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Changing Pre-Service Teachers' Beliefs to Teach in Inclusive Classrooms in Victoria, Australia

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Abstract: The purpose of this study was to determine the effect of completing a course in inclusive education on pre-service teachers' beliefs and confidence to teach in inclusive classrooms. Twenty seven pre-service teachers completed a survey and concept maps. It was found that participants' beliefs and confidence level to teach in inclusive classrooms had improved significantly by the end of the course. At the beginning of the course participants were concerned whether "they would be able to teach in inclusive classrooms". At the end of the program the majority believed that they were ready to teach in inclusive classrooms but they were concerned whether they would get necessary support to teach in such classrooms. The results of this study have implications both for teacher educators involved in preparing teachers for inclusive classrooms as well as researchers who are interested in using a new approach to evaluate impact of teacher training courses.

Introduction

In Australia as elsewhere, students with special educational needs are increasingly being included into regular school programs. The fundamental principle of inclusive education is that all children should learn together regardless of any difficulties or differences they may have (UNESCO, 1994). Inclusion is "an ongoing process aimed at offering high quality education for all while respecting diversity and the different needs and abilities, characteristics and learning expectations of the students and communities, eliminating all forms of discrimination" (UNESCO, 2008, p.3).

In Australia, the majority of students with special education needs are educated in regular rather than in segregated settings (Foreman, 2011). Although many factors have contributed towards increasing enrolment of students with additional needs in regular schools compared to special settings (Foreman, 2011), the significant influence of the Disability Discrimination Act (DDA) (1992) (Australian Legal Information Institute, 2009) in this regard cannot be discounted. According to the Act, it is unlawful for an educational authority to discriminate against a person on the ground of a person's disability in areas like enrolment and access to facilities (Australian Legal Information Institute, 2009). A significant amendment to the DDA in 2005 further clarified the responsibilities of schools in relation to educating students with disabilities. The Education Standards of the DDA requires that schools must make reasonable adjustments to ensure the engagement of students with disabilities in various school activities (Commonwealth of Australia, 2005). Regular schools are not only required to enrol students with disabilities but they are also required to ensure that the curriculum is modified to meet each student's educational needs (Commonwealth of Australia, 2005). As a result of this legislation, as well as supportive inclusive education policies in different states in Australia, a large number of students with disabilities are now entering regular schools (Forlin & Chambers, 2011).

The changes in policies at national level have made it necessary to reform teacher education programs so that pre-service teachers are adequately prepared to teach children with disabilities effectively in regular classrooms. Many universities across Australia have responded to this challenge by ensuring that all pre-service teachers complete at least one subject in special and/or inclusive education (The Ministerial Council for Education, Early Childhood Development and Youth Affairs, MCEECDYA, 2010). Teacher registration bodies (e.g in New South Wales and Western Australia) have also made it mandatory for all pre-service teachers to complete at least one subject in special and/or inclusive education to be eligible to register as a teacher. However, there are no such requirements for teachers in other States of Australia such as Victoria (Parliament of Victoria, 2005). Many universities in Victoria continue to graduate pre-service teachers with no or very limited understanding of issues related to students with disabilities (Parliament of Victoria, 2005). Rather, courses in special education are offered only as electives (Parliament of Victoria, 2005). The situation is likely to improve in the future with the establishment of a national system for the accreditation of pre-service teacher education programs (The Ministerial Council for Education, Early Childhood Development and Youth Affairs, MCEECDYA, 2010).

The Australian Institute of Teaching and School Leadership (AITSL) (2011) has produced graduate standards for accreditation of all initial teacher education programs in Australia that might further improve the situation. "The Proficient Standards will be used to underpin processes for full registration as a teacher and to support the requirements of nationally consistent teacher registration." (p.2). Graduates in teacher education programs will need to know a range of strategies to support full participation of students with disabilities (AITSL, 2011). More specifically, the graduates will be required to be proficient in designing and implementing teaching activities that support the participation and learning of students with disabilities and address relevant policy and legislative requirements (AITSL, 2011).

Incorporating content related to teaching of students with special needs in teacher education programs appears to be a step in right direction. However, the question remains whether changing teacher education curricula will adequately prepare pre-service teachers to teach effectively in inclusive classrooms. One way of determining whether pre-service teachers are ready to teach students with special learning needs alongside their peers is by understanding their attitudes to and concerns about inclusion (Forlin, & Chambers, 2011; Chong, Forlin & Au, 2007) and examining their confidence levels (Forlin & Chambers, 2011). Favourable teacher attitudes towards inclusion of students with disabilities are identified as the strongest predictors of success or failure of inclusion programs (Avramidis, Bayliss, & Burden, 2000; Avramidis & Norwich, 2002). It is also important to note that favourable attitudes alone are not sufficient. Teachers also need to have necessary support from school leaders in the form of additional time for planning, modified teaching material and teacher aides (assistants) to ensure success of implementing inclusive education (Avramidis & Norwich, 2002).

Considering educators' attitudes play such an important role in determining the kind of practices they use and ultimate acceptance or rejection of a child with a disability (Avramidis, et al., 2000; Avramidis & Norwich, 2002; Sharma, Moore & Sonawane, 2009), a number of researchers have undertaken research to determine what effect university training has on prospective teachers' attitudes to inclusion. For example, it has been found that there is a significant and positive effect of completing a subject in special or inclusive education on participants' attitudes (Beattie, Anderson & Antonak, 1997; Carroll, Forlin & Jobling, 2003; Lambe & Bones, 2006) and their efficacy beliefs (Lancaster & Bain, 2010). In an international study, Sharma, Forlin & Loreman (2008) evaluated the effect of training received through either single subject or infusion (information about inclusion is infused into all subjects studied by prospective teachers) programs on 603 pre-service teachers from Australia, Canada, Hong Kong and Singapore. They found significant improvements in

participants' attitude to and concerns about inclusion and sentiments to work with students with disabilities across all countries. They also found that gains in scores for participants in infusion programs were not as significant as they were for participants in single subject cohorts.

An examination of information covered in courses on special and inclusive education in pre-service education programs suggests that researchers have incorporated information about various strategies that teachers could use to promote inclusive practices (Carroll, Forlin & Jobling, 2003; Chong, Forlin & Au, 2007; Forlin, Loreman, Sharma & Earle, 2009). The strategies included differentiated instruction, curriculum adaptation and modifications, alternate assessment, collaboration with team members, peer tutoring and co-operative learning, collaboration with parents and para-professionals, collaborative problem solving, and classroom management strategies (Carroll et al., 2003; Chong, et al., 2007). Some courses also cover philosophical issues such as the negative impacts of labelling, rationale for inclusion, and policies and legislation in support of inclusion (Chong, et al., 2007; Sharma et al., 2008). Information on issues like atypical development and exceptionality (Campbell, Glimore & Cuskelly, 2003) and characteristics of children with disabilities (Lambe & Bones, 2006) is also covered in a few programs. Participants in several studies are provided systematic contact with people with disabilities either directly or indirectly. For example, Beattie, Anderson and Antonak (1997) showed videos of people with disabilities depicting positive portrayal. Participants in the research were taught by a number of guest speakers with a visible disability to provide personal contact. In the Chong et. al. (2007) study an incursion program was organised for prospective teachers to provide them with systematic contact with people with a disability. Twenty students from a special school spent a whole day at the university engaging in a range of fun activities with the teachers.

It appears that many researchers who have examined the impact of training on participants' attitudes have employed a pre-post design (Beattie, Anderson & Antonak, 1997; Campbell et al, 2003; Carroll, Forlin & Jobling, 2003; Forlin & Chambers, 2011; Lambe & Bones, 2006; Chong, Forlin & Au, 2007). A pre-post design entails collecting data from participants at two stages. At the pre-test stage, participants provide data prior to receiving any information about the course, and they again provide data at the post-test stage on the same measures that were used at the pre-test stage. Any change in scores from pre to post-test stage may be attributed to the information presented during the course. Some researchers (e.g Drennan & Hyde, 2008) have criticised pre-post test design because such a design "work[s] on the assumption that the respondent's assessment and understanding of the concept being measured will not change from pre-test to the post-test" (p. 699). Sprangers (1989) noted that a respondent's perception of the construct (for example inclusion or inclusive education) being evaluated would change as a result of the intervention (e.g. the course on special or inclusive education) which may lead the respondent to underreport any real change occurring between pre and post stage of the intervention. The change in understanding of the concept from pre to post stage is known as response-shift (Lam & Bengo, 2002). It is, therefore, recommended that researchers use retrospective pre-tests when evaluating student self-report of change (Howard, 1980). Drennan and Hyde (2008) report that "the retrospective pretest method differs from the traditional pre-test-post-test design in that both post-test and pre-test perceptions of respondents are collected at the same time. Basically the design asks the respondent to first report his/her ability as a result of the programme (post-test) and then at the same time to recall the beginning of the programme and compare it with where he/she is now (then-test). The collection of then-test and post-test ratings at the same time leads to the reduction of response-shift bias due to the fact that the respondent is making the ratings from the same internal frame of reference. (p. 701)

They concluded "that the use of retrospective pre-testing could provide a more reliable indicator of change following an educational intervention than that ascertained through the traditional pre-test-post-test design" (p. 701). Some researchers have also found

that respondents' pre-test scores using a pre-post test design may be inflated compared to the scores obtained in a retrospective pre-test format (Howard, 1980). In other words, participants tend to report much higher growth in their scores in a pre-post test design compared to a retrospective designs. Although retrospective design has its advantages, it also has one significant drawback. Participants reporting on a construct (e.g attitudes or knowledge) only at post stage may not accurately recall their perception of the construct at the "then" stage because of the time gap. It would therefore be useful to combine both retrospective and pre-post design to determine actual change in participants' beliefs about inclusion.

The present study was aimed at evaluating the effect of completing a course in inclusive education on pre-service teachers' beliefs about inclusive education. The beliefs in this study are defined as encompassing three related constructs: attitudes to teaching in inclusive classrooms, sentiments towards people with disabilities, and concerns about including students with disabilities in regular classrooms. The research used both a pre-post test design and a retrospective pre-test test design in evaluating the impact of training. The research used a quantitative measure (a questionnaire) for pre-post test design and concept maps for retrospective pre-test design. Concept maps have been used by many researchers to measure growth in participants' understanding of a concept but rarely to measure change in participants' attitudes or beliefs (e.g. Hay & Kinchin, 2006). In this research, concept maps were used to measure change in participants' beliefs. Concept mapping is a graphical organisation technique that individuals could use to explain and explore their knowledge and understanding about a topic or construct (Hay & Kinchin, 2006). The concepts that an individual considers important in demonstrating their knowledge (or perceptions) of a topic are placed in text boxes and are arranged hierarchically (so that important and broad concepts are at the top and details and examples at the bottom) (Hay & Kinchin, 2006). Use of concept maps was considered useful in this study as it allowed the collecting qualitative data and thus triangulating data obtained from the quantitative survey. Further, concept maps are useful for evaluation as they provide more significant information about participants' knowledge and how they have organised it than most of the traditional tools (e.g essays or multiple type questions) (Kinchin & Alias, 2005; Novak, 1998; Trochim, 1989). Concept mapping can be used to identify themes in relation to the key concept (in this case 'feelings about inclusion'). The specific research question of the study was:

What is the effect of completing a course in inclusive education on pre-service teachers' beliefs (attitude, sentiments and concerns) about inclusive education and their confidence to teach in inclusive classrooms?

Method

Participants

A purposive sampling was employed in collecting data from a cohort of 4th year pre-service teachers who were enrolled to do an elective subject in special education and inclusion (see details below). The participants were preparing to teach in primary or secondary schools. Thirty-three students were enrolled in the elective subject, of which 27 provided usable data (three students were absent in the first class and another three were absent in the last class). The majority of participants were females (n= 23) that matched the demographics of teachers in Victoria. About half of the participants (44%) indicated having some contact with a person with a disability. A minority (12%) of the participants indicated having received 'some' training in special or inclusive education.

Course

The participants were completing a 20-hour course on special and inclusive education. The participants had attended a 2-hour lecture every week for 10 weeks. Each two hours session consisted of a powerpoint presentation followed by a series of hands-on activities requiring pre-service teachers to work in small groups. The course was divided into three modules. A brief description of the three modules is provided below.

Module 1: What is Inclusion?

This module lasted for three weeks (2 hours each week). During the first two weeks, general information about disability, integration, mainstreaming and inclusion, and international policies supporting inclusion was presented. A significant emphasis at this stage was on sociological models of disability rather than the medical model of disability. Information about the local legislation (e.g. Disability Discrimination Act, 1992 and the Education Standards, 2005) and its implication for teaching children with disabilities was covered in week 3.

Module 2: Why inclusion?

This Module was also run for three weeks (2 hours each week). Research for and against inclusion was presented to help students develop a rationale for inclusion based on the available scientific evidence. A parent of a child who is attending an inclusive school presented her journey to successfully educate her son (with Autism Spectrum Disorder) in a regular school. Participants also visited an inclusion school (located at the university campus) during this module.

Module 3: How to include everyone?

This module was run for the last four weeks (a total of 8 hours) of the course. Participants learnt about strategies such as peer tutoring, co-operative learning, curriculum based assessment, and differentiated instruction. In the last week of the course, case studies of successful inclusive teachers were analysed in order to identify key attributes of such teachers.

There were two assessment tasks in this course. The first assessment (40%) required a group of three pre-service teachers to work together on a class presentation. The topic of the class presentation related to addressing a barrier to implementing inclusive education in their classroom. The key assignment criteria were that participants would use sociological models of disability and employ a reflective practice model in identifying and addressing the barriers. The other assessment was an exam (60%) that was based on a number of readings associated with class activities throughout the course. Three types of questions were asked in the exam; multiple choice questions, short answer type questions, and one long essay type question. The short answer type questions were mainly based around different teaching scenarios or teaching strategies. The long essay type question required participants to demonstrate how they would work with a particular student in their classroom. A brief description of the case student was provided to students.

Instrument

A two-part questionnaire was used to collect data from participants. The first part of the questionnaire gathered demographic information from participants. Part two of the scale was Sentiments, Attitudes and Concerns about Inclusion (SACIE) scale (Author, 2009). SACIE has 15 items and it uses a 4 point anchor system (Strongly Agree to Strongly Disagree). A higher score on SACIE indicates that an individual has a more positive attitude towards including students with disabilities into regular classes, has lower degree of concerns towards including such students in his or her classroom, and possesses more positive sentiments when dealing with persons with disabilities compared to a person who receives a lower score on it. SACIE yields a total scale as well as three factor scores (attitude, sentiments and concerns). The participants were also asked to draw two concept maps (Then and Now) that allowed researchers to capture participants' attitudes, concerns and sentiments.

Procedure

Ethics clearance was obtained from the Human Ethics Committee at the University prior to commencing the research. The questionnaire was administered to pre-service teachers during the first week of the course (pre) and again in the last class (post). Each participant was asked to write the last four digits of his or her student ID on top of the questionnaire to allow for matching surveys at both stages of data collection. All participants also completed two concept maps in the last class (post stage only) prior to completing the survey questionnaire. They were asked to describe how they felt about including students with disabilities in their classrooms at the beginning of the program (Then concept map) and at the completion of the program (Now concept map). The data completion sheet that was used to collect information about concept maps included a central concept "beliefs about inclusion". Three constructs arising from the centre were labelled attitudes to inclusion, concerns about inclusion and sentiments toward people with disabilities (see Figure 1). Each participant was asked to describe their beliefs in relation to each of the constructs (i.e attitudes, concerns and sentiments) at the beginning of the program (Then) and the completion of the course (Now). Participants in this study completed concept maps prior to completing the survey so as not to allow survey questions to influence their qualitative responses. It took approximately 10 minutes for each participant to complete the concept maps.

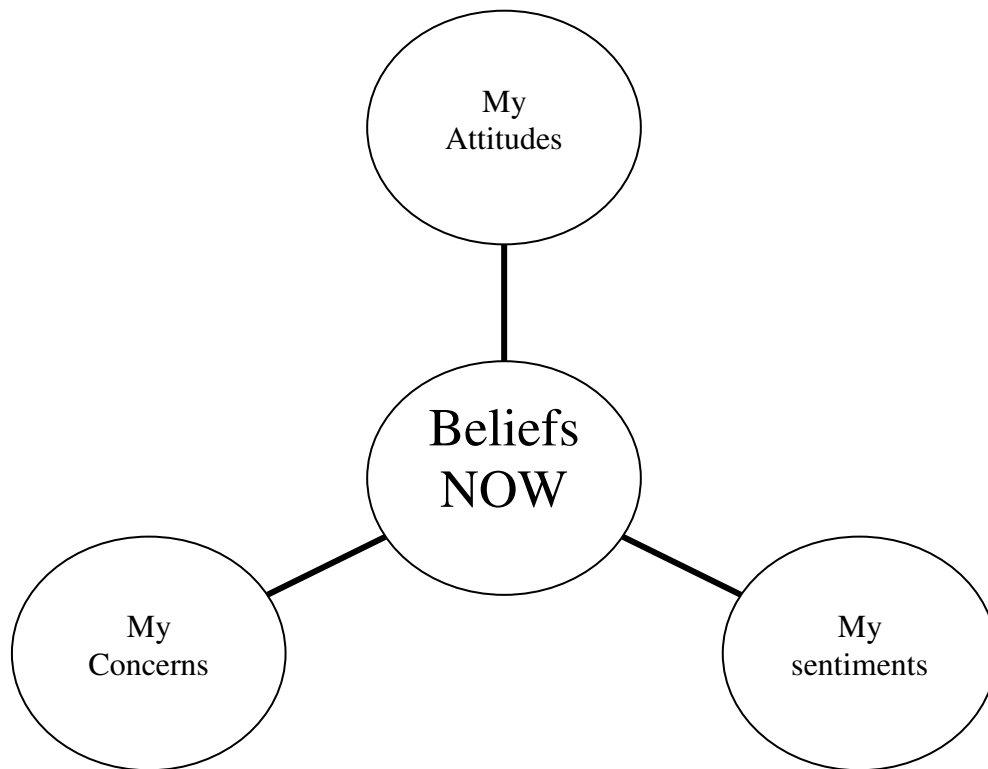


Figure 1: A Blank Concept Map of Beliefs About Inclusion

Data analysis

Data from the survey questionnaires were analysed using paired-sample t-tests. The data from concept maps were analysed to categorise information under three headings: positive, neutral and negative. Any concepts (a belief identified in relation to any of the three constructs i.e attitude, sentiment or concern) that revealed positive beliefs (e.g. all students' needs must be catered for) were clustered under positive category and concepts revealing negative beliefs (e.g. I don't think it will work in my classroom) were clustered under "negative" category. Neutral or unrelated concepts were clustered in neutral category (e.g. what is inclusion?). Data were analysed by two independent researchers (the author and his research assistant). As it was the first time that concept maps has been analysed in this way, it was necessary to ensure reliability of data analysis. The research assistant was trained to undertake this analysis by the author of this study with particular emphasis on what basis a concept could be classified as positive, negative or neutral. Each concept map was rated separately by the two researchers and the results were compared. There was close agreement in the concepts classified under different headings by the two researchers. Minor discrepancies (e.g What is inclusion? be classified as neutral or negative) in coding of concepts were discussed until it could be categorised under one of the three categories (positive, negative or neutral). Thus three concept map scores for each participant (positive,

neutral and negative scores) were calculated. These scores of the class were added to calculate group positive, neutral and negative scores for 'Then' and 'Now' concept maps.

Results

The purpose of the study was to determine the effect of participating in a 10-week course on pre-service teachers' beliefs about teaching in inclusive classrooms. A series of paired-sample t-tests were employed to determine significant change in sub-scale scores from pre to post stage scores on the three sub-scales of SACIE. Data from concept maps were used to determine qualitative change in participants' views about inclusion. Data from concept maps were converted into quantitative scores for each participant to determine change in their perceptions as described above.

	Pre data Mean (SD)	Post data Mean (SD)	<i>t</i> value
Concern score	2.92 (0.40)	2.41(0.42)	6.20***
Sentiment score	3.23 (0.64)	3.59 (0.36)	-3.42**
Attitude score	2.88 (0.32)	3.28 (0.42)	-3.67**
Confidence score	2.69 (0.76)	3.69 (0.47)	-5.30***
Knowledge of local legislation score	1.69(0.76)	3.61(0.66)	-8.82***

*** $p < 0.001$, ** $p < 0.01$.

Table 1: Change in Attitude, Concern and Sentiment scores

As Table 1 indicates there was a significant increase in participants' attitude to inclusion scores (Pre stage $M = 2.88$, Post stage $M = 3.28$, $p < 0.01$). Similarly participants' sentiment scores improved significantly suggesting that the participants started expressing more comfort interacting with people with disabilities (Pre stage $M = 3.23$, Post stage $M = 3.59$, $p < 0.01$) towards the completion of the course. Most prominent change was noticed in participants' concern levels (Pre stage $M = 2.92$, Post Stage $M = 2.41$, $p < 0.001$). This decline in concern scores suggested that participants were not as concerned about teaching in inclusive classrooms at the completion of the course as they were at the beginning of the program. This implies that participation in one subject on special and inclusive education has positive effect on participants' beliefs about inclusion.

Participants were also asked to indicate their confidence levels in including children with disabilities in their classroom on a single item at both stages (pre and post) of data collection. A five point anchor system with responses ranging from Very low (1) to Very high (5) was used to measure their confidence level. A significant change was noted in participants' confidence level (Pre stage $M = 2.69$, Post Stage $M = 3.69$, $p < 0.001$). While at the beginning of the course, participants indicated having 'average' (less than 3) level of confidence, at post stage they reported a 'high' (close to 4) level of confidence to teach in inclusive classrooms.

In addition, an item measured participants' perceived knowledge about local legislation (DDA) using a five point anchors Nil (1) to Very good (5). The change in their knowledge score was significant (Pre stage $M = 1.69$, Post Stage $M = 3.61$, $p < 0.001$). While their score at the beginning of the course was close to 'poor' (less than 2), it increased to 'good' (close to 4) at the post stage.

Then and Now concept maps were also analysed to reveal whether or not qualitative changes in participants' views about inclusion had occurred. Participants were asked to

complete two concept maps. Figure 2 and 3 show example of concept maps (Then-Now) of one participant.

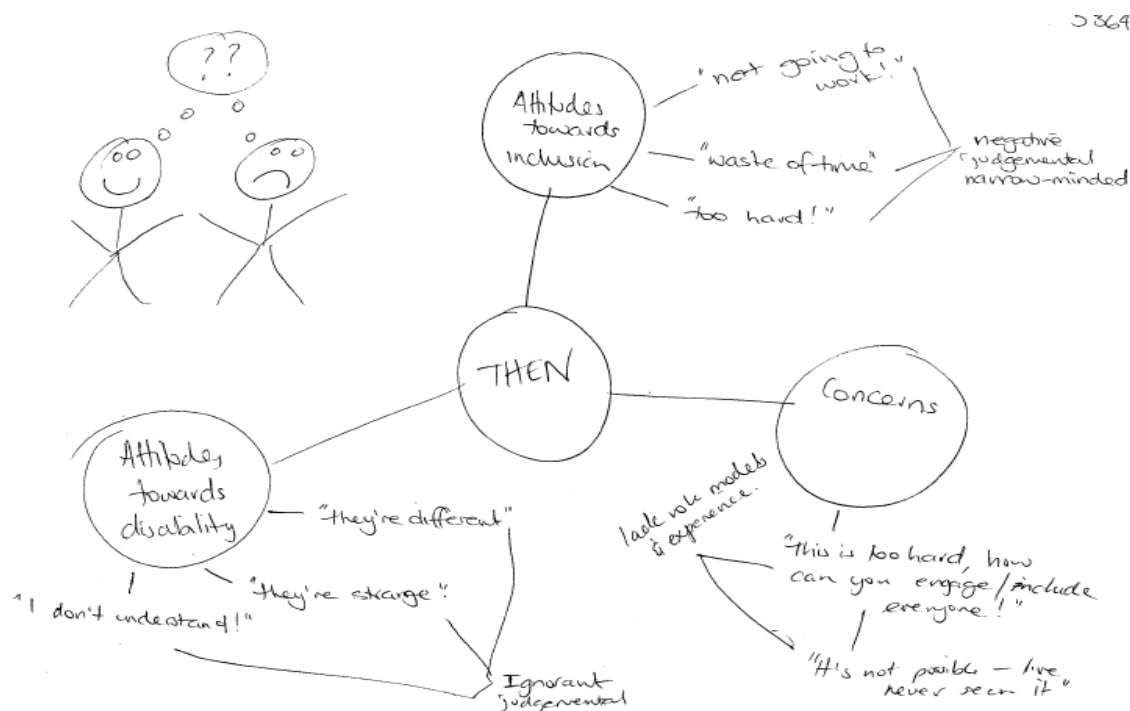


Figure 2: Then Concept Map Revealing Attitude, Concern and Sentiments

An analysis of the themes emerging from concept maps suggested that the participants' views at the beginning of the course (as represented in 'Then' concept maps) revealed slight degree of ignorance about inclusion and also some degree of apprehension. Participants' raised questions like "will inclusion work in my classroom?" Participants' responses suggested their ignorance about the intent and philosophy of inclusion. For example, one participant wrote: "why shouldn't such students be sent to special schools?". Also a large majority of participants expressed statements that revealed prominent belief in medical model of disability. It was evident in responses like, "I know how to teach children with LD but I don't know how to teach children with Down syndrome".

A significant shift occurred in their responses at the end of the program (as revealed in Now maps). A large majority agreed that inclusion overall was a good idea for a majority of students with disabilities. They still had some concerns about including students with very severe disabilities and those who display severe disruptive behaviours. The themes emerging from 'Then' concept maps revealed that inclusion "should be a prime responsibility of any teacher". Most significant shift noted at this stage was about the kinds of concerns participants identified at 'Now' stage. While at the beginning of the course they were worried about their inability to meet the needs of students with various types of disabilities in their classrooms, at the post stage they were worried about the lack of support they will have to successfully include students with various disabilities. In fact, only negative themes at this stage related to the lack of availability of support (e.g adequate funding and additional time) when they start teaching. This suggested that there was a shift of concerns relates to an individual teacher's ability to meet the needs of students with disabilities at the beginning of the program towards concerns about availability of support for them to be inclusive. Also, a

most significant shift occurred in terms of participants beliefs from the medical model of disability to the social model of disability. The participants expressed statements (Now maps) that in order “to teach the most important thing I need to know is how each child is different and his or her strengths. The labels of the child tell me nothing about how to teach a child”.

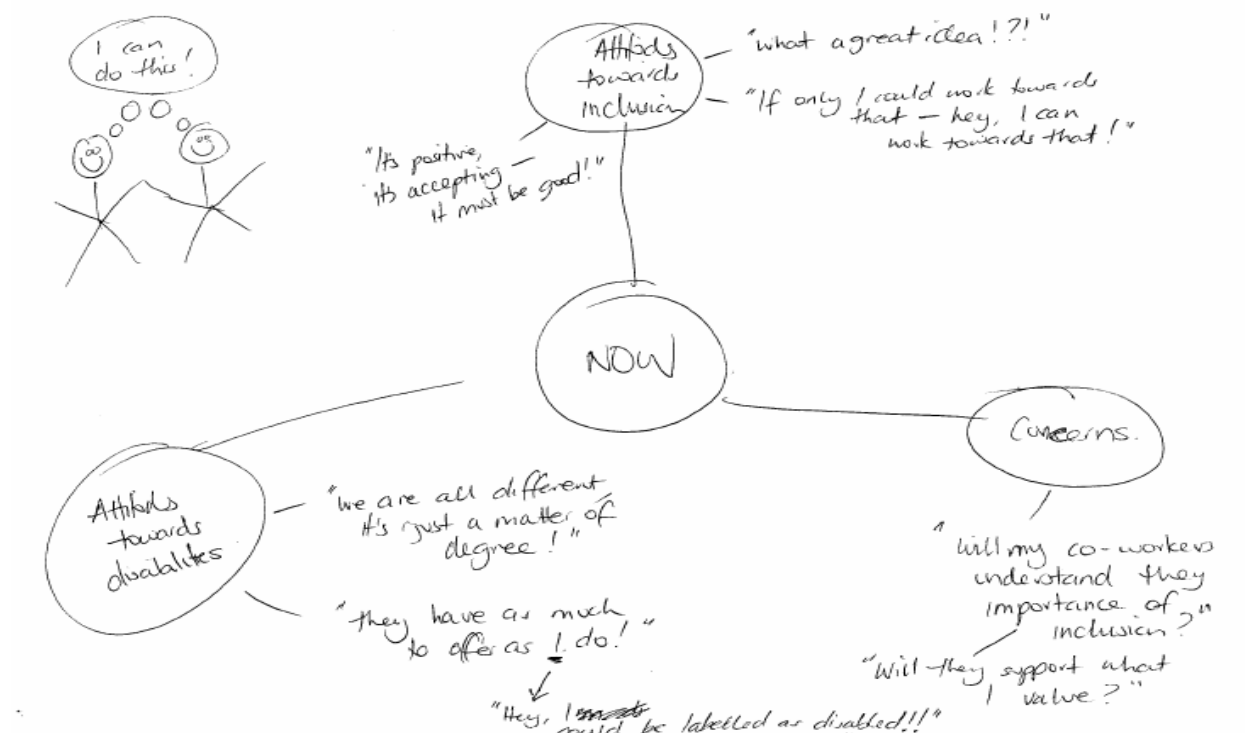


Figure 3: Now Concept Map Revealing Attitude, Concern and Sentiments

An analysis of Then and Now maps indicated a significant shift in scores (from negative beliefs to positive) from the beginning of the course to the end of the course. Participants indicated that they were concerned and less optimistic about the idea of inclusion at the beginning of the course (Then) compared to the end of the program (Now). The participants' positive scores at the “then” stage (beginning of the course) was 6 suggesting that participants were making very few positive statements about teaching in inclusive classrooms. This score improved to 65 from 6 suggesting that they were feeling more inclined to teach in inclusive classrooms towards the end of the program. At the same time the number of negative statements declined significantly from Then (34) to Now stage (5) which further supported the results obtained through the survey.

Discussion

Completing a subject in special education has often been recommended by policy makers (The Ministerial Council for Education, Early Childhood Development and Youth Affairs, MCEECDYA, 2010), teacher educators (Forlin & Chambers, 2011), and researchers (Avramidis & Norwich, 2002). However, this recommendation has not yet influenced what happens in the teacher education programs in Australia. This is evident in policies of various jurisdictions in Australia (Commonwealth of Australia, 2002). For example, all pre-service teachers in New South Wales (NSW) are required to complete at least one subject in special

and/or inclusive education, there are no such requirements in Victoria. The question, should pre-service teachers complete a subject in inclusive education, has been answered to some extent in this research. The results of this study indicate that completing a course in inclusive education can significantly improve participants' beliefs (as measured by their attitude, sentiment and concern scores) about inclusion and can also enhance their confidence levels. More specifically, at the end of the course, participants' were significantly less concerned about implementing inclusion, positive about including students with disabilities in their classrooms and had more favourable attitudes towards people with disabilities. These results are consistent with the past research (Campbell, Glimore & Cuskelly, 2003, Carroll, Forlin & Jobling, 2003; Forlin & Chambers, 2011; Chong et al., 2007).

Based on these results it can be said that a course of 20 hours is reasonably sufficient in enhancing pre-service teachers' willingness to teach in inclusive classrooms. These findings provide further support to the key recommendation made by the Commonwealth of Australia (2002) to make such courses compulsory for all pre-service teachers.

While the debate of incorporating a course in inclusive education in teacher education programs will continue until such a course is made mandatory for all teachers, it is timely to discuss what should be included in such a course. Teacher educators may find it useful to have the curriculum organised using a similar framework as the one we used in this research focussing on what inclusion is, why to include and how to include. Other researchers have also used similar topics when evaluating the impact of training (Carroll, et al., 2003; Chong et. al, 2007; Forlin & Chambers, 2011; Sharma, et al., 2008). In this regard, it is important to identify the key components in each of the three modules that might have contributed in shaping participants' beliefs. During the first module (what is inclusion?), one of the key emphases of our program was on how students with disabilities are similar to other students rather than how they are different from others. The participants were constantly reminded to find strengths of rather than weaknesses of students that they will be teaching in their classrooms. In Module 2 (Why include?), the participants were presented research in support of inclusion and were challenged to identify research against inclusion. They were reminded of their legal responsibility to include students with disabilities in their classrooms. The key objective of this module was for participants to understand that inclusion requires changing the school culture and teaching practices rather than changing the student to fit the system. In the final phase (Module 3), participants were introduced to teaching strategies that have been found to be effective in inclusive classrooms.

Using this framework to deliver information about inclusion to the participants indicated that a significant improvement in their beliefs could be achieved. Participants' overall confidence level to teach in inclusive classrooms also improved. In the absence of any observational data, the best way to ascertain what a respondent will actually do when teaching in inclusive classrooms can be judged by their confidence levels. A significant improvement in their mean confidence level from 2.69 at pre-stage to 3.69 at post-test stage is an indication that participants were reasonably confident of teaching in an inclusive environment. It can further be said that as participants' level of confidence increases, their attitudes also tend to become more positive. These results provide further support to the study by Chong et al. (2007) and Forlin et al. (2011) who found a significant and positive correlation between participants' attitudes and confidence levels.

In this research, data was also collected on participants' perceived knowledge about the local legislation (the DDA). Participants' scores at two stages (pre and post) indicated a significant improvement in their knowledge. It is not yet known whether increased knowledge of legislation improves participants' beliefs or vice versa but this finding has clear implication for teacher training programs. Pre-service teachers need to be informed of local legislation and policies regarding inclusive education. Similar recommendations were also made by Chong et al. (2007) and Forlin et al. (2011) as they also found that a significant correlation existed between participants' knowledge about local legislation and participants'

attitudes. Basic information about the legislation and how not meeting the educational needs of a child with a disability can constitute discrimination against a student was extensively covered in the course. This information may have increased the level of anxiety amongst the participants at the beginning of the course. This increased level of anxiety at the beginning of the program is perhaps necessary for ingraining optimum level of motivation in prospective teachers to learn more about how best to teach in an inclusive classroom, and so potentially avoid litigation.

Finally, we would like to comment on the usefulness of concept maps and 'Then Now' methodology in this research. The types of responses we obtained from participants in concept maps would not have been possible if we had just used a pre-post survey questionnaire. Participants were honest in reporting what they didn't know about inclusion and about their beliefs at the beginning of the program. For example, they reported that they were concerned about their ability to teach in inclusive classrooms and were less optimistic about the idea of implementing inclusion in their classrooms at the beginning of the program. Their beliefs shifted both quantitatively as well as qualitatively at the end of the program. They conveyed more positive responses as well as their concerns were more about lack of support from others rather than their ability to teach in inclusive classrooms. In our view, this is perhaps the most significant finding. Based on these data it can be said that the participants of this study are ready to teach in inclusive classrooms (as evidenced by their beliefs and confidence levels), however, whether they continue to use inclusive practices would largely depend on how much support they would receive from the schools where they will teach.

Conclusion

This research provided data about pre-service teachers during the time of their teacher education. It is not yet known if change in beliefs will also be reflected in the actual classroom practices of these teachers. An observational study is needed to provide further support to the findings of the study. All participants in the study were those who elected to do the course. It could be possible that participants who elect to do a course in special education are inherently different from those pre-service teachers who chose to do another subject. Hence, change in their attitude scores could be a reflection of their willingness to teach in such classrooms even without receiving any training in special or inclusive education. It is possible that participants who do not elect to do such a course will show different level of improvement in their attitude scores compared to those who do a mandatory course in inclusive and special education. This study does indicate that one subject on special and inclusive education is sufficient to inculcate beliefs necessary to teach in inclusive environments. However, whether the teachers will continue to use inclusive practices will only be possible if they are supported by schools. Inclusion of children with disabilities not only requires providing adequate support to students in class, it also requires providing necessary support to classroom teachers. This support is even more important for newly trained teachers.

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