Self-Efficacy of Preservice Teachers toward Differentiation

Ayidh Abdullah AlGarni, Taif University, Saudi Arabia

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Abstract
A significant correlation between self-efficacy and knowledge was identified in previous studies (Kao & Tsai, 2009; Scherer & Bruce, 2001). Self-efficacy toward differentiation refers to the degree of confidence future teachers have that they can perform successfully in the task of differentiation. Indeed, self-efficacy appears to influence the teachers' choice of activities and how much effort they will spend on them (Bandura, 1986). To determine whether the gifted course in the current study could improve the participants' self-efficacy, that is, their belief that they have the capacity needed for differentiation, the special education future teachers' self-efficacy was examined both quantitatively and qualitatively. The quantitative analysis assessed all participants (n=90); they were presented with four self-efficacy questions, before and after participating in the course. Three questions were adapted from STEBI-B scale (Enochs & Riggs, 1990). The fourth question was developed by the researcher. The answers were based on a 4-point Likert scale: Poor, Average, Good, and Very Good. A one-way repeated measures ANOVA was performed to determine if the participants' self-efficacy improved after the course. No significant effect on the participants' self-efficacy toward differentiation was identified ($p<.05$). The results from the study, suggested limited improvement in the participants' self-efficacy toward differentiation. As a consequence, there is merit in redevelopment of the gifted education course, and the incorporation of more practical opportunities for future teachers to experience the teaching of the gifted.

Keywords: Self-efficacy, Future teachers, University, Gifted education, Differentiation

Introduction

Self-efficacy refers to the degree of confidence future teachers have that they can perform successfully in the task of differentiation for gifted students. These students should be equally entitled to an education tailored to match their exceptional abilities. Landrum et al (1998) stated that; "Gifted learners are entitled to be served by professional who have specialised preparation in gifted education, expertise in appropriate differentiated content and instructional methods" (p.67). Equity issues also suggest that, as a result of such differences in the students' potential, teachers have a responsibility to address the needs of all children in ways that enable them to maximize their cognitive aptitudes, including the gifted students. However, research shows that the needs of gifted students in Saudi Arabia and elsewhere are not being met as well as they could be by contemporary schooling (Al Qarni, 2010; Finley, 2008; Taylor & Milton, 2006; Winebrenner, 2000). One explanation, according to Paine (1990), is that teachers' lack of knowledge about, and experience with, giftedness, frequently find it difficult to address their students' diverse needs. This explanation remains unchallenged in the literature. Of particular concern is the self-efficacy of future teachers who will one day influence the education of gifted students (Abbitt, 2011; Curtis, 2005).

According to Bandura, self-efficacy appears to influence the teachers' choice of activities and how much effort they will spend on them (1986). Previous research indicated that teacher self-efficacy is a better predictor toward gifted students when trying to predict teachers' willingness to differentiate instruction for gifted students being taught in the regular classroom (Chan, 2001; Romi & Leyser, 2006; Starko & Schack, 1989)

Knowledge was shown also to have an impact on self-efficacy (Abbitt, 2011; Ertmer & Ottenbreit-Leftwich, 2010; Pajares, 1992; Tschannen-Moran, Hoy, & Hoy, 1998; Wheatley, 2005). Pajares (1992) discusses the relationship and distinctions between knowledge and self-efficacy and the influence these might have on the teaching practices of future educators. So, understanding the relationship between knowledge and self-efficacy toward differentiation provides insight into how effective a university course about giftedness on self-efficacy.

Appropriate teacher education is seen as important in preparing teachers for differentiation. This study was conducted in Saudi Arabia, where significant educational reform is being undertaken to align the social and economic future with changing global circumstances. Like many countries, Saudi Arabia is attempting to develop a knowledge economy and, conditional for the success of this agenda is the support of the gifted. Teachers play an important role in supporting the gifted (Diezmann & Watters, 2000). The term "giftedness" has been defined in Saudi Arabia as being "evident in someone who has exceptional academic abilities and who needs special and different education from that which is available in the regular classroom" (ALNafi & et al., 1992, p. 25).

This study examines future teachers' perceived ability to implement differentiation to meet the academic needs of the gifted within heterogeneous classrooms. To design a university gifted course that has the greatest impact on classroom practices, there is a

need to know the relationship between (self-efficacy and knowledge) to the expected behavioral changes of the participants once they go to the classroom. In addition, examining the relationship between knowledge of differentiation and self-efficacy beliefs can provide a unique connection between these two areas of research. As such, it was the focus of this study to explore the relationship between knowledge and self-efficacy of future teachers regarding their ability to successfully implement differentiation for the gifted. A clearer understanding of how knowledge would affect self-efficacy is needed in order to effectively and positively influence the ways in which the gifted course is taught at the university level. To this end, the following question guided this research study:

To what extent does participating in a gifted education course would impact on future teachers' self-efficacy toward differentiation?

Literature review

There is general belief among theorists and researchers in gifted education on the need to differentiate the regular curriculum for gifted students (Finley, 2008; Gagné, 2005; Tomlinson, Tomchin, & Callahan, 1994). In this context, differentiation refers to the strategy of providing learning experiences that are sufficiently challenging and relevant to the needs of all children within a heterogeneous ability classroom. However, according to Diezmann and Watters (2000), beside the importance of the challenging tasks for gifted students, the role of the teacher is critical in providing and facilitating these tasks.

When considering how to design teacher preparation experiences that will develop skilled and knowledgeable teachers who create engaging and effective classroom environments, researchers have found both knowledge and self-efficacy to be useful in understanding the processes at work (Ertmer & Ottenbreit-Leftwich, 2010; Roberts & Henson, 2001). It has been also found that the self-efficacy of both inservice and future teachers explain and predict classroom practices (Ertmer & Ottenbreit-Leftwich, 2010).Teacher preparation efforts that focus solely on developing knowledge, however, also face the challenge of addressing the complete picture of how future teachers become practicing teachers who implement differentiation in creative and effective practice. Ertmer and Ottenbreit-Leftwich (2010) described the connection between knowledge and self-efficacy beliefs by stating that “although knowledge is necessary, it is not enough if teachers do not also feel confident using that knowledge to facilitate student learning” (p. 261)

In the late 1970’s, efficacy thought developed from Bandura’s theory of self-efficacy (Bandura, 1977). Bandura (1997) defined personal self-efficacy as “judgments about how well one can organize and execute courses of action required to deal with perspective situations that contain many ambiguous, unpredictable, and often stressful elements” (pg. 201). Furthermore, Bandura (1995) postulated that ‘self-efficacy beliefs influence the course of action people choose to pursue, how much effort they put forth in given endeavours, how long they would persevere in the face of obstacles and failures, their resilience to adversity, whether their thought patterns are self-hindering or self-aiding, how much stress and depression they experience in coping with taxing environmental demands, and the level of accomplishments they realize” (p. 3). According to Bandura definition, lack of future teachers' self-efficacy of

differentiating means that the needs of future gifted children would be overlooked in most of regular classrooms

Since 1990, researchers have seen similar evidence connecting teacher efficacy beliefs to teaching behaviours. For example, Czerniak and Shriver (1994) found significant differences between future elementary teachers with high and low self-efficacy in their choices of instructional strategies. Specifically, high-efficacy teachers tended to choose activities in which they expected students to use higher-level thinking and problem-solving skills, and were more likely than low-efficacy teachers to use teaching strategies that were based on research or theory. In addition, Czerniak and Shriver found that the teachers with high teaching self-efficacy were oriented toward the goals of developing students' critical thinking and decision-making skills, and tended to measure success of their lessons by whether or not they believed these goals were achieved. In contrast, the teachers with low teaching self-efficacy tended to measure success of a lesson by their ability to control students and to keep the class orderly and quiet. Future teachers with high teaching self-efficacy have also been shown to be more likely to claim that activity-based instruction, in which students learn through cooperation and experience, is the most appropriate method of teaching at the elementary level (Enochs, Scharmann, & Riggs, 1995). According to studies cited by Roberts and Henson (2001), both pre-service and experienced teachers with high efficacy tended to experiment with teaching materials and teaching methods more than teachers who were less efficacious. Henson also asserted that self-efficacy beliefs are primary to behavioral changes.

A significant correlation between self-efficacy and knowledge was also identified in previous studies (Abbitt, 2011; Tschannen-Moran et al., 1998; Wheatley, 2005). For instance, Abbitt (2011) investigated the relationship between measures of Technological Pedagogical Content Knowledge (TPACK) and the self-efficacy beliefs of future teachers about technology integration. Within a single-group, pretest–posttest design, a correlational analysis identified knowledge domains in the TPACK model have a significant and positive correlation with self-efficacy beliefs about technology integration. Findings from the study illustrate the changing nature of the complex relationship between knowledge and self-efficacy beliefs and highlight the potential areas of knowledge that influence future teachers' beliefs about technology integration.

This study sought to examine to what extent does participating in a university gifted course would improve future teachers' self-efficacy toward differentiation.

Methodology

To determine whether the gifted course in the current study could improve the participants' self-efficacy, that is, their belief that they have the capacity needed for differentiation, the special education future teachers' self-efficacy was examined both quantitatively and qualitatively. According to Johnson, Onwuegbuzie, and Turner (2004) the term mixed methods designs has gained dominance over other terms such as integrative design and mixed design.

Mixed methods design was used in this study to collect quantitative and qualitative data. The design initially allowed the documentation of self-efficacy and relationships

to knowledge. The quantitative component investigated a cohort of future special education teachers taking a semester course in gifted education. It also investigated the pre- and post-change in self-efficacy of the participants towards differentiation. This design involves a sequential presentation of; a pre-test questionnaire, semi-structured interviews, followed by an intervention (the gifted education course), a post-test questionnaire and, finally semi-structured interviews. The following diagram represents the study structure.

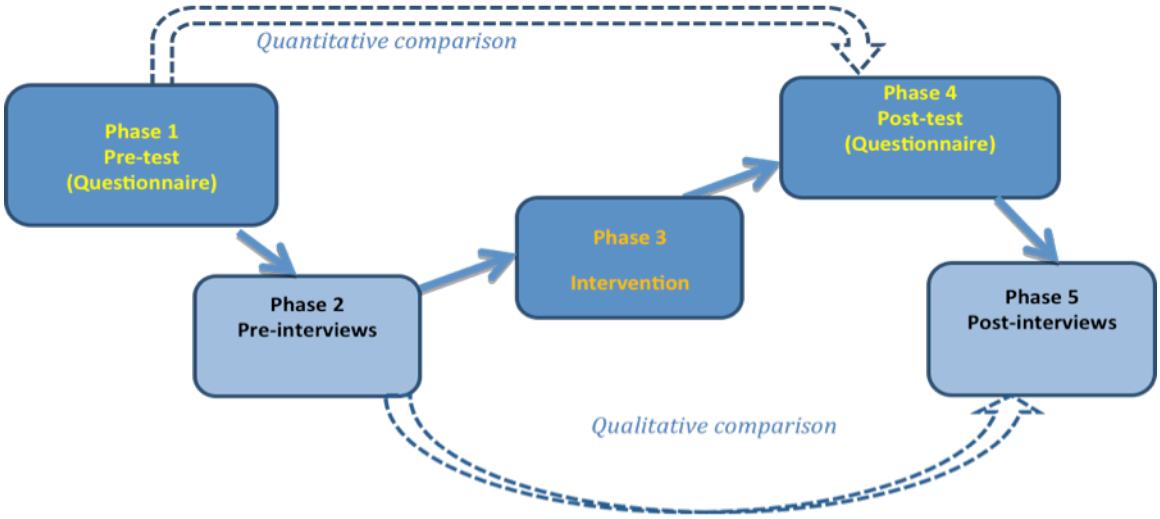

Figure 1: five phases of the study

The qualitative component involved eight participants enrolled in the gifted education course as a component of the special education program. Thus, the quantitative dimension of the study was complemented with qualitative data collected through semi-structured interviews. These interviews probed participants', self-efficacy, in depth, and enabled the researcher to identify reasons for the participant's possible change of self-efficacy toward differentiation.

Quantitative Data: Phases 1 and 4 "Questionnaire"

This section describes the participants, the questionnaire, data collection and data analysis of quantitative phases 1 and 4.

Participants

The participants were university students at a tertiary institution's Department of Special Education, Faculty of Education. The University is accredited by the Saudi Arabian Ministry of Higher Education, and funded by the government of Saudi Arabia.

The students were undertaking a four year full-time Bachelor of Special Education degree. The graduates can be employed as Primary, Secondary, or High School teachers. These future special education teachers were undertaking an introductory course about gifted education as part of their degree program. In Saudi Arabia, gifted education in teacher education programs falls within the gambit of special education.

Consequently, this study focused on future teachers who are undertaking Special Education program

The participants included all Saudi Arabian special education future teachers, enrolled in the gifted course at this university (N= 90) during year 2014. The participants (all male) ranged in age from 19-40 years. The majority (91%) was between 20-24 years old, the more normal future teachers' age in Saudi Arabia. At the time the study was conducted, they had not commenced their internship or professional experience. The internship is required in the last six months of the teachers' programs.
Those participants 25 years and older (9%) tended to be from a group of in-service teachers who held a diploma in education, but were upgrading their qualification to the bachelor's degree in Special Education

Questionnaire

The quantitative analysis assessed all participants (n=90); they were presented with four self-efficacy questions, before and after participating in the course. Three questions were adapted from STEBI-B scale. The fourth question was developed by the researcher. To ensure the reliability of the questions, back translation technique was used for these questions. The answers were based on a 4-point Likert scale: Poor, Average, Good, and Very Good. The questions are given below:

> "Right now in my present pre-teaching situation, the strength of my personal beliefs in my capabilities to:
> 1. "Plan activities that accommodate the range of individual differences among my students".
> 2. "Implement teaching methods at an appropriate pace to accommodate differences among my students".
> 3. "Utilise teaching aids and learning materials that accommodate individual differences among my students".
> 4. "Improve the academic performance of students, including those who are gifted".
> 5.

Data Collection

The participants' self-efficacy were examined before and after their enrolment in the gifted course, as means of determining whether the participants' self-efficacy were changed by the course.

The questionnaire was conducted at the Special Education Department, within the selected University, Saudi Arabia. A permission letter requesting the distribution of the questionnaires to the participants was sent to the chairperson of the University; approval was given. The course, offered in the Spring semester, 2014, was a one semester (16 weeks), with three-hour long lectures a week. The future special education teachers were tested twice; prior to and after the experience of attending the course. According to Gravetter and Wallnau (2008):

In a repeated-measures study, we are interested in whether or not there is a systemic difference between the scores in the first treatment condition and the scores in the second treatment condition. The hypothesis test will use the difference scores obtained from a sample to evaluate the overall mean difference, μD, for the entire population. (p. 346)

The future special education teachers were invited, in the week before starting the course (pre-test) and in last week of the course (post-test), to complete the questionnaire, fold it, and place it in the box located at the front of the lecture room. The participants were asked to include, in the questionnaire, an identifier code that enabled the researcher to match the pre- and post-test responses. The questionnaire took approximately 30 minutes to complete. Confidentiality was assured as the participants placed their own questionnaire in the sealed box.

Qualitative Data: Phases 2 and 5 Semi-Structured Interviews

This section addresses phases 2 and 5 of the qualitative data, the semi-structured interviews. Creswell (2008) identifies five required steps in qualitative research: (1) identifying participants and locations; (2) gaining access to the organisation; (3) determining the types of data collection; (4) developing data collection forms; and (5) conducting the process in an ethical manner.

Through the participants own identifier codes on their questionnaire, 10 participants were selected, identified, and invited to participate in one-on-one voluntary 40 minutes interviews. The selection was based on extreme case sampling, which, according to Creswell (2008), is "a form of purposeful sampling in which you study an outlier case or one that displays extreme characteristics" (p. 215).

The participants were selected on the basis of their means' scores, that is: the five participants with lowest mean scores, and the five participants with highest mean scores on the questionnaire. Eight of the invited participants agreed to the interviews (four with lower mean scores and four with higher mean scores).

Data Collection

The interview, guided by the study's theoretical framework, had a mixture of three kinds of questions: the main questions (e.g., would you be able to plan activities that accommodate the range of individual differences among my students), the follow-up questions, and the probes. According to Rubin and Rubin (2005), the main questions are used, in advance, to cover each part of the broad topic. The follow-up questions are asked to obtain an explanation of the themes or concepts that the interviewees have made, while the probes questions "are techniques to keep a discussion going while providing clarifications" (Rubin & Rubin, 2005, p. 137).

Each 40 minute voluntary interview explored, in-depth, the participants' self-efficacy and sought to identify what experiences or circumstances might have led them to their answers. The interviews also probed into the ways the course influenced their self-efficacy. The findings uncovered important aspects of the questionnaire related to the participants' self-efficacy toward differentiation.

Data Analysis

In the current study, the qualitative data were analysed by using thematic analysis. Thematic analysis "is the most commonly used form of analysis in qualitative research, particularly research involving interviews" (Willis, 2006, p. 271).
The thematic content analysis method proceeded as follows. After each semi-structured interview, the data were immediately transcribed verbatim by the researcher. After completing the interview response transcription, the researcher read the data twice to check for transcription accuracy. The data were then coded as described next.

There are two approaches to coding data, each operating with slightly different rules: a priori and emergent. When dealing with a priori coding, the categories are established prior to the analysis, based upon theories and finding of previous systematic studies (Boyatzis, 1998; Stemler, 2001; Weber, 1990).

- **A priori themes**: the four self-efficacy beliefs (Enochs & Riggs, 1990).
- **Emergent themes:** were obtained through extensive reading, searching through materials, sorting, comparing within categories, coding, adding key words and concepts, and finally writing mini-summaries of categories.

Course Description: Phase 3

This section provides a detailed description of phase 3, the "Introduction to Giftedness and Creativity–255" special course. Designed for third-year undergraduate students in the Special Education Program at a Saudi University's Department of Special Education, the compulsory semester-long course is taught by an Associate Professor of Psychology. This is students' only course about giftedness. In Spring semester, 2014, 100 3rd-year special education students, who were male, and Saudi future teachers (the participants) enrolled in the course. The purpose of the course was to improve the future teachers' knowledge of giftedness and their teaching strategies.
The course introduced future special education teachers to the characteristics and needs of gifted students in Saudi Arabia. The following (Figure 2) is a brief description of the course.

The course aims to provide special education future teachers with a background overview of the importance of giftedness in Saudi culture and its inception. It also intends to illustrate the distinction between the different terms: "intelligence", "genius", "intellectually" "gifted", "talent", and "creativity", and to identify the characteristics of gifted students. In addition, it strives to provide knowledge of identification procedures for gifted, and to identify programs of care, problems and teaching methods of gifted students.

The learning objectives of this course translated from the course outline are:

1. To have a general background on the concept of giftedness creativity and related theories.
2. To recognize the importance of the gifted and their role in the development of societies.
3. To understand the genetic and environmental factors affecting giftedness and creativity.
4. To recognize the tools and methods necessary for identifying the gifted.
5. To identify the characteristics and needs of the gifted in light of recent differing theories.
6. To recognize different programs for the gifted students, and
7. To understand problems facing gifted students

The lecturer taught these topics in one three hour session per week (Wednesdays from 8 to 11 am) for 16 weeks, an entire semester. The lecturer collated all the information presented in the lecturer slides into a book of notes which the students used for pre-lecture reading. The students also take notes during the lectures, with an allocated amount of time (approximately 15 minutes) at the end of each lecture for questions. The students were not required to do any more than interact or discuss the course during the allocated time for the course. The course design, called conclusion-oriented or lecture-based, has long been used in universities in the Middle East, as well as throughout the world (Adekoya & Olatoye, 2011; McKeachie & Svinicki, 2005).

Significant components of gifted education were recommended for inclusion into all future teacher courses, namely: characteristics and identification of gifted students (including gifted underachievers), social and emotional issues, understanding of the myths versus the facts about gifted students, the value of giftedness, and differentiation. The gifted course in the current study included these components

Result

The current study sought to examine to what extent participating in a gifted education course would impact on future teachers' self-efficacy toward differentiation.
A one-way repeated measures ANOVA was performed to determine if the participants' self-efficacy improved after the course. No significant effect on the participants' self-efficacy toward differentiation was identified ($p<.05$). The results are presented in Table 1

Table.1 below.

Table.1 ANOVA for Self-efficacy Questions

Questions		Sum of Squares	df	Mean Square	F	Sig.
1	Between Groups	.000	1	.000	.001	.982
	Within Groups	98.253	176	.558		
	Total	98.253	177			
2	Between Groups	.738	1	.738	1.008	.317
	Within Groups	128.818	176	.732		
	Total	129.556	177			
3	Between Groups	1.676	1	1.676	2.436	.120
	Within Groups	120.369	175	.688		
	Total	122.045	176			
4	Between Groups	.052	1	.052	.087	.769
	Within Groups	104.898	176	.596		
	Total	104.949	177			

**$p < 0.01$

The results from the quantitative data, suggested limited improvement in the participants' self-efficacy toward differentiation. Prior to introducing to the course, most participants had low self-efficacy toward differentiation because either the allocated time of the class or the skills needed to teach the gifted. For example, participants (PRC70) and (PRC30) stated that, "… because of the allocated time for the class, I found it difficult to differentiate the curriculum for the gifted in the regular classrooms", and "it is difficult for teachers to provide different activities for different abilities the students have in the allocated time of the class", respectively. Indeed, all participants were concerned about the limited class time allocated for general teaching, which further inhibited teachers from meeting the needs of the gifted. Because of the increasing diversity in classrooms, the teachers tended to focus their efforts and attention on the majority of students, that is, teaching the average students. As a consequence of such pressures, low self-efficacy toward differentiation may have developed.

Other participants linked the difficulty to implement differentiation to teachers' competencies "if the teacher is not scientifically qualified he will definitely face difficulties in implementing teaching methods at an appropriate pace to accommodate differences among students" (PRC8). Another participant had a preference for teaching the disabled and his reason was that "gifted students need gifted teachers who can deal with them and meet their different needs and I don't see myself gifted"

(PRC30). These previous responses imply that for teacher to differentiates the curriculum for the gifted, teachers must be specialised in gifted education or is gifted himself. This is an alarming finding as most of gifted students are taught by non-specialised gifted teachers at least in Saudi Arabia (Alqarni, 2010). These responses reflect their lack of competencies to teach the gifted. This reason was shown to be linked to the lack of knowledge about differentiation (Paine, 1990)

Upon completing the course, the participants were interviewed for a second time. The interviews showed that most participants (n=4) had limited improvement in their self-efficacy toward differentiation. For example, participant (POC12) stated: “I don’t think I’m able to accommodate individual differences among my students, they need a specialised teacher who is able to meet their individual needs”. His response indicated low self-efficacy, which may be attributed to the lack of real differentiation experience in the course. Another participant explained: “I wish the course had showed me in real world practically how to differentiate the curriculum for the gifted” (POC54). The data indicate that the gifted course had little, if any, positive impact on the participants’ self-efficacy in differentiation, even after completing the course.

Some participants became more aware of the curiosity of the gifted along with the difficult questions they ask, which make it difficult to teach the gifted. As one of the participants explained, " I don’t think I'm able to teach the gifted. They need specialized teacher to teach them" (POC54). Another participant was concern about curiosity by gifted students “ I think it is difficult to deal with gifted students specially in answering some of the gifted questions" (POC8). The course was designed to introduce the participants to some of gifted characteristics such as curiosity (Course Notes: Chapters IV and V, pp. 53-78, Slides 1-71, Weeks 4 & 5).

The issue of time pressure also remained as a concern for a number of participants. As noted by participant (POC12), "I agree with special services for the gifted such as special classes, but I don't agree it should be provided in the mainstream classrooms; teachers have no time to address different teaching activities for different abilities". This perspective appeared to be a potential reason for low self-efficacy. While the participants were concerned with helping gifted students to reach their potential, the course appears to have given them no real experiences or strategies for how to differentiate the curriculum effectively for the gifted in mainstream classrooms. However, more time was given to alternative strategies, such as special classes, schools and acceleration. For example, one participant commented that, “there were some programs as far as I remember but we studied more about acceleration and special schools” (POC58).

The future special education teachers would benefit from having more hands-on experience in how to use differentiation strategies. These experiences would also help develop high self-efficacy towards differentiation. Such attention is important as differentiation involves adjusting the content, the learning processes, and the types of products created. Further, the learning environment can be changed through developing different expectations, places to do their work, and assessment practices. Without sufficient guidance and exposure, future teachers will become overwhelmed by the goals to be achieved.

Discussion

The goal of this study was to explore to what extent participating in gifted curse would impacts on future teachers' self-efficacy beliefs about their ability to differentiate the curriculum for the gifted. The data analysis suggests limited improvement in future teachers' self efficacy toward differentiation as a result of one semester long gifted course.

Concern for the participants in the current study revolved around either time pressure or the curiosity of the gifted. Within the curriculum differentiation approach, teachers must adjust the curriculum, and find additional resources, to match the needs of the gifted learners. According to VanTassel-Baska and Stambaugh (2005), and congruent with the current findings, the "lack of planning time" for teachers is a major barrier or inhibition to the implementation of differentiation for gifted students. For example, the participants argued that they sometimes feel overwhelmed by the increasing diversity in classrooms, especially with the limited allocated class time. As found in earlier research (Tomlinson et al., 1995), 1996), such concern has the teachers focusing the effort and attention on teaching the average students, and, consequently, low self-efficacy may exist.

The results from the current study are consistent with the research of Westberg and Archambault (1995), Tomlinson et al. (1994), and Gallagher and Weiss (1986), that is, the greatest barriers to effective gifted programs within regular classrooms arose from a lack of planning and teaching time. The findings appear to relate to the participants' experiences of differentiation. For example, teachers with field experience of differentiation tend to feel more confidants and capable of implementing the necessary programs (Hudson, Hudson, Lewis, & Watters, 2010; Rash & Miller, 2000).

Further, the participants' unchanged mindset and self-efficacy towards differentiation may result because "teacher education programs transmit essentially conservative perspectives and future teachers do not have the conceptual tools to transcend these ideas" (Pierce & Adams, 2009, p. 3). Using new ideas in a classroom usually happens more effectively if teachers have seen it modelled (Bangel, 2007). This lack of applied use of differentiation would affect concerns. Thus, future teachers' self-efficacy towards differentiation appears hard to improve by only acquiring surface level of knowledge (information). Schultz et al. also identified that, where future teachers were involved in a semester-long course, specific to gifted education, they showed no improvement in their self-efficacy toward differentiation; however, they did become "concerned about the workload necessary to deal with gifted children in their classrooms" (p. 23).

Some future teacher concerns have been identified as relating back to their schooling experiences. According to Lortie (1975), they spend thousands of hours as students. These experiences, especially in Saudi Arabia, mean that the future teachers had witnessed teachers having little time for planning within their busy teaching schedules. Al-Alwani (2005) also found that Saudi teachers work long hours, and had a heavy work load, with few hours for planning and teaching. Consequently, until future

teachers are provided with real world teaching experience, that incorporates the various recommended strategies, techniques and pedagogy, teacher education programs will continue to reaffirm previous assumptions rather than challenge them (Koehler, 1985; Lortie, 1975; Nel, 1992; Pajares, 1992).

In the current study, a number of participants became more aware of the curiosity of the gifted, as well as the difficult questions they ask. In addition, the semi-structured interviews revealed low self-efficacy because of the teacher's skills and subject matter knowledge. Further, as indicated by some participants, the teachers' knowledge of their subject matter may lead to student underachievement, including that of the gifted. Similarly, a longitudinal study of American youth, using data on 2,829 students, by Monk and King (1994), found that teachers' content preparation, as measured by coursework in the subject field, is positively related to students' achievements in mathematics and science. The beliefs of the future teachers in the current study also aligned with VanTassel-Baska and Stambaugh's (2005) argument that: "Subject matter knowledge, although important for all students, becomes critical for educators working with gifted students" (p. 212). They argued that gifted students are more advanced in subject matter content and need teachers who have advanced knowledge to challenge them beyond the typical curriculum content zones. Some participants in the present study also come to realise that it is very difficult for teachers who lack the content knowledge and scientific process to guide gifted students through some specific strategies, such as independent inquiry. Teacher's subject matter knowledge was also identified as a factor for ability to cater for the educational needs of gifted students.

Conclusion

To conclude, the gifted education course appears to be effective in increasing future teachers' knowledge of giftedness at least at a superficial level. However, the nature of the course may not sufficiently challenge previous concerns and experiences to remove those concerns or experiences, or provide the participants with the capability to differentiate the curriculum effectively for the gifted in mainstream classrooms. Thus, as shown in the current study, despite the increase of surface knowledge about giftedness by the participants, this knowledge might not necessarily translate into high self-efficacy and yet effective teaching of gifted students. Nevertheless, awareness of the differences of gifted students and the needs of the gifted is an important first step.

The future teachers' low self-efficacy toward differentiation may continue and be hard to change without deep knowledge and practice. The course information needs to be provided within applied, field experience, provided throughout their study.

The gifted course can service as a starting point to focus future teachers' attention on the varied needs of the gifted and learn about some of their special services. As they move into the classrooms, future teachers need a continuous supportive environment to help them improve their self-efficacy and achieve this task. Such support may include university supervisor visits and professional workshops. While the learning and implementation of differentiation will take time, it is essential that the groundwork be firmly embedded so that the transition is achieved as best practice.

Limitation

The results of this study are applicable to Saudi future special education teachers selected for the investigation within the current university context. Further research is needed, however, to determine whether the findings apply to other future special education teachers across other universities.

Attaining low self-efficacy towards differentiation supports the value of offering future teachers with hand-on experience that reflects and challenges their traditional beliefs. A future research question could be: What is the self-efficacy of future teachers toward differentiation before and after being involved in field experience?

The study should be replicated to include larger population from different universities. The findings from the current study have significant implications for policy and practice within Saudi Arabia. For example, the Ministry of Education, the Ministry of Higher Education and lecturers at the universities may use the study outcomes in their planning of professional development opportunities for future teachers, as well as in their evaluation of future teachers' preparation programs.

The results show that the current gifted education course has little effect on the self-efficacy of future teachers toward differentiation. Thus, substantial changes with deep knowledge are required in the type of gifted education course provided and the inclusion of field experience.

Thoughts for Improving Future Course

Future teachers could spend four weeks (of three-hour sessions) at university. From week five, they may spend two hours at school working individually with gifted students, and one hour at the university to discuss and reflect on their practice and their student's progress. In their first four weeks at university, they may be exposed to information about gifted students, schools, and policies relating to gifted education. They also may learn about key theoretical models of giftedness, such as Gagné's (1993, 2010) "Differentiated Model for Gifted and Talented (DMGT)".

They may be introduced to a wide range of related topics (namely, reasons for gifted disengagement, the importance of collaboration between teachers, parents and school personnel in supporting gifted students, incorporating challenging learning experiences that promote higher order thinking and problem solving skills; real world learning experiences for students; and the alignment and design of curriculum, pedagogy and assessment that is relevant to gifted student's development, interests and needs). Given the significance of experience in contributing to beliefs (Polanyi, 1966), it would appear that the participants need practical, authentic experiences. For instance sessions would appear to be needed to help them differentiate instruction. The study also informs teacher education in general in that the style of delivery doesn't really improve self-efficacy. The influence of cultural knowledge and experience overwhelms what happens in a university course. We could have anticipated this from other literature (e.g., science education). So a lot has to be done to engage students deeply in learning and to challenge existing beliefs.

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Contact email: aaaq55@yahoo.com.au