was completed by the GAT Academic coordinators from five of the nine academic programs to obtain prevalence data on TE students in the GAT Academic programs as a means of triangulating prevalence data from two data sources; the survey and the DoE database. It could then be determined whether any additional TE students had been identified in the pool of students accepting places in the GAT Academic programs. By using two data sources, the deficiencies that can stem from any single data collection method are decreased (Mitchell, 1986).

Question 6 of the survey asked:

*Have you identified any more students in your gifted and talented program with a learning disability since their entry into the selective Academic program or your class?*

<table>
<thead>
<tr>
<th>Year Group</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year Group</td>
<td>Number</td>
</tr>
<tr>
<td>Year Group</td>
<td>Number</td>
</tr>
<tr>
<td>Year Group</td>
<td>Number</td>
</tr>
<tr>
<td>Year Group</td>
<td>Number</td>
</tr>
</tbody>
</table>

Three of the five coordinators had identified additional TE students in the GAT Academic programs when learning issues arose in Year 10. One coordinator indicated an additional TE student was identified in Year 10, with no identification of the disability by the coordinator. A further coordinator indicated two additional students were
identified in Year 10 having a specific learning difficulty and another coordinator indicated that one additional student had been identified having dyslexia and ADHD.

Therefore, for the Year 6, 2007 cohort four additional TE students were identified after entry in these five programs in Year 10. As examinations form part of the Year 10 curriculum further TE students may have been identified when the students thought special examination provisions were needed.

**Key Finding 5.5**
Coordinators’ reported that a further four TE Academic students had been identified, when they reached Year 10. The majority of disabilities had been disclosed at the application stage.

**Key Finding 5.6**
With the additional four TE students that were identified post entry to the GAT Academic programs, the annual mean prevalence of TE Academic students increased to 1.6%

A summary of the annual mean prevalence of TE GAT students in the received and accepted pools for all programs and GAT Academic programs is shown below.

- An annual mean of 0.16% of applicants for all GAT programs declared they were TE.
- An annual mean of 0.6% of applicants that accepted a place for all GAT programs declared they were TE.
- An annual mean of 0.3% of applicants that accepted a place in GAT Academic Programs declared they were TE.

_Figure 5.1. Percentages of TE students at the application and selection stages_

A summary of the annual mean prevalence of TE GAT students, all programs and Academic within these accepted cohort of students is detailed below.
5.4. Overview of Methods Used to Analyse Disability Data and Data Regarding Special Examination Provisions

Longitudinal quantitative cohort data were gathered from the Department of Education (DoE) for TE prevalence in the GAT schools (personal communication, 31 October, 2011, 25 January, 2012, 30 April, 2013), disability in Government secondary schools of Western Australia (personal communication, 19 October, 2011, 12 January, 2012 & 5 September, 2012) and the Year 12 special examination provisions approved by the School Curriculum and Standards Authority (SCSA, 2014). These data were then displayed in organised tables and graphs from which patterns could be identified and comparisons made between data collection pools.

5.5. Prevalence of twice exceptional students in Western Australian GAT Academic programs 2007 to 2012 compared to disability in Western Australian Government schools

TE prevalence data amongst applications, those selected for programs other than Academic, and selected for Academic programs were compared to the prevalence of mainstream disability in the Department of Education’s schools at Year 6, 2007-2012. The complexity of separating disability categories was challenging, both statistically and for the clarity of the reader. These data were then compared to the SCSA prevalence data and categories for approved Year 12 special examination provisions for the Western Australian Certificate of Education (WACE).
Department of Education Data

Data were gathered from the Gifted and Talented Education (GAT) Branch of the Department of Education (DoE) (personal communication, 31 October, 2011, 25 January, 2012, 30 April, 2013). GAT application numbers were examined in years 2007 to 2012 (which was the year that Year 6 students applied for entry into Year 8, 2009 to 2014) to determine how many students had indicated a disability and were requiring exemption from the GAT Academic Test – Arts only, or special test provisions for any GAT program. Applicants applying for a GAT Art’s position can apply for exemption as they are being assessed in Arts related areas, but not for selective Academic positions, as this is the sole criterion for selection.

Disability data from the Census, Semester 2 for Year 6, 2007 to 2012 were gathered from the DoE (personal communication, 19 October, 2011, 12 January, 2012, 5 September, 2012). Disability prevalence was determined and compared to TE prevalence in GAT Academic and other GAT programs.

The total pool of selected TE academic applications compared to disability

Table 5.4 summarises the percentage of students with disabilities in Government schools in Year 6, Semester 2, 2007 to 2012 collected through the Census by the DoE. The prevalence of students in mainstream schooling with a disability, excluding those students from Education Support facilities, was summarised in two categories:

1. Mainstream total disability (MD) – students with disabilities (all categories) educated in mainstream classrooms, and

2. Mainstream conservative disability (MCD) – students within the categories of: Autism, Asperger’s disorder, vision impairment, deaf and hard of hearing, severe mental disorder, physical disability and severe medical health conditions educated in mainstream classrooms. Excluded were students with a global developmental delay, mild, moderate and severe intellectual disability due to impairment of cognitive function, a pervasive developmental disorder not otherwise specified (PDD-NOS) and speech/language impairment. Schools can receive additional funding to support the education of MD and MCD students through the DoE’s Schools Plus model of funding. Mainstream disability has been included as these students could potentially apply and be successful in gaining a place in GAT programs other than Academic. Both MD and
MCD disability excludes disability such as dyslexia, dyspraxia, dysgraphia, ADD/ADHD and any disability not severe enough to warrant application for Schools Plus funding. Therefore, MD and MCD disability prevalence provides over and understated disability prevalence with a mid-point between the two most likely.

Table 5.4 summarises the data for MD and MCD in Year 6, 2007 to 2012 compared to Year 6 Government school students educated in mainstream classes.

Table 5.4. Year 6 student mainstream enrolment compared to MCD and MD prevalence in Government school

<table>
<thead>
<tr>
<th>Year 6</th>
<th>2007</th>
<th>2008HCY*</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
<th>Annual Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Year 6 mainstream student enrolment Semester 2</td>
<td>19,637</td>
<td>11,174</td>
<td>19,654</td>
<td>20,452</td>
<td>20,001</td>
<td>20,171</td>
<td>111,089</td>
<td>18,515</td>
</tr>
<tr>
<td>A. Mainstream conservative disability (MCD)# (% of Year 6 enrolment)</td>
<td>238 (1.2%)</td>
<td>186 (1.7%)</td>
<td>337 (1.7%)</td>
<td>407 (2.0%)</td>
<td>424 (2.1%)</td>
<td>497 (2.5%)</td>
<td>2,089</td>
<td>348 (1.9%)</td>
</tr>
<tr>
<td>B. Mainstream disability (MD) (% of possible applicants)</td>
<td>449 (2.2%)</td>
<td>342 (3.0%)</td>
<td>530 (2.6%)</td>
<td>647 (3.1%)</td>
<td>645 (3.2%)</td>
<td>687 (3.4%)</td>
<td>3,300</td>
<td>550 (3.0%)</td>
</tr>
</tbody>
</table>

*HCY = Half Cohort Year
#MCD = AU – Autism, AS – Asperger’s Disorder, VI – Vision impairment, DH – Deaf and hard of hearing, SM – Severe mental disorder, PD – Physical disability, SH – Severe medical health condition only

The annual mean Year 6 mainstream student enrolment at Semester 2 over the six years was 18,515 with MCD prevalence an annual mean of 1.9% and MD prevalence 3.0%. Over the six year period MCD disability prevalence increased by 1.3% and MD by 1.2%

Key Finding 5.7
The annual mean MCD prevalence 2007 to 2012 was 1.9% and MD prevalence 3.0% in Government schools. Mainstream conservative disability increased by 1.3% and MD 1.2% over the six years.
Table 5.5 summarises the number of students in mainstream schooling with a disability as collected through the Census and reported by the DoE in Semester 2 of each year 2007-2012 in the following categories: AU = Autism, AS = Asperger’s disorder, VI = Vision impairment, DH = Deaf and hard of hearing, MD = Severe mental disorder, PY = Physical disability and MH = Severe medical health condition.

Table 5.5. Prevalence of MCD students 2007-2012

<table>
<thead>
<tr>
<th>Year</th>
<th>AU</th>
<th>AS</th>
<th>VI</th>
<th>DH</th>
<th>MD</th>
<th>PY</th>
<th>MH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>72</td>
<td>17</td>
<td>22</td>
<td>41</td>
<td>11</td>
<td>45</td>
<td>30</td>
</tr>
<tr>
<td>2008</td>
<td>61</td>
<td>9</td>
<td>19</td>
<td>34</td>
<td>16</td>
<td>26</td>
<td>21</td>
</tr>
<tr>
<td>2009</td>
<td>110</td>
<td>22</td>
<td>25</td>
<td>48</td>
<td>28</td>
<td>46</td>
<td>58</td>
</tr>
<tr>
<td>2010</td>
<td>120</td>
<td>30</td>
<td>20</td>
<td>51</td>
<td>50</td>
<td>69</td>
<td>67</td>
</tr>
<tr>
<td>2011</td>
<td>141</td>
<td>28</td>
<td>20</td>
<td>53</td>
<td>38</td>
<td>53</td>
<td>91</td>
</tr>
<tr>
<td>2012</td>
<td>165</td>
<td>21</td>
<td>26</td>
<td>66</td>
<td>65</td>
<td>40</td>
<td>114</td>
</tr>
</tbody>
</table>

% Change  
+129% +24% +18% +61% +491% -11% +280%

AU - Autism, AS – Asperger’s, VI – Vision Impairment, DH - Deaf and Hard of Hearing, MD – Severe Mental Disorder, PY – Physical Disability and MH – Severe Medical Health Condition

Key Finding 5.8
With the exception of Physical Disability that declined by 11% over the six year period, all other disability categories increased by 18 to 491% in Government schools. The largest increases were for Severe Mental Disorder, Severe Medical Health Condition and Autism.

Figure 5.3 summarises the mean annual data for Year 6 students, received applications and accepted offers of places for TE and non-TE students for all GAT programs using MD.
An annual mean of 27,071 Year 6 students comprise the pool of potential applicants for all GAT programs, 2,181 or 8.06% of the student pool apply for entry to all GAT programs and 784 or 35.95% are accepted for all GAT programs.

Based on MD prevalence of 3.0% an annual mean of 812 students in the student pool would have a disability and 26,259 or 97.0% would not.

Applications received from TE students for all GAT programs totalled 44 students or 5.42% of MD students with 2,137 or 8.14% of students being without a MD disability. Places accepted by TE students for all GAT programs totalled 15 or 34.09% of TE applicants and 769 or 35.99% are non-MD/TE applicants.

Key Finding 5.9

A smaller proportion of MD/TE students (5.42%) apply for admission to all GAT programs than non-MD/TE students (8.14%). Additionally the MD/TE acceptance rate for all GAT programs (34.09%) is lower than for non-MD/TE students (35.99%).
GAT all programs using Mainstream Conservative Disability (MCD)

Figure 5.4 summarises the mean annual data for Year 6 students, received applications and accepted offers of places for TE and non-TE students for all GAT programs using MCD.

<table>
<thead>
<tr>
<th>Total pool of Year 6 students (annual mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td>27,071</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Students without MCD disability</th>
<th>Mainstream conservative disability (MCD) students</th>
</tr>
</thead>
<tbody>
<tr>
<td>26,557 or 98.1% of the student pool</td>
<td>514 or 1.9% of the student pool</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Applications for all GAT programs (annual mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2181 or 8.06% of the student pool</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Applications received from non-TE students for all GAT programs</th>
<th>Applications received from TE students for all GAT programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,137 or 8.05% of students without MCD disability</td>
<td>44 or 8.56% of MCD students</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Places accepted for all GAT programs (annual mean)</th>
</tr>
</thead>
<tbody>
<tr>
<td>784 or 35.95% of applicants</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Places accepted by non-MCD/TE students for all GAT programs</th>
<th>Places accepted by TE students for all GAT programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>769 or 35.99% of non-MCD/TE applicants</td>
<td>15 or 34.09% of TE/MCD applicants</td>
</tr>
</tbody>
</table>

**Figure 5.4.** Mean annual numbers of Year 6 students, received applications and accepted offers of places for TE and non-TE students for all GAT programs using MCD

An annual mean of 27,071 Year 6 students comprise the pool of potential applicants for GAT programs, 2,181 or 8.06% of the student pool apply for entry to all GAT programs and 784 or 35.95% of the applications are accepted for all GAT programs.

Based on MCD prevalence of 1.9% an annual mean of 514 students would have a MCD disability and 26,557 or 98.1% are without a MCD disability.

Applications received from TE students for all GAT programs totalled 44 students or 8.56% of MCD students while 2,137 or 8.05% of students without a MCD disability applied for GAT places.
Places accepted by TE students for all GAT programs totalled 15 or 34.09% of TE/MCD applicants and 769 or 35.99% were non-MCD/TE students.

**Key Finding 5.10**

A larger proportion of MCD/TE students (8.56%) apply for admission to all GAT programs than non-MCD/TE students (8.05%); however, a higher proportion of non-MCD applicants accepted places (35.99%) than MCD/TE applicants (34.09%).

**Application to and Acceptance of Places in GAT Academic Programs by Students with MCD and MD**

Figure 5.5 summarises the mean annual data for Year 6 students, received applications and accepted offers of places for TE and non-TE students for GAT Academic programs using MD.

<table>
<thead>
<tr>
<th>Total pool of Year 6 students (annual mean)</th>
<th>27,071</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students without MD disability</td>
<td>26,313 or 97.0% of the student pool</td>
</tr>
<tr>
<td>Mainstream disability (MD) students</td>
<td>812 or 3.0% of the student pool</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Applications for all GAT programs (annual mean)</th>
<th>2181 or 8.06% of the student pool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications received from non-TE students for all GAT programs</td>
<td>2,137 or 8.14% of students without MD disability</td>
</tr>
<tr>
<td>Applications received from TE students for all GAT programs</td>
<td>44 or 5.42% of MD students</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Places accepted for GAT Academic programs (annual mean)</th>
<th>464 or 21.27% of applicants for all GAT programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Places accepted by non-MD/TE students for GAT Academic programs</td>
<td>457 or 21.39% of non-MD/TE applicants for all GAT programs</td>
</tr>
<tr>
<td>Places accepted by TE students for GAT Academic programs</td>
<td>7 or 15.91% of TE students applying for all GAT programs</td>
</tr>
</tbody>
</table>

*Figure 5.5.* Mean annual numbers of Year 6 students, received applications and accepted offers of places for TE and non-TE students for GAT Academic programs using MD
An annual mean of 27,071 Year 6 students comprise the pool of potential applicants for GAT programs. A total of 2,181 or 8.06% of the student pool applied for entry to all GAT programs and 464 or 21.27% of applicants were accepted for GAT Academic programs.

Based on MD prevalence of 3.0% an annual mean of 812 students in the student pool would have a disability and 26,259 or 97.0% would not.

Applications received from TE students for all GAT programs totalled 44 students or 5.42% of MD students with 2,137 or 8.14% of students being without a MD disability. Forty-four TE students or 5.42% of the applications were received from MD students and 2,137 or 8.14% of applications were received from students with a MD disability.

Places accepted by TE students for GAT Academic programs totalled 7 or 15.91% of TE applicants and 457 or 21.39% are non-MD/TE Academic applicants.

Key Finding 5.11

A higher proportion of non-MD students (8.14%) applied for GAT Academic Programs than MD students (5.42%). The TE acceptance rate for GAT Academic programs (15.9%) is lower than for non-MD/TE students (21.4%).

**GAT Academic programs using Mainstream Conservative Disability (MCD)**

Figure 5.6 summarises the mean annual data for Year 6 students, received applications and accepted offers of places for TE and non-TE students for GAT Academic programs using MCD.
An annual mean of 27,071 Year 6 students comprise the pool of potential applicants for GAT programs, 2,638 or 8.06% of the student pool apply for entry to all GAT programs and 464 or 21.27% of applicants are accepted for GAT Academic programs.

Based on MCD prevalence of 1.9% an annual mean of 514 students in the student pool would have a disability and 26,557 or 98.1% would not.

Applications received from TE students for all GAT programs totalled 44 students or 8.56% of MCD students, while 2,137 or 8.05% of applicants were from those without a MCD disability.

---

**Figure 5.6.** Mean annual numbers of Year 6 students, received applications and accepted offers of places for TE and non-TE students for GAT Academic programs using MCD
Places accepted by TE students for GAT Academic programs totalled 7 or 15.91% of TE applicants and 457 or 21.39% were from non-MD/TE Academic applicants.

**Key Finding 5.12**

A larger proportion of MCD students (8.56%) than non-MCD students (8.05%) applied for entry to all GAT programs. A larger proportion of non-TE applicants (21.39%) were offered and accepted places in GAT Academic programs than TE applicants (15.9%).

**Summary**

Based on mainstream disability prevalence, a smaller annual mean of MD/TE students (5.42%) apply for admission to all GAT programs than non-MD/TE students (8.14%). Using mainstream conservative disability prevalence, slightly higher annual mean of MCD/TE students (8.56%) apply for admission to all GAT programs than non-MCD/TE students (8.05%).

The acceptance rate for places in all GAT programs for TE applicants is slightly lower than that for non-MD/TE students and MCD/TE students, 34.09% of applicants compared to 35.99%.

The acceptance rate for places in GAT Academic programs for TE applicants is lower than that for non-MD/TE students and MCD/TE students, 15.91% of TE applications for all GAT programs result in accepted places in GAT Academic programs compared to 21.39%.

The majority of students who accept places in all GAT programs (98.1%) and GAT Academic programs (98.5%) are non-TE students.

The proportion of students who accept places in all GAT programs whom are TE (1.91%) is lower than the proportion of the Year 6 student pool that is MD (3.0%) and equal to the proportion whom are MCD (1.9%)

The proportion of students who accept places in GAT Academic programs whom are TE (1.51%) is lower than the proportion of the Year 6 student pool that are MD (3.0%) and lower than the proportion that are MCD (1.9%).

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Key Finding 5.13
The annual mean prevalence of TE students (1.51%) who accept a place in GAT Academic programs is lower than MD and MCD prevalence of 3.0% and 1.9% respectively. The annual mean prevalence of TE students (1.91%) who accept places in all GAT programs is lower than MD prevalence of 3.0% and equal to MCD prevalence of 1.9%.

SCSA Data – Year 12, 2007 to Year 12, 2014

When considering disability in Western Australian schools, it is prudent to also consider disability as reported by the School Curriculum and Standards Authority (SCSA, 2014), as the categories of disability are broader than those gathered and reported by the DoE. This allows for a comparison with the prevalence of reported disability and also collection of disability patterns that are not collected by the DoE.

Students in Year 12 wishing to apply for special examination provisions for their Western Australian Certificate of Education (WACE) examinations apply to the SCSA for special provisions. There are two types of special provisions, sickness/misadventure and special examination arrangements.

The Authority recognises that individual students, under circumstances outlined in the special provisions policy, may need special external examination arrangements to allow them to demonstrate their knowledge, skills and understandings within certain courses. The underlying principle of special provisions is to ensure that the most appropriate, fair and reasonable arrangements and options are available for students to demonstrate their capabilities where their external assessment is affected by illness, impairment or personal circumstances. Special provisions are available for practical and written examinations.

Students who are eligible for special provisions are not exempt from meeting the requirements for a Western Australian Certificate of Education (WACE), or from being assessed in a course.

In considering the eligibility for special provisions, the School Curriculum and Standards Authority is mindful of the need to balance the competing demands of allowing students to demonstrate their knowledge, skills and understandings with the need to preserve the academic integrity of the assessment process.

There are two types of special provisions for the WACE examinations:

- **Special examination arrangements** – Candidates who have a temporary or permanent disability, illness and/or specific learning disability that could disadvantage them in timed assessments may apply
to sit an examination under special conditions. Application is made prior to the examinations.

- **Sickness/misadventure provisions** – Candidates who suffer from a temporary sickness, non-permanent disability or an unforeseen event close to or during the examinations which they believe may have resulted in performance below expectations or non-attendance in particular examinations are given the opportunity to apply for assessment consideration. Application is made immediately after the examinations.


Table 5.6 summarises the Year 12, 2007 to 2014 percentage of approved applications for special examination provision compared to Year 12 enrolled students.

Table 5.6. **SCSA approved Special Examination Arrangements Year 12 2008 to 2014 (SCSA, 2013)**

<table>
<thead>
<tr>
<th>Year 12</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013*</th>
<th>2014#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 12 students enrolled as at Semester 2</td>
<td>20,551</td>
<td>21,333</td>
<td>22,517</td>
<td>22,726</td>
<td>23,207</td>
<td>23,939</td>
<td>17,010</td>
</tr>
<tr>
<td>Year 12 students enrolled for at least 4 examinations (% of all Year 12s)</td>
<td>11,440 (56%)</td>
<td>12,129 (57%)</td>
<td>13,443 (60%)</td>
<td>13,514 (59%)</td>
<td>13,259 (57%)</td>
<td>13,205 (55%)</td>
<td>9,152 (54%)</td>
</tr>
<tr>
<td>Percent of Year 12 population with an approved WACE special examination provision</td>
<td>1.1%</td>
<td>1.3%</td>
<td>1.7%</td>
<td>1.7%</td>
<td>1.6%</td>
<td>1.7%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

*Year 6 cohort 2007  #Year 6 HCY 2008

**Key Finding 5.14**
Over a seven year period, which included the Year 6 applicant year of 2007 and 2008 graduating in Year 12, 2013 and 2014, the percentage of Year 12 students who successfully applied for special examination provision ranged from 1.1 to 1.9%. The percentage of approved applications increased by 0.8% of the Year 12 population between 2008 and 2014.
Table 5.7 summarises the Year 12, 2008 to 2014 approved special examination applications by category of disability. Examining the categories sheds light on the most prevalent disability categories and how this relates to TE Academic prevalence and the DoE’s disability data.

Table 5.7.  Approved Applications by disability category 2008 to 2014 (SCSA, 2014)

<table>
<thead>
<tr>
<th>Year 12</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013*</th>
<th>2014#</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLD</td>
<td>114</td>
<td>138</td>
<td>137</td>
<td>158</td>
<td>136</td>
<td>147</td>
<td>110</td>
</tr>
<tr>
<td>ADD/ADHD</td>
<td>25</td>
<td>17</td>
<td>18</td>
<td>20</td>
<td>17</td>
<td>26</td>
<td>24</td>
</tr>
<tr>
<td>Fine Motor</td>
<td>38</td>
<td>33</td>
<td>79</td>
<td>48</td>
<td>40</td>
<td>53</td>
<td>37</td>
</tr>
<tr>
<td>Hearing</td>
<td>6</td>
<td>5</td>
<td>42</td>
<td>5</td>
<td>11</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Vision</td>
<td>14</td>
<td>8</td>
<td>20</td>
<td>14</td>
<td>17</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>Physical</td>
<td>14</td>
<td>29</td>
<td>35</td>
<td>63</td>
<td>52</td>
<td>55</td>
<td>57</td>
</tr>
<tr>
<td>Psychological</td>
<td>23</td>
<td>43</td>
<td>53</td>
<td>69</td>
<td>89</td>
<td>90</td>
<td>77</td>
</tr>
<tr>
<td>TOTAL</td>
<td>234</td>
<td>273</td>
<td>384</td>
<td>377</td>
<td>361</td>
<td>396</td>
<td>330</td>
</tr>
</tbody>
</table>

*Year 6 cohort 2007  # Year 6 HCY 2008

With the exception of the HCY in 2014, the total number of approved applications for special examination provision has steadily increased. From 2008 to 2014 the number of approved applications increased by 41%.

Table 5.8 summarises the percentage of SLD and ADD/ADHD approved applications for special examination arrangements over seven years that do not form part of MCD nor MD prevalence.

Table 5.8.  Percentage of approved applications – SLD and ADD/ADHD 2008 to 2014

<table>
<thead>
<tr>
<th>Year 12</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013*</th>
<th>2014#</th>
<th>Annual Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved Applications</td>
<td>234 (49%)</td>
<td>273 (51%)</td>
<td>384 (36%)</td>
<td>377 (42%)</td>
<td>361 (38%)</td>
<td>396 (37%)</td>
<td>330 (33%)</td>
<td>336 (40%)</td>
</tr>
<tr>
<td>SLD</td>
<td>114 (49%)</td>
<td>138 (51%)</td>
<td>137 (36%)</td>
<td>158 (42%)</td>
<td>136 (38%)</td>
<td>147 (37%)</td>
<td>110 (33%)</td>
<td>134 (40%)</td>
</tr>
<tr>
<td>ADD/ADHD</td>
<td>25 (11%)</td>
<td>17 (6%)</td>
<td>18 (5%)</td>
<td>20 (5%)</td>
<td>17 (5%)</td>
<td>26 (7%)</td>
<td>24 (7%)</td>
<td>21 (6%)</td>
</tr>
</tbody>
</table>

*Year 6 cohort 2007  # Year 6 HCY 2008
An examination of the SCSA’s categories for approved special examination provision shows that the category of Specific Learning Disability (SLD), which includes dyslexia, dysgraphia and dyspraxia, has the largest number of approved applications 2008 to 2014 and represented 40% of approvals over the seven-year period. The SLD category is not gathered by the DoE, and is therefore, not represented in the MCD nor MD prevalence.

ADD/ADHD is the second largest disability category and represented an average of 6% of approvals over the seven-year period. Both of these categories are not represented in disability prevalence data for MD and MCD as reported by the DoE.

The annual mean percentage of Year 12 students with approved special examination provision based on SLD plus ADD/ADHD is 0.72% (155/21,612). This adds to the percentages of the Year 6 population that have been classified as MD (3.0%) or MCD (1.9%) – 3.72% and 2.62% respectively.

**Key Finding 5.15**

An annual mean of 46% of SCSA’s approved special examination applications relate to the disability categories of SLD and ADD/ADHD which are additional categories to those gathered by the DoE through the Census. This is an annual mean of 0.72% of enrolled Year 12 students and 1.43% of WACE examination candidates.

Disability prevalence as reported by the DoE and SCSA, shows the increasing prevalence of disability while the prevalence of TE GAT Academic students declined over the studied six-year period 2007 to 2012. The disability patterns as reported by the DoE, SCSA and TE Academic prevalence during these six years was one of disparity. While disability was increasing, no doubt due to better means of identification and support for students with disability, greater parental awareness and knowledge, and more inclusive educational practices, TE GAT Academic prevalence has not steadily increased.

**Key Finding 5.16**

TE prevalence in the GAT Academic programs is lower than disability as reported by the DoE and as reported by SCSA.
5.6. Analysis of Data from the Program Coordinator Survey

A qualitative analysis of a closed and open-ended survey was undertaken to investigate GAT Academic program coordinators' understanding of the GAT selection process used by the Department of Education (DoE). Additionally the coordinators’ perceptions and knowledge of the TE students participating in the GAT Academic programs were also probed by the survey.

5.7. GAT Academic Program Coordinator Survey

Coordinators from five of the nine GAT Academic programs completed a survey. The closed and open-ended responses to these questions are summarised for each question below.

**Question 2: How is gifted and talented defined in your program?**

The four of the five coordinators attributed the definition, assessment and selection of gifted and talented students to the DoE. Three coordinators directly linked the definition to a score cut-off point that students must achieve to be selected: “Students are selected through the Department of Education selection tests” (Coordinator 4) “as assessed by the GATE testing protocols” (Coordinator 2) and “Students who achieve a score above [. . .] in the Education Department’s testing in Year 6. This is meant to give me students in the top 5% of their age group.” (Coordinator 3). Coordinator 1 correctly attributed the definition that was used at their location to Françoys Gagné: “Students are given opportunities for critical analysis and higher order thinking skills. The model of giftedness we apply is Gagné’s as it accommodates a wide range of abilities with a focus on specific outcomes.” Additionally Coordinator 5 commented “Internally we have synergy with GERRIC (UNSW) [Gifted Education Research, Resource & Information Centre, University of New South Wales] training modules and apply this to our language around giftedness”.

Survey data provided a ‘picture’ of the coordinators’ knowledge of the gifted and talented definition used by the DoE in relation to their coordinating role of the GAT Academic program. Only one coordinator correctly attributed the definition used by DoE to Françoys Gagné with all other coordinators providing an operational definition related to the DoE’s testing and testing score cut-off point. This most closely describes the process of GAT Academic program selection and also the classification indicator to
be defined as gifted and talented by the DoE. Therefore, the test and cut-off score became the definition.

Of note, was the mention by one coordinator of the GERRIC (Gross, MacLeod, Bailey, Chaffey, Merrick, & Targett, 2005) modules in relation to application of the language used for giftedness. In the Gifted and Talented Education Professional Development Package for Teachers (Gross et al., 2005, p. 4) on line source, which is the professional development developed for the Department of Education, Science and Training in collaboration with GERRIC and used by the Department of Education, the statement “The key to Gagné’s view of giftedness is that it defines outstanding potential rather than outstanding performance” which is in contrast to the DoE’s policy definition that uses ‘ability’.

**Question 3:** Indicate by circling one or all of the following criteria used for selecting students into the selective gifted Academic program:

a. Individually administered tests of achievement  
b. Group administered tests of achievement  
c. Individually administered tests of potential  
d. Group administered tests of potential

Two of the coordinators gave no response to this question, two indicated the criteria to be group administered tests of potential with one also adding “definitely potential not achievement” and another indicated “individually administered tests of achievement”.

There was a lack of awareness of the criteria for identifying GAT Academic applicants. This maybe due to it being variously represented in the GAT Brochure of 2009 as “the test includes individual assessments in the areas of mathematics, language, writing and academic potential.” (DET, 2009, p. 13). In the 2010 GAT Brochure that was used prior to the survey’s completion “The test includes individual assessments in the areas of mathematics, language, writing and abstract reasoning.” (DET, 2010b, p. 7). In the Gifted and Talented Parent Presentation (DET, 2014, p. 25) the GAT Academic Test is described as a “test that has four equally weighted components: Reading Comprehension, Communicating Ideas in Writing, Quantitative Reasoning (Mathematics & Science), and Abstract/Non-verbal Reasoning”.

Therefore, measures of achievement and potential. The student’s reading comprehension is assessed on their ability to understand and interpret a range of texts.
and in communicating ideas in writing when presented with a stimulus and instructed to present a well organised, creative, interesting and original piece of writing. For the quantitative reasoning and abstract non-verbal reasoning students are required to extract and interpret information, identify and recognise relationships, connections and differences, solve problems, identify similarities and differences, think logically, hypothesise and complete sequences. Therefore, the GAT Academic testing assesses achievement in reading and writing and potential or aptitude for higher order thinking with the quantitative reasoning and abstract non-verbal reasoning.

Knowing whether the testing is assessing achievement or potential, or achievement and potential is important in planning for curriculum differentiation and supporting students. Information from the DoE about the testing regime, handover of information about academic/potential strengths and weaknesses of students was insufficient for the coordinators to have knowledge of the criteria for student selection.

Key Finding 5.17

One coordinator knew the GAT definition adopted by the DoE with all other coordinators providing an operational definition related to the DoE’s testing and testing score cut-off point. None of the coordinators recognised that both tests of achievement and potential are used to select students for the GAT Academic programs.

Question 5: How did you become aware of the learning disabilities of these students? and/or rank the source of the majority of information given to you, 1 being the source of most information –

- a. Parents
- b. GATE Branch
- c. Principal
- d. School Psychologist
- e. Learning Support Coordinator
- f. Other school personnel

One coordinator had no students with a disability at her location. The remaining four coordinators indicated that the most highly ranked source of information about students’ learning disabilities was: the learning support coordinator, the school psychologist and parents (see Table 5.9).
Table 5.9. *Ranked Source of Information on students’ disability*

<table>
<thead>
<tr>
<th>Coordinator 5</th>
<th>Coordinator 4</th>
<th>Coordinator 3</th>
<th>Coordinator 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Other school personnel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. GATE Branch</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Principal</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Two coordinators also added that they became aware of the learning disabilities of these students from the “School's medical register” (Coordinator 2) and “school testing or data on admission.” (Coordinator 5). Coordinator 4 commented:

> As coordinator of the Gifted and Talented Education program I am made aware of these students’ learning disabilities firstly via communication from/with the school’s Learning Support Coordinator. Discussions with the Learning Support Coordinator and the School Psychologist provided additional information about these students and their needs. When necessary, meetings were/are held with these school personnel and students’ parents to gain more information to plan initiatives to cater to a student’s individual learning needs. The school’s Year Coordinators are, to some degree, a source of information about the individual learning needs of these students. No information was/is gained from the school principal. Information I have gained from the GATE Branch has been limited and in response to a query about a student’s scores in each of the tests administered by the DoE. At no point was unsolicited information been provided by the GATE Branch and the students who have been offered a place in our program and their learning disabilities.

The Gifted and Talented (GAT) Branch was rated the fifth source just above the principal by one coordinator and is not mentioned by any other coordinators. Therefore, the GAT Branch plays virtually no role in providing information about the learning disabilities of TE students, even though they were registered as TE when requesting special examination provision for the GAT Academic Test.

**Question 7: Why do you think identification was not made or revealed until after entry into the selective Academic program?**

One coordinator had no students with disabilities at her location and another indicated “N/A.” (Coordinator 2). Three coordinators commented:
It was thought that the child was just a bit unusual. (Coordinator 4)

Fear greater scrutiny of student capacity (performance as children get older and external accountability measures (exams) begin to exert pressure. Changes in Curriculum Council regulation re inclusivity (exam conditions) has created an agenda for this. (Coordinator 5)

In the case of one student, cultural factors have influenced the parents’ decision to not pursue an official recognition and diagnosis of the child’s disability. In the case of second student, official assessment procedures have not resulted in a specific diagnosis. Nevertheless the student exhibits many traits of aspergers [sic], necessitating the planning and implementation of modified teaching and learning adjustments. (Coordinator 4)

Three coordinators believed that identification of TE students was not revealed until entry into the program when examination provisions were necessary as a matter of inclusivity and equity for the student, another listed cultural factors as a barrier to formal identification and also assessments that do not confirm disability. Therefore, identification became important when special examination provisions needed to be put in place for the student that is ‘driven’ by the school or parents, but potential barriers to the identification are parents and assessment criteria not being met for a diagnosis to be made.

Key Finding 5.18

In the majority of instances, the Learning Support Coordinator identified the TE students. The GAT Branch does not communicate information about TE students to the coordinators of the GAT Academic programs.

Question 13: Do any twice exceptional students in the selective Academic programs receive funding through Schools Plus? Please list year level and disability funded.

Year 8, 9, 10, 11, 12

Two coordinators indicated that their schools received a funding allocation through the DoE’s Schools Plus funding model for TE students in their GAT programs. In the first location the coordinator indicated it was for a Year 11 student with dyspraxia and a Year 8 student with Asperger’s Syndrome. The other coordinator indicated that a student in Year 8 had an 0.1 resourcing allocation and a Year 9 student an 0.4 resourcing allocation. One coordinator had never heard of Schools Plus and two other coordinators did not respond to the question.
Question 4: What is the number and percentage of students currently diagnosed with a learning disability (dyslexia, specific learning difficulty, dysgraphia, dyspraxia, ADD/ADHD) in the gifted Academic programs at your school?

Of the 799 GAT Academic students in Years 8 to 12, in one particular year at the five locations, the following numbers of students with disabilities were identified:

<table>
<thead>
<tr>
<th>Year</th>
<th>Cohort Number</th>
<th>Number with a learning disability</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>187</td>
<td>7</td>
</tr>
<tr>
<td>9</td>
<td>165</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>187</td>
<td>7</td>
</tr>
<tr>
<td>11</td>
<td>138</td>
<td>5</td>
</tr>
<tr>
<td>12</td>
<td>122</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>799</strong></td>
<td><strong>29 (3.6%)</strong></td>
</tr>
</tbody>
</table>

One location put in place Special Examination provisions.

The identified 29 TE GAT Academic students in Years 8 to 12, in that year at the five locations comprised 3.6% of the GAT Academic cohort (selection years 2005 to 2009: 2005 and 2006 excluded from original data collection) and was 0.6% higher than MD of 3.0%.

Of the 799 identified GAT Academic students in Years 8 to 12, in that year at the five locations, the following numbers of students with disabilities were identified:
<table>
<thead>
<tr>
<th>Disability Type</th>
<th>Student Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD/HD</td>
<td>8</td>
</tr>
<tr>
<td>Asperger’s Syndrome*</td>
<td>2</td>
</tr>
<tr>
<td>Autism*</td>
<td>2</td>
</tr>
<tr>
<td>Deaf &amp; Hard of Hearing*</td>
<td>0</td>
</tr>
<tr>
<td>Dysgraphia</td>
<td>0</td>
</tr>
<tr>
<td>Dyslexia</td>
<td>1</td>
</tr>
<tr>
<td>Dyspraxia</td>
<td>1</td>
</tr>
<tr>
<td>Muscular development problem</td>
<td>1</td>
</tr>
<tr>
<td>Physical Disability*</td>
<td>0</td>
</tr>
<tr>
<td>Severe Medical/Health Condition*</td>
<td>0</td>
</tr>
<tr>
<td>Severe Mental Disorder – Anxiety*</td>
<td>1</td>
</tr>
<tr>
<td>Specific Learning Disability</td>
<td>6</td>
</tr>
<tr>
<td>Speech/language impairment*</td>
<td>0</td>
</tr>
<tr>
<td>Vision Impairment*</td>
<td>1</td>
</tr>
<tr>
<td>Unidentified</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
</tr>
</tbody>
</table>

*DoE Schools Plus funding categories

The most common categories of disability were: AD/HD (8), specific learning disability (6) and those not specifically identified (6).

SCSA data indicates that 40% of approved provisions for WACE exams were in the category of specific learning disability (SLD). Data from the five GAT Academic program coordinators indicates that 27.58% of TE students were identified as having a SLD (SLD + dyslexia + dyspraxia), which is 12.74% less than the annual mean reported by SCSA. Additionally, while the DoE disability data indicates that Severe Mental Health and Severe Medical Health Condition are two of the three categories with the largest increases in numbers over six years, these two categories have the lowest reported numbers: 0 and 1, as reported by the coordinators.

**Question 6:** Have you identified any more students in your selective Academic program with a learning disability since their entry into your school?

Yes/No  
Year Group  _________________  Number  ___________

What have been the majority of learning disabilities identified after entry to your school? Rank 1 for most prevalent through to 6:
Two coordinators noted that no additional students had been identified since entry into their school. The remaining three coordinators all noted that identification of further students was made in Year 10. In two locations, an additional student was identified and in a further location two additional students were identified but it is noted in relation to these students “there has not been an ‘official’ diagnosis as such . . . cultural factors influenced the parent’s decision to not pursue an official recognition and diagnosis of the child’s disability . . . official assessment procedures have not resulted in a specific diagnosis” (Coordinator 4).

Two coordinators identified that the majority of learning disabilities identified after entry to their school were: Specific Learning Difficulty and Dyslexia and AD/HD. Another coordinator noted, “I have no idea what these disabilities are” (Coordinator 3) in relation to the terms dysgraphia and dyspraxia and two other coordinators had no further students identified at their school, therefore, this question was not applicable to them.

**Question 14: Over time are numbers of twice exceptional students increasing, decreasing or remaining the same at your school? Specify: What is the reason for this?**

Two coordinators felt the numbers had remained the same: “I’d say on average, numbers have remained the same” (Coordinator 4) and “Remains consistent” (Coordinator 1). One coordinator felt the numbers were increasing and added “I’m [sic] not really qualified to answer this. I suspect the numbers are the same, however we are getting better at diagnosing” (Coordinator 3). Another coordinator also felt the numbers were increasing with the reason for this being “more interventions/testing” (Coordinator 5). Coordinator 2 answered, “Don’t know – records not kept”.

One coordinator believed the numbers of TE students to be increasing while two others felt the numbers were remaining the same as they have not had any, and another coordinator did not know as records are not kept. TE students were not recognised as a noteworthy group in the GAT Academic program for half of the coordinators, which
indicated the TE students' low profile in the GAT Academic programs. The majority of coordinators indicated that numbers of TE students were remaining the same or that records were not kept, with only one coordinator noting that numbers were increasing through better diagnosing and more interventions/testing.

**Key Finding 5.19**
The majority of TE students were identified on entry with a small number later identified in Year 10. The majority of coordinators believed that TE numbers were remaining the same over time.

**Key Finding 5.20**
Some GAT coordinators indicated they had limited knowledge of learning disabilities.

**Question 10:** Do students with a learning disability in the selective Academic programs have any unique learning characteristics? Yes/No Specify:

One coordinator indicated no, but added, “they [TE students] always have a specific passion that becomes consuming” (Coordinator 3). Another coordinator indicated yes and added:

> Our dyspraxia and aspergers [sic] students have difficulty forming legible handwriting. Some of these students have limited social awareness in terms of recognition of widely accepted social behaviour in a classroom learning or playground social situation. Many have poor organizational and time management skills. Some require a greater degree of reflection time prior to offering a response to a query or task. Some have the ability to have concentrated focus on one task or aspect of a task (Coordinator 4).

A further comment from one coordinator was “not obviously” (Coordinator 2). One coordinator did not respond to this question.

**Question 11:** Do students with a learning disability in the selective Academic programs have any unique achievement characteristics? Yes/No Specify:

Four of the five coordinators' commented on this question. One coordinator commented “not obviously” (Coordinator 2) and another commented, “This has not been researched. I suspect achievement has suffered” (Coordinator 5). “Very high achievement in assessments that require rote learning e.g. Chemical symbol tests”
(Coordinator 3) is noted as a unique achievement characteristic for a TE student at one location. At another location

Some of these students are very creative and articulate their responses to tasks and discussions through creative means such as illustrations/drawings. They need to demonstrate achievement through creative means instead of/in addition to 'standard' mode. Some are quite ‘dominant’ in a class situation and like to have their achievement presented publically. Others are the opposite and prefer very private demonstration of achievement. A few are quite lateral thinkers and will develop an idea or concept to see its application and relevance in a variety of situations. This causes them to look beyond the most immediate responses and present quite advanced responses, which is often assessed as high achievement. For some very high achievement is possible when a task requires them to focus on one particular aspect of an idea or concept only or when it is in an area of personal interest to the student (Coordinator 4).

Question 16: Have you had to remove any twice exceptional students from the selective Academic program at your school? Yes/No  Number: ____  Years: 8, 9, 10, 11, 12  Specify the reason/s:

Four coordinators noted that they have not had to remove any TE student from their program and another coordinator did not respond due to there being no TE students at her location.

Survey data provided a ‘picture’ of the coordinators’ perceptions and knowledge of TE students in the GAT Academic programs. Despite there being variance in the coordinators’ answers about the unique learning characteristics of TE students, only one coordinator thought they did not have unique learning characteristics. Learning characteristics were both positive and negative: concentrated focus, passion that becomes consuming, difficulty forming legible handwriting, greater degree of reflection time, limited social awareness and poor organisation and time management skills.

Key Finding 5.21
Negative learning characteristics outweighed the positive for TE GAT Academic students.

Three coordinators stated that TE students exhibit unique achievement characteristics. Two coordinators noted positive achievement characteristics such as: very high achievement in assessments that require rote learning, lateral thinkers, advanced responses and very creative and articulate.
All achievement characteristics demonstrated by the intellectually gifted student. One coordinator also noted a negative achievement characteristic of dominance in class situations and the need for achievement presented publically. While also adding that other TE students prefer very private demonstration of achievement and high achievement when a task requires them to focus on one particular aspect of an idea or concept only or when it is an area of personal interest.

All achievement characteristics of the student with a disability who does not wish to draw attention to themselves and their disability and achievement that is inconsistent or in isolated areas. Another coordinator believed that there was nothing obvious about the achievement characteristics of the TE student.

Key Finding 5.22

Coordinators were perceptive to the strengths or difficulties experienced by TE students, but it was uncommon for a coordinator to have both positive and negative perceptions.

Question 8: Where any modifications to the selection process made to accommodate students with a learning disability? Yes/No Specify these modifications:

Four coordinators answered no, with one also commenting “Not as far as I know, unless the Department of Education’s test administrators apply test modifications.” (Coordinator 4). One coordinator left this question blank.

Question 12: Have you had to put in place any accommodations or modifications for the twice exceptional students at your school? Yes/No Years: 8, 9, 10, 11, 12 Specify:

One coordinator left this question blank and another responded noting that no accommodations where put in place. One of the two coordinators, who indicated yes, noted these accommodations or modifications were put in place “In Years 8 – 10. The students had an education assistant.” (Coordinator 3). Another coordinator who indicated yes commented:
Our school psychologist runs small group and individual social skills sessions for some of these students. Our Learning Support Coordinator works with individual students to implement and maintain time management and organization skills. The dyspraxia and aspergers [sic] students use a computer instead of handwriting in class and for exam situations. These students are given ‘alternative’ ways to demonstrate achievement. In some cases the students’ classmates in the gifted and talented group are provided with information, from the school psychologist, to gain an understanding of their classmates’ specific learning needs. The teachers of classes with these students in them have been offered assistance/professional development from our school psychologist to understand the students’ needs and strategies to assist the students’ learning. An alternative learning pathway has been opened in conjunction with a local TAFE, for one of these students to pursue his passion and area of talent (technology) while attending school (Coordinator 4).

Another coordinator while indicating no, went on to comment “No, other than those that apply in mainstream with similar conditions – (e.g. extra exam time/scribes etc.” (Coordinator 5).

Only half of the coordinators put in place accommodations or modifications. These were: for an education assistant (a trained paraprofessional who may assist individuals or groups of students in the classroom under the direction of the teacher), social skills sessions, time management and organisation skills, use of a computer instead of handwriting for class and exam and, alternate ways to demonstrate achievement. No mention was made of extra working time being put in place.

Key Finding 5.23

Coordinators had limited knowledge about accommodations or modifications based on SCSA provisions for TE students.

Question 15: Is it appropriate to place the student who is twice exceptional in the selective Academic program at your school? Yes/No Specify reason:

Four coordinators believed that it was an appropriate placement for a TE student in their GAT Academic program. One coordinator did not respond to the question. Amongst the four coordinators’ comments were:

It is clear that these students have benefited socially and academically from being placed in the program [. . .] has the personnel and funding resources . . . to accommodate these students and their individual needs (Coordinator 1).
Why should they be disadvantaged by being placed in a non academic program. The lessons are often self paced – which allows students to work at own pace (Coordinator 3).

We have had students twice exceptional obtain university degrees (Coordinator 4).

Where testing suggests “giftedness” then we place them (Coordinator 5).

Four of the five coordinators believed that placing TE students in the GAT Academic program was appropriate and one coordinator had no response. The positive statements covered, working at own pace, social and academic benefits and, funding and resources available for their individual needs.

<table>
<thead>
<tr>
<th>Key Finding 5.24</th>
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<tbody>
<tr>
<td>Coordinators’ perceived the inclusion of TE students into the GAT Academic programs as a benefit to the student. All noted that they have never had to remove a TE student from the program</td>
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5.8. Analysis of Data from the Parents of TE Students’ Survey

A qualitative analysis of a closed and open-ended survey was undertaken to investigate the perceptions of parents of TE students of the GAT Academic programs and the selection process used by the Department of Education (DoE). Additionally the parents’ perceptions of the barriers to inclusion of their children were also probed by the survey.

5.9. Parents of TE Students Survey

Eight parents of twice exceptional children completed a survey. The closed and open-ended responses to these questions are summarised for each question below.

Question 1: Were you aware of the Department of Education’s (DoE’s) selective Academic programs?

Seven parents were aware of the existence of the DoE’s GAT Academic programs and one parent was not aware.
Question 3: Did you make enquiries about the DoE’s

a. GAT Academic programs?  
   Yes/No

b. Entry requirements?  
   Yes/No

c. Did you consider applying for a GAT Academic position for your child?  
   Yes/No

Seven parents had made enquiries about the GAT Academic programs and entry requirements, but one parent did neither. Two parents did not consider applying for the GAT Academic program and six did consider applying for a GAT Academic position for their child. Therefore, seven of the eight parents had looked into the GAT Academic programs but ultimately only six considered applying.

Question 2: Did a teacher/principal recommend the Academic program for your child?

Three parents indicated that a teacher or principal recommended the GAT Academic program for their child and five parents indicated that no recommendation had been made.

While the majority of parents were aware of the GAT Academic programs and had made enquiries about entry requirements little more than half decided to apply. Despite their children being intellectually gifted the majority of parents had not be recommended to apply by their child’s primary school teacher or principal.

Key Finding 5.25

The majority of parents were aware of the GAT Academic programs and had made enquiries about the program and entry requirements, but only three-quarters of parents had considered applying for a position for their child. The majority of TE children had not been recommended to apply by teachers or the principal at their primary school.

Question 4: What did you consider the advantages of your child applying for and being part of the DoE’s Academic programs?

All eight parents stated that the advantages were access to like-minded peers, intellectual stimulation, extension, acceleration, an academic program, specialist teachers that catered for various learning styles:
intellectual stimulation, like-minded peers, G and T trained teachers, and possibilities for academic extension (Parent 1).

Since very early, Kindy in fact, [...] would often choose to “under” achieve in order to blend in with her classmates. We always wondered if she was surrounded by similarly bright students, she may strive to achieve more (Parent 2).

I hoped that the DoE’s Academic program would cater to various learning styles and provide greater academic opportunities (Parent 4).

Finding other students like him who were very bright so that he could have acceleration (Parent 3).

I hoped that the DoE’s Academic program would cater to various learning styles and provide greater academic opportunities (Parent 4).

Advantages were access to an academic program and peers suited to gifted children. Often lack of understanding about giftedness in Primary School, so access to specialist teachers and a school that “gets it” is appealing (Parent 5).

... chance to live up to abilities rather than being lost to difficulties (Parent 6.)

Being given opportunities for extension and working in a school with an ‘able’ peer group (Parent 7).

The opportunity to be surrounded by peers with like interests and abilities. Teaching that understood and supported [...] abilities (Parent 8).

Question 5: What did you consider the disadvantages of your child applying for and being part of the DoE’s Academic programs?

Five parents made mention that they were concerned about how their child would cope, their self-esteem, pressure and competition, separation from familiar peers and peers living locally, distance/travel, possible anxiety, depression issues and judgements made by other children:

My impression was that they cater for students who excel at school. I wasn’t sure that my child would excel at school despite his high IQ. I therefore thought that it might not be the best for his self-esteem. Most importantly though, I didn’t think he had much of a chance at getting a place. Because I chose to home school him for primary years his academic skills in spelling and writing were below grade level (a combination of him never practicing these skills but also having sensory and coordination issues which make handwriting challenging for him (Parent 1).

Also concerned about judgements from other children in the program (Parent 5).
Pressure and competition. Separation from familiar peers and peers living locally. Possible self esteem, anxiety, depression issues (Parent 6).

I wasn’t sure that the competitiveness and academic intensity of an academically selective program would be right for my child (Parent 7).

I ruled out [. . . ] on the basis that if he couldn’t cope with the AEP then he would have to leave (Parent 8).

Three parents made mention of the GAT Academic testing and support:

Once I heard about the testing I knew this would be a problem for [. . . ] and it seemed unlikely he would get through. They would not accept any other proof. I was concerned that he wouldn’t get any support which he needed (Parent 3).

I was concerned that the Academic programs may not provide for or recognise twice exceptionality. My child’s gifts were not recognised or fostered in Primary School (Parent 4).

I considered the nature of the testing a barrier to entry, and was concerned about the support or lack thereof that would be provided by the schools (Parent 5).

Three parents were concerned about travel:

We were initially concerned about the distance and how [. . . ] would cope in a boarding school environment (Parent 2), Distance/travel (Parent 6) and, Travel was also a consideration – albeit a small one (Parent 8).

Parents perceived that there were advantages to their child participating in the GAT Academic programs including being with like-minded peers, extension, acceleration and expert teachers but also perceived the disadvantages of gaining entry through the GAT Academic testing, recognition and support for their TE child, their child fitting in, possible self esteem, anxiety and depression issues and being accepted by other children.

Key Finding 5.26

Parents were perceptive to the advantages of a GAT Academic placement for their child but were also aware of the disadvantages of applying and being part of the GAT Academic programs.

Question 7: What where your reasons and perceptions behind the decision to apply/not apply for a GAT Academic position?

Four parents decided not to apply due to issues of inclusion and no alternative testing option:
My son did not apply for a GAT Academic position. I had conversations with several of these schools as well as personnel within head office to enquire about alternative routes to application – but it was quite clear that the only adjustment to application would be to have him use keyboard rather than handwrite (Parent 1).

We didn’t apply because we weren’t sure if he would cope and the testing was a problem. It seems like children with disabilities should go there (Parent 3).

[...] was 2nd preference but we didn’t consider it to be a good fit, and didn’t consider [...] (Parent 5).

I feel his ability to remain ‘included’ in another school would have been tenuous (Parent 8).

One parent was concerned for their child’s ability to cope with the testing and another wanted a broader focus:

He has never sat the GATE test and still thinks it would be too much worry for him (Parent 4).

“[...] applied for [...] but [...] was our 1st preference as we felt this would give her a better balance and let her focus more on her strengths and fewer subjects (Parent 6).

and another parent

our child needed a broader focus and support. We also didn’t want her to have to travel too far to get to school (Parent 7).

The majority of parents chose not to apply for their child because of lack of inclusion for children with disabilities and that no alternative testing was available, therefore entry point, was available. They were also concerned about their child’s ability to cope and needing support when none appeared evident, the narrow focus on academics and travel time to these programs.

### Key Finding 5.27

Parents chose not to apply because of issues of inclusion, no alternative testing option available, their child’s ability to cope, needing support, travel time and narrow focus on academics.

### Question 6: What do you consider the barriers that prevent, or supports that assist students with disabilities participating in the DoE’s Academic programs?

Five parents mentioned the GAT Academic testing as a barrier:
The first barrier is the method by which these children are chosen. There is no consideration of IQ testing or any other signs of potential. The entrance test is designed to create equality of access, but in fact, in my opinion does not create equity (Parent 1).

One barrier is the testing which isn’t very equitable for a child with a disability (Parent 3).

The GAT testing was promoted as being very ‘intense’ and taking a long time. The ‘worry/anxiety was more than my child could face at 12 years of age (Parent 4).

Testing structure is very off-putting. Even with extra time, some 2E children will not display true potential (Parent 5).

Limited definition of what being ‘gifted’ entails – some gifted kids are not remotely performing at their potential (Parent 7).

Lack of support, pressure, monitoring or knowing how their child will cope academically and emotionally as well as the expectation that students will be all rounders was identified as a barrier by four parents:

   My initial concerns prior to applying were that as [. . .] would be so far away from us, we would be unable to see if she was coping emotionally with the program. Although academically she may have been fine, her emotional health could have suffered and this may not have been picked up on or monitored closely (Parent 2).

   Not knowing how your child’s LD will impact their performance in High school is also an issue (Parent 5).

   A barrier is the pressure of the Academics programs expecting kids to be ‘All rounders’. I know this has improved and they can be ‘streamed’ BUT the kids themselves view this as a failing (Parent 6).

   Absence of inclusion support services . . . I know this doesn’t/didn’t exist at [. . .] [. . .] got no additional help despite his diagnosis (Parent 8).

The main barrier to participation in the GAT Academic programs by the TE, was the GAT Academic testing and that no alternative testing option was available. Parents perceived other barriers to be the lack of inclusion in the program where children with disabilities would not get support and had to be competent in all areas. Parents did not perceive that there existed any supports that would assist the TE to be part of the GAT Academic programs as their general view was that inclusion was not present to foster the TE to apply and be part of the programs.
Finding 5.28

The majority of parents perceived the GAT Academic Test as the main barrier to participation in the GAT Academic programs. Parents did not identify any supports that assist TE students to participate in these programs.

Question 8: Any other comments:

Three parents made negative comments about the program, application and selection process. The comments were:

I remember when we filled in the online application, if you ticked the box that indicated your child had a disability, it automatically stopped you from continuing with the application and instead, referred you to call the DoE. I remember thinking this could deter some people from filling in this application especially if they felt that their child may then be discouraged from applying. It was because of this, that I chose not to tick the box and instead, allow [. . .] the opportunity to apply the same as other students (Parent 1).

I didn’t feel that my son would be welcome at these schools. I didn’t want him to feel the one out (Parent 3).

I feel that GAT schools don’t want or need kids with learning difficulties because they can easily fill their places with kids who are much easier to manage (Parent 8).

Two further parents highlighted the daunting task in picking a secondary school and issues related to identification of TE students. The comments were:

I would like to see early screening of children for twice exceptionality and this information also included in teacher training. It requires skill to pick these children as the giftedness and the learning difference/disability can work to cancel each other out – so that neither gets identified. The earlier the intervention in my opinion the better chance these kids have at being able to reach their potential. It is also important that these kids know that their 2E can come with unique gifts and challenges – and are given the chance to shine in the ways they are good at. The biggest problem for this cohort is that often, neither the giftedness or the disability/difference gets recognised and assisted (Parent 1).

Finding the right secondary school for a child known to be gifted with an LD is quite daunting. We only felt like we had one option [non GAT Academic school], and were lucky to gain entry to that school (Parent 5).

In the additional comments section parents expressed their concern about applying for a GAT Academic program position, the process and how it is carried out and the program. They perceived the process as a deterrent for the TE to apply which would
discourage many parents from going ahead. Many parents mentioned how they perceived their TE child was not wanted or welcome in the programs, which would also discourage parents from going ahead with an application.

Key Finding 5.29

The parents' additional comments expressed concern about the: GAT Academic testing, process and program; the need for early screening and teacher training; TE child being viewed as having only challenges and lastly that finding the right school is daunting and leaves no real option to go to a GAT Academic school. Many perceived the process to be a deterrent to application.

Chapter Summary

Prevalence of twice exceptional students in GAT programs and comparisons with the prevalence of disabled children in Government schools

Over the years 2007-2012 an average of 8.1% of Year 6 students enrolled in Government and non-Government schools applied for entry to GAT programs, of which an annual mean of 0.16% of applicants indicated they had a disability and were twice exceptional (TE) (Key Finding KF5.1). Of these students, 36.5% from the received applicant pool accepted offers of places in GAT programs with 0.6% indicating twice exceptionality (KF5.2). The prevalence of TE students in the GAT Academic programs was an annual mean of 0.3% of applicants accepting offers of places in GAT Academic programs compared to the total applicant pool (Key Finding KF5.3) and 1.5% of students selected for the GAT Academic programs (KF5.4). Triangulation of TE data from the GAT Academic coordinator survey increased the TE prevalence from 1.5% to 1.6% (KF5.6). The majority of disabilities had been disclosed at the application stage (KF5.5).

The annual mean Mainstream Conservative Disability (MCD) and Mainstream Disability (MD) was 1.9% and 3.0% in Government schools, with MCD and MD increasing over the six years 1.3% and 1.2%, respectively (KF5.7). All disability categories increased by 18 to 491% in Government schools over the six-year period with Severe Mental Disorder, Severe Medical Health Condition and Autism having the largest increases (KF5.8). Smaller proportions of MD/TE students apply for admission to all GAT programs and are accepted than non-MD/TE students (KF5.9). A larger proportion of
MCD/TE students apply for admission to all GAT programs than non-MCD/TE students, however, a higher proportion of non-MCD applicants accepted places than MCD/TE applicants (KF5.10). Therefore, the annual mean prevalence of TE students who accept places in all GAT programs is lower than MD prevalence and equal to MCD prevalence (KF5.13).

Higher proportions of non-MD students applied for and were accepted for GAT Academic Programs than MD students (KF5.11). Slightly larger proportions of MCD students than non-MCD students applied for entry to all GAT programs, but a larger proportion of non-TE applicants were offered and accepted places in GAT Academic programs than TE applicants (KF5.12). Therefore, the annual mean prevalence of TE students who accept a place in GAT Academic programs is lower than MD and MCD prevalence (KF5.13). The majority of GAT Academic coordinators believed that TE numbers were remaining the same over time (KF5.19).

Over a seven year period, the percentage of Year 12 students who successfully applied for special examination provision through SCSA ranged from 1.1 to 1.9% with the percentage of approved applications increasing by 0.8% of the Year 12 population from 2008 to 2014 (KF5.14). Of the approved applications, 46% or 0.72% of enrolled Year 12 students and 1.43% of WACE examination candidates, relate to the disability categories of SLD and ADD/ADHD, which are additional categories to those gathered by the DoE through the Census (KF5.15). Therefore, TE prevalence in the GAT Academic programs is lower than disability as reported by the DoE and as reported by SCSA (KF5.16).

**Coordinators' knowledge of definition and identification of gifted and talented students**

One GAT Academic coordinator at the five participating programs knew the GAT definition adopted by the DoE with all other coordinators providing an operational definition related to the DoE’s testing and testing score cut-off point. None of the coordinators recognised that both tests of achievement and potential are used to select students for the GAT Academic programs (Key Finding KF5.17). In the majority of instances, the Learning Support Coordinator identified the TE students, as the GAT Branch does not communicate information about TE students to the coordinators of the GAT Academic programs (KF5.18).
Coordinators’ perceptions of TE students’ needs in GAT programs

Some GAT coordinators indicated they had limited knowledge of learning disabilities (Key Finding KF5.20) and had limited knowledge about accommodations or modifications based on SCSA provisions for TE students (KF5.23). They reported that TE students had more negative learning characteristics than positive (KF5.21). Coordinators were perceptive to the strengths or difficulties experienced by TE students, but it was uncommon for a coordinator to have both positive and negative perceptions (KF5.22). They perceived the inclusion of TE students into the GAT Academic programs as a benefit to the student and noted that they have never had to remove a TE student from the program (KF5.24).

Parent awareness of the GAT Academic Programs and its requirements

Seven of the eight parents were aware of the GAT Academic programs and had made enquiries about the programs and entry requirements but only six of the eight parents considered applying for a position for their child (Key Finding 5.25).

GAT Academic programs recommended for the TE student

Three of the eight parents indicated that a teacher or the principal had recommended the GAT Academic program for their child (KF5.25).

Parent perceptions of the advantages and disadvantages of the GAT Academic Programs

All eight parents stated that the advantages of their child participating in the GAT Academic programs would be access to like-minded peers, an academic program and specialist teachers (KF5.26). Parents’ perceived the disadvantages for their child as being the child’s ability to cope, their self-esteem, anxiety and depression, recognition and support, fitting in and judgements made by other children (KF.5.26).

Parent reasoning for not applying

Parents gave their reasons for not applying for a GAT Academic position for their child as no alternative testing option was available or made available, their child’s ability to cope or that they would need support in the program, travel time and the narrow focus on academics (KF2.7).
Parent perception of barriers that hinder or supports that assist TE students to participate in the GAT Academic programs

Parents did not identify any supports that assist TE students to participate in the GAT Academic programs, but identified the barriers of: the GAT Academic testing, absence of inclusion, lack of support and no alternative testing option available (KF5.28). Half of the parents identified the GAT Academic testing as the main barrier.

Further comments by parents

In the additional comments section, parents wrote about: the necessity for early screening of children for twice exceptionality; the necessity for teacher training; the characteristics of the TE that can cancel each other out so that no identification is made; students having unique gifts as well as challenges, and that finding the right school for the TE child is daunting which often leaves only the option of not going to a school where there is a GAT Academic program.
CHAPTER 6

6.0. DISCUSSION

The central theme investigated in this thesis is the prevalence of TE students in the GAT Academic programs compared to disability in the Department of Education’s (DoE) schools of Western Australia (WA) and the School Curriculum and Standards Authority’s (SCSA) prevalence data. More specifically, it focused on the relationship between TE student prevalence in these programs, the barriers to entry and participation framed by Gagné’s Differentiated Model of Gifted and Talented (DMGT) adopted by the DoE. In particular, whether equity and inclusion for TE students in the program is evident.

Before undertaking a detailed discussion of the findings of the studies reported here, it is useful to outline briefly the step-by-step process from which the research design developed. Six years of longitudinal cohort data were used to determine prevalence of TE students in the GAT Academic programs as well as DoE disability data for the same time period. A comparison was also made to SCSA data. The secondary data collection was undertaken with objectivity and curiosity about the prevalence of TE students in the programs and how this compared to disability prevalence in the DoE’s schools.

In order to explore variables influencing TE prevalence in these programs, data was gathered from the coordinators of the GAT Academic programs and also parents of TE students. This led to a series of Research Questions (1 – 4), which were set in the context of the research literature and framed by the DoE’s practices, policies and adoption of Gagné’s DMGT model. These questions investigated, in a rigorous manner, the relationship between TE prevalence and disability and the barriers to their inclusion.

The main study reported in this thesis was an investigation of how many TE students applied and were accepted into the Western Australian GAT Academic programs and whether prevalence was in line with mainstream disability prevalence as reported in the literature. This was examined in Research Question 1. It was anticipated, based on the outcomes of previous research by Barnard-Brak, Johnsen, Pond Hannig, and Wei (2015), Clark (2008), Crepeau-Hobson and Bianco (2011), Davis and Rimm (2004), Nielsen (2002), VanTassel-Baska, Feng, Swanson, Quek, and Chandler (2009) and
others that TE students are underrepresented in gifted programs and therefore, are a marginalised group.

It was not the central focus of this thesis to examine Gagné’s DMGT model, however, the role of the adopted model and definition in understanding and allowing entry for TE students into the GAT Academic programs, was of secondary interest in order to analyse whether the DoE was adhering to their adopted model and definition; that of Gagné’s, which frames the thesis.

The purpose of Research Questions 2 and 3 were to establish the knowledge and perceptions of the GAT Academic coordinators of the gifted and talented definition, the identification means used by the DoE and of TE student’s needs in gifted programs. This was in order to determine issues and barriers to TE inclusion in the programs from the perspective of DoE staff involved with the GAT Academic program.

The purpose of Research Question 4 was to establish the perceptions of parents of TE students of the GAT Academic programs to examine barriers to the TE’s inclusion in these programs. This question was included to set the examination and discussion of TE prevalence and barriers to TE inclusion in the programs obtained from Research Questions 1, 2 and 3. This question provided an important ‘anchor’ to place the thesis in the broader context of TE research.

The remainder of this chapter is devoted to a discussion of the findings in the context of the literature reviewed in Chapter 2 and the theoretical framework outlined in Chapter 3. Implications for future research and educational practice are then provided.

6.1. Research findings

6.2. Research Question 1: What is the prevalence of twice exceptional (TE) students in the GAT Academic programs and how does the prevalence of twice exceptional (TE) students in the GAT Academic programs relate to the prevalence of disabled children in Government schools in Western Australia 2007 to 2012?

This first question is based on longitudinal cohort data of those students who applied, both from Government and non-Government schools, for a GAT Academic program 2007 – 2012 for entry in Year 8, 2009 - 2014. This data was then compared to
longitudinal cohort data of those mainstream students identified with a disability; both mainstream (MD) and mainstream conservative disability (MCD) 2007 – 2012. Students educated in an Education Support facility were excluded. Mainstream disability (MD) includes all students with any disability category educated in a mainstream setting and mainstream conservative disability (MCD) includes students within the categories of: Autism, Asperger’s disorder, vision impairment, deaf and hard of hearing, severe mental disorder, physical disability and severe medical health conditions educated in mainstream classrooms. Excluded were students with a global developmental delay, mild, moderate and severe intellectual disability due to impairment of cognitive function, a pervasive developmental disorder not otherwise specified (PDD-NOS) and speech/language impairment. WA schools can receive additional funding to support the education of MD and MCD students through the DoE’s Schools Plus model of funding.

Mainstream disability has been included as these students could potentially apply and be successful in gaining a place in GAT programs other than Academic. Both MD and MCD disability excludes disability such as dyslexia, dyspraxia, dysgraphia, ADD/ADHD and any disability not severe enough to warrant application for Schools Plus funding. Hence, MD and MCD disability prevalence provides over and understated disability prevalence with a mid-point between the two most likely. This is due to MD prevalence including all disability types and MCD prevalence disability types without cognitive impairment, and neither MD nor MCD includes learning disabilities such as dyslexia, dyspraxia, dysgraphia or Attention Deficit/Hyperactivity Disorder (AD/HD). Consequently MD includes all disability types and MCD restricted disability types, but with neither including learning disabilities.

The School Curriculum and Standards Authority (SCSA, 2014) data for special examination provision for the Year 12 WA Certificate of Education (WACE) was also compared to TE prevalence. The following discussion is in three sections: prevalence of TE students in the GAT programs, TE prevalence compared to disability in the DoE’s schools and SCSA Disability Data for disability prevalence.

6.2.1. Prevalence of TE students in the GAT programs

The results showed that over the years 2007-2012 an average of 8.1% of Year 6 students enrolled in Government and non-Government schools applied for entry to all GAT programs, of which an annual mean of 0.16% of applicants indicated they had a
disability and were twice exceptional (TE) (Key Finding [KF] 5.1). Of these students, 36.5% from the received applicant pool accepted offers of places in all GAT programs with 0.6% indicating twice exceptionality (KF5.2). The prevalence of TE students in the GAT Academic programs was an annual mean of 0.3% of applicants accepting offers of places in GAT Academic programs compared to the total applicant pool (KF5.3) and 1.5% of students selected for the GAT Academic programs (KF5.4). Triangulation of TE data from the GAT Academic coordinator survey increased the TE prevalence from 1.5% to 1.6% (KF5.6) with the majority of disabilities having been disclosed at the application stage (KF5.5).

Historically, inconsistent data from America has been reported about the prevalence of TE students that largely refutes the findings of this study. Maker (1977) hypothesised the incidence of giftedness should occur at the same rate in the population of students with a disability as it did in students without a disability, estimating that 3% of special education students were gifted. Barnard-Brak, Johnsen, and Pond (2009) estimated that approximately 9% of a special education population could have an intellectual quotient (IQ) in the gifted range. Nielsen in 1993 reported that a prevalence rate of 2 to 5% of the general population and 2 to 7% of the special education population were TE (Nielsen, 1989, 1993). Other researchers such as Dix and Schafer (1996), Fine (2001) and Whitmore (1981) estimated that prevalence would range from 2 to 15% of the general population.

In the gifted student population, Baum and Owen (1988), Brody and Mills (1997), Geschwind (1982), Geschwind and Galaburda (1987), McCoach et al. (2004), Ruban and Reis (2005), Scheps, Rose, and Fischer (2007) and von Karolyi and Winner (2004) maintained that learning disabilities are anywhere from 1% to 3, 5 or even 36%. Further, Nielsen (2002) contended that 2 to 5% of gifted students would have disabilities. In more recent times, this was corroborated by Lovett and Sparks (2010) at 5%. In the 2012-2013 State of the States in Gifted Education National Policy and Practice Data (National Association for Gifted Children, 2013) directors of programs’ reported TE prevalence anywhere from 0.02 to 14%. Assouline and Whiteman (2011) estimated that up to 7% of students may be TE and Barber and Mueller (2011) estimated that up to one in five gifted students may also meet the criteria for twice exceptionality. Therefore, prevalence rates of TE students have been estimated for three different populations: mainstream, special education and gifted populations. This study focused on Year 6 students applying for GAT programs in WA, in particular the GAT Academic programs, hence a gifted population with prevalence being predicted
by researchers anywhere from 0.02% to 36% or one in five of the gifted student population.

Focusing on the findings of the present study and the broader aspect of all GAT applicants, an average of 8.1% of Year 6 students in WA applied for entry to GAT programs and an annual mean of 0.16% of applicants indicated they had a disability and were TE (KF5.1). Those TE students who were offered a place comprised 0.6% of the cohort (KF5.2). Less than 1% of these cohort pools were TE. Narrowing this down to just the GAT Academic programs, which is the main focus of the thesis, 0.3% of applicants accepting offers compared to the total applicant pool were TE (KF5.3) and 1.5% of the GAT Academic students (KF5.4), later triangulated to 1.6% (KF5.6), were TE. These findings do not align with the majority of research with the exception of the 2012-2013 State of the States in Gifted Education National Policy and Practice Data (National Association for Gifted Children, 2013) which estimated a TE prevalence of anywhere from 0.02% to 14%. This data is the lowest identified in the literature with 24 of the 42 American states in 2013 noting that they do not collect data or none is available which may indicate that data collection was inconsistent and haphazard. This is a similar situation to the DoE, where the TE have little to no prominence in data collection, which alludes to the TE being a marginalised and invisible group (Merrotsy, 2013) that has little accountability attached to their educational needs. This is a constant theme throughout the literature. Barber and Mueller (2011) estimated that up to one in five gifted students might have a disability. In the GAT Academic programs of WA it was one in sixty-three gifted students.

6.2.2. TE Prevalence compared to disability in the DoE’s schools

The results of this study showed that the annual mean Mainstream Conservative Disability (MCD) and Mainstream Disability (MD) was 1.9% and 3.0% respectively in Government schools, with MCD and MD increasing over the six years 1.3% and 1.2%, respectively (KF5.7). With the exception of physical disability, all other disability categories increased by 18 to 491% in Government schools over the six-year period with Severe Mental Disorder, Severe Medical Health Condition and Autism having the largest increases (KF5.8). Smaller proportions of MD/TE students applied for admission to all GAT programs and are accepted than non-MD/TE students (KF5.9). A larger proportion of MCD/TE students applied for admission to all GAT programs than non-MCD/TE students, however, a higher proportion of non-MCD applicants accepted places than MCD/TE applicants (KF5.10). Therefore, the annual mean prevalence of
TE students who accepted places in all GAT programs, other than Academic, is lower than MD prevalence and equal to MCD prevalence (KF5.13). This result where TE prevalence is equal to that of MCD will be due to students being able to apply for an exemption from the GAT Academic testing, as this is not the sole criterion for selection as in the GAT Academic programs. It is interesting to note how this exemption buoyed TE numbers into GAT programs other than Academic.

Higher proportions of non-MD students applied for and were accepted for GAT Academic Programs than MD students (KF5.11). Slightly larger proportions of MCD students than non-MCD students applied for entry to all GAT programs, but a larger proportion of non-TE applicants were offered and accepted places in GAT Academic programs than TE applicants (KF5.12). Therefore, the annual mean prevalence of TE students who accepted a place in GAT Academic programs is lower than MD and MCD prevalence (KF5.13). The majority of coordinators believed that TE numbers were remaining the same over time (KF5.19) despite disability prevalence increasing over these six years.

Assertion 6.1

Exemption from the GAT Academic Test was a factor in the increased application number and entry of TE students into GAT programs other than Academic. When this was not an option for the GAT Academic programs, TE prevalence was impacted. Offering this option had a positive impact on TE prevalence.

Historically over thirty years of research in America has indicated that: learning disabilities should be just as prevalent amongst the intellectually gifted population as in the general population (Winner, 1996; van Viersen, Kroesbergen, Slot, & de Bree, 2016; Zecker, 2000), however, this was refuted by the present study. Additionally, the rate of adolescents with a learning disability and high intellectual quotient (IQ) should be similar to that of high IQ scores alone in the general population (Faigel, 1983) and the incidence of giftedness should be similar in special education populations (Lovett, & Sparks, 2010; Maker, 1977; Nielsen, 1993, 2002) which in America includes students with dyslexia, dyspraxia, dysgraphia and AD/HD, unlike in Australia. Zecker (2000, p. 1) contended that it is an “erroneous belief that learning disabilities are in some way restricted to those children who are less bright than average . . . children with learning disabilities are by definition of at least average mental ability.” Therefore, a focus on disability prevalence and how this compares to TE representation in the GAT Academic
programs is needed, as the basic premise that underlies much of the research on twice exceptionality was that it was reasonable to expect disability prevalence in a gifted program to be similar to disability prevalence in mainstream schooling. As this was not supported by the data presented here, data collection on this cohort of students needs to occur to ensure that the DoE is providing equitable access for the TE. Ford (2014, p. 103) and Grantham (2011) concur in relation to African American and Hispanic minority students, that to bring about equity-based change requires that “educators cannot and must not be bystanders in addressing social, economic, racial and educational injustices”. This is a sentiment that the DoE needs to tackle in relation to TE student representation in the WA GAT Academic programs.

Assertion 6.2
Identification and analysis of the representation of minority groups such as the TE to provide equitable and equal access to the GAT Academic programs is required. Establishing data collection by surveys, interviews, focus groups and case studies, from TE students and caregivers regarding their experiences is necessary for positive and inclusive education outcomes.

To determine prevalence, a two-stage analysis was used for all GAT programs (excluding Academic) and Academic alone.

Stage 1 - All GAT programs (excluding Academic). It was anticipated that TE prevalence when compared to disability would be in the range 1.9% to 3.0% (KF5.7). This was not the case in the majority of cases. Using a broader mainstream disability percentage of 3% it was found that smaller numbers of TE apply and are selected for these programs (KF5.9), but using the more conservative mainstream disability percentage of 1.9%, higher numbers of TE are applying but less are being accepted (KF5.10). Hence, the annual mean prevalence of TE students who accept places in all GAT programs is lower than MD prevalence and equal to MCD prevalence (KF5.13).

Stage 2 – Academic programs. It was anticipated that TE prevalence when compared to disability would be in the range 1.9% to 3.0%. This was not the case. Using a broader mainstream disability percentage of 3% it was found that smaller numbers of TE students applied for and were accepted for GAT Academic programs (KF5.11) and using the more conservative mainstream disability percentage of 1.9% lower numbers of TE students were offered and accepted places (KF5.12).
Therefore, the findings of this study were that the annual mean prevalence of TE students who applied and accepted a GAT Academic position was not within the disability range of 1.9% to 3.0%. Given that disability prevalence increased over the six years 1.3% and 1.2% respectively (KF5.7) and that disability category prevalence increased by 18 to 491% (KF5.8) in particular the categories of Severe Mental Disorder (+491%), Severe Medical Condition (+280%) and Autism (+129%) in Government schools, this would indicate that disability prevalence in GAT Academic programs should also have increased. In 2002, Scruggs and Mastropieri stated that individuals identified with a learning disability had increased in America 150 to 200% from 1975 to 1995. MacMillan, Gresham, Siperstein, and Bocian (1996, p. 169) commented that were the epidemic-like increase in learning disability numbers “interpreted by the Centre for Disease Control one might reasonably expect to find a quarantine imposed on the public schools of America”. Despite all indicators that disability prevalence and therefore TE prevalence should have increased, from 2007 to 2012 there was only an 0.1% increase in the number of received applications indicating disability but an 0.1% decline in applicants offered and accepting places for GAT Academic programs while acceptances for all GAT programs stayed the same. Given the rather ‘epidemic-like’ increase in some disability categories reported, it would have been expected that an increase in TE numbers be predicted based on DoE data, which points to barriers to TE entry to the GAT Academic programs due to TE parent perceptions of the program and entry requirements (KF5.29).

6.2.3. SCSA Disability Data for disability prevalence

Over a seven-year period, granting of special examination provision in WA ranged from 1.1% to 1.9% of Year 12 students and increased by 0.8% from 2008 to 2014 (KF5.14). The largest categories of specific learning difficulty (SLD) and ADD/ADHD, which comprised 46% of all approved applications, equalled 0.72% of enrolled Year 12 students and 1.43% of WACE examination candidates (KF5.15). These categories are not included in the DoE data above. Therefore, the findings of this study that TE prevalence in the GAT Academic programs is lower than disability as reported by the DoE and as reported by SCSA (KF5.16) does not reflect the anticipated numbers reported by the DoE, SCSA nor in the research literature.

This data additionally gives further weight to an anticipated increase in numbers of TE students, applying and being accepted for GAT Academic programs, which is contrary
to the historical data collected. Siegle, Gubbins, O’Rourke, Langley, Mun, Luria, Little, McCoach, Knupp, Callahan, and Plucker (2016, p. 104) believe that the “persistence of barriers that limit the full participation of underserved student populations in this [gifted] process is a long-standing and critical issue in gifted education today.” This is the situation with the WA GAT Academic programs, where there were persistent barriers that limited the full participation of TE students from the Year 6 application years of 2007 to 2012 and no doubt continues today as the manner of entry to the program remains the same (KF5.29).

**Assertion 6.3**

Reported disability prevalence in some categories has increased dramatically in the DoE’s schools. If TE prevalence is to change, the DoE should reflect on disability prevalence trends from the Census data, noting its limitations for disability category inclusion and make the link between disability prevalence and the GAT student population profile.

The prevalence of TE students in the GAT Academic programs can only increase if barriers to entry are identified and removed so that they have equitable access and provision for their needs. Some of the barriers that block or hinder entry are discussed below in relation to literature in the field.

- **6.2.4. Alternate entry**

The necessity for and barriers that exist when there is no alternate entry to gifted programs, has been identified by this study and concurs with the literature (KF5.27 and 5.28). When McClain and Pfeiffer (2012) asked state gifted coordinators in America if their state provided any special accommodations or flexibility for special populations, 48% had no current mandate or policy for identifying underrepresented gifted students, which echoes the practice of the DoE who have no flexibility for the TE. In Australia, Victoria makes provision for alternate entry into Year 9 at the selective entry schools. Two schools allow access for up to 10% of the enrolments for students whose parents have a Commonwealth Health Care Card or Pension Card, or who are of Indigenous descent and up to 5% of those who missed the cut-off score by five marks (Victorian DET, 2012). A principal from one of these schools, in his statement to the Inquiry into the education of gifted and talented students (2012) noted there was not “a whole lot of difference in their [TE] performance” (Parliament of Victoria, 2012, p. 173) when admitted under equity consideration than those admitted under the normal process.
This is not the case in WA, where the GAT Academic programs have only one entry point through the GAT Academic testing with no provision for entry through any other means for whatever reason. This is in contrast to the DoE’s PEAC program “which aims to provide gifted students with the chance to meet and work with like-minded peers. Entry is through state-wide testing in Year 4, although teachers may nominate students who miss the test” (Letter from the Minister for Education [Western Australia], to Chair, Victorian Parliament Education and Training Committee cited in Parliament of Victoria, 2012, p. 159).

6.2.5. Academic Selective Entrance Test

The GAT Academic Test has been identified as the major barrier to TE entry to the GAT Academic programs and agrees with the literature in the field (KF5.7 and 5.8). Expecting the TE student to manifest a talent from their gift in all areas through their performance on the GAT Academic Test, would ‘fly in the face’ of the documentation that would support the diagnosis of a disability - differences between potential and achievement (Morrison & Rizza, 2007). This expectation is also in contradiction to Gagné’s (1985) model that views giftedness as being a first step of identification of a gift and talent as the second step of turning that gift into a talent.

WA has a performance based model and this position is further reinforced when documentation of a disability, such as the WISC-V (Wechsler, 2014) is not accepted in lieu of the GAT Academic testing as it does not fulfil the talent/achievement/performance component of the testing. As the GAT Academic testing result is derived from a compiled score of all the tests, only those students who can demonstrate an overall all-round gift and talent will be offered a place, which was mentioned by one parent of a TE student as a barrier (KF5.6). The contention by Winner (1996) that the gifted all-rounder is the exception rather than the rule, suggests that the DoE only want those ‘exceptions’ with no room for students who do not fit this mould. Great strengths and weaknesses are the characteristics of the TE student; therefore expecting global giftedness (Winner, 1996) to gain entry to the GAT Academic programs would be unlikely. WA has not moved away from stereotypical notions that ignore gifted children who for a range of reasons have not been able to translate high potential into achievement “or in ways that are fundamentally different from stereotypical gifted characteristics” (Siegle, Gubbins, O’Rourke, Dulong, Mun, Luria, Little, McCoach, Knupp, Callahan, & Plucker, 2016, p. 115). Therefore, there is a mismatch between the theoretical model adopted and the day-to-day identification
practice that is creating a barrier to entry for TE students by the very nature of their disability.

Gagné (2012) does point out that natural abilities are not innate as they develop over the whole course of a person’s life, but much more so during the early part of that life and sometimes during adulthood (Gagné, 2013). Hence there seems an inconsistency between Gagné’s intent of developing a gift (potential) into a talent (achievement) throughout the whole course of a student’s education, as the DoE’s implied intent is that this gift has already been turned into a talent in primary school. The onus for talent development is clearly not placed on the GAT Academic programs, which seem to only have the focus of further enhancing the talent of already gifted and talented students. Therefore, this is the limitation discussed by Dimaano (2011) that limits the concept of intellectual giftedness to those that can demonstrate a measurable talent as well as intellectual giftedness.

The DoE (DET, 2011, p. 3) does acknowledge that “gifted and talented students are represented in all socio-economic and cultural groups” and many of these students are “at risk of not achieving to their full potential”. There is no mention of disability specifically and yet one example given by the DoE linking to disability is “other identified students clearly do not achieve to their potential due to physical, emotional, motivational and social factors or specific learning difficulties” (DET, 2011, p. 3). This suggests an acceptance of the status quo that students who have physical, emotional, motivational and social factors or specific learning difficulties “clearly do not achieve to their potential” (DET, 2011, p. 3). It is therefore implicit in what is written, that students with any of these issues will have achievement problems hence different educational needs, yet the DoE’s identification means will preclude many from succeeding and gaining entry into a gifted environment. Siegle et al. (2016, p. 115) contends “It is imperative that a model for talent development for underserved students include experiences for students that prepare them for the formal identification process”. Consequently a presumption has been made that this has occurred for the TE, or acts as a pre-requisite for entry.

There is a general assumption made in the professional development made available to WA teachers through the Gifted and Talented Education Professional Development Package for Teachers (Gross, MacLeod, Bailey, Chaffey, Merrick, & Targett, 2005) that WA has moved away from stereotypical definitions that ignore gifted children who for a range of reasons have not been able to translate high potential into achievement. As
the current selection process for identification is also performance based identifying successful students who are already achieving, this confirms that that the stereotype is used for entry to the GAT Academic programs. The DoE is ‘silent’ with regard to how to serve TE students who are unable to make its strict cut-off scores. As pointed out by Valencia (2010) the decision makers for structural inequality are often held blameless and unaccountable for their roles in creating injustice because a focus on individual and group weaknesses obscures the importance of other factors (Weiner, 2006).

One of these other factors, is the DoE’s GAT Academic testing that constrains opportunities for the TE. Waitoller and Artiles (2010) use the metaphor of the ‘canary’ in the ‘coal mine’ to highlight there is a not just a problem with the ‘canary’, but the ‘coal mine’ in relation to overrepresentation of culturally and linguistically students in special education and the relationship between the two. Waitoller and Artiles’ (2010) statement should remind the DoE and educators in general, that we should not just be focusing on the TE ‘canary’ who is in ‘distress’ but on the ‘coal mine’ and the relationship between the two. What long term consequences for TE students are attached to not making the decision to apply for a GAT Academic program placement because of the GAT Academic testing and to “what extent do these decisions contribute to cultural reproduction or change for the participation” of this group in our society? (Waitoller & Artiles, 2010, p. 45). This is the ‘coal mine’ referred to by Waitoller and Artiles (2010), which in this instance is the DoE’s GAT Academic testing and processes that deter parents of TE students from applying and thus creates a barrier to entry (KF5.7 and KF5.8). Faggen (1990) likens these tests to high stakes gambling where those who pass receive valuable services and benefits and those who fail lose out on the services and benefits.

As pointed out by Schroth (2007) there is much debate between equity and excellence in gifted education, those who want to provide opportunities for those students who are already performing at a high level and those students with the potential to benefit from such instruction. The GAT Academic testing is based on an excellence model. As Duke (2003), Fullan (2001) and Schroth (2007) state, gifted programs want ‘winners’ for their program as they are ill-prepared and not resourced to cope with students who have readiness needs which may ultimately influence the success of the program. It is Schroth and Helfer’s (2008) contention that the conceptions of academic talent and giftedness and the types of students these conceptions focus upon, indicate the philosophies underlying the followers’ actions. Dimaano (2011) also points out that you need to go beyond the mechanics of a system and deep into its objectives of an
educational placement to find out what is fair and just. It is this disparity between Gagné’s model that is at odds with the DoE’s philosophy that highlights which students the WA GAT Academic programs serves. When the DoE uses a selection tool that ensures that all students are gifted and talented, not merely gifted, they are choosing students who are stereotypically competent in all areas. This safeguards the success of the program and highlights that these are the students the DoE’s model is designed to serve and that TE students are not a focus in their target population.

From Plucker, Hardesty, and Burrough’s (2013, p. 29) perspective of American schools in relation to culturally, linguistically and economically diverse communities, they state “it is somewhat harrowing to imagine a future in which the largest fastest-growing segments of our K-12 student population have almost no students performing at advanced levels academically.” With some categories of disability increasing rapidly and disability prevalence rising in WA schools, it is disturbing to imagine how many TE children should be benefiting from these programs, but are being kept out by persistent barriers. Balogh (2011, p. 29) contends that it is “not enough just to consider what we can do to help the disadvantaged young people who have got into the programs to unravel their talent. The key solution is applying an identification procedure different from the one typical today”. This is at the heart of the present study, whether we should be satisfied that some TE students have gained entry to the GAT Academic programs or whether we should be concerned about those who have not gained entry. There is little hope of solving the problem of TE underrepresentation until the sole criterion of access to these programs is how well they perform on the GAT Academic Test (Balogh, 2011). This is reflected in Shore, Cornell, Robinson, and Ward’s (1991, p. 18) question: “Are proactive identification methods more effective in selecting underserved populations of gifted children, or should one reduce the number of hurdles, to the point of an open door?” In the case of the WA GAT Academic programs, a proactive identification method and reduction in hurdles needs to occur, rather than being content that some TE students are being accepted.

Gagné (2011b) acknowledges that candidates for educational or occupational situations usually are more numerous than places and forces the adoption of selection procedures and good selection procedures always aim to identify candidates most apt to succeed, which is the aim of the GAT Academic testing. However, Dracup (2011) reinforces that by limiting our gifted and talent candidates to those who demonstrate good chances of future success, we are stating that only selected high achievers are capable of high achievement, which is the implicit intent of the GAT Academic testing.
Assertion 6.4

It is necessary to question the present accepted status quo, that some TE students are successful in gaining entry to the GAT Academic programs by sitting the GAT Academic testing, therefore it is an equitable identification and entry means. TE students require alternate means of entry if prevalence is to increase.

- 6.2.6. The GAT Process

In line with disability prevalence of between 1.9% and 3.0%, the annual pool of TE Academic applicants needs to be considerably larger to increase the chances of more highly ranked TE Academic students being selected. It would have been predicted based on disability data that an annual mean of between 41 and 65 TE Academic students would have accepted offers of places for GAT Academic programs rather than seven. Therefore, to enable this to change, the total pool of TE applicants who initially apply would need to be at a minimum 1.9 to 3.0% larger. This may be addressed by removing the barriers that parents of TE children perceived, were limiting participation. These included: the process being a deterrent to application (KF5.29), anti-inclusion (KF5.27), the GAT Academic testing and lack of support (KF5.28). One telling comment from Parent 1 expressed a common perception of other parents of TE children when applying on line:

I remember when we filled in the online application, if you ticked the box that indicated your child has a disability, it automatically stopped you from continuing with the application and instead, referred you to call the DoE. I remember thinking this could deter some people from filling in this application especially if they felt that their child may then be discouraged from applying.

Therefore, this first perceived barrier needs to be removed so that more parents will continue with the process and apply for their child. Based on the researcher's experience, when disability is indicated, the recipient of this information needs to make contact with the parent, not stop them from continuing to apply or enrol their child. This first barrier signifies in quite an explicit way, that the typical channel is not available to them, therefore for some of the most disadvantaged students; they are disadvantaged further and made to feel different. This is further compounded by how the process and any contact with the DoE made them feel:

I didn’t feel that my son would be welcome at these schools. (Parent 3)
I feel that GAT schools don't want or need kids with learning difficulties because they can easily fill their places with kids who are much easier to manage. (Parent 8)

While parents of TE children have these perceptions and feel unable to change the process, TE prevalence in the WA GAT Academic programs will remain unchanged. Literature in the field also mirrors the same views. Hertberg-David and Callahan (2008) contend that who is enrolled or does not enrol and who persists or does not persist mirrors a school and community’s commitment to equity and excellence. Unfortunately, it seems implicit that the DoE views equity and excellence as mutually exclusive and when this occurs, sound educational practices that will meet the needs of all students will not be developed (Colangelo & Davis, 2003). If we are truly committed to a vision of equity for all students in our schools, we need to focus on who is participating and succeeding in the most advanced courses as we do on comparing pass rates of different demographic groups on competency tests (Hertberg-David & Callahan, 2008). Students have varied learning needs and inclusive leaders make it explicit that diversity is about differences and inclusion is our capacity to include these differences (Gerstandt, 2007; Gordon, 2010). It would seem that the WA GAT Academic program is one education area where inclusion has not occurred.

**Assertion 6.5**

Predominantly, parents felt that the DoE was focused on student excellence rather than equity and was not welcoming of students with a disability into the GAT Academic programs. In order to challenge these perceptions and encourage parents of TE children to apply, so that the pool is larger and subsequently accepted TE numbers are more likely to be larger, recruitment practices need to be broadened. Recruiters need to actively seek potential students by educating families and community members, who may not have previous exposure to GAT Academic programs, by bringing the information out into the community instead of expecting community members to come to the schools.
6.3. **Research Question 2:** How knowledgeable are the GAT Academic program coordinators regarding the gifted and talented definition and identification means used by the Department of Education?

Question 2 is based on a qualitative analysis of a closed and open-ended survey to investigate GAT program coordinators’ understanding of the GAT selection process used by the Department of Education (DoE). Additionally the coordinators’ perceptions and knowledge of the TE students’ participating in the GAT Academic programs were also probed by the survey. The following is in two sections.

- 6.3.1. Coordinator knowledge of definition and identification of gifted and talented students

Only one GAT Academic coordinator at the five participating programs knew the GAT definition adopted by the DoE, with all other coordinators providing an operational definition related to the DoE’s testing and testing score cut-off point (KF5.17). None of the coordinators recognised that both tests of achievement and potential were used to select students for the GAT Academic programs (KF5.17). In the majority of instances, the Learning Support Coordinator identified the TE students, as the GAT Branch does not communicate information about TE students to the coordinators of the GAT Academic programs (KF5.18).

In 2001 Gagné’s theoretical framework was chosen by the DoE to underpin the development of its policy and the implementation of its programs (Education Department of WA, 2001a, p. 2) due to the importance placed on ensuring that “identification processes are inclusive, flexible and continuous, that they utilise information from a variety of sources and assist in identifying a student’s intellectual strengths, talents, social and emotional needs”. Mention was made of students who are Indigenous Australians or have English as a second language or dialect not being well represented in the gifted and talented cohort. Miller (2008) believed that the concept of giftedness that is adopted has implications for educators in the field, in particular school administrators working to develop programs for gifted students. This provides a “foundation for all subsequent decisions made about issues such as identification, curricula and programming” and is the compass that guides the program (Miller, 2008, p. 115). Therefore, knowledge of the definition and its underpinning philosophies should be a foundational pillar for GAT Academic coordinators.
In 2011 the Policy and Guidelines for the Education of Gifted and Talented Students was updated and the definition adopted closely aligns with Gagné’s definition for which he has been acknowledged as the author:

**Giftedness** designates the possession and use of outstanding *natural* abilities, called aptitudes, in at least one ability *domain*.

**Talent** designates the outstanding mastery of *systematically developed* abilities, called competencies (knowledge and skills), in at least one field of human activity [sic] Talent emerges from ability as a consequence of the student’s learning experience. (Gagné, F. See Appendix A.)

These definitions reflect the distinction between ability and performance and recognize other factors in the development of a person’s giftedness into talents (DET, 2011, p. 3).

Moon (2006) posits that a clear definition supports a shared understanding and provides a foundation for identification that is linked to programming and services and yet only one coordinator attributed the definition to Françoys Gagné and specifically mentioned how “it accommodates a wide range of abilities” (Coordinator 1).

While this study’s sample was small, it did align with previous research by Pfeiffer (2001, p. 177) that highlighted there were two competing perspectives on how to conceptualise giftedness, that children with outstanding “potential ability should be considered gifted” and another that “demonstrated productivity should be the hallmark of giftedness.” Three coordinators gave no response to this question and two indicated the testing was measuring potential, one reinforcing that it was definitely not achievement. Therefore, half of the coordinators believed that the students chosen for the GAT Academic programs were children with outstanding “potential ability [who] should be considered gifted” (Pfeiffer, 2011, p. 177) when in fact the testing measured both potential and achievement and entry was reliant on both being demonstrated. Some of the coordinators had no response, which alluded to their lack of knowledge of the identification means and hence of the students they were receiving into their program.

To rectify this issue, which seems quite common in the literature, Carman (2013) recommended that a foundational guideline be produced that reports the method of identification of gifted participants. While this is fairly basic, 11.5% of the reported studies reviewed by Carmen (2013) did not even reach this level of reporting due to the participants being pre-identified by their schools. This is similar to the WA GAT Academic programs where the DoE pre-identifies the students and leaves the schools
that receive the students somewhat unsure of the method of identification and definition used.

Interrelated with Gagné’s (2011a, p. 18) DMGT model and this study, is his suggestion that the label for gifted programs be revised to “academic talent development”. Dimaano (2011, p. 42) believes that Gagné’s (2011a, p. 18) suggestion that the current label of “gifted program” for the intellectually gifted should be revised to “academic talent development” as it perfectly reflects the business of our field, limits the concept of intellectual giftedness, “a phenomenon that is difficult to observe and easy to deny, to academic talent, an observable and measurable quality.” The WA GAT Academic programs are based on a meritocratic ideology that is focused on the here and now of achievement, because it is judged to be the most relevant predictor of future achievement in their “excellence-oriented talent development program” (Gagné, 2011a, p. 14). Cohen (2011) contends that if opportunities are increased and barriers are decreased so that there is a level playing field, then merit (achievement) can then be the determinant for identification and placement in special programs to support talent development. Using a meritocratic (excellence) approach determines who will benefit from the scarce commodity of a high quality education (Dracup, 2011). However, lotteries, targets and quotas of various kinds are frequently deployed to “soften the impact of rationing by ensuring that disadvantaged populations do not lose out too severely” (Dracup, 2011, p. 46).

This is not the case with the WA GAT Academic programs where potential and achievement must be demonstrated whether the student has a disability or comes from a culturally and linguistically diverse background such as Indigenous Australians. As Dimaano (2011, p. 42) asserts, it is easy to deny intellectual giftedness without academic evidence that is observable and measurable. Ford (2010, p. 32) in her discussion of the underrepresentation of culturally and linguistically diverse gifted students identified the systemic barrier of colour-blindness (culture-blindness) (Ford, Moore, & Milner, 2005; Milner & Ford, 2007) where educators “intentionally or unintentionally suppress the importance of the role of culture in learning, curriculum, instruction, assessment and expectations” and how colour-blindness “is often equated with being fair by not seeing differences and treating everyone the same”. This is the same situation as the DoE being fair to everyone by being seemingly disability-blind with regard to the GAT Academic testing requirement for demonstration of giftedness as well as talent. Therefore, the findings of this study agreed with the assertions of experts in the field of gifted education, that achievement is often required as concrete
evidence of the ‘gift’ in an excellence based program such as the WA GAT Academic programs, which is to the detriment of the TE. Knowledge of how the students are identified is another foundational pillar for the GAT Academic coordinators.

**Assertion 6.6**

It is necessary to ensure that all coordinators have knowledge of the definition adopted and identification means and to make the link between the students’ performance and their teaching practice. Professional learning is necessary in areas related to giftedness in minority populations such as the TE.

The findings from this study found that in the majority of instances, the Learning Support Coordinator identified the TE students, as the GAT Branch did not pass on information about TE students to the coordinators of the GAT Academic programs (KF5.18). When the target population for the GAT Academic program is not TE students, any information gathered by the DoE for these students is treated as an administrative task for the purposes of providing some form of provision for the GAT Academic testing only. Assouline, Nicpon, and Huber (2006, p. 15) contend, “The challenge for educators is to assimilate information about [TE] student’s strengths and/or vulnerabilities so that student achievement is enhanced not stifled”. There is therefore, a disconnect between the DoE and those that are educating the pre-identified TE students which is confirmed by Coordinator 4 who commented “At no point has unsolicited information been provided by the GATE Branch and the students who have been offered a place in our program and their learning disabilities”. This implies that knowledge of the TE student’s disabilities and needs is not a priority as the program is geared towards ‘typical’ students.

**Assertion 6.7**

It is necessary to ensure that all GAT Academic schools are given the information and documentation forwarded to the DoE by parents of TE students once students have gained placement. This will encourage early identification and support for TE students in their transition and alleviate parent concerns.
6.4. **Research Question 3:** What knowledge and perceptions do the GAT Academic program coordinators have of TE students’ needs in gifted programs?

Some GAT coordinators indicated they had limited knowledge of learning disabilities (KF 5.20) and had limited knowledge about accommodations or modifications based on SCSA provisions for TE students (KF5.23). They reported that TE students had more negative learning characteristics than positive (KF5.21). Coordinators were perceptive to the strengths or difficulties experienced by TE students, but it was uncommon for a coordinator to report both positive and negative perceptions (KF5.22). They perceived the inclusion of TE students into the GAT Academic programs as a benefit to the student and noted that they have never had to remove a TE student from the program (KF5.24)

While the coordinators’ knowledge of learning disabilities (KF.20) was not well developed, which linked to their lack of awareness about accommodations or modifications based on SCSA’s guidelines, this was not surprising based on research findings by others over many years. There has been a longstanding concern in the literature that classroom teachers, both special education and mainstream rarely have the training to address the needs of gifted and talented students (Kennedy, Higgins, & Pierce, 2002) including the TE. This was also identified as a concern in the 2001 Senate Inquiry into the Education of Gifted Children (Commonwealth of Australia, 2001) where it was recommended that training be provided to teachers to identify giftedness in children who have disadvantages, with identification of giftedness being the focus rather than education on giftedness and disabilities. Without this training, WA will continue to experience that which was described by Troxclair (2013) in America, where it was found that pre-service teachers had stereotypical perceptions and attitudes that gifted students are gifted in all areas and will not need any additional assistance. Hence, as there has been no formal requirement for Australian teachers to engage in gifted education units of study or programs, there has been a continuing lack of gifted and talented training for teachers (Fraser-Seeto, 2012). In the context of the GAT Academic programs this leaves coordinators without the necessary training to be cognisant of the diversity of gifted students.

Based on research findings over many years, pre-service teacher preparation does not adequately prepare teachers to identify or serve TE students which was also a point made by one parent “Information concerning the unique needs of gifted learners
including the TE should be part of every teacher’s training” (Parent 1). Specifically, general education and special education teachers would benefit from training that includes learning the characteristics and needs of gifted students, including an intentional focus on twice-exceptional learners and other underrepresented gifted populations. Bianco and Leech (2010, p. 331) highlighted that if an additional unit cannot be added to already-crowded requirements, then teacher educators in all disciplines should consider infusing gifted education topics into their courses through readings, assignments, field experiences and discussions. Given the findings of the study reported here, there is still no universal requirement for WA teachers to engage in gifted or disability education, let alone a requirement for both to form part of pre-service teacher education courses.

Karnes and Shaunessy (2002) recommended that teacher training include information about gifted students with disabilities so that teacher knowledge of student abilities and disabilities as well as disability compensation and strategies for curricular modifications (Clark, 2002) can be put in place. This is also taken up by Coleman (2005) and Rinn and Nelson (2009) who maintain that deconstructing the characteristics and learning needs of the TE student must form an integral part of teacher education training and a deepening and broadening conceptual understanding of dual diagnoses woven into professional development for all levels of the profession. It is recommended by Schultz (2012, p. 127) that professional development is needed that includes “tangible, real-life examples of variability in development” to bring about change. Foley Nicpon, Allmon, Sieck, and Stinson (2011) and Syzmanski and Shaff (2012) reinforce this need by stating that educational professionals’ knowledge and experience with this population of students is very limited. While educators are gaining more experience working with the TE population over time, Foley Nicpon, Assouline, and Colangelo (2013) state that this is not enough. Therefore, the concern still remains based on the findings of this study, that teacher knowledge of giftedness and disability and the crossover between the two does not form a compulsory part of WA teacher education nor professional development for the teaching profession.

In 1985 Yewchuk stated that in America there was a divide between the two specialisations of special education and gifted and talented education that was reflected in professional training programs where teachers focused on one or the other, but not both. In the same year, Whitmore and Maker (1985, p. 204) stated “we should be familiar with identified strengths and vulnerabilities [of G/LD individuals] . . . in order to facilitate the development of potential.” Corn (1986) contended that giftedness
amongst TE students with a visual impairment generally goes unidentified which can be attributed to teachers not being knowledgeable of their characteristic traits (Besnoy, Manning, & Karnes, 2005). With Konza and Moroney (1990) further reinforcing this with regard to a TE student with cerebral palsy, that knowledgeable teachers are vital for the strengths of the child to be developed given that these may be hidden by enormous difficulties. It is then not surprising from the findings of this study that only one student out of 799 at the five GAT Academic programs had a vision impairment and none had a physical disability or were deaf and hard of hearing even though Friedrich (2001) estimated that 5% of the total population of blind and visually impaired students are gifted.

Gentry, Hu, and Thomas (2008) identified professional development as one of three necessary actions to solve the problem of underrepresentation of minority groups. Based on the findings of this study, the issue of knowing the strengths and vulnerabilities of the TE and how to develop that potential, is still hindered by the separation of the two educational specialisations with each not including a pre-requisite of the other to assist teachers to identify TE students and support them.

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<th>Assertion 6.8</th>
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<td>Engagement with professional learning is important for the development of new knowledge and thus expertise. Establishing units of study within Education courses at a tertiary level for pre-service teachers of all specialisations and gifted/disability professional learning for practicing teachers is necessary to tackle the problem of underrepresentation of minority groups such as the TE.</td>
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Responding to learners’ diversity involves tackling assumptions relating to expectations about certain groups of students, their capabilities and behaviours (Ainscow, 2005). Using Gagné’s (2010) interpretation of giftedness, the TE student would be defined as possessing superior natural abilities, called aptitudes or gifts and at the same time would possess impairment in the processes that are related to learning, processing, remembering or perceiving (Wormald, 2011). The findings reported here indicate that coordinators’ reported more negative learning characteristics than positive (KF5.21) in line with the TE student’s disability and while perceiving that they had strengths, it was uncommon for them to report both positive and negative perceptions (KF5.22). VanTassel-Baska, Feng, and Evans (2007, p. 229) maintained that for those students whose level of “functioning may be atypical, adjustment to higher expectations and
performance takes time; it is not automatic and may require real effort and struggle for those students to be successful”. Consequently the disabling condition of the TE actively suppresses the capability of the individual to perform in some areas, thus undermining their perception of themselves and their abilities (Brody & Mills, 1997) and no doubt that of teachers. It is this performance related to their disability that more often than not, based on the findings of this study, precludes parents from thinking their child could cope in the GAT Academic programs (Parent 8) or gain placement (Parent 3).

In Victoria’s Inquiry into the education of gifted and talented students (Parliament of Victoria, 2012) two staff members at their selective academic schools had conflicting opinions about the inclusion of TE students. One commented that these students do not have the same academic capabilities as other students at the school and it was “deleterious to the students themselves” (p. 172) and the other that they “do not see a whole lot of difference in their performance” (p. 173). Similarly to the findings of this study, the Victorian teachers’ perceptions were either negative or positive (KF5.22). The majority of coordinators believed that placing TE students in the GAT Academic program was appropriate stating that “it is clear that these students have benefited socially and academically” (Coordinator 1), “The lessons are often self-paced – which allows students to work at own pace” (Coordinator 3) and “We have had students twice exceptional obtain university degrees” (Coordinator 4), noting that they had never removed a student from the program (KF5.24). Therefore, despite identified benefits to those TE students in the WA GAT Academic programs, these benefits dare being denied to a wider range of TE students due to barriers to their inclusion.

6.5. Research Question 4: What perceptions do the parents of TE students have of the GAT Academic programs?

- 6.5.1. Parent perceptions of the advantages of the GAT Academic Programs

All eight parents stated that the advantages of their child participating in the GAT Academic programs would be access to like-minded peers, an academic program and specialist teachers (KF5.26). The following is a discussion of the identified advantages as perceived by parents of TE students of this study, for inclusion in the GAT Academic programs.
6.5.2. Like-minded peers

Wellisch and Brown (2012) stated that gifted children can feel uncomfortably different from others due to their unique behaviours and unusual style of communication and this is especially so if they also have learning difficulties and possess a confusing mixture of high and low abilities. They may also find themselves socially mismatched with same-aged peers when they should be grouped with mentally similar children (Wellisch & Brown, 2012). This issue was highlighted in the present study by parents of TE students who felt that being part of the GAT Academic programs allowed their child access to like-minded peers so that they would not feel uncomfortably different and be socially and mentally matched with students similar to themselves (KF5.26).

we always wondered if she was surrounded by similarly bright students, she may strive to achieve more (Parent 2).

Finding other students like him who were very bright so that he could have acceleration (Parent 3).

Advantages were access to an academic program and peers suited to gifted children (Parent 5).

working in a school with an ‘able’ peer group (Parent 7).

The opportunity to be surrounded by peers with like interests and abilities (Parent 8.)

It was felt by parents of TE students that their child being with like-minded peers would enhance their child’s achievement and learning.

The importance of being grouped with true like-minded peers was discussed by Wang and Neihart (2015) where they found that external supports from parents, teachers and peers were enablers of academic success for TE students. This was also suggested by Schunk and Pajares (2002), as possibly affecting students’ academic self-efficacy through modelling and peer networking. Therefore, having access to true peers who are their intellectual equal enables the academic achievement of TE students (Wang & Neihart, 2015) and supports positive social/emotional outcomes (Bees, 2009; Jackson, 1998; Yssel, Prater, & Smith, 2010).

This was taken up by Furrer and Skinner (2003) who found that students sense of relatedness, that is feeling special and important to teachers, parents and age-mates was related to behavioural engagement and interest in school which in turn related to performance, thus students’ perceptions of school warmth decreased the likelihood of
dropping out in students with and without disabilities (Reschly & Christenson, 2006a). Resnick, Bearman, Blum, Bauman, Harris, Jones, Tabor, Beuhring, Sieving, Shew, Ireland, Bearinger, and Udry (1997) also found that the higher the students’ perceived closeness with family members, school personnel and sense of belonging at school, the less likely they were to engage in risky health behaviours such as violence, substance use and suicidal behaviour. Therefore, placement with a match of intellectual peers in a GAT Academic program is a protective mechanism for the TE.

- **6.5.3 Academic Program**

As reported in this study, parents of TE students, highlighted their child’s need for an academic program that was commensurate to their intellectual potential rather than having their child do irrelevant meaningless busywork that did not match their abilities (Crammond et al., 2007; Hansen & Toso, 2007; Kanevsky & Keighley, 2003). Three parents commented:

- possibilities for academic extension (Parent 1).
- [ . . . ] provide greater academic opportunities (Parent 4).
- Being given opportunities for extension (Parent 7).

Herbert’s (2001) study echoed the findings of Kanevsky and Keighley’s (2003) study where gifted underachievers described a poor match between their abilities and their coursework as well as frustration with assignments they perceived to be meaningless and below their ability level as contributing to their underachievement. The risk factors identified by Crammond et al. (2007) and Hansen and Toso (2007), were all found to contribute to students dropping out of school. Landis and Reschly (2013) also highlighted as a prominent variable in academic outcomes amongst gifted students who underachieve more than in the general population, their perception that the work is irrelevant, frustrating, unchallenging and intellectually insulting all contributed to underachievement.

- **6.5.4. Specialist Teachers**

It was Bloom in 1985 that found from his interviews of over 120 talented individuals under the age of forty in three different fields: athletics, aesthetics and cognitive/intellectual and after interviewing participants’ parents and teachers/coaches, that he could draw generalisations about the talent development process. One generalisation that Bloom (1985) found was that talent develops in three stages
throughout the individual’s life and similarly the talented individuals had three noted kinds of teachers throughout their talent development process: a local teacher that fostered their love for the domain, an advanced teacher who had a reputation for talent in the field and a history of helping children to develop their talents, and a master teacher. Tannenbaum (1983) and Gagné (2013) both identified parents, teachers and peers as environmental catalysts that can both positively and negatively influence the course of talent development (Gagné, 2003). Without entry to the GAT Academic programs, the TE student does not have access to a master teacher, which is the third and crucial stage in the talent development process identified by Bloom from his study. It is then not surprising based on the findings of this study, that parents identified that an advantage of having access to the GAT Academic program was specialist teachers: “G & T trained teachers” (Parent 1) and “access to specialist teachers and a school that ‘gets it’ is appealing” (Parent 5). This is the master teacher referred to by Bloom thirty years previously and identified by Tannenbaum (1983) and Gagné (2003) as an environmental catalyst along with peers that TE students need to succeed.

A GAT Academic program is the ideal location for TE students who would have the benefit of inclusion with their intellectual peers, knowledgeable and supportive gifted teachers and parents who had chosen this option for their child to add further support. This was taken up by VanTassel-Baska (1998, p. 762) “Contrary to popular belief, talented individuals do not make it on their own. Not only is the process of talent development lengthy and rigorous, but the need for support from others is crucial for ultimate success”. Therefore, when a TE student is excluded from a GAT Academic program, all the at-risk factors that have been pinpointed by research come into play. Consequently, the provision provided outside of a GAT Academic program for those students who became a false negative through the GAT Academic testing, could never match that within such a highly specialised gifted environment.

Assertion 6.9

The opportunity for placement into a GAT Academic Program can be viewed as a protective mechanism for TE students who are placed with like intellectual peers and have access to specialised teachers.
6.5.5. GAT Academic programs recommended for the TE student

Three of the eight parents indicated that a teacher or the principal had recommended the GAT Academic program for their child (KF5.25).

It is not surprising that only three TE children were recommended to apply to the WA GAT Academic program as research by Bianco and Leech (2010) found that teachers were much less willing to refer students with disability labels to gifted programs than identically described students with no disability labels. Moon and Brighton (2008) and Jolly and Hughes (2015) also found that teachers lack of understanding about TE students hindered their referral of TE students to gifted programs. Being identified as gifted raises expectations while identification of a disability tends to lower teacher expectations (Bianco, 2005; Lovett, 2013). Teacher decisions for referral to a gifted program were significantly influenced by their teaching credentials and by the presence or absence of a disability label (Bianco & Leech, 2010). Without adequate training, teachers "may default to anecdotal or erroneous information, often informed by popular stereotypes" (Croft & Wood, 2015, p. 88) and personal beliefs that may or may not be valid (Berman, Schultz, & Weber, 2012). This was reinforced by Ford (cited in Ford, 2013, p. 65) “The less we know about others, the more we make up. The more we know about others, the less we make up”. Hence a strong teacher knowledge base can counteract incorrect assumptions. Townend and Pendergast (2015, p. 38) found that “teachers have been provided with little or no knowledge and understanding of twice-exceptional students in Australia”. Therefore, teacher perceptions and knowledge are vitally important to parents for the identification and inclusion of TE students in WA GAT Academic programs as without this first step, parents do not perceive their child is welcome or viewed as a suitable candidate.

The under-referral of TE students in this study to gifted programs, mirrors the issues encountered by culturally and linguistically diverse students. Ford (1998) suggested that teachers often under-refer diverse students for gifted screening and placement which was illustrated by Bevan-Brown (1999) in relation to the Maori perspective on special abilities. In this instance due to cultural differences, between the majority and minority culture in New Zealand, gifted Maori students were not readily identified and when they were, did not fit into the highly structured and rigid gifted programs that lack any input from the Maori minority culture (Bevan-Brown, 1999). In 2001 The Honourable Alan Carpenter MLA, the then WA Minister for Education made a submission to the Senate Inquiry into the education of gifted and talented children.
where Indigenous Australian students were mentioned twice: “Current data shows that Indigenous Australians and students who have English as a second language or dialect are not well represented in the gifted and talented student cohort” (Education Department of WA, 2001a, p. 2) and “In particular Indigenous Australians and students who have English as a second language or dialect tend to be absent from program [sic] as a proportion of the population” (Education Department of WA, 2001a, p. 3). This is the same situation as the WA TE, where the DoE note that they are likely to be underrepresented in gifted programs and yet, as shown by this study, this is a continuing problem today.

Gifted Indigenous students “constitute a ‘high risk’ group because their cultural and intellectual characteristics are generally not well accommodated in our school system” (Cronin & Diezmann, 2002, p. 12). Cronin and Diezmann (2002) contend that minority groups can be disadvantaged in mainstream processes that seek to identify gifted students and as a result there is a disparity in the participation of minority students in gifted programs (Fraser, 1997). These disadvantages may result from cultural, ethnic or racial differences; language or economic difficulties; teachers’ low expectations of culturally or linguistically diverse students; or teachers’ failure to recognise gifted behaviours exhibited by minority students (Fraser, 1997). A very similar scenario to that which occurs for TE students and one expressed by two parents:

The biggest problem for this cohort is that often neither the giftedness nor the disability/difference gets recognised and assisted (Parent 1).

He was already precociously gifted but his primary schooling did not nurture his gifts and at no point were we encouraged to seek academic extension programs for him. In fact, learning support was usually recommended and a bleak outlook promoted. My child was never involved in PEAC, although he really wanted to be. His learning style coupled with his anxiety and autism really clouded his potential (Parent 4).

The issue of teacher expectations, role modelling and community are raised as factors that need addressing to reverse underachievement of gifted Indigenous students with Chaffey (2008, p. 39) cautioning that the “academic underachievement and ‘invisible’ underachiever status of many academically gifted Indigenous children means successful inclusion in traditional gifted education provision is unlikely”. Bousnakis et al. (2011, p. 4) highlighted that Indigenous students “suffer from issues of cultural stereotyping, low expectations (self, family, society), forced-choice dilemma and issues of identity”. Many of these factors are also experienced by the TE, who often are
viewed as unlikely candidates for gifted programs, due to their differing characteristics to ‘typical’ stereotypical gifted students.

6.5.6. Disadvantages and barriers identified by parents

Parent awareness of the GAT Academic Programs and its requirements

Seven of the eight parents were aware of the WA GAT Academic programs and had made enquiries about the program and entry requirements but only six of the eight parents considered applying for a position for their child (KF 5.25).

Parent perceptions of the disadvantages of the GAT Academic Programs

Parents’ perceived the disadvantages for their child as being the child’s ability to cope, their self-esteem, anxiety and depression, recognition and support, fitting in and judgements made by other children (KF5.26).

Parent reasoning for not applying

Parents gave their reasons for not applying for a GAT Academic position for their child as no alternative testing option was available or made available, their child’s ability to cope or that they would need support in the program, travel time and the narrow focus on academics (KF5.27).

Parent perception of barriers that hindered or support that assisted TE students to participate in the GAT Academic programs

Parents did not identify any supports that assisted TE students to participate in the GAT Academic programs, but identified the barriers of: the GAT Academic testing, absence of inclusion, lack of support and no alternative testing option available (KF5.28). Half of the parents identified the GAT Academic testing as the main barrier.

The following is a discussion of the identified concerns and barriers, as perceived by parents of TE students of this study, for inclusion in the GAT Academic programs.

- 6.5.7. Coping

Two parents in this study were concerned about their child’s ability to cope in the GAT Academic program (KF5.26) which was articulated by Moon and Reis (2004) where they contend that TE students may struggle with feelings of learned helplessness,
disruptive behaviour, disorganisation, difficulty completing assignments, limited
motivation, poor social and listening skills, or problems sustaining attention. TE
students who consistently exhibit these qualities decrease the likelihood of being
placed in or being given a gifted education opportunity (Moon & Reis, 2004) (KF5.25).
The findings reported in this study indicate that some parents would not take the risk of
their child not coping in the GAT Academic program. This was reinforced by Parent 7
who commented: “I ruled out [. . .] on the basis that if he couldn't cope with the AEP
then he would have to leave” and Parent 3: “We didn’t apply because we weren't sure
if he would cope”. Ruban and Reis (2005) believe that TE students who do succeed
academically do so because they have learned to compensate for their learning
difficulties, but the parents, in this study, did not express this.

6.5.8. Inclusion

Inclusion goes beyond disability and aims to ensure all students achieve their individual
educational potential by anticipating and removing barriers to learning (Rouse, 2012).
How effectively these barriers are removed depends on how broad the school system
is and how well prepared teachers are over time to support all students (Rouse, 2012).
The findings of this study also supported the sentiments of Rouse (2012), where
parents expressed concern regarding the inclusion of their TE child.

Parent 8 commented: I feel his ability to remain 'included' in another [GAT
Academic] school would have been tenuous.

It seems like children with disabilities shouldn't go there [GAT Academic
program] (Parent 3).

I didn't feel that my son would be welcome at these schools. I didn't want him to
feel the one out (Parent 3).

The whole process made me feel that my child didn't belong because she had
dyslexia (Parent 6).

I feel that GAT schools don’t want or need kids with learning difficulties because
they can easily fill their places with kids who are much easier to manage
(Parent 8).

Ainscow and Miles (2008) take up this point when they stated that inclusion is about
removing barriers to access and participation for marginalised groups, specifically any
who may be at risk of exclusion or underachievement. It was the enactment of this
assertion that parents of TE students were wanting, as they either knew that their child
would not cope without support or where unsure and therefore would not take the risk of applying for or placing their child in a WA GAT Academic program.

Dracup (2011, p. 45) believes that identification for gifted and talented students should be about spotting ability rather than simply confirming ability through the demonstration of talent, as this will be “useless in identifying gifted underachievers whose ability is not yet translated into high attainment”. Prior (2013) contends that the challenge for inclusion of TE students would be in them being recognised at all and where they are identified the assumption would be that if the student were “truly gifted, their giftedness will emerge” (Johnson, Karnes, & Carr, 1997, p. 516). This was supported in this study where a minority of TE students had been recommended by the school principal or teacher as being suitable candidates for the GAT Academic programs (KF5.25). Adler (1984), Callahan (1982) and Schroth and Helfer (2008) liken many identification processes of TE students as a process of dividing ‘winners’ from ‘losers’ the ‘sheep’ from the ‘goats’, which was the sentiment expressed by parents.

Wellisch and Brown (2011) discuss how Gagné (1985, p. 105) included underachievers within his original model and defined them as “gifted intellectually, but not talented academically” and yet twenty-five years on, he has reversed his position on underachievers stating that “being bright is rarely sufficient to deserve the . . . gifted label; students must also show high academic performance” (Gagné, 2011a, p. 108). In Gagné’s (2011b, p. 145) article he states that underachievers “need a special alternative pathway, distinct from the highly challenging course offered in the academic talent development programs. I will leave to experts the task of engineering that pathway”. These statements signify that their inclusion was difficult to adequately address and may now have been dismissed even though he does state that he would never ‘dismiss’ a sub-group that was in the DMGT from the very beginning (Gagné, 1985). Gagné believes that underachievers require help to overcome their unequal opportunities and bring their achievement up to a level of their gifted potential. This puts the onus back onto the education system to establish such a pathway for students, especially the TE in the WA GAT Academic programs.

- 6.5.9. No alternative pathway for TE students based on the DMGT and provided by the DoE

Wellisch and Brown (2011, p. 115) asserted that the real equity issue that arises from Gagné’s (2011a) article is that academic talent development is only for high achievers
without an alternative pathway for underachievers, thus excluding many gifted children with promise and potential. This was never a proviso or delimitation placed on Gagné’s original DMGT model. Gifted underachievers disadvantaged by learning disabilities (Silverman, 2009) or socio-emotional problems resulting from childhood stress and trauma (Winner, 2000), separation anxiety disorder, social phobia or generalised anxiety disorder (Mychailyszyn, Mendez, & Kendall, 2010) can create barriers that prevent academic high achievement (Munro, 2002). Gagné’s (2011b) causal components including sub-components or facet-level effects are evidenced by many TE students therefore lessening their chance of high performance but not eliminating it totally. Focusing on the limited assessment criterion of performance excludes many who may be gifted but have no current capacity to achieve (Wellisch & Brown, 2011). This was expressed by Parent 1 - “My impression was that they cater for students who excel at school. I wasn’t sure that my child would excel at school despite his high IQ”. Therefore, there are impediments and barriers that exist “affecting the overall student [gifted] population and to a greater degree, the underserved student population . . . even the act of defining gifted students as a single population neglects the vast diversity among student populations” (Siegle, Gubbins, O’Rourke, Dulong, Mun, Luria, Little, McCoach, Knupp, Callahan, & Plucker, 2016, p. 104).

Gagné (2011b) clarified that achievement measures, illustrate the most basic and common situation and does not cover initial entrance to a talent development program where the student has not had a chance to try their hand at learning the knowledge and skills of a particular academic or occupational field. He goes on to assert that this is when program administrators look for other predictors usually in the form of relevant natural abilities such as specific physical abilities and for academic gifted programs, IQ tests as the selection tool because “so much research has shown that cognitive abilities represent the group of natural abilities most closely associated with academic achievement” (Gagné, 2011b, p. 138). Gagné (2011b, p. 139) then detailed the link between the concept of intelligence and its most appropriate measure, the IQ test. Based on the scientific literature in the field, both IQ tests and achievement tests are “the best predictors of academic excellence” (Gagné, 2011b, p. 139) with Erwin and Worrell (2012) ranking them as the best and second best predictor respectively. Gagné then discussed the point by Ford (2003, p. 511) that asks “Given the persistent [ethnic] gap in the intelligence, aptitude and achieve test scores . . . one must ask why educators continue to rely extensively or exclusively on such tests for recruitment purposes? This is not just a question of access; it is also a question of equity.”
The point made by Ford (2003a) mirrors the situation of the TE, where evidence of a learning disability manifests in a “persistent gap in the intelligence, aptitude and achievement test scores” and yet “educators continue to rely extensively or exclusively on such tests for recruitment purposes” (Ford, 2003a, p. 511) despite minority students obtaining lower scores on both achievement tests and IQ scores (Ford, 1998; Worrell, 2009b). Gagné (2011b, pp. 139-137) again reiterated that in the context of the type of academic talent development programs described in his article, coordinators cannot avoid intelligence and achievements tests if they want to maximise predictors of academic excellence. This is the case with the WA GAT Academic programs where the testing is separating the ‘winners’ from the ‘losers’, the ‘sheep’ from the ‘goats’ (Adler, 1984; Callahan, 1982; Schroth & Helfer, 2008), the ‘typical’ from the disabled. This point is taken up by Ronksley-Pavia (2015, p. 320) who stated “when people hear the word disability, they often equate it with the stereotype of an individual lacking in intelligence (Silverman, 2003; Swain & Cameron, 1999)” and constructs them as “inexperienced, passive and intellectually immature” (Singh & Ghai, 2009, p. 132). Consequently, the TE are more often than not constructed as students with some form of weakness, which gives a rationale for their exclusion as less than suitable candidates.

In the context of the WA GAT Academic programs under investigation in this study, if IQ testing is the best predictor of cognitive abilities that represent the group of natural abilities (gifts) “most closely associated with academic achievement” (Gagné, 2011b, p. 138), then using an achievement test as part of the testing regime measuring talent, ensures that all chosen candidates are already IGAT (intellectually gifted and academically talented) and described by Gagné as “the typical population of students in US gifted programs” (Gagné cited in Gagné, 2015, p. 290). This seems to somewhat contradict Gagné’s earlier assertion that giftedness and talent are two different stages in a highly able student’s journey from high potential to high performance (Gagné, 2003) and that achievement measures, do not cover initial entrance to a talent development program where the student has not had a chance to try their hand at learning the knowledge and skills of a particular academic or occupational field (Gagné, 2011b). This can often be the experience of TE students and one expressed by Parent 1:
Because I chose to home school him for primary years his academic skills in spelling and writing were below grade level (a combination of him never practicing these skills but also having sensory and coordination issues which makes handwriting challenging for him) despite his IQ being on the 99th percentile.

It would seem that the intent of the WA GAT Academic programs is to only cater for those students who are already IGAT and typical, which will create a barrier for TE students.

Theoretically, based on Gagné’s and others assertions, the use of IQ tests, supplied by students with disabilities could be used as an entry point as it is most closely associated with academic achievement, but it would seem that a limited schooling opportunity must be reserved for those who, at least on the testing day, evidence high achievement, whether or not they will go on to academic excellence, as more a ‘sure bet’ to success. This links to Duke’s (2005, p. 4) belief that well-run schools that can sustain and expand their educational achievements are able to balance the needs and desires of different constituencies, while also maintaining strict levels of quality control. Therefore, leaders of effective schools and districts understand the necessity to provide opportunities for gifted students and to increase access to such programs for traditionally underrepresented groups (Duke, 2005) such as the TE.

Gagné (2011b, p. 143) discussed correcting inequity and uses VanTassel-Baska’s (2011, p. 107) assertion that “Schools should try to make up for the inequities of birth, of poverty and of educational disadvantage to the extent that they can” and questions whether the “should try” means that they are not really doing it, which Gagné believed confirms his “own judgement that ‘making up’ for these deeply rooted sources of inequalities represents an extremely difficult challenge, especially at the local level”. He also brings into this discussion the lower validity of modifying a criteria, as an inequitable breach of a desirable meritocratic selection policy. With regard to the GAT Academic testing process, it is not suggested that the criteria should be lowered to ensure that more TE students gain entry, but that an alternate pathway such as presentation of a full psychometric assessment that includes IQ is taken as their evidence of future academic performance and that support that must come into play somewhere along the academic talent development process for underachieving students that occurs after entry, be made available at the outset for these TE students. This is a pathway that is suggested by Wellisch and Brown (2012) for underachieving
gifted students, where they propose a model of inclusive gifted identification and progression. Three parents addressed this point:

There is no consideration of IQ testing, or any other signs of potential (Parent 1).

Once I heard about the testing I knew this would be a problem for [. . .] and it seemed unlikely he would get through. They would not accept any other proof. I was concerned that he wouldn't get any support which he needed (Parent 3).

Parent 6: They weren’t interested in reading the reports we have about her IQ, so it seemed pointless.

Gagné (2011a, 2011b) does reiterate that the academic talent development model he proposes will more than likely increase ethnic-based disproportionate representations in the gifted field due to chronically lower performances of African Americans and Hispanics on measures of IQ and achievement measures. This mirrors the often lower performances in some academic areas, of the TE student that in this instance, then leaves no appropriate pathway. Underachievers of any sort including TE students who cannot demonstrate IGAT status need a special alternative pathway; one that Gagné has not defined but believes is outside of his current DMGT model and in the context of this study, also outside the WA GAT Academic programs.

Fiebig (2011, p. 54) maintained, “probing students’ abilities in a single test, which then defines their academic pathway, remains highly objectionable.” The similarities between Gagné’s model and some European educational systems, in particular, the German system, are drawn by Fiebig (2011). In Germany there is six years of basic education for all students with excellence classes being the exception, as all students stay together in collective classes, then separation occurs after this where students are assigned, based on merit, to one of three educational branches with Gymnasium (the highest) for preparing college bound students for entering university. Therefore, students who are high achievers will only have access to Gymnasium. The egalitarian style Australian education system where everybody has a ‘fair go’ or fair chance of success is far different from the German system. Yet when it comes down to a scarce educational opportunity such as entry to the GAT Academic programs, the DoE very quickly fall back to a meritocratic (excellence) system with no flexibility or alternates for identification, while knowingly acknowledging that TE students exist and have different learning characteristics.
Fiebig (2011) stated that it is highly objectionable when selection falls down to performance on one test that will then determine an educational pathway. In Australia secondary students are assessed on school coursework assessments and examinations, universities similarly use coursework assessments and examinations and while the GAT Academic testing, it is not one test, but multiple tests, both measuring achievement and potential, it is then put into one composite score being a compilation of all the testing with different weightings. It is well known that many TE students will score lower on composite intelligence scores due to their areas of weakness (Baum & Owen, 1988; Ferri, Gregg, & Heggoy, 1997; Foley Nicpon, Rickels, Assouline, & Richards, 2012) much as they will score lower on a composite score comprised of measures of potential and achievement. Therefore, it ‘boils down’ to one assessment point as the one and only entry identification point. Arguably this is highly objectionable when there is awareness that minority groups such as those with disabilities will be unlikely to be overall high achievers thus intentionally setting a criterion that will create a barrier to their inclusion (KF5.27). Freeman, Raffan, and Warwick (2010) highlight that the identified gifted population should broadly reflect the whole school population and unless providers are explicitly focused on improving standards, only for high achievers, it is essential to take a multi-faceted approach to discovering hidden potential.

**Assertion 6.10**

It is necessary to ensure that the GAT Academic Test does not create barriers to entry for TE and other minority gifted students. Time spent reflecting on the complexity of factors that are creating barriers for TE student entry to and participation in the GAT Academic programs, to identify alternate entry options has the potential to change parents' perceptions and increase TE numbers. An alternate pathway for TE students and an inclusion philosophy needs to be clearly articulated to prospective parents.

The findings of this study are similar to those discussed by Wellisch and Brown (2011) and Fiebig (2011) and are all relevant to the TE student seeking entry to a WA GAT Academic program which is an excellence model for high achieving students with no other pathway for gifted students who are underachieving or have no current capacity to achieve, such as minority students. Gagné’s first model was adopted by the DoE, which clearly defined and accepted underachievers as “gifted intellectually, but not talented academically” (Gagné, 1985, p. 108) and detailed that the journey from gifted to talented was a two part process. Now Gagné has clarified in his recent model that
there is no pathway in his model for underachievers and yet, nothing has changed in terms of identification for the WA GAT Academic programs, as the testing process has remained the same despite the two models having quite different students in mind as their intended selectees.

If the DoE were guided or influenced by Gagné’s model, then the adoption of the first model would have led the DoE to think about and try and identify gifted underachievers. Aptly put by Wellisch and Brown (2012, p. 146), when Gagné first proposed his DMGT in 1985, “it was immediately recognized internationally for the inclusion of underachievers, who were placed in the giftedness component of the DMGT.” TE students who underachieve have no pathway in this new model nor for inclusion in the WA GAT Academic programs, now matching Gagné’s revised DMGT model which has created great concern amongst many gifted experts in the field (Balogh, 2011; Cobley & McKenna, 2011; Cohen, 2011; Dimaano, 2011; Dracup, 2011; Fiebeg, 2011; Harder, 2011; Wellisch & Brown, 2011) as it “contradicts the generally accepted notion of Gagné’s (2008) representation of giftedness” (Ronksley-Pavia, 2015, p. 335).

Gagné has continued to update his model in 1995, 2004, 2009 and now 2013, but there has been no attempt to add components that would address the needs of this subgroup of gifted children (Wellisch & Brown, 2012). Ford, Grantham, and Whiting (2008, p. 300) state that when “one makes giftedness synonymous with achievement, gifted underachievers will be neither recruited nor retained” despite talent development being the most critical aspect of their education (Baum & Owen, 2004; Baum, Schader, & Herbert, 2014; Hallowell, 2004; McCoach et al., 2001; Neihart, 2008; Nielsen, 2002). The consistency of the DoE’s identification process signals that the process of identification of students for the WA GAT Academic programs was only ever theoretically aligned with Gagné’s earlier model, but is now in line with his later DMGT 2.0 model and his 2011 articles on the talent development process that offers no pathway for the underachiever.

- **6.5.10 GAT Academic Test**

Rose (2009) believed that TE students may be overlooked because entry to gifted programs is through a total score rather than subscale scores as in the GAT Academic testing, with Assouline et al. (2009) contending that they can also be missed due to their unusual testing patterns with extreme dips on certain sub-tests. This again
harkens back to Faggen’s (1990) assertion that these tests are like high-stakes gambling where there has to be winners and losers.

Naglieri and Ford (2003) suggested that a nonverbal measure can be more appropriate for minority students than a measure of general ability that contains both verbal and nonverbal content, as tests of intelligence are constructed in ways that presume a given level of language proficiency is present in the individual who has the ability to comprehend the instructions, formulate and verbalise responses, or otherwise use language ability in completing the expected tasks (Flanagan & Ortiz, 2001). Flanagan and Ortiz (2001) contend that bias results in cases where individuals are limited in English proficiency or for whatever reasons are not developmentally equivalent in language proficiency in comparison to a norm group. This was a sentiment expressed by Parent 1: “I didn’t think he had much of a chance at getting a place. Because I chose to home school him for primary years his academic skills in spelling and writing were below grade level (a combination of him never practicing these skills but also having sensory and coordination issues which make handwriting challenging for him”). In Pfeiffer’s (2001, p. 176) survey of gifted experts, 25% were concerned that a “disproportionate number of potentially gifted children of color, or economic disadvantage and who are female, linguistically different, or disabled were not being adequately served.” The findings of this study also support this contention for TE students, who, due to a learning disability are not always equivalent in language or other proficiency in comparison to a norm or ‘typical’ group and are therefore, not finding a place in the WA GAT Academic programs and being adequately served.

The literature on culturally and linguistically diverse populations in many ways mirrors the issues and problems surrounding the TE and the perceptions of parents of WA TE children. Joseph and Ford (2006) argued that if different groups have different group norms on intelligence tests, then those subgroup norms should be considered when making decisions regarding placement. Culturally competent assessment is much more than ensuring that tests are unbiased, rather it represents a commitment to data collection and assists in identifying and eliminating sources of bias through the educational process (Skiba, Knesting, & Bush, 2002). Skiba et al. (2002) contend that assessment is about data collection that identifies and eliminates sources of bias and even the absence of technical bias in intelligence tests in no way absolves those who administer and make decisions based on those tests, from socially responsible decision making. The findings of this study has identified that the inclusion of TE students in the testing phase of the WA GAT Academic programs does not equate to
equity when the demonstration of the student’s disability is measured and viewed as merely not meeting minimum cut off scores for selection, as their subgroup norms should be considered when making decisions regarding placement (Joseph, & Ford, 2006). Three parents reinforced this point:

The entrance test is designed to create equality of access, but in fact, in my opinion does not create equity (Parent 1).

One barrier is the testing which isn’t very equitable for a child with a disability (Parent 3).

The testing is a huge barrier so it seems insurmountable to get a place, [...] is not a good speller or reader. I knew this would hold her back for the testing (Parent 6).

Bonner (2000 p. 654) highlighted that there needs to exist a happy medium between rigid nomination and selection methods with a more global approach so that the approach “does not promote under-identification of any student group”. This was reflected in the parents’ responses as a concern for their TE children (KF5.28).

It was Joseph and Ford’s (2006) recommendation that school districts examine the demographics of their gifted programs in relation to economic, racial and linguistic diversity and conduct studies on variables that contribute to underrepresentation. In the context of the present study there are two similar areas of examination: (a) exploring the number or percentage of diverse students applying for gifted placement and (b) exploring the number and percentage of diverse students applying for gifted placement but who failed to meet criteria (Joseph & Ford, 2006). Maize (2009, p. 21) maintained that a multifaceted admissions policy that is more thoughtful and nuanced than a single-test policy is essential as “any educational program that offers a scarce resource should be generous in its conception of and steadfast in its commitment to broader social goals.” The barriers experienced by TE students to gain entry to the WA GAT Academic programs are very similar to other diverse minority students. When the TE are constructed as less able, this can become the defence for low representation, which is a broad stereotype that combined with ‘disability-blindness’ allows inequity to continue (Ford, Moore, & Milner, 2005; Milner & Ford, 2007). Given it is unacceptable, indefensible and inequitable that TE prevalence in the WA GAT Academic programs is not within the very conservative disability range of 1.9% to 3.0%, guidelines and accountability needs to be put in place and guaranteed, to ensure that underrepresentation does not continue (Ford, 2010).
It is necessary for inclusion and equity to be enacted to change TE prevalence in the GAT Academic programs. In order to do this, the DoE needs to comprehensively audit disability data for demographics, with a cross analysis and reporting on the application for, enrolment in and failed applications for the GAT Academic programs for minority student representation. Tailoring strategies to specific barriers, issues and needs of the TE group and setting up and adhering to a TE percentage or threshold from which to know that underrepresentation at and above a certain level must be addressed in a proactive way, is essential to bring about change.

Dimaano (2011) proposed that a variety of measures and pathways for admissions be used, whereupon the programs will serve as incubation points for the early development of talent and then the resulting achievement can be measured to recruit students to the more rigorous Academic Talent Development programs. She asserted that using this model recognises that potential has a stronger, yet less measurable presence than manifest talent and must be given a chance to develop before being judged, thus achievement then becomes a valid criterion. One wonders whether the ‘incubation point’ should be the entry to Primary Extension and Challenge (PEAC), where TE students are given the chance to develop before being judged, but in reality many have not had this opportunity, again due to the TE’s learning characteristics that make them less likely candidates to succeed. This was expressed by Parent 4: “My child was never involved in PEAC, although he really wanted to. His learning style coupled with his anxiety and autism really clouded his potential”. Balogh (2011) further reinforced that while identification procedures for gifted programs remain the same, false negatives will eliminate high potential, late-blooming or underachieving gifted students from entry. Erin and Worrell (2012) also reinforced that “it is far more harmful [to students] to produce false negatives than false positives”.

Similarly to the findings of this study, Morrison and Riza (2007) found in America that despite the majority of states having a written gifted policy outlining identification and programming recommendations, underrepresentation of students with disabilities in gifted programs existed. Therefore, a discrepancy between policy and practice existed that could be attributed to “miscommunication of policy intent, concern over numbers of students, availability of adequate resources and building bridges for special populations” (Morrison & Rizza, 2007, p. 58). A very similar situation with the DoE’s gifted documentation where there is a miscommunication between the intent of the
policy and what is put into practice through the GAT Academic testing. This is further compounded, as there is no legislation or general policy covering the TE students as a discrete category in Australia (Townend, Pendergast, & Garvis, 2014). This is little wonder when:

there exists no legislation at federal or state levels in Australia enshrining, establishing or protecting the right of gifted children to an appropriate education or mandating teacher training on how to meet the special needs of gifted students. Most states have some form of gifted ‘policy’ on the websites of their education departments, but these policies are not mandated and their aspirational pronouncements do not appear in the process of being consistently implemented. They are mere policy and not law (Pendergast & Garvis, 2014, p. 76).

They contend that these policies can be ignored with impunity unlike students with disabilities where policies addressing their needs are supported by both federal and state legislation. Therefore, disability policies are “enforceable in a way in which gifted policies are not” (Townend, Pendergast, & Garvis, 2014, p. 76) and yet there is an intersection of disability and giftedness with TE students. In 2004, twice exceptionality was written into legislation in America (Assouline & Whiteman, 2011), but Australia has as yet, not followed this lead.

McClain and Pfeiffer (2012) examined the gifted decision-making models used by the states in America to see whether they considered or recognised using one or more gifted identification decision-making models. More than half of the states endorsed a multiple cut-off or averaging approach, which has the advantages that a very high score on one test can compensate for a less impressive score on a second measure, which can increase student diversity (McClain, & Pfeiffer, 2012). They also caution in relation to the averaging of results “students could be selected without being truly outstanding in any one domain and a truly exceptional student could be eliminated because of one low score” (McClain & Pfeiffer, 2012, p. 77). Seven American states used the single cut-off; flexible model for gifted identification, which considers just a single piece of diagnostic information (McClain & Pfeiffer, 2012). However, this has the flexibility that if the student can demonstrate their gifts by obtaining a high score on one of a number of alternative tests or measures they will be accepted (McClain & Pfeiffer, 2012). This is similar to Australia’s Victorian selective schools where they can choose students who are within five points of the cut-off score for entry.

When McClain and Pfeiffer (2012) asked American state gifted coordinators if their state provided any special accommodations or flexibility for special populations who might otherwise not meet state-specified gifted criteria, slightly more than half the
states mandated specific policies for identifying culturally diverse students, whereas the remaining 48% had no current mandate or policy for identifying underrepresented gifted students. Half of the states recognised “that some groups of students in United States schools are less likely to do as well on traditional gifted identification methods and benefit from flexible and non-traditional gifted identification procedures” (McClain & Pfeiffer, 2012, p. 75). Similarly to WA, several American states noted that TE students were an underserved group but had no accommodations or flexibility for this special population.

In the WA Gifted and Talented Policy (DET, 2010a, p. 1) under background notes it is stated:

Gifted and talented students are represented in all socio-economic and cultural groups and are part of the population of almost all schools. For varied reasons many of these students are at risk of not achieving to their full potential. For example:

- student abilities are not fostered through appropriate educational provision;
- identified students do not achieve to their potential due to physical, emotional, motivational and social factors or specific learning difficulties;
- some students are not identified; and
- gifts and talents may be masked by cultural or other background factors.

On page 3 under Identification it is noted:

Principals will plan and implement strategies to identify gifted and talented students.

Guidelines:

Identification measures are especially necessary for those who, for various reasons of disadvantage, may not be recognized. Early identification is important, as is intervention.

Identification processes for gifted and talented students should:

- Be inclusive, so that gifted and talented students are not educationally disadvantaged on the basis of racial, cultural or socio-economic background, physical or sensory disability, geographic location or gender.

Therefore, WA’s DoE policy acknowledges that TE students exist and make recommendations to principals of the DoE’s schools, but falls short of highlighting that flexibility or alternate means of entry need to be employed. One parent in this study raised this concern from her experience that “the Academic programs may not provide for or recognise twice exceptionality. My child’s gifts were not recognised or fostered in Primary School” (Parent 4) (KF5.26). Warne and Price (2016) found that when
American states had accountability systems for gifted programs, more children were identified as gifted and that the “careful, thoughtful attention to . . . policy . . . means that leaders must track data” (Swanson & Lord, 2013, p. 216). While the findings of this study indicate this is needed, the DoE has made no such suggestion or provision as the WA GAT Academic Programs seem outside of the DoE’s guidelines. Gallagher (2002) points out that there is a distinction between hot policy problems such as violence in schools, children with disabilities and cool policy problems such as pollution and the education of the gifted. While cool policy problems are well recognised they can be put off to some future time as they are cool in the perceived need for immediate action. Such is the case of inclusion of the TE into the WA GAT Academic programs.

When WA initially added secondary specialist subject departments into existing schools in the 1980s, nominated children were screened on the basis of a group intelligence test and then subsequently identified by an individually administered Slosson Intelligence Test (Slosson, 1963). Students who were disadvantaged were administered the Raven’s Advanced Progressive Matrices (Raven, 1962). Upon an early review when it was revealed that a disproportionately high number of boys were selected the DoE considered whether equal opportunities for girls to participate in the Secondary Specialist Placement Programs (SSPP) should be implemented, which then started in 1982 (Bragget, 1985). Since that time a greater emphasis is now placed on potential as well as achievement with no refinement or consideration how this impacts on students with disabilities. This reflects the implicit suggestion that students with certain disabilities types who can demonstrate that they are competent in all areas have demonstrated their ‘fit’ into the GAT Academic programs to the exclusion of others. Schultz (2012, p. 126) contends that inflexible “policies, such as those requiring a certain grade point average, assume ‘one size fits all’ which discriminates against children with learning disorders who may also have areas of gifts and talents.” One parent labelled the process as anti-inclusion (KF5.27), which is an apt label for a process that the DoE knowingly continues on with, even though they are aware that the greater majority of students with disabilities will not be able to meet such a standard as they evidence a disability.

Duke (2005) asserted that school districts in the United States that have been successful in increasing the number of diverse gifted students serviced, while also maintaining high standards are able to combine more equitable identification processes, necessary academic and social supports to those identified and effective communication between and amongst administrators, teachers and families. Success
often depended upon a shared vision, logical and appropriate procedures, adequate funding and a common belief that the chosen goal is a proper one (Deal & Peterson, 1999; Duke, 2003, Duke, 2005; Fullan, 2001). Gagné (2011b) in his question to his colleagues “Why is it important to develop the talent of all gifted children? Which ideology should guide our defense of their right to a special education?” concludes like Borland (1989, p. 31) that students should be offered special services:

not because they promise to be productive adults or because they fit an expert’s profile of the gifted child, but because they demonstrate pronounced educational needs that can only be met by the provision of a special or modified curriculum.

Norris and Dixon (2011, p. 43) take up this point in relation to gifted students with Autism Spectrum Disorder (ASD) that ASD does not disqualify the student from being “deserving and indeed needing, a differentiated curriculum appropriate to their gifts”. This is the crux of this study, that many WA TE students need the provision of a special and modified curriculum that can only be provided in the GAT Academic programs, because of their “pronounced educational needs” (Borland, 1989, p. 31) as identified by Gagné (2011b).

• 6.5.11. The need for support

Parents in this study expressed concern whether support would be provided to their child if they gained entry to the GAT Academic programs. Three parents made reference to support in their decision not to apply for a place or saw this as a perceived barrier for their child (KF5.28):

I was concerned that he wouldn’t get any support which he needed (Parent 3).

We were concerned about the support or lack thereof that would be provided by the schools (Parent 6).

Absence of inclusion support services . . . I know this doesn’t/didn’t exist at [GAT Academic school] . . . got no additional help despite his diagnosis (Parent 8).

It cannot be totally predictive that the power of the GAT Academic testing will ensure that underachievement or underperformance will not occur once the child has a place in the WA GAT Academic programs. Despite decades of research on gifted underachievers, underachievement has yet to be eliminated (Flint, 2007). Hence, underachievement, for whatever reason, would be expected in a cohort of students in a gifted program such as the GAT Academic programs. Support mechanisms put in
place for these GAT Academic program students, out of necessity, would also accommodate the TE student upon entry. Reis, Baum, and Burke (2014) contend that research suggests that TE students will require special education services for their difficulties, which should include instruction in compensation strategies to enable them to manage their disabilities so that they can thrive in an academically challenging environment (Baum, 2008; Brody & Mills, 1997; Reis, McGuire, & Neu, 2000; Reis, Neu, & McGuire, 1995, 1997).

Two of the factors that contributed to the success of school districts in America being able to successfully increase the number of diverse gifted students, was academic and social supports to those identified students with effective communication between and amongst administrators, teachers and families (Deal & Peterson, 1999; Duke, 2003; Duke, 2005; Fullan, 2001). The findings of research suggests that an approach that highlights and encourages TE students abilities while also supporting their coexisting exceptionalities will best meet all their educational needs (Assouline & Whiteman, 2011; Baum, Cooper, & Neu, 2001; Baum, Rizza, & Renzulli, 2006; Franklin-Rohr, 2006; Schultz, 2012; Swanson, VanTassel-Baska, Feng, & Chandler, 2007; Yssel, Prater, & Smith, 2010). The findings of this study suggest that parents were not sure whether any support would be available for their child and from their perception of the WA GAT experience whether it was information from others or their own observations, knowing that support was available was very important.

I also chose [non-GAT school] because of its [. . .] support program. I saw no equivalent of this program at any of the DOE Academic select schools. (Parent 1)

I was concerned that the Academic programs may not provide for or recognise twice exceptionality. (Parent 4)

We put [non-GAT Academic school] as our first option because of [. . . support program]. (Parent 5)

We didn’t apply for a fully academically selective program as we thought our child needed a broader focus and support. (Parent 7)

Limited definition of what being ‘gifted’ entails – some gifted kids are not remotely performing at their potential. (Parent 7).

Parents’ concerns also reflected that expressed by Besnoy, Manning, and Karnes (2005) that if teachers are aware that TE students exist and are knowledgeable of their characteristics, they will be likely to provide services that address their strengths and weaknesses. Hence parents’ perceived that lack of awareness of TE students and
their characteristics and needs by the WA GAT process, translated into lack of support in the GAT Academic programs. As reinforced by Barber and Mueller (cited in Besnoy, Swoszowski, Newman, Floyd, Jones, & Byrne, 2015, p. 109) "In order to build collaborative relationships and provide a twice-exceptional student with appropriate interventions and programming strategies, all stakeholders need to understand the child’s learning and social-emotional characteristics". Besnoy et al. (2015, p. 109) highlighted that the “minimal formal training related to these students may impede teachers from clearly articulating an appropriate educational plan, which could frustrate parents and undermine the collaborative parent-teacher relationship”. Yssel, Prater and Smith (2010) further add that stakeholders should be knowledgeable of laws regarding students with disabilities and well versed in state regulations governing gifted education. Therefore, the findings of this study where WA GAT Academic coordinators were largely unsure of the definition and selection means for the students (KF5.17), knowledge about disability (KF5.20) and accommodations and modifications based on SCSA’s provisions (KF5.23), reinforced that parent concern and apprehension was justified.

There are a complex set of causes for underachievement in gifted students including twice exceptionality (Silverman, 2009), lack of motivation due to socio-emotional problems (Reis & Renzulli, 2004), lack of interest and absence of educational challenge, engagement and support (Reis, & Renzulli, 2009) influencing their level of achievement (Gross, 1993). Studies have speculated that the number of underachieving gifted students is somewhere between 10% (Wills & Munro, 2011) and 50% (Hoffman, Wasson, & Christianson, 1985; Seeley, 1993), therefore a large enough cohort of students that will require support. Reddy, Rhodes, and Mulhall (cited in Wang & Neihart, 2015, p. 155) stated that students “who reported increasing levels of teacher support during the transitional school period had a corresponding decrease in depression and increase in self-perceptions”. From the parents’ perspective it seemed to them that the WA GAT Academic programs were ill prepared to cope with students who have readiness needs because of the child’s disability (Duke, 2003; Fullan, 2001; Schroth, 2007) despite this being an inclusion and equity issue.
Assertion 6.12

Engagement with professional learning to enact new knowledge and reflect on outcomes is an important condition for changing practice and relationships whether it be in the classroom or systemic. Support for TE students was identified as a critical element in the decision making process for parents. Making support services available and transparent to parents is important for their engagement in the GAT process.

6.6 Review of Findings

This study highlighted the complexity associated with determining TE prevalence over a number of different student pools and comparing it to disability prevalence across two organisations with differing criteria. The core project was to identify TE prevalence but it was also to consider disability prevalence as a comparison between the two and the knowledge and perceptions of GAT Academic coordinators and parents of TE students. It was also important to consider the viewpoints and perceptions of others in relation to the GAT Academic programs, but restrictions on access to all GAT Academic coordinators and a larger pool of parents of TE students, and resources available to document this fully, were not possible.

The impact of an exemption from the WA Academic testing, both positive and negative for TE students, contributed to prevalence levels in GAT programs. While the results of the data gathered for this study cannot be generalised to other populations other than that of WA’s GAT Academic programs, it was interesting to note that an exemption from the testing had a positive effect on TE application numbers for non-Academic programs which had a flow on effect to acceptance numbers. This suggests that the GAT Academic testing is creating a deterrent to more TE students applying for the GAT Academic programs and unwittingly is a contributing factor to low prevalence numbers. If there was an alternative entry point this may encourage parents of TE students to apply for placement for their child. While this persistent barrier exists, an increase in TE numbers is unlikely. This infers that the DoE has an anti-inclusion philosophy regarding the GAT Academic programs, which was a point, that Ainscow and Miles (2008) made - inclusion is about removing barriers to access and participation for marginalised groups, who may be at risk of exclusion or underachievement. VanTassel-Baska and Stambaugh (2005) used the metaphor of ‘overlooked gems’ to describe the raw potential of high potential, low-income gifted students who are underrepresented in programs for gifted students and similarly the TE of WA are our ‘overlooked gems’.

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Information from the DoE’s Census data revealed that disability prevalence increases on a yearly basis, with some disability categories such as Autism, Severe Mental Disorder and Severe Medical Health Condition increasing at a rapid rate, which is not reflected in the six-year historical data of disability prevalence in the WA GAT Academic programs. The rather static disability prevalence reported in this study over the six years, which is not consistent with reported disability prevalence nor the escalation in prevalence of certain categories, acts as a warning that the GAT Academic programs do not reflect the demographics of the whole school population (Freeman, Raffan, & Warwick, 2010). Prior (2013) alerted us that the challenge for inclusion of TE students would be for them to be recognised at all. Therefore, while it was heartening that disability prevalence in mainstream classes had increased over the six years, more than likely due to better resourcing and a push for inclusion, it was also disheartening that disability prevalence in the WA GAT Academic programs did not reflect this change. Hence the status quo was maintained over the six-year period and is more than likely to continue into the future.

Focusing on those TE students who are accepted into the GAT Academic programs to the exclusion of those who are not applying and/or who are not successful, gives a false sense of security, that the WA GAT Academic program’s selection means has been successful in recruiting and including TE students. The current philosophy of the DoE as evidenced by the selection means, is that only already IGAT (intellectually gifted and talented) students are wanted. The DoE’s adoption of Gagné’s model only theoretically aligned with their practices as the selection means identifies students who have already turned their gift into a talent. This safeguards the success of the program but excludes those of promise who are unable to demonstrate IGAT status due to their disability and the rigid selection means. Those WA TE students who cannot demonstrate IGAT status in the conventional way required by the DoE, or who are still at the gifted stage, have no pathway for entry and now need another pathway outside of Gagné’s DMGT model. This alludes to the fact that Gagné has left this to others to determine, with the DoE as yet to determine that alternate pathway. Therefore, there is no avenue for entry for many WA TE students.

An open relationship where information is shared between the DoE and the GAT Academic coordinators is important for the identification and support of pre-identified TE students in their transition to secondary school. The information sharing disconnect between the DoE and the GAT Academic schools, hinders the coordinator’s ability to understand TE students’ strengths and vulnerabilities at a crucial time in their
Parents’ perceived that their TE children were unwelcome and many had experienced or heard of negative occurrences. The exchange of important information, given to the DoE for GAT Academic testing accommodations, plays a pivotal role in coordinators being able to contact parents and plan for the TE students’ needs prior to entry. These actions would alleviate some of the concerns expressed by parents as it paves a ‘path’ that is welcoming and supportive.

Clearly articulating the DoE’s adopted definition and identification means is essential to address the characteristics of the WA GAT Academic programs’ student population and plan for their education. Moon (2006) posited that the definition is the guiding force behind all future decisions about the program. In a busy workplace, time for professional conversations and learning with peers can be limited and as WA GAT Academic coordinators are not involved in the identification of candidates, a disconnection can develop due to the different locations of the GAT Academic schools. This research highlighted the importance of the coordinators’ knowledge in this area and to ensure that there is a common understanding between coordinators, professional learning should be offered regularly and as refreshers of sometimes presumed knowledge.

Parents’ perceived that their TE children were not welcome or included in the WA GAT Academic programs and the on line enrolment form was a barrier that one parent indicated would be thought of as a deterrent to application. In order to challenge these perceptions and encourage parents of TE children to apply, which increases the likelihood of more TE students gaining entry to the GAT Academic programs, the recruitment process and on line application form requires modification. It was evident in this research that parents’ perceived a lack of inclusion as a significant factor in their decision not to apply on behalf of their child. The most likely reason that many did not proceed to application was their perceived concerns about the process and whether their child would ‘fit’ within the WA GAT Academic programs’ intent and culture and therefore apprehension about the possibly, negative consequences for their TE child, which may be more negative than positive. The covert messages that parents sensed, whether intended or not, played a powerful role in forming their opinions about the GAT Academic programs.

An important undertone that parents’ perceived and formed part of the conclusions drawn from the study’s data, were that the DoE’s GAT Academic programs were openly contradictory to inclusion and equity. The consistency of the WA GAT
Academic testing over time from 2007 to 2012 and up to 2016, where the same testing means is used by all candidates to infer fairness to all, is in reality anti-inclusionary. The DoE’s Equity and Inclusion Charter (DoE, 2013a) when considering policy, in relation to disability and representation states, “some students will require different treatment in order to participate in a high quality school education”. Therefore, the mismatch between the broader DoE policies, Charter and Discrimination Policy generally, all point to the WA GAT Academic programs being outside the influence of, and requirement for inclusion and equity provision for minority groups. While it was positive that some TE students had gained entry and it is tempting to be content that some students had gained entry, the GAT Academic Test and DoE’s processes has had a negative impact on TE prevalence and should not be brushed aside because of a ‘blinkered view’ of the minority rather than the majority.

The systemic barrier of the GAT Academic Test combined with parent doubt and concern about support for their TE child were highlighted as major impediments to the equitable inclusion of WA TE students into the GAT Academic programs. Not only did parents feel that their children would not be successful in gaining a place through the GAT Academic testing, they were additionally and equally concerned that if their TE child was accepted that support was not available. Consequently, it was as if the ‘sword of Damocles’ was hanging of their child’s head waiting to fall if their child could not demonstrate a high-level of performance after entry (VanTassel-Baska, Feng, & Evans, 2007). Having a support program, they felt, was a necessary pre-requisite when working with students who evidence a disability. If this one factor had been different, and parents were aware that there was support available, this may have been enough to sway their decision to apply for a GAT Academic position for their child.

In Australia and particularly WA, there is a lack of quantitative research into TE prevalence in Australian gifted programs, with qualitative research, especially case studies more prevalent. Research in this field is a complex process and to give the researcher an insight into the broader aspects of TE prevalence it was decided to use a mixed method approach. This methodological approach enabled the researcher to identify TE prevalence and also the factors that potentially impacted TE prevalence. Information was gathered from two surveys – GAT Academic coordinators and parents of TE students to establish a context and insights into TE prevalence in these programs. The five GAT Academic coordinators were recruited from the nine GAT Academic programs situated at eight schools and eight parents of TE students whose child did not participate in a GAT Academic program were recruited. This study
provided the opportunity to discover the prevalence of TE students in the WA GAT Academic programs in conjunction with coordinator knowledge and perceptions and parent experiences and perceptions.

6.7. Summary of Answers to Research Questions

This research determined the prevalence of TE students in the GAT Academic programs of WA and compared it to the DoE’s mainstream disability prevalence and also SCSA data on special examination provision for WACE examinations. In the process, questions arose as to GAT Academic coordinators’ knowledge and perceptions of TE students and parents of TE students’ perceptions as a consequence of their experience with the GAT process. As a result, issues and barriers surrounding TE entry to, and participation in the GAT Academic programs were identified.

Research Question 1: What is the prevalence of twice exceptional (TE) students in the GAT Academic programs and how does the prevalence of twice exceptional (TE) students in the GAT Academic programs relate to the prevalence of disabled children in Government schools in WA 2007 to 2012?

The data gathered from the DoE and after triangulation with the GAT coordinator survey indicated that TE students comprised an annual mean of 1.6% of students who accepted a place in the WA GAT Academic programs. This was lower than DoE mainstream conservative disability of 1.9% and mainstream disability of 3.0% and suggested that barriers existed to their inclusion in the GAT Academic programs. It was evident that the prevalence of TE students would be anticipated to be higher, given that the DoE disability data does not include the category of SLD and ADD/ADHD, the largest category using historical SCSA disability data. This was also confirmed by the higher prevalence rate of TE students in GAT programs other than Academic where exemption from the testing impacted positively on TE prevalence (Assertion 6.1).

It was also evident that underrepresentation had occurred over the six years and that inequitable and unequal access to the GAT Academic programs had resulted from the DoE’s practices according to TE parents. When underrepresentation of TE students is not identified and analysed through the DoE’s data collection processes and the concerns of parents of TE students are not ‘heard’ and addressed (Assertion 6.2), it is unlikely that a substantial change in the DoE’s processes that are creating barriers will occur (Assertion 6.3). As such, it would be reasonable to expect that a failure to
promote positive and inclusive education outcomes for the TE such as alternate entry, minority community consultation and recruitment, will continue to perpetuate underrepresentation into the foreseeable future (Assertion 6.4 & 6.5).

**Research Question 2:** How knowledgeable are the GAT Academic program coordinators regarding the gifted and talented definition and identification means used by the Department of Education?

There were indicators that some WA GAT Academic coordinators had knowledge of the definition and identification means adopted by the DoE. A teacher’s knowledge base has a considerable influence on their ability to identify and support TE students and make appropriate links between the student’s characteristics, performance and their teaching practice. This highlights the limitations of professional learning at all stages of teacher education and career which more often than not, leaves teachers in WA unprepared to understand the TE and other minority populations (Assertion 6.6). Consequently, providing important disability information to coordinators on student need, prior to entry, can be one way to change parents’ perceptions and concerns that their children were unwelcome and that no support was available (Assertion 6.7).

**Research Question 3:** What knowledge and perceptions do the GAT Academic program coordinators have of TE students’ needs in gifted programs?

There were indicators that GAT Academic coordinators had limited knowledge of learning disabilities and their accommodations and generally perceived the TE to have more negative learning characteristics than positive. Consequently, the data confirmed that the TE students’ disabilities overshadowed their gifted traits and constructed them as students who were primarily disabled. Opportunities to enact new knowledge and change perceptions, through professional learning at all levels of the teaching profession is required to better understand TE students and ultimately address underrepresentation (Assertion 6.8).

**Research Question 4:** What perceptions do the parents of TE students have of the GAT Academic programs?

Parents had a positive perception that there were benefits of placement in the WA GAT Academic programs and that it could be a protective mechanism, but they also perceived that the negatives far out-weighed the benefits for their TE child (Assertion
Parent perceptions were highlighted as critical in their decision whether to apply for entry on behalf of their child which points to the significance and contribution of these perceptions in TE underrepresentation. It is important for the DoE to articulate and demonstrate an inclusion philosophy and practice to prospective parents (Assertion 6.10) to allay their anti-inclusionary perceptions. It would be doubtful that a change to perceptions and underrepresentation would occur without thorough auditing of student demographics, cross analysis and reflection on DoE data, and proactive strategies implemented to identify and remove barriers to TE entry. A minority group such as the WA TE, in the context of a limited educational resource, requires an alternate entry pathway with adoption of a quota or allocation system to change the parents’ perceived climate of anti-inclusion in the GAT Academic programs (Assertion 6.11).

The perceived lack of support for their TE child in the GAT Academic programs also contributed to their decision not to apply for entry on behalf of their child. This ‘flagged’ a need for engagement with professional learning and the building of relationships both in the classroom with parents and systemically, to acquire and reflect upon new and up-to-date knowledge about the TE and other minority groups. The support available to the TE and their parents through the GAT Academic programs needs to be transparent so that parents engage with and do not discount a GAT Academic placement for their child (Assertion 6.12).

6.8. Contribution to Knowledge

There is a paucity of research in the area of twice exceptionality in America but little available in Australia, especially Western Australia that specifically addresses prevalence and the barriers to entry to selective gifted programs. The international research community gives widely varying TE prevalence depending on the student populations being examined, but no prevalence research had been undertaken in Western Australia to place TE prevalence in the GAT Academic programs within this broader international perspective. It was tempting to concentrate on the lived experiences of the TE, their parents and GAT Academic program coordinators, but if systemic barriers are not highlighted and removed as a matter of social justice, the status quo of underrepresentation will continue. This study contributes to knowledge on TE prevalence for many stakeholders, which is a starting point from which to more fully explore the systemic barriers and factors that have lead to underrepresentation of the TE in the DoE’s GAT Academic programs of Western Australia. As asserted by
Ronksley-Pavia (2014) prevalence rates drive funding and provision, therefore identifying TE prevalence in the WA GAT Academic programs identifies the need for their entry and provision, within these programs.

The ‘voices’ of the TE, especially in America, are often ‘heard’ in research, but their ‘voice’ and that of their parents is often not explicitly linked to the systemic education context of administrators who are then left with an insufficient picture of the perceptions, attitudes and experiences of TE students and their parents and how their policies and actions have directly impacted on them. If education systems are to advocate and lead as agents of change in the lives of gifted students including the TE, it is critical that they gain the necessary knowledge of the students they are to serve and how their actions have impacted on their participation, in particular in the GAT Academic programs. This study offers valuable information and insights to the Western Australian DoE, educators and minority communities who work with TE students and their parents. Consequently this study offers insights into the barriers TE students and their parents experience in the GAT process and their perceptions about the lack of TE inclusivity and equity in the process, which perpetuates underrepresentation.

6.9. Limitations

There are several potential limitations to the study and they are outlined below. According to Rudestam and Newton (2007, p. 105) limitations refer to “restrictions in the study over which you have no control”.

One such restriction to the study was the small number of WA TE GAT Academic students identified – 44 in total over six years. While this was a limitation, it is noted in all the research literature that small sample sizes are to be expected for the TE; therefore, while limiting in statistical terms, it does accurately reflect the anticipated sample size. A small sample size can be a problem for generalisation, but in this instance, can be generalised to the WA GAT Academic programs as the sample included all identified TE students to the DoE. Nevertheless, the reader should be cautious when drawing conclusions and inferences to other GAT Academic programs outside of WA based on these research findings. Generalisability of the findings must be limited to the studied WA GAT Academic schools due to the use of a purposive sampling procedure.
TE prevalence data was based on the production of documentation by parents to support claims of a disability to the DoE at the time of the GAT Academic testing taking place. The designation of disability depends on the knowledge of the person collecting and reading the documentation to decide whether this is a bona fide disability. Therefore, a potential limitation to the designation of TE can occur due to lack of expertise by DoE personnel.

Access to all eight GAT academic schools and online program offered the best opportunity for the largest pool of TE students to be identified. Only five of the nine Academic program coordinators participated by completing the survey, which limited generalisation to all GAT Academic program coordinators in WA. The return rate was a potential limitation, but at 66%, was considered satisfactory (Drew, Hardman, & Hosp, 2008). An attempt was made to control this limitation by offering the survey via email and sending reminders by email.

Each of the nine programs had been in operation for different lengths of time, had different cut off scores for entry and are in different geographical locations in the metropolitan area of Perth, WA. Therefore, some GAT Academic coordinators will be able to respond in a more considered and experienced fashion, whereas others will have the hindsight of only a shorter time span. They will also have varied GAT training and experiences, having been the coordinator for varied lengths of time, which while somewhat limiting, does reflect the staff profile at that point in time. All nine GAT Academic programs are not identical therefore responses may pertain to their unique program that has only broad commonality with other programs. While this can also be viewed as a limitation, the breadth of information and responses gathered are reflective of the breadth of the GAT Academic programs.

By their nature, schools offering GAT Academic programs are competitive in terms of selecting the highest performing students and offering programs that are likely to produce the best academic results. Therefore, the selection and achievement of these students becomes a marketing tool for the promotion of the program and therefore increased student enrolment numbers. Consequently, there is potential for coordinators to be secretive or selective as to details of operation and what is offered to these intellectually gifted students. This has the limitation that coordinators will only reveal their ‘public accounts’ (Bowling, 2007) and the researcher can only report on the snapshot gathered from the surveys at that time.
The self-reported data from both the GAT Academic coordinators and parents of TE students is a potential limitation. Mail/email surveys can have the disadvantage that someone other than the intended recipient can complete the survey and that the GAT Academic coordinators and parents can be influenced by what they think the researcher wants to hear. As a result the data gathered from the five GAT Academic coordinators may have provided significantly different responses than those from the non-respondents, and also parents of TE children who are participating in the GAT Academic programs may have also given vastly different responses, therefore limiting the generalisability of the findings of the study.

The purposive sample used for the parent survey had the limitation of generalisation and inference making to the entire population of parents of TE students and TE GAT Academic program students in WA. Additionally the retrospective reporting in the survey had the limitation that parents will selectively or inaccurately recall events and perceptions from the past. Therefore, it is cautionary to not generalise the results of the parent survey to all parents of TE students in the GAT Academic programs.

This research serves to highlight the underrepresentation of TE students in the GAT Academic programs and the perceptions of some DoE personnel and parents of TE students to identify and understand issues and barriers to TE students’ entry. Despite the limitations above, the information gathered in this process is useful in understanding how underrepresentation of TE students and other minority groups can be impacted by the explicit and implicit processes, practices and perceptions of those involved and to develop the necessary knowledge and actions to address this social justice issue.

6.10. Implications and Recommendations

The significance of this research is that it highlights a number of factors and barriers that have impacted the prevalence of TE students in the WA GAT Academic programs. Much of the research literature focuses on very specific areas such as disability, race and minority status, inclusion and equity, and the many facets that contribute to these groups continued underrepresentation in gifted programs. It was the researcher’s intent to ‘fit all the pieces of this jigsaw’ together to illustrate how the experiences of TE students, and their parents in the Western Australian education system are not unique, but mirror what others have experienced and still experience today. Professor Hilliard III rightly summed this up: “Race, minority status, socioeconomic status, and
other variables are not factors that predict what students can learn. More likely than not, they predict how schools will treat children” (1995, p. xiv).

Many of the factors identified as contributing to the underrepresentation of TE students in gifted programs have been well documented in other studies. It is recommended that a formal evaluation of gifted education with an emphasis on the TE and other minority groups is needed with data evaluated annually in meaningful and instructive ways.

One of the factors that this researcher perceived to be the most significant was the barrier created by the GAT Academic Test. This resulted in many of the participating parents deciding not to apply for placement on behalf of their child, which then negatively impacted TE prevalence. It was evident that an alternate entry point was needed to allow equitable access to the programs. It is recommended that an alternate pathway for entry to the GAT Academic programs be devised that is not ‘disability-blind’ as without this change, TE underrepresentation is likely to continue and other barriers identified by TE parents cannot be addressed.

The influence of parent perceptions about the GAT Academic Test, the GAT process and the GAT Academic programs are also highlighted in this research as contributing factors to TE underrepresentation. Viewing the small number of TE students who gained entry to the GAT Academic programs as a positive indication of equity and inclusion, can cloud perceptions as to the anti-inclusion and inequitable practices that parents and the research literature identified. It is asserted by this researcher that underrepresentation will continue in the WA GAT Academic programs until such time as positive social justice practices alongside consultation with minority communities are enacted, as identified by TE underrepresentation and called for by parents of TE students. As noted by Ford (1998) more effort must focus on the recruitment of minority students in gifted education programs. It is recommended that the DoE work with minority communities and proactively promote and encourage participation of minority students.

Feedback from GAT Academic coordinators encouraged the researcher to believe that TE students were welcome and had a place in the programs, but lack of information from the DoE, knowledge about disability and the perceived largely negative TE attributes, biased a positive view of the TE. Professional learning needs to be undertaken over extended periods from one year to another, to facilitate the on-going
professional knowledge of coordinators and teachers to facilitate this process of TE awareness, identification, support and inclusion as progress is being made with TE research. This point is taken up by Fraser-Seeto, Howard, and Woodcock (2015) in regards to the uptake of the GERRIC gifted resource package (Gross et al., 2005). They found from their study that the uptake of this gifted professional development remained poor amongst teachers as a result of insufficient initial and ongoing promotion of the resource package which requires “effective support systems and ongoing revision to ensure it is utilised and appropriate for the needs of the users” (Fraser-Seeto, Howard, & Woodcock, 2015, p. 9) by the DoE. It is recommended that improvements in the promotion and availability of professional development for educators especially in relation to TE and minority groups be instituted. This is vital to the process of increasing underrepresented students and creating an informed learning community.

The mismatch between gifted policy, the DoE gifted website, Gagné's DMGT model and what was put into practice through the GAT process alludes to the fact that much of what the DoE has written has little relevance for TE students in the GAT Academic programs and is merely aspirational. While it was encouraging that TE students were mentioned with the likelihood that they will be difficult to identify, charging principals with looking for these students amongst their school population, seems more an afterthought that can be ignored with impunity in the GAT Academic programs. Consequently, using the very points made by the DoE about TE students and other minority groups should ensure that differences are taken into account for entry to the GAT Academic programs. Gifted policy, definitions and information need to be updated, cohesive, relevant and pertain to the GAT Academic programs. This will require a review of communication channels such as websites and other parent communication forums to determine if a clear articulation of inclusion to the GAT Academic program for the TE is present. As currently assembled, very little if anything with regards to the TE is perceived to pertain to the GAT Academic programs.

As noted by Ford (2003, p. 290) “If we continue to do what we’ve always done we’ll continue to get what we’ve always gotten.” TE students and other minority groups are “competing in a race that seems to be over for them before it has even begun” despite our task as educators being to seek excellence and equity for all students (Ford, 2003b, p. 290). In 1957 it was suggested by Boykin (cited in Ronksley-Pavia, 2015) that TE children’s needs and issues were often heightened not only by their own inability and lack of opportunity to cope with situations, demands and activities but also
by the “attitudes and restrictions of society and its failure to give exceptional children a fair, unbiased, unprejudiced chance to achieve” (p. 42). Ronksley-Pavia (2015) asserts that little has changed since that time. It is recommended that all gifted material including websites and parent communication forums be audited for compliance to disability, discrimination and equity policies and that these be articulated with mention of the TE, and not remain merely aspirational in the additional material.

6.11. Future Research

It was the intent of this study that discovering the prevalence of TE students in the WA GAT Academic programs would serve as a beginning for future research that moved beyond American research describing the difficulties that TE students encountered, to research on lifting systemic barriers in Western Australia that created a barrier to their participation. As Schultz (2012, p. 128) noted in America “schools have a moral and legal obligation to provide an education to all special education students in the least restrictive environment” and in the case of the TE that least restrictive environment includes the GAT Academic programs.

This researcher has asserted that an alternate entry point for TE students into WA GAT Academic programs would increase the likelihood of TE prevalence increasing, but this is a complex process and further research is required to determine how this would be best achieved. A starting point would be a review of Whiting and Ford’s (2006) non-discriminatory assessment principles and recommendations. It was indicated that accepting a full psychometric assessment in lieu of the GAT Academic Test would provide an alternate entry means and the formation of a panel of experts to examine TE applicant’s profile as an entry point, and the role that this would play in increasing TE prevalence warrants further research. Wellisch and Brown’s (2012) proposed inclusive model of gifted identification and progression may be a starting point, as would successful learning support models that cater for and accommodate TE students.

The researcher presumed that modifying the GAT process would increase TE prevalence, however, this is not guaranteed. Further research is required to determine how best to facilitate minority community consultation and involvement to increase the small pool of WA TE applicants in line with population demographics. The complex factors that create barriers for entry to GAT Academic programs as perceived by TE students, their parents and minority groups such as Aboriginal Australians, as a whole
in Western Australia, also calls for further research. As Callahan (2005, p. 99) states with regard to minority underrepresented populations, the situation is

a complex interaction of factors, such as inadequate opportunities for talent development, the inadequacy of one-shot, paper-and-pencil assessments, the inherent bias and shortcomings of policies and procedures, surrounding the identification of gifted students, and the lack of connections between the identification criteria and the curriculum and services offered to gifted students.

It is a complex issue that cannot "be solved with a single, silver-bullet answer" (Callahan, 2005, p. 98).

### 6.12. Concluding Comments

The WA GAT Academic programs are not a panacea for all that seemingly ‘ails’ the mainstream education system with regard to gifted education. Placement into these programs with like-minded peers, specialist teachers and appropriate curriculum will not automatically solve and fulfil the unmet needs of TE students who feel that they are not understood. For those TE students who desire to be in these programs and should be, how can we deny them entry because their disability does not allow them to demonstrate IGAT status through the GAT Academic Test. Currently individual differences are downplayed through a process of equity based on ‘disability-blindness’ so that the process is fair to everyone and yet not fair to the TE. This research highlighted the significant impact that inequitable and anti-inclusion practices have on how parents engage with and then perceive the GAT process, which contributed to the underrepresentation of TE students in the WA GAT Academic programs.

Despite the difficulties inherent in identifying and addressing complex issues that create barriers to TE prevalence in the WA GAT Academic programs, there is a great need to persist in these endeavours on behalf of those who are marginalised and a seemingly ‘invisible’ minority of ‘overlooked gems’ (VanTassel-Baska & Stambaugh, 2005).
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APPENDICES

Appendix A – Department of Education Information Letter

The Department of Education
Royal Street
East Perth

The prevalence of Twice Exceptional students in selective academic programs: the near miss phenomena

My name is Lynne Ivicevic, I am the Learning Support and Academic Excellence Coordinator at xxxxxx and I am writing to you on behalf of Edith Cowan University where I am completing a research project as part of a PhD. I am conducting a research project that aims to study the prevalence and experiences of twice exceptional students – intellectually gifted and learning disabled, in the selective academic programs in WA. My research is being supervised by Dr. Lorraine Hammond 93706540 and Associate Professor Tony Fetherston 63042355, Faculty of Education and Arts.

I would like to invite the Department of Education and its selective academic schools to take part in this project. This is because the eight selective academic schools as well as online programs comprise all the Gifted and Talented academic schools where intellectually gifted students are selected through the Academic Selective Entrance Test and then offered placement in the GATE programs.

I seek access to the information gathered on the Application Forms of students who have been nominated by their parent/caregiver to apply for entry into the selective academic programs and compiled by you into a database. The information I wish to gather concerns when the designation of a Yes for disability is indicated on the form, the total number per year and which schools have been nominated and then offered, what disability is assigned to it and how many are successful for entry into these programs for students entering secondary school in 2012 back to 2006 when reliable consistent data has been collected. Additionally data for each year on the total number of students applying for the selective academic programs and numbers of successful applicants will be necessary for statistical purposes. The GATE scores and names of any applicants are not required. This data will be gathered once only.

The Gifted Coordinators at the selective academic schools will be asked to complete a simple survey that should take no more than 20 minutes of their time.

Participation in this project is entirely voluntary and if any participant later changes their mind, they are able to withdraw their participation at any time during the study. There are no consequences for withdrawal and will not affect the relationship with the researcher or Edith Cowan University.

All information that identifies anyone will be removed from the data collected and coded to preserve anonymity. The data will then be stored securely by myself in a locked container that can only be accessed by myself and my supervisors. The data will then be stored for a minimum period of 5 years after which it will be destroyed by shredding.

The identity of participants and the school will not be disclosed at any time, except in circumstances that require reporting under the Department of Education Child
Protection Policy, or where the research team is legally required to disclose that information. Participant privacy and the confidentiality of information disclosed by participants, is assured at all other times. The data will only be used for this project, and will not be used in any extended or future research without first obtaining explicit written consent from participants.

Consistent with Department of Education Policy, a summary of the research findings will be made available to the participating site(s) and the Department. You can expect this to be available at the completion of the PhD, approximately 2014.

The research has been approved by ECU’s Ethics body, Approval No. 5599 and has met the policy requirements of the Department of Education as indicated in the attached letter. I have Working with Children Check approval – xxxxx.

If you have any questions or require any further information about the research project, please contact myself or my two supervisors listed above.

If you have any concerns or complaints about the research project and wish to talk to an independent person, you may contact:

Research Ethics Officer
Edith Cowan University
270 Joondalup Drive
Joondalup 6027
(08) 6304 2170
research.ethics@ecu.edu.au

If you have had all questions about the project answered to your satisfaction, and are willing for the Department of Education and the selective academic schools to participate, please complete the Consent Form on the following page. This information letter is for you to keep.

Yours sincerely

Lynne Ivicevic, l.ivicevic@ecu.edu.au
Edith Cowan University
Appendix B – Department of Education Consent Form

The prevalence of Twice Exceptional students in selective academic programs: the near miss phenomena – Lynne Ivicevic, PhD Candidate
l.ivicevic@ecu.edu.au

Consent Form – Department of Education
Ethics Approval 5599

- I have read this document and understand the aims, procedures, and risks of this project as described within it.
- For any questions I have had, I have taken up the invitation to ask those questions, and I am satisfied with the answers I received.
- I am willing for the Department of Education to be involved in the research project, as described.
- I understand that the Department of Education's participation in the project is entirely voluntary.
- I understand that the Department of Education is free to withdraw participation at any time, without affecting the relationship with the research team or Edith Cowan University.
- Withdrawal from the study can occur at any time.
- I understand that this research may be published in a journal, presented at professional development/conferences, provided that the participants or the school are not identified in any way.
- I understand the Department of Education will be provided with a copy of the findings from this research upon its completion.

Department of Education Representative: _________________________
Signature: _________________________
Dated: _________________________

Return to: Ms L. Ivicevic
c/o Dr. L. Hammond
Special Education Coordinator
ECU
2 Bradford Street,
Mt. Lawley 6050
Appendix C – Coordinator Information Letter

May 13, 2011
Dear Teacher,

The prevalence of Twice Exceptional students in selective academic programs: the near miss phenomena

My name is Lynne Ivicevic, I am the Learning Support and Academic Excellence Coordinator at xxxxx and I am writing to you on behalf of Edith Cowan University where I am completing a research project as part of a PhD. I am conducting a research project that aims to study the prevalence and experiences of twice exceptional students – intellectually gifted and learning disabled, in the selective academic programs in WA. My research is being supervised by Dr. Lorraine Hammond 93706540 and Associate Professor Tony Fetherston 63042355, Faculty of Education and Arts.

I would like to invite you to take part in this project because as the Gifted Coordinator, you have knowledge about the numbers of twice exceptional students in Years 8 – 12 and also their experiences as part of the selective academic program. I am gathering information from the Application Forms of students who have been nominated by their parent/caregiver and have indicated disability, who apply for entry into the selective academic programs from 2012 back to 2007 from the Department of Education, and am interested in the twice exceptional students you currently have at your school and teach. These would be students currently in Years 8 – 12 and any information you have on the Year 8s of 2012. No data has been kept on the types of disability indicated by the Department of Education, therefore the information I collect from you will be invaluable to the them and my study.

You will be asked to complete a simple survey that should take no more than 20 minutes of your time. The survey, letter and consent form are attached to this letter and a postage paid self-addressed envelope is attached for return.

Participation in this project is entirely voluntary and if you later change your mind, you are able to withdraw your participation at any time during the study. There are no consequences for withdrawal and will not affect the relationship with the researcher or Edith Cowan University.

All information that identifies you will be removed from the data collected and coded to preserve anonymity. The data will then be stored securely by myself in a locked container that can only be accessed by myself and my supervisors. The data will then be stored for a minimum period of 5 years after which it will be destroyed by shredding.

Your identity or your school will not be disclosed at any time, except in circumstances that require reporting under the Department of Education Child Protection Policy, or where the research team is legally required to disclose that information. Participant privacy and the confidentiality of information disclosed by participants, is assured at all other times. The data will only be used for this project, and will not be used in any extended or future research without first obtaining explicit written consent from participants.

Consistent with Department of Education Policy, a summary of the research findings will be made available to the participating site(s) and the Department. You can expect this to be available at the completion of the PhD, approximately 2014.
The research has been approved by ECU’s Ethics body, Approval No. 5599 and has met the policy requirements of the Department of Education as indicated in the attached letter. I have Working with Children Check approval – xxxxx

If you have any questions or require any further information about the research project, please contact myself or my two supervisors listed above.

If you have any concerns or complaints about the research project and wish to talk to an independent person, you may contact:

Research Ethics Officer
Edith Cowan University
270 Joondalup Drive
Joondalup  6027
(08) 6304 2170
research.ethics@ecu.edu.au

If you have had all questions about the project answered to your satisfaction, and are willing for the Department of Education and the selective academic schools to participate, please complete the Consent Form on the following page. This information letter is for you to keep.

Yours sincerely

Lynne Ivicevic, l.iversevic@ecu.edu.au
Edith Cowan University
Appendix D – Coordinator Consent Form

The prevalence of Twice Exceptional students in selective academic programs: the near miss phenomena – Lynne Ivicevic, PhD Candidate
l.ivicevic@ecu.edu.au

Consent Form – Coordinator
Ethics Approval 5599

- I have read this document and understand the aims, procedures, and risks of this project as described within it.
- For any questions I have had, I have taken up the invitation to ask those questions, and I am satisfied with the answers I received.
- I am willing to be involved in the research project, as described.
- I understand my participation in the project is entirely voluntary.
- I understand that I am free to withdraw participation at any time, without affecting the relationship with the research team or Edith Cowan University.
- Withdrawal from the study can occur at any time.
- I understand that this research may be published in a journal, presented at professional development/conferences, provided that the participants or the school are not identified in any way.
- I understand the Department of Education will be provided with a copy of the findings from this research upon its completion.

Parent: __________________________

Signature: _______________________

Dated: _________________________

Return to: Ms L. Ivicevic
            c/o Dr. L. Hammond
            Special Education Coordinator
            ECU
            2 Bradford Street,
            Mt. Lawley 6050
Appendix E – Coordinator Survey

Survey – Twice Exceptional Students

School: ___________________________
Teacher Name ________________________
Position _____________________________
Learning Area _________________________

1. How many selective academic classes does the school run or do you teach?
   Year 8: ______ classes  Student numbers _______
   Year 9: ______ classes  Student numbers _______
   Year 10: ______ classes  Student numbers _______
   Year 11: ______ classes  Student numbers _______
   Year 12: ______ classes  Student numbers _______

2. How is gifted and talented defined in your program?
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________

3. Indicate by circling one or all of the following criteria used for selecting students into
   the gifted academic program:
   a. Individually administered tests of achievement
   b. Group administered tests of achievement
   c. Individually administered tests of potential
   d. Group administered tests of potential

4. What is the number and percentage of students in the gifted academic programs currently
diagnosed with a learning disability (dyslexia, specific learning difficulty, dysgraphia, dyspraxia, AD/HD) at your school or in your classes?
   Year 8:  Number _______  percentage _______
   Year 9:  Number _______  percentage _______
   Year 10: Number _______  percentage _______
Year 11: Number _______ percentage ________
Year 12: Number _______ percentage ________

5. How did you become aware of the student’s learning disability?

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

Or

Rank the source of the majority of information given to you, 1 being the source of most information -

a. Parents ______
b. G & T Branch ______
c. Principal ______
d. School Psychologist ______
e. Learning Support Coordinator ______
f. Other school personnel ______

6. Have you identified any more students in your gifted and talented program with a learning disability since their entry into the selective academic program or your class?

Yes/No Year Group ______ Number ________
Year Group ______ Number ________
Year Group ______ Number ________
Year Group ______ Number ________

7. If yes, why do you think identification was not made until after entry into the gifted and talented program?

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

331
8. Were any modifications to the selection process made to accommodate students with a learning disability? Yes/No
Specify:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

9. Will there be any future modifications to the selection process to accommodate students with a learning disability? Yes/No
Specify:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

10. Do students with a learning disability in gifted programs have any special learning characteristics? Yes/No
Specify:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

11. Do students with a learning disability in gifted programs have any special achievement characteristics? Yes/No
Specify:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
12. Have you had to put in place any accommodations or modifications for the gifted learning disabled students?  
Yes/No

Years: 8  9  10  11  12

Specify:

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

13. Do any twice exceptional students in the selective academic programs receive funding through Schools Plus? Please list year level and disability funded.

Year 8 - ____________________________________________

Year 9 - ____________________________________________

Year 10 - __________________________________________

Year 11 - __________________________________________

Year 12 - __________________________________________

14. Over time are numbers of gifted learning disabled students increasing, decreasing or remaining the same?

   Specify:

   ____________________________________________

   ____________________________________________

   ____________________________________________

What is the reason for this?

   ____________________________________________

   ____________________________________________

   ____________________________________________
15. Is it appropriate to place the student who is both academically gifted and learning disability in the gifted program at your school appropriate?  Yes/No

Specify:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

16. Have you had to remove any gifted students with a learning disability from the gifted program at your school?  Yes/No

Number: ____  Years: 8 9 10 11 12

Specify the reason/s:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

17. Is there any further information you wish to share regarding the prevalence and identification of gifted learning disabled students?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

18. Would you accept an invitation to participate in an interview based on the information given in this Survey?  Yes/No
19. Do you wish to receive a summary of the results of this study? Yes/No

Thank you for your participation.
## Appendix F – Survey Summary

### Survey – Twice Exceptional Students

<table>
<thead>
<tr>
<th>School: ___________________________</th>
<th>Teacher Name ________________________</th>
<th>Position ___________________________</th>
<th>Learning Area __________________________</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Respondent 1</th>
<th>Respondent 2</th>
<th>Respondent 3</th>
<th>Respondent 4</th>
<th>Respondent 5</th>
</tr>
</thead>
</table>

### 1. How many selective academic classes does the school run or do you teach?

| Year 8, 1 class – 10 students | Year 8, 2 classes – 32 students | Year 8, 2 classes – 56 students | Year 8, 1 class - 30 students | Year 8, 2 classes - 59 students |
| Year 9, 1 class – 12 students | Year 9, 1 class – 24 students | Year 9, 2 classes – 52 students | Year 9, 1 class - 13 students | Year 9, 2 classes - 64 students |
| Year 10, 1 class – 18 students | Year 10, 1 class – 24 students | Year 10, 2 classes – 61 students | Year 10, 1 class - 21 students | Year 10, 2 classes - 63 students |
|                            |                            | Year 11, 2 classes – 62 students | Year 11 – no distinct class – 17 students | Year 11, 2 classes - 59 students |
|                            |                            | Year 12, 2 classes – 62 students |                                | Year 12, 2 classes - 60 students |

### 2. How is gifted and talented defined in your program?

<table>
<thead>
<tr>
<th>Respondent 1</th>
<th>Respondent 2</th>
<th>Respondent 3</th>
<th>Respondent 4</th>
<th>Respondent 5</th>
</tr>
</thead>
</table>

**Respondent 1**

- Students are given opportunities for critical analysis and higher order thinking skills. The model of giftedness we apply is Gagne's as it accommodates a wide range of abilities with a focus on specific student outcomes.

**Respondent 2**

- As assessed by the GATE testing protocols.

**Respondent 3**

- Students who achieve a score above … in the Education Departments testing in Year 6. This is meant to give me students in the top 5% of their age group.

**Respondent 4**

- Students are selected through the Department of Education selection tests.

**Respondent 5**

- In terms of selection process – by their test results in the GATE selective testing process. We have synergy with GERRIC (UNSW) training modules and apply them to our language around giftedness.
3. Indicate by circling one or all of the following criteria used for selecting students into the gifted academic program:

   a. Individually administered tests of achievement
   b. Group administered tests of achievement
   c. Individually administered tests of potential
   d. Group administered tests of potential

<table>
<thead>
<tr>
<th>Individually administered tests of achievement</th>
<th>Group tests of potential</th>
<th>13. Group administered tests of potential – definitely potential not achievement</th>
<th>-</th>
<th>-</th>
</tr>
</thead>
</table>

4. What is the number and percentage of students in the gifted academic programs currently diagnosed with a learning disability (dyslexia, specific learning difficulty, dysgraphia, dyspraxia, AD/HD) at your school or in your classes?

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 8</td>
<td>1 (ADHD) - 3%</td>
<td></td>
</tr>
<tr>
<td>Year 9</td>
<td>1 (ADHD) - 4%</td>
<td></td>
</tr>
<tr>
<td>No special exam arrgs.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 8</td>
<td>1 - 2% SLD</td>
<td></td>
</tr>
<tr>
<td>Year 9</td>
<td>2 - 4% SLD</td>
<td></td>
</tr>
<tr>
<td>Year 10</td>
<td>4 - ?</td>
<td></td>
</tr>
<tr>
<td>Year 11</td>
<td>2 - 3%</td>
<td></td>
</tr>
<tr>
<td>Year 12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 8</td>
<td>13% Aspergers</td>
<td></td>
</tr>
<tr>
<td>Year 9</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Year 10</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Year 11</td>
<td>1 - 6% dyspraxia</td>
<td></td>
</tr>
<tr>
<td>Year 12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 8</td>
<td>4 7% (2 ADHD, Autism &amp; vision impaired)</td>
<td></td>
</tr>
<tr>
<td>Year 9</td>
<td>5 8% (Dyslexia, SLD, ADHD, Anxiety, Autism)</td>
<td></td>
</tr>
<tr>
<td>Year 10</td>
<td>2 3% (SLD, ADHD, Muscular Development Problem)</td>
<td></td>
</tr>
<tr>
<td>Year 11</td>
<td>2 3% (SLD, central auditory processing disorder, Aspergers, ADHD – but left early in year)</td>
<td></td>
</tr>
<tr>
<td>Year 12</td>
<td>3 5% (Dysgraphia, 2ADHD, unidentified/unspecified autism spectrum)</td>
<td></td>
</tr>
</tbody>
</table>

Special Exam Arrangements – 2010 – 3, 2011 – 3
5. How did you become aware of the student's learning disability?

Or

Rank the source of the majority of information given to you, 1 being the source of most information -

a. Parents  
   b. G & T Branch  
   c. Principal  
   d. School Psychologist  
   e. Learning Support Coordinator  
   f. Other school personnel

---

Schools medical register + LS Coord.  
School psychologist Parents  
   1. LSC  
   2. School Psy  
   3. Parents  

As coordinator of the Gifted and Talented Education program I am made aware of these students' learning disabilities firstly via communication from/with the School's Learning Support Coordinator. Discussions with the Learning Support Coordinator and the School Psychologist provided additional information about these students and their needs. When necessary, meetings were/are held with these school personnel and students’ parents to gain more information to plan initiatives to cater to a student’s individual needs.

School testing or data on admission.  
   1. parents  
   2. School psych  
   3. LSC  
   4. Other school per  
   5. GATE branch  
   6. principal
learning needs. The school’s Year Coordinators are, to some degree, a source of information about the individual learning needs of these students. No information was/is gained from the school principal. Information I have gained from the GATE Branch has been limited and in response to a query about a student’s scores in each of the tests administered by the DoE. At no point has unsolicited information been provided by the GATE Branch about the students who have been offered a place in our program and their learning disabilities

1 LSC
2 School Psych
3 Parents
4 Other school per
5 GATE Branch
6 Principal
6. Have you identified any more students in your gifted and talented program with a learning disability since their entry into the selective academic program or your class?

<table>
<thead>
<tr>
<th>Yes/No</th>
<th>Year Group</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Year 10 – 1</td>
<td>Yes, Year 10 – 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specific learning difficulty</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 10 – 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dyslexia &amp; AD/HD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Really insufficient numbers</td>
</tr>
</tbody>
</table>

7. If yes, why do you think identification was not made until after entry into the gifted and talented program?

| -     | N/A        | It was thought that the child was just a bit unusual |
|       |            | In the case of one student cultural factors have influenced the parents’ decision to not pursue an official recognition and diagnosis of the child’s disability. |
|       |            | In the case of second student, official assessment procedures have not resulted in a specific diagnosis. Nevertheless the student exhibits many traits of aspergers, necessitating the planning and implementation of modified teaching and learning adjustments. |
|       |            | Far greater scrutiny of student capacity/performance as children get older and external accountability measures (exams) begin to exert pressure. Changes in Curriculum Council regulations re inclusivity/exam conditions has created an agenda for this. |
8. Were any modifications to the selection process made to accommodate students with a learning disability? Yes/No

| - | N/A | No | Not as far as I know, unless the Department of Education’s test administrators apply test modifications. | No |

9. Will there be any future modifications to the selection process to accommodate students with a learning disability? Yes/No

| - | Not to my knowledge. This is DET administered. | No | We have no control over selection. | No. Unless the Department of Education makes adjustments. | Perhaps. As we develop a local program we may look at policy. |

10. Do students with a learning disability in gifted programs have any special learning characteristics? Yes/No

| - | Not obviously | No | They always have a specific passion that becomes consuming | Yes | Our dyspraxia and aspergers students have difficulty forming legible handwriting. Some of these students have limited social awareness in terms of recognition of widely accepted social behaviour in a classroom learning or playground social situation. Many have poor organizational and time management skills. Some require a greater degree of |

| - | Yes. Those that apply to their learning characteristics! |
11. Do students with a learning disability in gifted programs have any special achievement characteristics?

| Yes/No | Not obviously | Yes Very high achievement in assessments that require rote learning eg chemical symbol tests. | Yes Some of these students are very creative and articulate their responses to tasks and discussions through creative means such as illustrations/drawings. They need to demonstrate achievement through creative means instead of/in addition to 'standard' mode. Some are quiet ‘dominant’ in a class situation and like to have their achievement presented publically. Others are the opposite and prefer very private demonstration of achievement. A few are quite lateral thinkers and will develop an idea or concept to see its application and relevance in a variety of | This has not been researched. I suspect achievement has suffered. |
situations. This causes them to look beyond the most immediate responses and present quite advanced responses which is often assessed as high achievement. For some very high achievement is possible when a task requires them to focus on one particular aspect of an idea or concept only or when it is in an area of personal interest to the student.

12. Have you had to put in place any accommodations or modifications for the gifted learning disabled students?

<table>
<thead>
<tr>
<th>Year</th>
<th>Accommodation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes/No</td>
<td>Years: 8 9 10 11 12</td>
</tr>
<tr>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>Yes, Years 8, 9, 10</td>
<td>Yes, Years 8, 10, 11</td>
</tr>
<tr>
<td>In years 8 – 10 the students have an education assistant.</td>
<td>Our school psychologist runs small group and individual social skills sessions for some of these students. Our Learning Support Coordinator works with individual students to implement and maintain time management and organization skills. The dyspraxia and aspergers students use a computer instead of</td>
</tr>
</tbody>
</table>
| No other than those that apply in mainstream with similar conditions – (e.g. extra exam time/…… etc.) | }
handwriting in class and for exam situations. These students are given ‘alternative’ ways to demonstrate achievement. In some cases the students’ classmates in the gifted and talented group are provided with information, from the school psychologist, to gain an understanding of their classmates’ specific learning needs. The teachers of classes with these students in them have been offered assistance/professional development from our school psychologist to understand the students’ needs and strategies to assist the students’ learning. An alternative learning pathway has been opened, in conjunction with a local TAFE, for one of these students to pursue his passion and area of talent (technology) while attending school.
13. Do any twice exceptional students in the selective academic programs receive funding through Schools Plus? Please list year level and disability funded.

<table>
<thead>
<tr>
<th>Year</th>
<th>Disability</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>aspergers</td>
</tr>
<tr>
<td>11</td>
<td>dyspraxia</td>
</tr>
<tr>
<td>8</td>
<td>0.1</td>
</tr>
<tr>
<td>9</td>
<td>0.4</td>
</tr>
<tr>
<td>10</td>
<td>0.6</td>
</tr>
<tr>
<td>11</td>
<td>0.6 has left</td>
</tr>
</tbody>
</table>

14. Over time are numbers of gifted learning disabled students increasing, decreasing or remaining the same? What is the reason for this?

<table>
<thead>
<tr>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remains consistent - none</td>
</tr>
<tr>
<td>Don’t know, records not kept.</td>
</tr>
<tr>
<td>Increasing. I’m not really qualified to answer this. I suspect the numbers are the same, however, we are getting better at diagnosing.</td>
</tr>
<tr>
<td>It is probably too early to say as our program only commenced in 2008. But I’d say, on average, numbers have remained the same.</td>
</tr>
<tr>
<td>Increasing/perhaps. More interventions/testing.</td>
</tr>
</tbody>
</table>

15. Is it appropriate to place the student who is both academically gifted and learning disability in the gifted program at your school appropriate?

<table>
<thead>
<tr>
<th>Specify:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes. We should they be disadvantaged by being placed in a non academic program. The lessons are often self paced – which allows students to work at own pace.</td>
</tr>
<tr>
<td>Yes We have had students twice exceptional obtain university degrees.</td>
</tr>
<tr>
<td>Yes Given the type of twice exceptional student we’ve had in our Gifted and talented Education program and the progress they’ve made as a student in that program to date, it is clear that these students have benefited socially and academically from</td>
</tr>
<tr>
<td>Yes. Their testing suggests “giftedness’ then we place them.</td>
</tr>
</tbody>
</table>
16. Have you had to remove any gifted students with a learning disability from the gifted program at your school?  
   Yes/No  
   Number: ____  
   Years: 8 9 10 11 12  
   Specify the reason/s:  
   -  
   No  
   No  
   No  
   No  
   No  

17. Is there any further information you wish to share regarding the prevalence and identification of gifted learning disabled students?  
   -  
   What I have noticed is that over the year, we have had a few Asperger’s boys. The parents did not tell the school. It was only after observation that the parents told us. I suspect a few students to be a low end autism issue but parents can be in denial. These needs are accommodated.  
   Some students are diagnosed, given an education assistant and special treatment. If they actually have nothing wrong with them it can be quite damaging.  
   It would be useful to have greater information about these students and their needs provided to the Learning Support Coordinator and school psychologist when the children enrol at the school. As it stands the gathering of information is an investigation task, undertaken by the LSC through contact with  
   Yes
347

18. Would you accept an invitation to participate in an interview based on the information given in this Survey?

<table>
<thead>
<tr>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

Yes. I am happy to talk, but records are not kept. Staff are told of these ADHD students but that is all. They cope well and have not been an obvious learning issue. A bigger problem has been low end autism students – undiagnosed, in my opinion.

19. Do you wish to receive a summary of the results of this study?

<table>
<thead>
<tr>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

Yes

Thank you for your participation.
Appendix G – Parent Information Letter

Dear parent/caregiver,

The prevalence of Twice Exceptional students in selective academic programs: the near miss phenomena

My name is Lynne Ivicevic, I am the Learning Support Coordinator at xxxxxx and I am writing to you on behalf of Edith Cowan University where I am completing a research project as part of a PhD. I am conducting a research project that aims to study the prevalence and experiences of twice exceptional students – intellectually gifted and learning disabled, in the selective Academic programs in WA. My research is being supervised by Dr. Lorraine Hammond (l.hammond@ecu.edu.au) and Emeritus Professor Mark Hackling, Edith Cowan Institute for Education Research, Faculty of Education and Arts.

I would like to invite you to participate in this study because your child has been identified as twice exceptional. Your parent perspective will be invaluable to this study as this cannot be gained from school personnel. It is suggested that you discuss your participation in the study with your child as the information you provide will be based on your parental experiences as well as those of your twice exceptional child. It is my intention to use the information from your experiences to form part of the whole study which has gathered data from the Department of Education on numbers of twice exceptional students in the GAT selective programs, disability in DoE schools and survey information from the gifted coordinators of the GAT selective Academic programs.

Participation in this project is entirely voluntary and if you later change your mind, you are able to withdraw participation at any time during the study. There are no consequences for withdrawal and will not affect the relationship with the researcher or Edith Cowan University.

All information that identifies you will be removed from the data collected and coded to preserve anonymity. The data will then be stored securely in a locked container that can only be accessed by me and my supervisors. The data will then be stored for a minimum period of 5 years after which it will be destroyed by shredding.

Your identity will not be disclosed at any time, except in circumstances that require reporting under the Department of Education Child Protection Policy, or where the research team is legally required to disclose that information. Participant privacy and the confidentiality of information disclosed by participants, is assured at all other times. The data will only be used for this project, and will not be used in any extended or future research without first obtaining explicit written consent from participants.

A summary of the research findings will be made available to the participating site(s) and the Department. You can expect this to be available at the completion of the PhD, approximately 2017.

The research has been approved by ECU’s Ethics body, Approval No. 5599 and has met the policy requirements of the Department of Education as indicated in the attached letter. I have Working with Children Check approval – xxxx.
If you have any questions or require any further information about the research project, please contact myself or my two supervisors listed above.

If you have any concerns or complaints about the research project and wish to talk to an independent person, you may contact:
Research Ethics Officer
Edith Cowan University
270 Joondalup Drive
Joondalup 6027
(08) 6304 2170
research.ethics@ecu.edu.au

If you have had all questions about the project answered to your satisfaction, and are willing to participate, please complete the Consent Form on the following page. This information letter is for you to keep.

Yours sincerely

Lynne Ivicevic, l.ivicevic@ecu.edu.au
Edith Cowan University
Appendix H – Parent Consent Form

The prevalence of Twice Exceptional students in selective academic programs: the near miss phenomena – Lynne Ivicevic, PhD Candidate
l.iversevic@ecu.edu.au

Consent Form – Parent
Ethics Approval No. 5599

- I have read this document and understand the aims, procedures, and risks of this project as described within it.
- For any questions I have had, I have taken up the invitation to ask those questions, and I am satisfied with the answers I received.
- I am willing to be involved in the research project, as described.
- I understand that participation in the project is entirely voluntary.
- I understand that I am free to withdraw my participation at any time, without affecting the relationship with the research team or Edith Cowan University.
- Withdrawal from the study can occur at any time.
- I understand that this research may be published in a journal, presented at professional development/conferences, provided that the participants or the school are not identified in any way.
- I understand that I will be provided with a copy of the findings from this research upon its completion.

Parent: _________________________
Signature: _________________________
Dated: _________________________

Return to: Ms L. Ivicevic
c/o Dr. L. Hammond
Special Education Coordinator
ECU
2 Bradford Street,
Mt. Lawley 6050
Appendix I – Parent Survey

The prevalence of Twice Exceptional students in selective Academic programs: the near miss phenomena

Survey/Questions – ECU Ethics Approval 5599

Name: __________________________________________

Think back to the time when you were deciding what secondary school your child would go to in Year 8 and whether you considered applying for your child to attend one of the Department of Education’s (DoE) selective Academic programs at schools such as Comet Bay College, Duncraig Senior High School, Governor Stirling Senior High School, Kelmscott Senior High School, Melville Senior High School, Perth Modern School, Shenton College or Willetton Senior High School.

1. Were you aware of the Department of Education’s (DoE’s) selective Academic programs? Yes/No

2. Did a teacher/principal recommend the Academic program for your child? Yes/No

3. Did you make enquiries about the DoE’s
   a. GAT Academic programs? Yes/No
   b. Entry requirements? Yes/No
   c. Did you consider applying for a GAT academic position for your child? Yes/No

4. What did you consider the advantages of your child applying for and being part of the DoE’s Academic programs?

____________________________________________________________________________________
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5. What did you consider the disadvantages of your child applying for and being part of the DoE’s Academic programs?

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6. What do you consider the barriers that prevent, or supports that assist students with disabilities participating in the DoE’s Academic programs?

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7. What were your reasons and perceptions behind the decision to apply/not apply for a GAT Academic position?

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8. Any other comments:

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9. Do you wish to receive a summary of the results of this study? Yes/No

Thank you for your participation, it is most appreciated.
l.vicevic@ecu.edu.au
Appendix J – Parent Survey Summary

Parent Survey responses

The prevalence of Twice Exceptional students in selective Academic programs: the near miss phenomena

Survey/Questions – ECU Ethics Approval 5599

Think back to the time when you were deciding what secondary school your child would go to in Year 8 and whether you considered applying for your child to attend one of the Department of Education’s (DoE) selective Academic programs at schools such as Comet Bay College, Duncraig Senior High School, Governor Stirling Senior High School, Kelmscott Senior High School, Melville Senior High School, Perth Modern School, Shenton College or Willetton Senior High School.

1. Were you aware of the Department of Education’s (DoE’s) selective Academic programs? Yes/No

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<td>Parent 8</td>
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2. Did a teacher/principal recommend the Academic program for your child? Yes/No

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3. Did you make enquiries about the DoE’s Academic programs?

a. GAT Academic programs? Yes/No

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b. Entry requirements?  

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<th>Parent</th>
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<td>Parent 7</td>
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c. Did you consider applying for a GAT academic position for your child?  

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<th>Parent</th>
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<td>Parent 7</td>
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<td>Parent 8</td>
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4. What did you consider the advantages of your child applying for and being part of the DoE’s Academic programs?

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<tr>
<th>Parent</th>
<th>Advantage</th>
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<tr>
<td>Parent 1</td>
<td>Intellectual stimulation, like-minded peers, G and T trained teachers, and possibilities for academic extension.</td>
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<td>Parent 2</td>
<td>The advantages were initially to see if […] was academically suitable for one of these positions. Although we knew […] was bright, we never really knew to what extent. Since very early, Kindy in fact, […] would often choose to “under” achieve in order to blend in with her class mates. We always wondered if she was surrounded by similarly bright students, she may strive to achieve more. […] now seems proud of her achievements whereas before, she often used to say that she did not feel she should be praised as the achievements came quite easily to her.</td>
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<td>Parent 3</td>
<td>Finding other students like him who were very bright so that he could have acceleration.</td>
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<tr>
<td>Parent 4</td>
<td>I hoped that the DoE’s Academic program would cater to various learning styles and provide greater academic opportunities. Initially we did not apply for a placement.</td>
</tr>
<tr>
<td>Parent 5</td>
<td>Advantages were access to an academic program and peers suited to gifted children. Often lack of understanding about giftedness in Primary School, so access to specialist teachers and a school that “gets it” is appealing.</td>
</tr>
<tr>
<td>Parent 6</td>
<td>Smaller cohort – protective against getting lost in mainstream. Extension potential and chance to live up to abilities rather than being lost to difficulties.</td>
</tr>
<tr>
<td>Parent 7</td>
<td>Being given opportunities for extension and working in a school with an ‘able’ peer group</td>
</tr>
<tr>
<td>Parent 8</td>
<td>The opportunity to be surrounded by peers with like interests and abilities. Teaching that understood and supported […] abilities.</td>
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</table>
5. What did you consider the disadvantages of your child applying for and being part of the DoE’s Academic programs?

Parent 1  My impression was that they cater for students who excel at school. I wasn’t sure that my child would excel at school despite his high IQ. I therefore thought that it might not be the best for his self-esteem. Most importantly though, I didn’t think he had much of a chance of getting a place. Because I chose to homeschool him for primary years his academic skills in spelling and writing were below grade level (a combination of him never practicing these skills but also having sensory and coordination issues which makes handwriting challenging for him). I also felt [...] would cater to his creative side and provide a peer group who ‘get him’.

Parent 2  We were initially concerned about the distance and how [...] would cope in a boarding school environment.

Parent 3  Once I heard about the testing I knew this would be a problem for [...] and it seemed unlikely he would get through. They would not accept any other proof. I was concerned that he wouldn’t get any support which he needed.

Parent 4  I was concerned that the Academic programs may not provide for or recognise twice exceptionality. My child’s gifts were not recognised or fostered in Primary School.

Parent 5  I considered the nature of the testing a barrier to entry, and was concerned about the support or lack thereof that would be provided by the schools. Also concerned about judgements from other children in the program.

Parent 6  Pressure and competition. Separation from familiar peers and peers living locally. Distance/travel. Possible self esteem, anxiety, depression issues.

Parent 7  I wasn’t sure that the competitiveness and academic intensity of an academically selective program would be right for my child.

Parent 8  I ruled out [...] GAT Academic school] on the basis that if he couldn’t cope with the AEP then he would have to leave. I considered [...] another GAT Academic school]. A potential disadvantage would have been the fact that his two cousins attend the same school and one would been in the same year. The similar aged cousin doesn’t have a disability but the older cousin (who is two school years ahead) has high functioning autism. [...] really wanted to go to [...] GAT Arts school] so he put the preference last (and I advised him that this would pretty much guarantee he wouldn’t get a place). Travel was also a consideration – albeit a small one.

6. What do you consider the barriers that prevent, or supports that assist students with disabilities participating in the DoE’s Academic programs?

Parent 1  The first barrier is the method by which these children are chosen. There is no consideration of IQ testing or any other signs of potential. The entrance test is designed to create equality of access, but in fact, in my opinion, does not create equity. I also chose [...] because of its [...] support] program. I saw no equivalent of this program at any of the DOE Academic select schools.

Parent 2  My initial concerns prior to applying were that as [...] would be so far away from us, we would be unable to see if she was coping emotionally with the program. Although academically she may have been fine, her emotional health could have suffered and this may not have been picked up on or monitored closely.

Parent 3  One barrier is the testing which isn’t very equitable for a child with a disability. There doesn’t appear to be any support. This makes you feel that your child doesn’t belong in it.
| Parent 4 | The GATE testing was promoted as being very ‘intense’ & taking a long time. The ‘worry/anxiety was more than my child could face at 12 years of age. Later, we discovered that the [...] program entry requirements would have excused my child from sitting the GATE test. |
| Parent 5 | Testing structure is very off-putting. Even with extra time, some 2E children will not display true potential. Not knowing how your child’s LD will impact their performance in High School is also an issue. |
| Parent 6 | Group work problems. A barrier is the pressure of the Academics programs expecting kids to be “All rounders”. I know this has improved and they can be “streamed” BUT the kids themselves view this as a failing. Support having to interact with fewer kids with more similar interests and getting a better chance not to slip through the cracks. |
| Parent 7 | Limited definition of what being ‘gifted’ entails – some gifted kids are not remotely performing at their potential. |
| Parent 8 | Barriers  
- Absence of inclusion support services like [...]. I know this doesn’t exist at [...] GAT Academic school and this was one of the reasons also for choosing [...]. [...] cousin with Autism SD got no additional help despite his diagnosis.  
- Inability to undertake online learning (similar to SPER) without being ‘remote’ or hospitalised. |

7. What where your reasons and perceptions behind the decision to apply/not apply for a GAT Academic position?

| Parent 1 | My son did not apply for a GAT Academic position. I had conversations with several of these schools as well as personnel within head office to enquire about alternative routes to application – but it was quite clear that the only adjustment to application would be to have him use keyboard rather than handwrite. Ultimately though we decided that [...] was a better fit for him; and he was also highly motivated to attend [...] himself. |
| Parent 2 | Our decision to apply was to give [...] the best opportunity to reach her full potential. We felt this would not be possible in the country area that we lived in. Moving to Perth was not the best option in relation to the wellbeing of our other children, so this opportunity was ideal. We made the decision to apply to a GAT Art’s school however, we still had not decided what to do if she was offered a spot. In fact, we were quite certain we would actually turn it down. |
| Parent 3 | We didn’t apply because we weren’t sure if he would cope and the testing was a problem. It seems like children with disabilities shouldn’t go there. |
| Parent 4 | When my child was nearly 13, he sat his schools independent Academic testing. It was held in a more supported and nurturing environment and he was offered a place in the GAT program. He has never sat the GATE test & still thinks it would be too much worry for him. |
| Parent 5 | We put [...] non-GAT Academic school as our first option because of [...] support program, AEP and [...] Arts program combination. [...] GAT Academic school was 2nd preference but we didn’t consider it to be a good fit, and didn’t consider [...] another GAT Academic school. |
| Parent 6 | [...] applied for GAT at [...] but [...] was our 1st preference as we felt this would give her a better balance and let her focus more on her strengths and fewer subjects. |
| Parent 7 | We didn’t apply for a fully academically selective program as we thought our child needed a broader focus and support. We also didn’t want her to have to travel too far to get to school! |
Parent 8  | The main reason for not preferencing [...] was the fact that [...] had set his mind on [...]. I knew AEP was available for him at [...] so didn’t have concerns about him being ‘held back’. If [...] had not got into [...]GAT Arts school], I feel his ability to remain ‘included’ in another school would have been very tenuous.

8. Any other comments:

| Parent 1 | I would like to see early screening of children for twice exceptionality and this information also included in teacher training. It requires skill to pick these children as the giftedness and the learning difference/disability can work to cancel each other out – so that neither gets identified. The earlier the intervention in my opinion the better chance these kids have at being able to reach their potential. It is also important that these kids know that their 2E can come with unique gifts as well as challenges – and are given the chance to shine in the ways they are good at. The biggest problem for this cohort is that often, neither the giftedness or the disability/difference gets recognised and assisted. |
| Parent 2 | I remember when we filled in the online application, if you ticked the box that indicated your child had a disability, it automatically stopped you from continuing with the application and instead, referred you to call the DoE. I remember thinking this could deter some people from filling in this application especially if they felt that their child may then be discouraged from applying. It was because of this, that I chose not to tick the box and instead, allow [...] the opportunity to apply the same as other students. |
| Parent 3 | I didn’t feel that my son would be welcome at these schools. I didn’t want him to feel the one out. |
| Parent 4 | My son is tremendously supported through his school’s [...] program. Almost by accident, he has found his way into Academic extension & into GATE drama. He was already precociously gifted but his primary schooling did not nurture his gifts and at no point were we encouraged to seek academic extension programs for him. In fact, learning support was usually recommended and a bleak outlook promoted. My child was never involved in PEAC, although he really wanted to be. His learning style coupled with his anxiety & autism really clouded his potential. I am so grateful that his schooling has been so successful in high school. His success is testament to great support and a positive environment that recognises his unique talents. |
| Parent 5 | Finding the right Secondary School for a child known to be gifted with an LD is quite daunting. We only felt like we had one option, and were lucky to gain entry to that school. This is important research. |
| Parent 7 | [...] had been identified as gifted through PEAC but had not been diagnosed or shown any indication in primary school of her anxiety disorder which was identified in year 8. So at the time of her entry we were not aware of this as a medical issue. |
| Parent 8 | I feel that GAT schools don’t want or need kids with learning difficulties because they can easily fill their places with kids who are much easier to manage. My nephews both attend [...] GAT Academic school] as local intake. |
9. Do you wish to receive a summary of the results of this study? Yes/No

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