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Michelle L. Bannister-Tyrrell
University of New England

Sofia Mavropoulou
University of New England

Marguerite Jones
University of New England

Jeffrey Bailey
University of New England

Anne O'Donnell-Ostini
University of New England

Rinchen Dorji
University of New England

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Initial Teacher Preparation for Teaching Students with Exceptionalities: Teacher Education Students' Knowledge and Perceived Competence

Michelle L Bannister-Tyrrell
Sofia Mavropoulou
Marguerite Jones
Jeffrey Bailey
Anne O'Donnell-Ostini
Rinchen Dorji
University of New England

Abstract: This research study surveyed 100 undergraduate teacher education students in a regional university in Australia, explored self-reported perceptions of their knowledge about students with exceptional needs, and their competence to be effective educators of these students in an inclusive classroom. Additionally, we included a measure of general attitude toward teaching in an inclusive classroom. What made this exploratory study atypical was broadening the concept of 'exceptionality' to the inclusion of items related to students with physical and cognitive challenges, superior academic gifts and those deemed to be twice exceptional. The results were unexpected in that teachers' age, parental status and exposure to units of study in special and inclusive education did not differentiate their knowledge, perceived competence, or general attitude.

Keywords: Teacher Education Students, knowledge, teaching competence, exceptional students.

Introduction

21st century educators are faced with many challenges within their classrooms, not the least of which is meeting the wide range of learning needs of all their students including both typical and exceptional learners. Pivotal to assisting teachers with the necessary skills and knowledge to effectively meet their students' learning needs are the courses and units completed during their undergraduate degrees. Inclusive education (IE) today no longer refers only to students with disabilities, but to the education of all students, including those with exceptional needs (Ainscow & Sandill, 2010). Students with exceptionalities include those with physical impairments, cognitive disabilities, cognitive strengths (gifted and talented), behavioural disorders, or a combination of these features. Students with exceptionalities come with many learning challenges and require classroom teachers with a specific skill set and understandings of the issues involved with IE. As Foreman and Arthur-Kelly (2014) state "in education, inclusion is based on the philosophy that schools should, without question, provide for the needs of all the children in the community, whatever their background, their ability or their disability" (p. 19).

Theoretical Background

Despite the adoption of an inclusive philosophy in Australia (Forlin & Bamford, 2005) as a response to the Salamanca Statement (United Nations Educational, Scientific and Cultural Organization (UNESCO), 1994), the delivery of education to students with disabilities remains a challenging and concerning issue. A recent survey of more than 1000 families of children with exceptionalities across Australia reported some disturbing findings (Children with Disability Australia, 2015). More than one quarter of the respondents indicated that their child had been refused enrolment in a school on the grounds of their disability, 17% of children and young people with disabilities were only offered part-time enrolment, and 68% of respondents felt their child was not receiving adequate support at school. Similarly, cognitively advanced students, although not faced with enrolment issues, did not necessarily have their learning needs met in school. In certain cases they have been found to be “significantly less productive, held lower status occupational positions, had not completed as much postgraduate study, and reported lower levels of life satisfaction” (Gross, Urquart, Doyle, Juratowitch & Matheson, 2011, p. 8) in comparison to students who received appropriate provisions.

High cognitive ability can be found in every culture, socio-economic group and religious affiliation; however, this understanding is not necessarily reflected in the identification of students outside the dominant cultural group of a society (Vialle & Rogers, 2011). High cognitive ability comes with specific learning needs due to structural differences in brain functioning (Geake, 2009). The capacity for rapid information processing requires intellectual challenge and coping strategies that if not provided to young students can negatively impact and undermine their development. Teachers untrained in the needs of students with high cognitive ability have been shown to have a poor rate of identification, and the knowledge to provide adequate and appropriate education for these students (Bangel, Moon & Capobianco, 2010; Rowley, 2012).

Twice exceptional students possess high cognitive abilities simultaneously with a learning disability. Awareness of this group of learners dates back to Hollingworth’s 1923 *Special talents and defects: Their significance for education*. However, only in the last two decades has a growing body of research focused on this group of learners, with most emerging from the United States, and in recent years within Australia (Ronksley-Pavia, 2015; Wormald, 2011). Baldwin, Baum, Pereles and Hughes (2015) suggest three issues that undermine identification and appropriate provision for the learning needs of the twice-exceptional student. Firstly, that the disability may be masked by the student’s exceptional ability, contrastingly, that the disability may conceal their exceptionality, and thirdly, as can be the case with twice-exceptional students, each may obscure the other. When this occurs, there is the concern that the various exceptionalities of the student are neither acknowledged nor addressed leading to the uncertainty of the student “perform[ing] below, at or above grade level” (Baldwin, Baum, Pereles & Hughes, 2015, p. 212) expectations. The following definition was developed by Wormald and Bannister-Tyrrell (2017) in response to the Australian Curriculum’s support of Gagné’s Differentiated Model of Giftedness and Talent 2.0 (2008). In supporting high potential/high performing students, the Australian Government DDA, Disability Standards for Education, ACARA Document and the NAGTC definition of twice exceptionality. Learners who are twice exceptional are students with natural abilities in the intellectual, creative, social, perceptual and physical domains, while exhibiting evidence of one or more disabilities as defined by the Disability Discrimination Act (1992). The Disability Standards for Education (2005) including but are not limited to specific learning disabilities; speech and language disorders; emotional /behavioural disorders; physical disabilities; autism spectrum and ADD/HD.

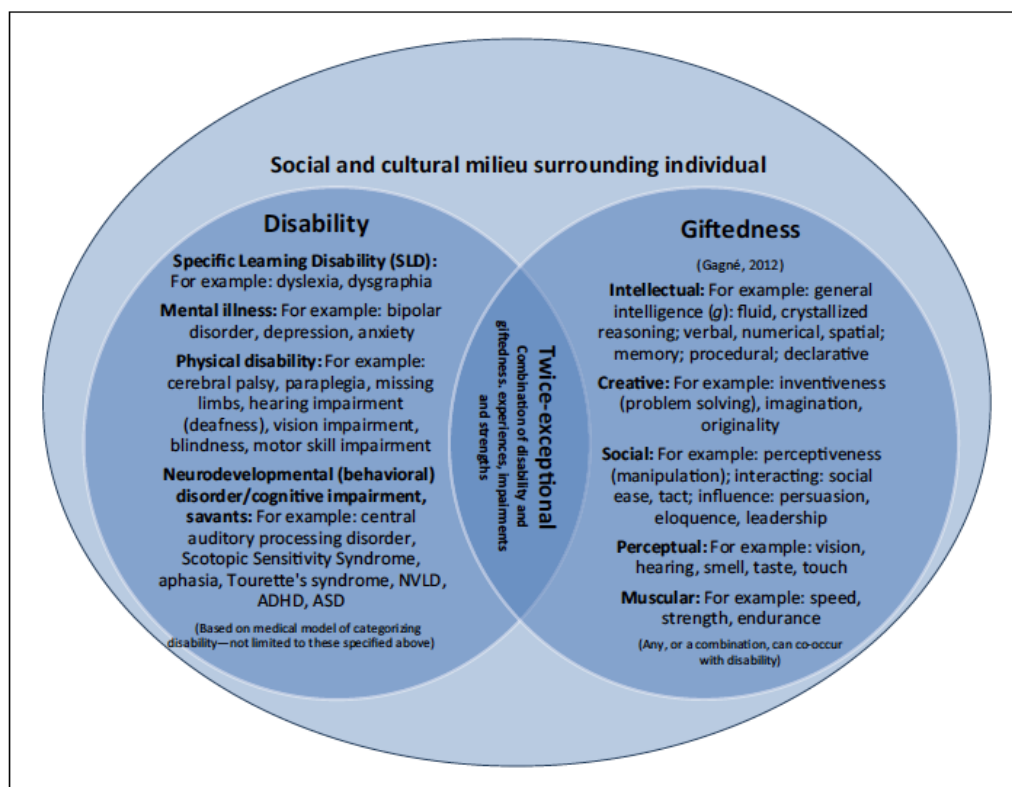
The Australian Context

In Australia the educational support of students with exceptionalities, particularly those with disabilities, is evident at a Federal level as demonstrated through several documents including, the Melbourne Declaration on Educational Goals for Young Australians (2008), the Ministerial Council on Education, Employment, Training and Youth Affairs (AITSL, 2011) (2009 – 2012) and the Australian Curriculum Assessment and Reporting Authority (ACARA). In 2008 the Melbourne Declaration on Educational Goals for Young Australians called for collaboration between federal, state and territory governments and public, independent and Catholic schooling sectors to promote equity and excellence in Australian schooling. The intentions were to, minimise the impact of various sources of disadvantage, including disability; enhance school cultures of excellence, and support the development of gifts and talents through individualised and/ or differentiated learning that supported the “diverse capabilities of each young Australian” (p. 7).

Reflective of this stance the Australian Curriculum, Assessment and Reporting Authority (ACARA, 2013) includes within their document, *Student Diversity and the Australian Curriculum*, which prioritises high-quality curriculum, and equity and excellence for all Australian students, by embracing the intentions of the *Disability Discrimination Act (1992)* and the *Disability Standards for Education 2005* (Commonwealth of Australia, 2006) (the Standards). The Act intended to give students with a disability the same rights as other students, including the right to education and training ‘*on the same basis*’ as students without a disability (ACARA, 2013).

While gifted and talented students are also included, the Student diversity link states: *Gifted and talented students are entitled to rigorous, relevant and engaging learning opportunities drawn from the Australian Curriculum and aligned with their individual learning needs, strengths, interests and goals. (Australian Curriculum, 2015, para. 1)*

However, it should be noted there is no mention or recognition of twice exceptional students in any of these documents. Figure 1 by Ronksley-Pavia (2015) shows the overlap between disability and giftedness where twice exceptional students might be positioned.



Note: ADHD – attention-deficit/hyperactivity disorder; ASK = autism spectrum disorders; NVLD = non-verbal learning disability.

Figure 1: Ronksley-Pavia's (2015, p. 330) representation of twice exceptionality.

Determinants of Pre-Service Teacher Attitudes towards Teaching Students with Exceptionalities

Research has shown that there is a direct correlation between teacher attitude and the success (or not) of teaching exceptional students. Coursework focused on inclusive education within teacher education programs has been shown to positively influence teacher education students' attitudes, confidence and competency to work within inclusive classrooms (Mergler, Carrington, Kimber & Bland, 2016; Tangen & Beutel, 2016). Likewise, studies (Bartley, 2014; Lassig, 2009; Wormald, 2011) have found that teacher attitude is pivotal in providing productive and positive learning environments for gifted and talented and twice exceptional students. While much of the research has focused on practicing teachers, there is growing evidence of the need to increase the understanding of teacher education students' attitudes towards exceptional students, and the factors that influence such development (Kim, 2010; Sharma, Moore, & Sonawane, 2009). While evidence for students with disabilities has had a long history, students with high cognitive ability and a learning disability, is a relatively new concept within the Australian educational landscape. An Australian study by Wormald (2011) highlighted that teachers in New South Wales (NSW) Australia have a general understanding of giftedness; however, were confused about the specific learning needs of such students. A study by Beacham and Rouse (2012) found that undergraduate teacher education can shape graduate teacher education students' attitudes and ability to select appropriate learning opportunities for students within inclusive classrooms, including for the student with twice-exceptionality.

Determinants of Pre-Service Teacher Views about Teaching Exceptional Students

Four variables have been identified in current research as influencing pre-service teachers' views about their competence in teaching students with exceptionalities in inclusive environments. The variables of parental status, age, completion of units, and personal experience are now examined:

Parental Status

Boer, Pijl, and Minnaert (2010) reinforce the notion that parents endorse inclusive education (IE) for children, whether the child is typically growing or demonstrates exceptionalities. Parents are far less favourable of segregated educational settings. In addition, parents, whose children are educated in IE classrooms, demonstrate more positive attitudes to IE than parents who have not experienced such contexts (Balboni & Pedrabissi, 2000). Likewise, positive attitudes are seen to develop in teachers as their experience in IE classrooms expands (de Boer, Pijl, & Minnaert, 2011). It is therefore hypothesised in this study that teacher education students, who are parents of children with exceptionalities educated in IE environments, will hold more positive attitudes towards the approach than their counterparts, or who do not have children at all. These four variables will now be explored further.

Age

Conflicting evidence exists in the research with regards to what, if any, relationship exists between the age of teacher education students and their attitudes towards inclusive education. For example Florin, Loreman, Sharma, and Earle (2009) found a positive correlation between the age and attitude of teacher education students in Australia, Hong Kong, Canada and Singapore compared with their older peers. Contrastingly, Avramidis, Bayliss and Burden (2000) found age was not an influence on teacher education students' attitudes towards inclusive education.

Completion of Relevant Units

Over the past decade the successful completion of inclusive education units has had a positive influence on the attitudes of teacher education students towards students with exceptionalities (Kraska & Boyle, 2014; Rowley, 2012). In recognition of this, since 1994 some education systems, such as that in NSW, have mandated the effective completion of a special education unit or course as a teacher accreditation requirement (BOSTES, 2014). This situation contrasts with the lack of mandated gifted education units or courses, despite the recommendations of two (Commonwealth of Australia, 1988; 2000). It is not surprising then that there are still those who argue that the preparation teacher education students receive to teach students with diverse learning needs is inadequate (Hoskin et al., 2015; Sharma, Forlin, Loreman & Earle, 2006; Wormald, 2011), in particular in terms of the ad hoc approach to the delivery of such units. The suggestion being that teacher education students, as a group, may not be provided with the skills and understandings they need to teach students with exceptionalities in current diverse classrooms.

Despite this lack of consistency across units and courses the research continues to support the positive impact of their completion on the attitudes of teacher education students. Hoskin and colleagues (2015) report, “although pre-service teachers may support the philosophies of IE (inclusive education), they lack the knowledge and efficacy to implement the practice effectively” (p. 10) unless specifically educated to do so. Harris and Hemmings (2008) found that without units in gifted education, which presented empirical research to counter the misunderstandings and mythology that surrounds gifted and talented students, teacher education students did not feel prepared or confident to cater for the specific learning needs of these students.

Personal Experience

Past and current research has documented that teachers who have some personal experience of teaching students with exceptionalities have increased confidence in teaching in inclusive education settings (Bradshaw & Mundia, 2006; Sharma, Shaukat, & Furlonger, 2015). It has been especially noted that teacher education students who have experiences of social interaction with persons with exceptionalities are more likely to hold positive attitudes in comparison with those who lack those interactions. Dias and Cadime (2016) have found that teachers’ personal experiences (as a family member, relative or friend) seemed to be a significant factor associated with a more positive affective attitude towards inclusive education. Similarly, Ahmmed, Sharma and Deppeler (2012) found that teachers who were acquainted with persons with disabilities outside classrooms had slightly more positive attitudes than teachers who did not have such experiences. However, research on the association between personal experience and teacher education students’ knowledge and competence for teaching students with exceptionalities remains scarce.

Aims of the Study

The primary aim of the present study was to explore teacher education students’ knowledge and views of their competence to teach students with exceptionalities in regular classrooms. Specifically, this study intended to answer the following questions:

1. Is there a relationship between being a parent of a child with or without exceptionalities and the knowledge, competence and general attitude of pre-service teachers for teaching students with exceptional needs in inclusive environments?
2. Is there any association between pre-service teachers’ age and their knowledge, competence and general attitudes towards teaching exceptional students in inclusive classrooms?
3. Is there any relationship between the completion of relevant units (including those centred on inclusive and special education, behaviour management and gifted education) and the knowledge, teaching competence and general attitude towards exceptional students of pre-service teachers?
4. Is there any association between personal experience with people with exceptionalities and the knowledge, competence and general attitudes of pre-service teachers?

Method

Participants

The selection criterion for participants in the study was enrolment in an undergraduate course in early childhood, primary or special education at a regional public Australian university. A formal invitation was emailed to all teacher education students enrolled in degrees with core units addressing inclusive education, including the Bachelor of Education (Primary), the Bachelor of Education (Early Childhood and Primary), and the Bachelor of Special Education (Primary)/ Bachelor of Disability Studies. At the time of the invitation to participate in this study, the number of inclusive education units completed by students in the different courses varied according to the length of time each participant had been studying. This variation was accounted for in the survey and data analysis. Participants were studying either on campus or by distance education and were spread geographically throughout Australia, and, in some cases, internationally.

At the initial stage of the data collection, the invitation to participate in the study was sent to 795 teacher education students across three degrees: 598 Bachelor of Education (Primary) students, 127 Bachelor of Education (Early Childhood and Primary) students and 70 students enrolled in the Bachelor of Special Education (Primary)/ Bachelor of Disability Studies. One hundred participants responded – a response rate of 12.5; 90% were females and the mean age of all respondents was 36.52 years ($SD=9.54$, range: 18-60 years). The cohort of participants were a cross section of Early Childhood, Primary and Secondary students. In an effort to increase response rates to the Scale, we sent out an invitation to participate to the students at three different times over two trimesters. Of the teacher education students' only 6% did not have any teaching experience with students with disabilities or with exceptional needs. The remaining 94% had varying levels of teaching experience with students with special needs: 28% had a small amount of teaching experience with students with exceptionalities, 42% had a moderate amount of experience, and 24% had extensive experience. Moreover, 82% of the respondents reported that they had teaching experience with gifted students (44% had small experience, 27% had moderate amount of experience and 11% had extensive experience). In regards to their parental status, 74% of the teacher education students had children, and 88% reported that their child did not have a disability.

Instrument

A four -part survey instrument, the Pre-service Teachers' Attitudes toward Inclusion (PTAI) Scale, was developed specifically for this study. The scale aimed to capture teacher education students' self-evaluation of their knowledge, skills and preparedness in teaching students from 5-12 years across the spectrum of exceptionality in regular classrooms. The range of diversity included students with disabilities, gifted students, and twice-exceptional students.

Relevant validated scales were investigated to develop an item pool. These included the: Opinions Relating to Mainstream (Larrivee & Cook, 1979 as cited in Killoran, Woronko & Zaretsky, 2014); Sentiments, Attitudes and Concerns about Inclusive Education (Wilczenski, 1995 as cited in Loreman, Earle, Sharma & Forlin, 2007); Self-Efficacy toward Future Interactions with People with Disabilities (Hickson, 1995); Inventory for Attitudes towards Integration (Kis-Glavis, Nikolic, & Igric, 1996 as cited in Stenton & Elkins, 2004); Teacher Attitude Towards Inclusion Scale (TAISA Adjusted) – Kraska & Boyle, 2014); Teachers' Attitudes Toward Inclusion (Kim, 2011); Assessing Attitudes of Pre-service Teachers Toward Gifted (Troxclair, 2013) and School Principals' Attitudes toward Inclusion (Bailey, 2004). As this study was designed to assess attitudes toward 'exceptionality' with the

inclusion of gifted, and twice exceptional, students these instruments were considered inadequate and the PTAI Scale was developed.

Prior to commencing the survey, participants were asked to indicate the specific units in inclusive, special, and/or gifted education they had completed to that point in time. A list of twelve units, which addressed inclusive/special education in their course objectives were specified in the scale.

One of the conceptual issues in measuring attitudes toward disability was to ensure that respondents understood the specific disability being addressed. To ask a respondent to form an impression about a person with a 'disability' lacks what is called referent specificity, that is, which disability and how significant the impairment. To ask a participant to respond to a question about their attitudes toward a person with an intellectual disability, for example, requires clear specificity of the degree of disability, that is, be it mild, moderate, severe, or profound. To address this issue of referent specificity, a glossary of terms (Table 1) was provided in the scale

In this survey the six terms used are defined as students who:	
Superior cognitive strengths	are able to solve complex cognitive problems quickly and easily and have advanced retention and retrieval of information
Mild intellectual impairment	have more difficulty solving complex problems than classmates and often make mistakes
Significant learning difficulties	have intellectual ability but have difficulty with reading and/or mathematics
Significant behaviour disorders	present with complex and challenging patterns of behaviour
Significant emotional disorders	have significant mental health issues, e.g., anger control, frequent outbursts, elevated anxiety
Superior cognitive strengths who might also have at least one of the following difficulties	are very cognitively capable but also have one or more of the other difficulties listed including intellectual impairment, learning difficulties, behaviour, and/or emotional problems.

Table 1: Glossary of terms used to characterise groups of students

The PTAI Scale included forced response items and open-ended questions. A six-point Likert scale was used for the forced response items with two bipolar tags – Strongly Disagree and Strongly Agree. For coding purposes 'Strongly Disagree' was coded as 1 and 'Strongly Agree' as 6. The lack of a neutral category ensured that participants would make a stance either in agreement with, or in opposition to, the statement. There is some evidence to support using an even number of possible responses, in this case six, to reduce 'fence sitting' or neutral responses (Bailey, 2004). An assumption was made that the six points on the scale were equal intervals; that is, the distance between 1 and 2 was the same as for 3 to 4 and so on.

Part A of the scale sought participants' responses about their *knowledge* of the range of students they were likely to meet in an inclusive classroom. Part B sought participants' perceived *competence to teach* students with the characteristics described in Table 1. In addition, included within, Part A and Part B were generic questions as follows:

- Part A – *In general, I feel I am very knowledgeable about the characteristics of the range of students I am likely to meet in an inclusive classroom.*
- Part B - *In general, I believe I would be very COMPETENT teaching the students I am likely to meet in an inclusive classroom.*

There was an additional generic statement after the first two parts of the survey: *I feel very positive about teaching in an inclusive classroom.* A second open-ended question followed: *When you consider the units you have completed (as ticked above), could you please describe any experiences and/or unit content that have been most significant in your preparation to teach in an inclusive classroom?*

Following the completion of the main scale, all participants were required to provide demographic information: gender, age (in completed years), and parental status. For those students who were also parents, further questions were included asking them to indicate whether they had a child with a disability, or a child identified as gifted and/ or talented, or a twice exceptional child.

Procedure

Following approval by the university's Human Research Ethics Committee, a brief introductory information sheet was emailed (via participants' official university email addresses) to teacher education students inviting them to participate in the Pre-service Teachers' Attitudes toward Inclusion (PTAI) Scale. The email contained the URL link for accessing and completing the Scale being administered through Qualtrics software. Participants were informed of the research topic, the ten-minute timeframe required to complete the survey, the voluntary nature of their participation, and assurances of anonymity. For maximising the number of respondents, the survey was re-administered three times across two trimesters, with online procedures in place to ensure that participants could only respond once to the survey.

Results

Method of Analysis

The first step in analysis involved the determination of normality of distribution for all dependent variables by performing the Shapiro-Wilk test. Results for 14 dependent variables showed that the null hypothesis was true ($p = .000$), meaning that the distributions of those variables were not normal. Therefore, non-parametric tests (Mann-Whitney U test, Spearman's rank correlation coefficient) for independent samples were used to examine group differences and correlations in our sample. All statistical analyses were performed using SPSS version 22.

Perceived Knowledge of Disabilities

The first comparison was the association between participants' completion of units in IE on their self-reported knowledge of the characteristics of the students they would most likely meet in an inclusive classroom – the larger mean indicated stronger agreement and higher level of self-reported knowledge. Significant differences ($p = .015$) emerged in responses to the generic question (*In general, I feel I am very knowledgeable about the characteristics of the range of students I am likely to meet in an inclusive classroom*) between students who had completed units in IE ($M = 4.33$) and those who had not ($M = 3.75$).

When analyses were completed on differences by the six 'groups' of students, results were as follows: students who had completed some or all of the named units reported being more knowledgeable about students with intellectual disabilities ($p = .042$) and of those students presenting with specific learning difficulties ($p = .046$). On the other hand, no significant differences were found between students who had completed units and those who had not in their perceptions of knowledge about the other groups of students (gifted, behaviour disorders, emotional disorders, or twice exceptional). Interestingly, there were no significant differences between students who had completed the unit on "Differentiation for

Talent Development” (n=22) and those who had not (n=78), on their knowledge and teaching competence to teach gifted students.

	Students		P value =
	With completed units	No completed units	
Mild intellectual impairment	4.41 (1.31)	3.98 (1.22)	.042
Specific learning difficulties	4.41 (1.36)	3.89 (1.40)	.046
Response to generic question	4.33 (1.31)	3.75 (1.33)	.015

Table 2: Statistically significant differences: means and standard deviations of participants’ perceptions about their knowledge of students with diverse needs in an inclusive classroom

Perceived Competence in Teaching

Students were asked to rate their competence to teach students falling under six categories of exceptionality and their overall teaching competence in an inclusive setting (*In general, I believe I would be very COMPETENT teaching the students I am likely to meet in an inclusive classroom*). Again, those students who had completed some or all of the inclusive education units expressed higher levels of overall teaching competence (4.16 vs 3.66; $p = .035$); they also demonstrated significantly higher reports of their teaching competence for all six diagnostic categories as can be seen in Table 3.

	Students		P value =
	With completed units	No completed units	
Mild intellectual impairment	4.49 (1.25)	3.93 (1.23)	.007
Significant learning difficulties	4.42 (1.34)	3.72 (1.41)	.007
Significant behavioural disorders	4.20 (1.18)	3.56 (1.46)	.021
Superior cognitive strengths	4.09 (1.21)	3.63 (1.29)	.045
Significant emotional disorders	4.02 (1.18)	3.46 (1.41)	.037
Twice exceptional	3.89 (1.18)	3.37 (1.25)	.030
General Teaching Competence	4.17 (1.37)	3.66 (1.31)	.035

Table 3: Statistically significant differences: means and standard deviations of participants’ perceptions about their competence to teach in an inclusive classroom

To gain an assessment of the participants’ attitudes toward inclusion as an educational philosophy and practice, they were asked the following question (Q15 in the scale): “*To what extent do you agree with the following statement: I feel very positive about teaching in an inclusive classroom.*” With 100 respondents from a wide variety of experiential backgrounds (age, parent vs non-parent, face to face contact with individuals with exceptional learning and behavioural characteristics), one would expect significant differences on their global attitude towards inclusive education. When age was analysed as a predictor of attitudes toward inclusion no differences were noted ($r^2 = .000$). A similar result was noted on the basis of number of units completed in inclusive education in their courses ($r^2 = .031$).

Relationship between Demographic Variables and Perceived Knowledge and Competence

A high and significant correlation (Spearman’s $\rho = .778$, $p = .000$) was found between students’ perceptions of general knowledge about exceptionalities and their views of their general teaching competence in an inclusive classroom. Moderate to high significant correlations were found between students’ general knowledge about exceptionalities and their

perception of teaching competence for gifted students ($r = .516$), students with mild intellectual impairment ($r = .764$), students with significant learning difficulties ($r = .799$), students with significant behaviour disorders ($r = .785$), students with significant emotional disorders ($r = .783$) and twice exceptional students ($r = .709$). As expected, moderate to high significant correlations were found between students' perception of their knowledge about specific groups of students with exceptionalities and their perception of competence to teach these specific groups of students.

When considering the influence of parental status, it was interesting to note that no significant differences emerged between students with parenting experience and those without, in terms of their general and disability-specific, knowledge and teaching competence, and their attitude towards teaching in an inclusive classroom. One expectation was that participants' age could have had a bearing on their responses. This was not the case, however, when simple regression analysis was conducted on the basis of age on knowledge, perceived competence, and attitude towards inclusion, age had no influence at all ($r^2 = .0003$, $r^2 = .001$, $r^2 = .00002$ respectively).

Discussion

Professionals working in the field of inclusive education are well aware of the limitations and challenges within the system. As indicated in the review, a very large proportion of parents lament the lack of appropriate support for their children in Australian schools (Children with Disability Australia, 2015). One of the obligations on teacher educators is to ensure that we are preparing the next generation of teachers, not only to be committed to inclusive education, but to also have the knowledge and competence to provide appropriate support and curricular and instructional opportunities for all students, but especially students with disabilities and exceptionalities. International research is clear that exceptionalities require teachers to be aware of the knowledge and skills to make specific alterations to teaching and learning by differentiating appropriately (Foley Nicpon, Allmon, Sieck, & Stinson, 2011; Foley-Nicpon, Assouline, & Colangelo, 2013). Within Australia the main research focusing on twice-exceptional students has primarily been case studies design involving small numbers of students and their families, with the exception of Munro (2002, 2003), Wormald (2010), Townsend and Prendergast (2015) who employed quantitative and qualitative research methods.

Additionally, for teacher educators preparing initial teacher education students in New South Wales (NSW), the agency responsible for approval of these programs, the NSW Education Standards Authority (NESA), has clear accreditation guidelines that emphasise teacher quality. As a national imperative, initial teacher education courses are required to address the Australian Institute for Teaching and School Leadership (AITSL) Professional Standards for Teachers (2012). For the purposes of this paper, Standard 4.1 at the Graduate level is particularly since it emphasises the importance of graduate teachers capacity to "identify strategies to support inclusive student participation and engagement in classroom activities" (AITSL, 2014).

There are many complex issues and competing agendas that impact the capacity and willingness of universities in preparing undergraduates for inclusive education within their teacher education courses.. Teacher educators hold many perspectives and priorities. Being a teacher educator does not necessarily guarantee positive attitudes about inclusive education, experience teaching in inclusive education settings, or even knowledge of strategies, which are required to provide the appropriate curriculum and instruction for students with disabilities. As well as these challenges, gaining consensus about the appropriate teaching

units to be included in undergraduate teacher education courses can be extremely difficult. There are a multitude of reasons for this, including the concerns of course accreditors, and that of teacher educators to ensure sufficient attention is paid to their sub-discipline area. For example, there is a compelling focus on literacy, curricular areas and/ or foundational studies such as the sociology of education.

In the case of the University involved in this study, the initial teacher education bachelor degrees include 11 core and elective units in special education, which embrace the theory and practice of inclusive education. In contrast, there is only one core unit gifted education, and that includes students studying the Bachelor of Education (Primary) degree. This university is only one of three universities across Australia that offers a core unit in gifted education for undergraduate teacher education. For the purposes of this current study, students were asked whether they had completed some or all of the units to determine whether exposure to such studies increased their knowledge of disability, their perceived competence to teach in inclusive education settings, and their attitudes toward inclusive education. What made the study unusual was the inclusion of teacher education preparation for students with a range of exceptionalities. This included units of study to prepare teacher education students for teaching students with: a disability, those with academic gifts and talents, and, those who are academically gifted and have a disability, that is, the twice-exceptional.

Limitations of the Study

It should be recognised that there are two major limitations to the study. Firstly, we did not analyse students on the basis of the number of units that they had studied; nor was the amount of specific formal or informal experience with children and adolescents with a disability analysed. In addition, parents of children with disabilities, siblings of family members with a disability, and even current or prior experience as a teacher aide in schools are experiential factors that may impact the three major areas under scrutiny, and are therefore considerations in future research. In addition, our sample is quite a specific group of mature pre-service teachers, the majority of which had moderate to extensive previous teaching experience with students with disabilities prior to, and when undertaking, the teaching degree. This makes it harder to generalize our findings to a wider population of younger pre-service teachers.

Despite the limitations of this study, there are several very important issues that merit the attention of undergraduate teacher educators. It is clear that taking undergraduate units of study that focus on inclusive education has a positive effect, not only on knowledge about disability and ability, but also on students' self-assessed competence and willingness to teach in inclusive education. This finding provides strong support for all initial teacher education service providers to review the content of their degrees to ensure appropriate content matter and treatment, especially in meeting the Professional Standard 4.1 (AITSL, 2014). In addition, it should be noted that we did not obtain any statistically significant results from students who had completed inclusive education units for all disability categories. Respondents appeared to be quite knowledgeable about students with mild intellectual disabilities and learning difficulties but were less knowledgeable about emotional and behaviour disorders. The same outcome applied to knowledge about students with academic gifts with or without an additional exceptionality. In the light of this evidence, it might be worthwhile to compare the knowledge and the views of pre-service teachers enrolled in different degrees (i.e. early childhood, primary, secondary and special education) about teaching students with a range of disabilities in inclusive classrooms.

What was unexpected, though, was the finding that student completion of units that included content on inclusive education did not have a differential effect on respondents' attitudes towards teaching in an inclusive classroom. The mean response was quite high (4.35 on a six-point scale) indicating that broader individual experiences and predispositions appear to influence positive feelings about inclusive education. The finding about knowledge reflected a paradoxical outcome in that despite participants expressing some knowledge limitations, those who had studied some of the named units expressed a high degree of confidence about teaching in inclusive settings. Follow-up interviews with a sample of the participants could yield some very valuable insights to this varied response to knowledge.

There were two surprising outcomes of the study that merit closer analysis. Parents of children with a disability demonstrated no difference in their knowledge, confidence, or attitudes to parents who did not have a child with a disability. For those who have worked in disabilities studies for many years, the general conclusion would be that parents of children with disabilities are extremely knowledgeable, are often quite vigorous advocates, and are very positive about gaining the best experience for their children. Nevertheless, we need to highlight the small percentage (12%) of the surveyed pre-service teachers who were parents of a child with a disability. Similarly, it was a surprise to note that the age of the respondents had no impact on their perceived knowledge, competence, or attitudes. Perhaps younger respondents have had more positive experiences in their own recent school history where inclusive education is much more common than was the case a generation ago.

For universities providing initial teacher education, it is absolutely essential that faculty work together to develop appropriate course content and methodology on inclusive education. More importantly, and this may be an area that is often overlooked, initial teacher education students must be placed in professional experience settings over the four years of their degree where they have constant, positive interaction with students with disabilities and academic gifts and talents. Such a priority would ensure the students develop the attitudes and the skill set that will enable them to provide the appropriate services that so many parents feel are currently lacking in the Australian school system.

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