Primary Teachers’ Attitudes and Knowledge Regarding Gifted Pupils and Their Education in the Kingdom of Saudi Arabia

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# LIST OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF CONTENTS</td>
<td>2</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>6</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>7</td>
</tr>
<tr>
<td>ACRONYMS</td>
<td>8</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>10</td>
</tr>
<tr>
<td>DECLARATION</td>
<td>11</td>
</tr>
<tr>
<td>COPYRIGHT STATEMENT</td>
<td>12</td>
</tr>
<tr>
<td>ACKNOWLEDGMENT</td>
<td>13</td>
</tr>
<tr>
<td><strong>1 CHAPTER ONE: INTRODUCTION</strong></td>
<td>14</td>
</tr>
<tr>
<td>1.1 STUDY RATIONALE</td>
<td>14</td>
</tr>
<tr>
<td>1.2 RESEARCH QUESTIONS</td>
<td>18</td>
</tr>
<tr>
<td>1.3 SIGNIFICANCE OF THE STUDY</td>
<td>19</td>
</tr>
<tr>
<td>1.4 ORGANISATION OF THE THESIS</td>
<td>20</td>
</tr>
<tr>
<td><strong>2 CHAPTER TWO: LITERATURE REVIEW</strong></td>
<td>22</td>
</tr>
<tr>
<td>2.1 INTRODUCTION</td>
<td>22</td>
</tr>
<tr>
<td>2.2 CONCEPTUALISATIONS OF GIFTEDNESS</td>
<td>23</td>
</tr>
<tr>
<td>2.3 GIFTED PROGRAMMING OPTIONS</td>
<td>28</td>
</tr>
<tr>
<td>2.3.1 Enrichment</td>
<td>29</td>
</tr>
<tr>
<td>2.3.2 Acceleration</td>
<td>31</td>
</tr>
<tr>
<td>2.3.3 Ability grouping</td>
<td>33</td>
</tr>
<tr>
<td>2.4 IDENTIFICATION OF THE GIFTED</td>
<td>35</td>
</tr>
<tr>
<td>2.4.1 Objective identification procedures</td>
<td>36</td>
</tr>
<tr>
<td>2.4.2 Subjective identification procedures</td>
<td>38</td>
</tr>
<tr>
<td>2.5 TEACHER ROLE AND EDUCATION OF GIFTED STUDENTS</td>
<td>39</td>
</tr>
<tr>
<td>2.6 CONCEPTUALISATION OF ATTITUDE</td>
<td>41</td>
</tr>
<tr>
<td>2.6.1 Tri-dimensional model-based definition</td>
<td>42</td>
</tr>
<tr>
<td>2.6.2 Uni-dimensional model-based definition</td>
<td>43</td>
</tr>
<tr>
<td>2.6.3 Evaluation of the attitude models</td>
<td>45</td>
</tr>
<tr>
<td>2.6.4 Characteristics of attitude</td>
<td>46</td>
</tr>
<tr>
<td>2.6.5 The relationship among attitudes, beliefs and behaviour</td>
<td>48</td>
</tr>
<tr>
<td>2.6.6 Function and importance of teacher attitude</td>
<td>50</td>
</tr>
<tr>
<td>2.7 TEACHER ATTITUDES TOWARDS GIFTED STUDENTS AND GIFTED EDUCATION</td>
<td>51</td>
</tr>
<tr>
<td>2.7.1 Studies that show teachers have positive attitudes</td>
<td>53</td>
</tr>
<tr>
<td>2.7.2 Studies that show teachers have negative attitudes</td>
<td>54</td>
</tr>
<tr>
<td>2.7.3 Studies that show teachers have both positive and negative attitudes</td>
<td>55</td>
</tr>
<tr>
<td>2.8 PREDICTORS OF TEACHER ATTITUDES</td>
<td>57</td>
</tr>
<tr>
<td>2.8.1 Teachers’ age</td>
<td>59</td>
</tr>
<tr>
<td>2.8.2 Teachers’ training on gifted education</td>
<td>59</td>
</tr>
<tr>
<td>2.8.3 Teachers’ years of experience</td>
<td>60</td>
</tr>
</tbody>
</table>
CHAPTER THREE: THE EDUCATION SYSTEM AND GIFTED EDUCATION IN THE KINGDOM OF SAUDI ARABIA

3.1 INTRODUCTION ................................................................. 87
3.2 KINGDOM OF SAUDI ARABIA: BACKGROUND .......................... 87
3.3 FEATURES OF THE EDUCATION SYSTEM IN THE KINGDOM OF SAUDI ARABIA ............... 88
3.4 GENERAL EDUCATION IN SAUDI ARABIA ................................ 89
   3.4.1 Pre-school stage (kindergarten) ......................................... 89
   3.4.2 Primary school stage ....................................................... 90
   3.4.3 Intermediate school stage ............................................... 91
   3.4.4 Secondary school stage ................................................. 92
3.5 THE SETTING, EXAMINATIONS AND SCHOOL CALENDAR SYSTEM IN GENERAL EDUCATION ......................................................... 94
3.6 TEACHER DUTIES IN GENERAL EDUCATION SCHOOLS .............. 95
3.7 GIFTED EDUCATION IN THE KINGDOM OF SAUDI ARABIA (KSA) ........ 97
   3.7.1 A brief history of gifted education in the KSA .................... 97
   3.7.2 Bodies of the gifted education system in the KSA ................. 99
   3.7.3 Provision of gifted programmes in the KSA (Mawhiba) ........... 101
   3.7.4 Identification of the gifted in the KSA .............................. 104
   3.7.5 Teacher qualification and duties in the KSA ....................... 105
   3.7.6 Teacher in-service training course in the KSA ................... 109
3.8 OBSTACLES FOR GIFTED EDUCATION IN THE KSA ..................... 110
3.9 SUMMARY OF THE CHAPTER .................................................. 113

CHAPTER FOUR: METHODOLOGY AND RESEARCH DESIGN ...114
4.1 INTRODUCTION .................................................................... 114
   4.1.1 Research questions ....................................................... 114
4.2 THE METHODOLOGICAL DEBATE .......................................... 115
4.3 RESEARCH DESIGN ............................................................. 119
4.4 RESEARCH METHODS .......................................................... 122
4.5 INSTRUMENTATION .............................................................. 124
5  CHAPTER FIVE: ANALYSIS OF THE QUESTIONNAIRE DATA ......160
5.1  INTRODUCTION ................................................................. 160
5.2  RELIABILITY OF THE QUESTIONNAIRE INSTRUMENT .................. 161
5.3  PRINCIPAL COMPONENTS ANALYSIS ...................................... 161
5.4  DESCRIPTIVE STATISTICS .................................................. 170
5.4.1 Description of the sample ................................................. 170
5.5  INDEPENDENT SAMPLE T-TEST ........................................... 175
5.5.1 Teachers’ attitudes towards the gifted and gifted education .......... 176
5.5.2 Teachers’ knowledge and training needs regarding the gifted and gifted education 181
5.5.3 Teachers’ attitudes towards in-service gifted training programmes .... 186
5.6  CORRELATION COEFFICIENTS ........................................... 188
5.6.1 Relationship between teachers’ attitude and knowledge regarding the gifted and gifted education .......................... 188
5.7  REGRESSION ANALYSIS ................................................... 189
5.7.1 Biographical characteristic factors predict teachers’ attitudes towards the gifted and gifted education ......................... 192
5.7.2 Biographical characteristic factors predict teachers’ knowledge regarding the gifted and gifted education ....................... 196
5.8  SUMMARY OF THE CHAPTER ........................................... 200

6  CHAPTER SIX: ANALYSIS OF THE INTERVIEW DATA ...............202
6.1  INTRODUCTION ................................................................. 202
6.2  STATISTICS OF INTERVIEWEES .......................................... 202
6.3  TEACHERS’ ATTITUDES TOWARDS GIFTED PUPILS AND THEIR EDUCATION ...... 205
6.3.1 Teachers’ attitudes towards gifted pupils ................................ 205
Chapter Six: Teachers’ Knowledge and Training Needs Regarding the Gifted and Gifted Education

6.3.2 Teachers’ attitudes towards gifted education ................................................... 208
6.3.3 Comparing questionnaire and interview analysis results in terms of teachers’ attitudes towards gifted pupils and their education ................................................... 215

6.4 Teachers’ Knowledge and Training Needs Regarding the Gifted and Gifted Education ................................................... 218
6.4.1 Teachers’ knowledge of 14 items regarding the gifted and gifted education ...... 218
6.4.2 Teachers’ overall knowledge regarding the gifted and gifted education .......... 221
6.4.3 Comparing questionnaire and interview analysis results in terms of teachers’ knowledge and training needs regarding the gifted and gifted education .......... 223

6.5 Teachers’ Attitudes Towards In-service Gifted Training Programmes ...... 225
6.5.1 Teachers’ attitudes rating for in-service gifted training programmes category ...... 226
6.5.2 Reasons for teachers’ level of attitudes towards in-service training programmes . 229
6.5.3 Voice of teachers regarding improving in-service gifted training programmes ...... 232
6.5.4 Comparing questionnaire and interview analysis results in terms of teachers’ attitudes towards in-service gifted training programmes ............................................. 232

6.6 Summary of the Chapter ................................................................................... 234

Chapter Seven: Discussion .................................................................................. 236

7.1 Introduction ........................................................................................................ 236
7.2 Teachers’ Attitudes Towards the Gifted and Gifted Education ....................... 236
7.3 Teachers’ Knowledge and Training Needs Regarding the Gifted and Gifted Education ....................................................................................................... 247
7.4 Teachers’ Attitudes Towards In-service Gifted Training Programmes ... 252
7.5 Relationship Between Teachers’ Attitude and Knowledge Regarding the Gifted and Gifted Education ............................................................................. 255
7.6 Biographical Characteristic Factors Predicting Teachers’ Attitudes and Knowledge Regarding the Gifted and Gifted Education ............................................. 258
7.7 Summary of the Chapter ................................................................................... 261

Chapter Eight: Summary and Conclusions ......................................................... 263

8.1 Introduction ........................................................................................................ 263
8.2 The Key Findings ............................................................................................... 263
8.3 Contributions to Knowledge ............................................................................... 266
8.4 Recommendations ............................................................................................. 268
8.5 Recommendations for Future Research .............................................................. 271

Bibliography .......................................................................................................... 273

Appendices ............................................................................................................. 306
Appendix A .............................................................................................................. 307
Appendix B .............................................................................................................. 322
Appendix C .............................................................................................................. 328

Word count: 85,794
LIST OF TABLES

Table 2.1  Acceleration models of gifted education programmes ................................... 32
Table 2.2  Ability grouping strategies of gifted education programmes ............................ 34
Table 3.1  The curricula and number of lessons from grades one through six in primary school ...... 91
Table 4.1  The four major paradigms in research in social science .................................. 116
Table 4.2  Number of RTs and GPTs in each stage of multi-stage sampling .......................... 142
Table 4.3  Six-phase guide to conducting thematic and saliency analysis (TSA) ................. 152
Table 5.1  Reliability statistics (Cronbach’s alpha) for questionnaire ............................... 162
Table 5.2  The value of the KMO and Bartlett's test of TAGES ............................................ 163
Table 5.3  Total variance explained by the seven factors .................................................. 165
Table 5.4  Total variance explained by the seven factors after oblique rotation .................... 166
Table 5.5  The seven factors and their loading variables .................................................... 167
Table 5.6  Participants classified by age and years of teaching experience .......................... 171
Table 5.7  Participants classified by specialisation and highest qualification degree .............. 172
Table 5.8  Participants who have a family member enrolled in a gifted programme and whether they perceive themselves as gifted .......................................................... 173
Table 5.9  Amount (number and hours) of gifted training courses received by participants .. 174
Table 5.10 Mean differences between RTs and GPTs in TAGES ........................................ 177
Table 5.11 Mean differences between RTs and GPTs in TKTGES ...................................... 182
Table 5.12 Mean differences between RTs and GPTs in their attitude regarding in-service gifted training programmes ................................................................. 186
Table 5.13 Correlation coefficients between teacher attitude and knowledge by Person $r$ .... 189
Table 5.14 The two prediction models produced by the stepwise multiple regression for the TAGES total score .............................................................................. 193
Table 5.15 Confidence conception predictive models by standard regression analysis for the TAGES total score ................................................................. 195
Table 5.16 The five prediction models produced by the stepwise multiple regression for the TKTGES total score ................................................................. 197
Table 5.17 Confidence conception predictive models by standard regression analysis for the TKTGES total score ................................................................. 199
Table 6.1 Statistics information of interviewees .................................................................. 204
Table 6.2 Mean differences between RTs and GPTs in their attitudes ................................. 216
Table 6.3 Correlation coefficients between teacher attitude and their specialisation by Pearson $r$ ... 218
Table 6.4 Numbers differences between RTs and GPTs in14 knowledge items .............. 220
Table 6.5 Correlation coefficients between teacher attitude and knowledge by Pearson $r$ .... 224
Table 6.6 Correlation coefficients between teacher overall knowledge and other biographical variables ................................................................. 225
Table 6.7 Differences between RTs who received and did not receive training courses with regards to their attitude towards in-service gifted training programmes .............. 228
Table 6.8 Correlation coefficients between teacher attitude and knowledge by Pearson $r$ .... 233
LIST OF FIGURES

Figure 2.1 Three-ring conception of giftedness .................................................................25
Figure 2.2 Monks and Boxtel’s (1986) multi-factorial model of giftedness .........................26
Figure 2.3 The differentiated model of giftedness and talent ..............................................27
Figure 2.4 The enrichment triad model of giftedness ........................................................31
Figure 2.5 Tri-dimensional model of attitude ......................................................................42
Figure 2.6 Theory of planned behaviour .............................................................................44
Figure 3.1 Map of the Kingdom of Saudi Arabia ...............................................................88
Figure 4.1 Mapping of the instruments against research questions .....................................126
Figure 5.1 Scree plot for the TAGES data ..........................................................................164
Figure 5.2 Gifted training courses received by RTs ...........................................................173
Figure 5.3 Gifted training courses received by GPTs .........................................................174
Figure 5.4 Comparing the means of RTs and GPTs on each subscale and overall TAGES scores ...........................................................................................................................180
Figure 5.5 Comparing the means of RTs and GPTs in the overall TKTGES .......................183
Figure 5.6 Means of the RT group in each item (topic) in the TKTGES ...............................184
Figure 5.7 Means of the GPT group in each item (topic) in the TKTGES ............................185
Figure 5.8 Percentages of RT and GPT responses to each in-service gifted training programme option .........................................................................................................................187
Figure 5.9 Normal P-P plot of regression standardised residual for the TAGES .................194
Figure 5.10 Normal P-P plot of regression standardised residual for the TKTGES ..........198
Figure 6.1 Mean differences between RTs and GPTs in overall knowledge .....................222
Figure 6.2 Mean differences between RTs and GPTs in their attitudes towards in-service gifted training programmes .................................................................227
ACRONYMS

**APA:** American Psychological Association

**BERA:** British Educational Research Association

**CAIMI:** Children’s Academic Intrinsic Motivation Inventory

**CEC:** Council for Exceptional Children

**CGTC:** World Council for Gifted and Talented Children

**CIA:** Central Intelligence Agency

**CogAT:** Cognitive Ability Test

**DCSF:** Department for Children, Schools and Families

**DECD:** Department for Education and Children's Services

**DMGT:** Differentiated Model of Giftedness and Talent

**ETM:** Enrichment Triad Model

**FA:** Factor Analysis

**GPT:** Gifted Programme Teacher

**ICT:** Information Communication Technology

**IQ:** Intelligence Quotient Score

**IRS:** Integrated Resource Session

**KACGC:** King Abdulaziz and his Companions Foundation for Giftedness and Creativity

**KMO:** Kaiser-Meyer-Olkin

**KSA:** Kingdom of Saudi Arabia

**MMR:** Mixed Method Research

**NAGC:** National Association for Gifted Children

**NCATE:** National Council for Accreditation of Teacher Education

**NCLB:** No Child Left Behind

**PCA:** Principal Component Analysis
**RDIM:** Revolving Door Identification Model

**RQ:** Research Question

**RT:** Regular Teacher

**SAT:** Scholastic Achievement Test

**SEM:** School-wide Enrichment Triad Model

**SPSS:** Statistical Package for Social Sciences

**SRBCSS:** Scales for Rating the Behavior Characteristics of Superior Students

**TA:** Thematic Analysis

**TAGES:** Teachers’ Attitudes towards the Gifted and Gifted Education Scale

**TARGET:** Teacher Assessment Related to Gifted Education Training

**TKTGES:** Teachers’ Knowledge and Training Needs about the Gifted and Gifted Education Scale

**TSA:** Thematic and Saliency Analysis

**TTCT:** Torrance Tests of Creative Thinking

**UK:** United Kingdom

**UNESCO:** United Nations Educational, Scientific and Cultural Organization

**US:** United States

**VIF:** Variance Inflation Factor

**WAS:** Wiener Attitude Scale

**WISC-IV:** Wechsler Intelligence Scale for Children

**WISC-R:** Wechsler Test for Individual Intelligence
Abstract

For many years, concern has been expressed about the quality of gifted education offered around the world. In response to these concerns, many countries, including Saudi Arabia, have introduced gifted education programmes in primary, intermediate and secondary schools. Current international research suggests that the attitude and knowledge of teachers regarding gifted pupils and their education is a key factor that determines the success of such programmes. However, little is known about the success of the Saudi government initiative as there is a dearth of studies that focus on teacher attitudes and knowledge of gifted pupils and their education.

The aim of this study is to investigate the attitudes and knowledge, training needs and attitudes towards in-service gifted training programmes of regular teachers (RTs) and gifted programme teachers (GPTs) towards gifted pupils and their education in primary schools in the Kingdom of Saudi Arabia. The researcher has used mixed methods for collecting data obtained from questionnaires distributed to, and semi-structured interviews with, a sample of 233 GPTs and 700 RTs for the questionnaire and 20 GPTs and 20 RTs for the semi-structured interview, both based on a multi-stage sampling technique.

The overall findings indicated that both groups of primary teachers held overall ‘slightly’ positive attitudes towards gifted pupils and their education, with higher positive attitudes among GPTs than RTs. However, there were significant differences between RTs and GPTs in overall knowledge and training needs regarding the gifted and gifted education, with higher knowledge in all topics for GPTs and high training needs for RTs in most gifted knowledge topics. In addition, there were significant differences between RTs and GPTs in their attitudes regarding in-service gifted training programmes, with an ‘ambivalent’ attitude level from GPTs and a ‘very negative’ attitude level from RTs. There were significant positive relationships between teacher attitudes and teacher knowledge regarding the gifted and gifted education. The analysis of semi-structured interview data provided evidence of the validity of the questionnaire results and illustrated the reasons behind positive or negative teacher attitudes and high or low teacher knowledge.

Based on the findings, the researcher makes several recommendations and offers possible directions for future research.
DECLARATION

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CHAPTER ONE:
INTRODUCTICON

1.1 Study Rationale

The concept of *giftedness* has been the subject of much debate, and the term is used in various ways in the literature depending on the scope of different research and developmental projects. Early key studies by Terman (1916) provided a simple model that concentrated on the intelligence concept and applied the intelligence quotient (IQ) score as a means of identifying giftedness. Complex models by Renzulli (enrichment triad model) and Gagné (differentiated model of giftedness and talent) emphasise general/special abilities, creativity and the influence of personality and environmental factors on development ability and, further, use multi-dimensional measurements to define individual ability.

These models/theories have been applied as frameworks by different educational programmes in different countries as strategies to identify, educate and serve gifted students. The enriched pull-out gifted programme (Mawhiba) was introduced by the Kingdom of Saudi Arabia government in 2001 to meet the needs of gifted pupils (Aljgiman, 2007). This gifted programme relies on the enrichment triad model (ETM) by Renzulli as its main component (Aljgiman, 2007). The organisation of the ETM model is multi-dimensional rather than unitary, that is, giftedness is based on a number of contributing dimensions. This in turn requires different types of assessment to identify gifted pupils and exercises an even greater influence on gifted education than academic ability in terms of intelligence and creativity of gifted pupils (Renzulli, 1986). The ETM model of giftedness, furthermore, emphasises the role of teachers in the design of learning situations (e.g. real problem-oriented, inductive thinking skills) that promote creative-productive giftedness (Aljugiman, 2007; Renzulli & Reis, 2006). The differentiation (intervention) of the Saudi gifted programme policy falls into the three categories of enrichment, acceleration and grouping; this involves the goal of exploring and developing the potential of gifted pupils systematically and strategically by providing them with challenges, experiences and enrichment education in regular school through a flexible teaching and learning environment (Aljehany, 2005).
The most important element of any gifted education programme, and the most significant influence on learning and development of gifted students, is a teacher who is considered an important part of the environment to develop gifted students’ potential. Scott (2000) indicated that “[i]n education, the most crucial leaders for change are the teachers who have the final say in whether a great idea is actually put into practice in a way that works for students” (p. 8). Research has suggested that one factor that can determine the success of teachers in meeting gifted students’ needs is teacher attitudes towards gifted students and their education. The influence of teachers’ attitudes towards beliefs and behaviour can directly affect the educational lives of gifted students. Thus, assessing and predicting the attitudes of regular education teachers and gifted programme teachers represents an important endeavour in improving the quality of gifted education. Therefore, according to Davis and Rimm (2004), the first question to be asked when devising a gifted education programme should be, “What is our attitude towards gifted pupils?” (p. 55).

Although for more than half a century a considerable number of studies have explored the attitudes of teachers towards gifted students and gifted education, the picture of teachers’ attitudes is still an ambiguous one. Some studies have shown that teachers tend to have positive attitudes towards the gifted and gifted education (e.g. Gagné, 1983), but others have suggested negative attitudes (e.g. Cramond & Martin, 1987), and still others have found both positive and negative attitudes (e.g. McCoach & Siegle, 2007). Furthermore, the results of these studies suggested that negative or positive teacher attitudes might be determined by different variables, such as knowledge (Moore, 2009), in-service gifted training programmes (Donerlson, 2008), experience (McCoach & Siegle, 2007) and other variables. Therefore, many researchers have examined these predictors of teacher attitude towards gifted students and their education, but they have reached little agreement. For example, Begin and Gagné (1994a) identified more than 50 different variables that have the potential to predict the attitudes of teachers towards gifted pupils.

The giftedness literature also contains significant discussion regarding the different attitudes towards gifted students and gifted education on the part of regular teachers (RTs) and gifted programme teachers (GPTs). Most research, such as that of Mills and Berry (1979) and Nicely, Small and Furman (1980), has found that GPTs hold more
positive attitudes than do RTs. Nicely et al. (1980) concluded that there is a positive correlation between attitudes and general knowledge with regards to gifted students and their education. This explanation is supported by several researchers who found that teachers who had a high degree of knowledge of the gifted and gifted education tended to have a more positive attitude towards gifted pupils and their education than those who did not (e.g. Mills & Berry, 1979; Reis, 1982; Greenfield & Blasé, 1981; Bransky, 1987; Cashon & Sullenge, 2000).

Based on the strong link between teachers’ knowledge of gifted students’ needs and the training they have received regarding the gifted, it becomes clear that GPTs tend to be more knowledgeable about the needs of the gifted than RTs. Meyers (1984) stated that “[e]nrichment teachers knew more than regular teachers about what to do with the gifted for additional regular class enrichment and knew why certain modifications had to be made in their teaching” (p. 33). Comparing regular and gifted teachers’ knowledge about the gifted and gifted education, Pfeiffer (2003) found differences in educational practices for gifted students in heterogeneous classrooms because RTs lacked experience, training and knowledge about gifted students’ needs. In the same vein, Westberg and Daoust (2004) and Tomlinson (1995) found that gifted students receive little differentiation (intervention) by RTs in the instructional curriculum in heterogeneous classrooms. Tomlinson (1995) suggested that this result may be due to RTs being responsible for too much work and being less knowledgeable about differentiation or teaching in a school that does not apply a differentiation model. Thus, many gifted pupils can be at significant risk of underachieving and other emotional and behavioural effects unless RTs provide an appropriate curriculum to challenge and maximise their abilities (DECD, 2011).

A surprising gap in the literature revealed that little research has described the knowledge and training needs of teachers regarding gifted students and gifted education (Dvorak, 2007). Munby, Russell and Martin (2001) reported several challenges in addressing teacher knowledge in research because different conceptions of teacher knowledge exist, such as knowledge of theory and practice that may lead researchers to develop more complex theories to characterise these knowledge components. Given the paucity of literature regarding teacher knowledge of gifted students and their education, this information becomes fundamental. Therefore, to define teacher knowledge of
gifted pupils and gifted education, the National Association for Gifted Children (NAGC) and the Council for Exceptional Children (CEC) (2008) published ten standards (NAGC-CEC) for teacher preparation that emphasise a cohesive implementation strategy: foundations, development and characteristics of learners’ gifts and talents, individual learning differences associated with gifts and talents, instructional strategies to address gifts and talents, learning environments and social interactions associated with gifts and talents, language and communication, instructional planning, assessment, professional and ethical practice and collaboration. Gifted and regular programme teachers need to understand these standards because of the recent trend in educational systems towards heterogeneous classrooms (e.g. No Child Left Behind) in which gifted and regular pupils receive special instruction together using the same curriculum structure and class environment (Ehlers & Montgomery, 1999; Chipego, 2004). According to VanTassel-Baska and Johnsen (2007), this model is important both in defining the essential knowledge and skills teachers need to teach gifted and talented students effectively and in helping to prepare teacher training programmes.

In light of the above, it is appropriate to conduct this study at this time, particularly because most of these issues have been addressed in separate studies using one type of teacher group and one type of methodology, leading to ambiguous results, and because no such attempt has previously been made in the Kingdom of Saudi Arabia. Almaraee (2003) reported that “[a] major problem that faces any researcher while studying teacher education programs in some developing countries, particularly Saudi Arabia, is the lack of research, studies, and information resources” (p. 49). The aim of this study is to explore the attitudes and knowledge of RTs and GPTs towards gifted primary pupils and towards gifted education in general by seeking to establish the strength of the correlation between teachers’ attitudes and knowledge, their training needs regarding the gifted and gifted education and their attitudes towards in-service gifted training programmes. Moreover, the study aims to identify associated and predictive variables regarding specific attitudes and knowledge. A combination of quantitative and qualitative research strategies was used to increase the reliability and validity of the results. Therefore, the study has the potential to enrich the literature on teachers’ attitudes and knowledge regarding gifted education. The goal is to investigate the success of gifted programmes in Saudi Arabia because identifying teachers’ attitudes and knowledge is important for the success of such programmes.
1.2 Research Questions

This study sought to address ten questions that emerged from the literature review of the theoretical and empirical approaches to the relevant concepts. These research questions (RQs) were designed to provide a specific focus for the research:

RQ1. What are the attitudes of RTs and GPTs towards gifted pupils and their education in Saudi Arabia?

RQ2. Are there significant differences between RTs and GPTs in their attitudes towards gifted pupils and their education in Saudi Arabia?

RQ3. What is the level of RT and GPT knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ4. Are there significant differences between RTs and GPTs in their knowledge level regarding the gifted and gifted education in Saudi Arabia?

RQ5. What are the needs of RTs and GPTs in terms of improving their knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ6. What are the attitudes of RTs and GPTs regarding in-service gifted training programmes in Saudi Arabia?

RQ7. Are there significant differences between RTs and GPTs in their attitudes regarding in-service gifted training programmes in Saudi Arabia?

RQ8. What is the relationship between RTs’ and GPTs’ attitudes towards gifted pupils and their education and RTs’ and GPTs’ knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ9. What biographical characteristic factors of RTs and GPTs predict their attitudes towards gifted pupils and their education in Saudi Arabia?

RQ10. What biographical characteristic factors of RTs and GPTs predict their knowledge regarding the gifted and gifted education in Saudi Arabia?
3.1 Significance of the Study

1- Although many studies have explored the attitudes of teachers towards gifted pupils and their education, there is still not a clear and definitive picture of them (McCoach & Siegle, 2005). Some studies have suggested that teachers tend to have positive attitudes (e.g. Gagné, 1983) while others have suggested that teachers have negative attitudes (e.g. Cramond & Martin, 1987), and still others have reported both positive and negative attitudes (e.g. Copenhaver & McIntyre, 1992). Furthermore, there is little agreement with regards to the predictors of teacher attitudes towards gifted pupils and their education. Thus, the results of the current study might provide a clearer picture of RT and GPT attitudes and predictors towards gifted pupils and their education.

2- Since there is a lack of research with regards to this aspect of education research, this study enriches the literature in terms of teacher knowledge. McGurk (2006) reported that teacher knowledge and how it develops is “…a relatively new line of inquiry in educational research, with most of the work in this area published in the last twenty years” (p. 11).

3- There is a dearth of studies in Saudi Arabia that focus on teacher attitudes and knowledge of gifted pupils and their education. The reason for this is that although special education for gifted pupils has existed in Western countries for many decades, the Saudi government only established the Saudi gifted education programme in 2001 (Al-Ghamdi, 2007).

4- Based on the results of investigating perceived knowledge and training needs of RTs and GPTs regarding gifted pupils and gifted education and teachers’ attitudes towards in-service gifted training programmes, it may be possible to create opportunities for educational authorities to plan and evaluate teacher training programmes with different foci in terms of meeting teacher needs.

5- The result of examining several potential predictors of RT and GPT attitudes and perceived knowledge towards the gifted and gifted education might help government and other organisations determine criteria for selecting appropriate teachers.
6- The results of the research might add to our knowledge of how the gifted programme (the pull-out programme and the use of an enrichment curriculum), as it is used in developed countries, can be implemented in developing countries such as Saudi Arabia.

7- The results of the research might have a potential benefit for the current gifted education system and policies in Saudi Arabia, so that provision of gifted education can be further developed.

4.1 Organisation of the Thesis

- Chapter two reviews the literature and focuses on a range of issues, namely, the conceptualisation of giftedness, current international trends in programmes in gifted education, different global strategies used to identify the gifted, role of teachers in supporting gifted students and how variables affect this role, different models and conceptualisations of attitude, research into teacher attitudes towards gifted students and gifted education, predictors of teacher attitudes and knowledge, definitions and models of teacher knowledge with regards to gifted students and their education, the relationship between teachers’ knowledge and attitude, teachers’ attitudes towards in-service gifted training programmes and professional development needs.

- The first section of chapter three provides an overview of key aspects of the education system in the Kingdom of Saudi Arabia (KSA). The second section provides general information regarding the KSA, with an emphasis on those factors that influence the provision of education. The third section describes the main characteristics and features of the KSA educational system. The next section describes KSA general education from pre-school through secondary school. This is followed, in the fifth section, by a description of the setting, examinations and the school calendar system. Teacher duties in general education schools are presented in the sixth
section. Gifted education in the KSA is presented in the seventh section; this includes a description of the history, system bodies, provision and identification of gifted students in the KSA, as well as teacher qualifications and in-service training courses. The main obstacles for gifted education in the KSA are discussed in the eight sections of this chapter.

- Chapter four describes the research methodology employed to gather the data. It thus includes a description of the methodological debate, research design, rationale for the qualitative-quantitative combination, instruments used and discussion of the selection of the population, the sample and ethical issues considered. Instruments' validity and reliability, data analysis techniques and the research protocol are also discussed.

- Chapters five and six present quantitative and qualitative data analysis, respectively.

- Chapter seven discusses the study's key findings derived from the quantitative and qualitative analyses to address the research questions.

- Chapter eight draws overall conclusions that consider the contributions to knowledge and educational implications and provides recommendations for future research.
CHAPTER TWO:
LITERATURE REVIEW

2.1 Introduction

Educational reform measures are intended to ensure that all pupils can maximise their potential in the schools they attend (Donerlson, 2008). Many pupils are gifted and can be at significant risk of underachieving without an appropriate curriculum to challenge and maximise their abilities (DECD, 2011). Theories in education and psychology have clearly shown that the progress made by gifted individuals can be affected by teachers’ attitudes and knowledge (Clark, 2008). Consequently, this research investigates teachers’ attitudes and knowledge regarding gifted pupils and gifted education. Therefore, it is essential to review empirical and descriptive studies related to gifted pupils and their education, teacher attitudes and teacher knowledge.

In this chapter, the literature review has been organised into the following sections:

- Section 2.2 presents a historical overview of the conceptualisation of giftedness.
- Section 2.3 examines the current international trends in programmes in gifted education.
- Section 2.4 discusses different global strategies used to identify the gifted.
- Section 2.5 examines the role of teachers in supporting gifted students and how variables affect this role.
- Section 2.6 discusses different models and conceptualises attitude.
- Section 2.7 discusses research that has investigated teacher attitudes towards gifted students and gifted education.
- Section 2.8 discusses several variables as predictors of teacher attitudes.
- Section 2.9 defines and models teacher knowledge generally and, specifically, with regards to gifted students and their education.
- Section 2.10 discusses the relationship between teachers’ knowledge and attitude.
- Section 2.11 examines teachers’ need for professional development.
2.2 Conceptualisations of Giftedness

The concept of giftedness has been the subject of much debate. The term is used interchangeably in the literature based on different foci, especially with regards to gifted models/theories associated with the concept, which has led, according to Freeman (2005), to more than one hundred definitions of giftedness alone. These range from specific definitions based on an intelligence quotient (IQ) to multi-faceted definitions of giftedness with more inclusive conceptions of intelligence. The multi-faceted definitions include various capabilities as a result of developments in cognitive science and psychology research (Galitis, 2009).

This overlap between conceptions of intelligence and giftedness began with Terman’s (1916) theory of superior ability based on the Stanford-Binet Intelligence Scale. Terman (1926) defined giftedness as “the top 1% in general intellectual ability, as measured by the Stanford-Binet Intelligence Scale or comparable measure” (p. 43). This conservative and exclusive definition of giftedness ignores many kinds of abilities, such as artistic, athletic and leadership abilities, and limits the definition to only the most intellectual aspects of giftedness (Litster, 2004). Renzulli (2002; 2004) reported that using the IQ approach alone to define giftedness is conservative because people either can or cannot achieve the IQ requirements for giftedness. Thus, from 1982 to 1994, the definition of giftedness was modified to include views of IQ and non-intellectual abilities. This began with DeHaan and Havighurst (1961), who believed that giftedness consisted of six talents/abilities (intellectual ability, creativity, scientific ability, social leadership, ingenuity, art ability); thus, any child “who is superior in some ability that can make him an outstanding contributor to the welfare of, and quality of living in, society” is considered gifted (p. 15). Likewise, Marland in his "Education of the Gifted and Talented" (1972) supported substituting the combination of six abilities to define giftedness with a single mean of IQ. This view was adopted by several researchers, such as Gardner (1983), Renzulli (1978), Gagné (2009) and Sternberg (1985), who developed models/theories to define conceptions of giftedness.

Gardner developed the multiple intelligences theory (Gardner, 1983; 1999; Karolyi, Ramos-Ford, & Gardner, 2003) with a view of intelligence and giftedness as a broad conception. According to Gardner (2003), there are three means for intelligence: (1) “[a] property of all human beings (All of us possess these 8 or 9 intelligences)”;
(2) “[a] dimension on which human beings differ (No two people—not even identical twins—possess exactly the same profile of intelligences” and (3) “[t]he way in which one carries out a task in virtue of one’s goals (Joe may have a lot of musical intelligence but his interpretation of that piece made little sense to us)” (p. 8). Gardner (1983) conducted a schematic test to “assess skill in assimilating new information or in solving new problems” (p. 18). This intelligence test takes the form of nine constructs (linguistic, musical, spatial, mathematical, bodily-kinaesthetic, interpersonal, intrapersonal, naturalist and spiritual) and individuals can be gifted in any one of them; thus, we can identify more gifted people (Gardner, 1983; 1999). Along the same lines, Sternberg’s triarchic theory of successful intelligence (1985; 2003) emphasised that a high IQ score alone cannot result in giftedness. Sternberg further emphasised the multiple loci of giftedness and accepted that some components of intelligence develop after birth. The initial 1985 model consisted of three patterns of giftedness (creative, analytical and practical) and these patterns described giftedness in terms of the ability to achieve success in life (Sternberg, 2003). However, because gifted individuals are seldom gifted in just one pattern, the number of patterns was expanded to seven in 2000 to accommodate this phenomenon: analyzer, creator, practitioner, analytical creator, analytical practitioner, creative practitioner and consummate balancer (Sternberg, 2003). The Sternberg theory (1985; 2000) appears to expand Gardner’s (1983) multiple intelligences theory by viewing intelligence as a behaviour in the context of human life.

The influence of environment on the development of intelligence was extended further in a three-ring conception of giftedness introduced by Renzulli in 1978 (Renzulli, 1978; 1986; 1998; 2004). In this framework, a gifted person can be recognised as gifted based on his or her behaviour, which contains three interlocking clusters (see figure 2.1) of psychological traits, including exceptional capability, task commitment and creativity; this leads to the conclusion that gifted children can develop these abilities and apply them to their performance (Renzulli, 1986). Renzulli (1986) emphasised that the interaction and overlap between these three clusters and the environment are important to display gifted behaviour and none of them should be ignored. Renzulli (1986) further defined the cluster of above-average ability as general ability that refers to “capacity to process information, to integrate experiences that result in appropriate and adaptive responses in new situations, and the capacity to engage in abstract thinking” (p. 66). This would include critical thinking, adaptability to novel situations and superior memory-processing skills that can be assessed through general tests and traditional
learning situations (Renzulli, 1998). In contrast, specific ability refers to “capacity to acquire knowledge, skill, or the ability to perform in one or more activities of a specialized kind and with a restricted range” (Renzulli, 1986, p. 66). Specific ability such as dance and drawing can be assessed through achievement tests or specific tests (Renzulli, 1998). The task commitment cluster refers to the ability to motivate oneself to determine what is necessary for task completion (Renzulli, 1998), using “perseverance, endurance, hard work, dedicated practice, self-confidence, and a belief in one’s ability to carry out important work” (Renzulli, 1986, p. 69). According to Renzulli (2002), the final cluster is creativity; Renzulli described its importance as a general domain of ability and described a creative person as “someone who is recognised for his or her creative accomplishments or persons who have a facility for generating many interesting and feasible ideas” (p. 72). According to Renzulli (1986), these clusters need attention during the identification procedure and during the development of opportunities and services that diverge from standard instructional programmes.

![Figure 2.1 Three-ring conception of giftedness (Renzulli, 2002, p. 72)](image)

Despite the importance of Renzulli’s theory as a framework to identify gifted children and define instructional gifted programmes for them, some researchers criticised the cluster of task commitment in the theory (Shore, Cornell, Robinson, & Ward, 1991; Gross, 1993; Monks & Boxtel, 1986). Monks and Boxtel (1986), for example, developed a multi-factorial model of giftedness that included task commitment but
emphasised the impact of environmental factors on development of gifted abilities; they proposed three-ring clusters within a triangle, placing school, peers and home outside the circles but within the triangle (see figure 2.2).

![Figure 2.2 Monks and Boxtel’s (1986) Multi-factorial Model of Giftedness (Cited in Phillips, 2000, p. 20)](image)

Currently, the most well known conceptual model designed to explain giftedness is Gagné’s (2009) “Differentiated Model of Giftedness and Talent” (DMGT). In this model (see figure 2.3), Gagné (2009) proposed a distinction between the notions of giftedness and talent by which giftedness was defined as outstanding natural capabilities in one ability at least, whereas talent was defined as outstanding mastery of a consistently developed capability in at least one field; the degree to which both conceptions appear determines whether a person is perceived to rank in the upper 10% among peers in the same age group. Similar to Renzulli’s (1986, 1998; 2004) theory, the DMGT model also identifies catalysts in development ability. Gagné (2009) argued that the development of gifts into talents is built on three basic components (giftedness (G), talent (T) and learning and practice (LP)) and three additional components (intrapersonal catalysts (ICs), environmental catalysts (ECs) and chance (C)). The first basic component is G (giftedness), which refers to natural abilities in terms of intellectual/cognitive (IG), creative (CG), socioaffective (SG) and sensorimotor (MG) skills. The second basic component is T (talent), which refers to development of giftedness, and the final basic component is LP (learning/practice), which refers to the activities involved in developing a talent. In contrast, three additional components affect the process of developing gifts into talents. IC (intrapersonal catalyst) components refer to all physical and psychological factors (personality, physical
characteristics, motivation, self-management and violation) that have positive or negative influence under genetics, whereas EC (environmental catalyst) components describe the positive effect of the environment around an individual. The final component is C (chance), which refers to a person’s chances to have a beneficial family, school and programme to help him develop (Gagné, 2009). Elements of this model emphasised the impact of the environment and personality in the development of natural abilities (gifts) into specific abilities (talents).

Figure 2.3 The Differentiated Model of Giftedness and Talent (Gagné, 2004, p. 121).

Based on previous models/theories, it is apparent that the concept of giftedness has changed over time from simple models concentrating on the intelligence concept and applying the IQ score as a means of identifying giftedness to complex models that emphasise general/special abilities, creativity and the influence of personality and environmental factors on the development ability and use multi-dimension measurements to define individual ability. Consequently, these models/theories have been applied as frameworks by different educational programmes in different countries.
as strategies to identify, educate and serve gifted students. However, as giftedness is a dynamic concept which reflects changes in society’s needs and priorities, in Saudi Arabia, it is essential that its definition be flexible and for it to recognise the cultural and social interests of Saudi schools and the communities who attend them (Grubb, 2008). Gifted education in Saudi Arabia relies on the enrichment triad model (ETM) by Renzulli as the main component in its gifted programmes (Al-Jugaiman, 2007). The organisation of the ETM model is based on each cluster of three-ring conceptions of giftedness, and this model exercises even greater influence on gifted education than academic ability in terms of intelligence and creative-productive achievement (Renzulli, 1986). Thus, according to Renzulli and Reis (1997; 2006), the three-ring model of giftedness consists of intelligence and creative-productive giftedness.

The ETM proposed as creative-productive giftedness draws on aspects of human activity that involve designing a situation to develop original materials and products. Thus, intelligence and the creative-productive in the three-ring model are adapted as a conceptualisation of giftedness because the Saudi education adaptation for ETM as a gifted programme was based on the three-ring model by Renzulli. In addition, because the three-ring model of giftedness is multi-dimensional rather than unitary, that is, giftedness is based on a number of contributing dimensions, this in turn requires different types of assessment to identify gifted students than those used in Saudi education. Finally, this model emphasises the role of teachers in the design of learning situations (e.g. real-problem-oriented, inductive thinking skills) that promote creative-productive giftedness (Aljugiman, 2007; Renzulli & Reis, 1997; 2006).

2.3 Gifted Programming Options

Educational programmes for gifted students have been adapted and modified over time, as in the field of special education, to involve meeting students’ individual needs and interests as well as enhancing their abilities and skills; thus, several types of programming are offered, but they vary in length, grouping, task type and difficulty and seating arrangements (Callahan, 2001; Litster, 2004). According to Gray, Ali and Favaro (2009), gifted program options fall into three categories: enrichment, acceleration and ability grouping. These categories are considered strategies of differentiation (intervention), which refer to students’ needs for learning, their
processes of learning and the creation of an experience to prove their learning (Tomlinson, 2002a). According to Riley et al. (2004), differentiation refers to “matching instruction to individual students; it is individualising and personalising education with the intention of developing the full potential of all learners” (p. 345).

This differentiated instruction is particularly appropriate for gifted students due to their different interests and their ability to learn fast (Piirto, 1994). In addition, differentiated instruction involves “extending and stretching the curriculum to include the excitement and challenge of exploring areas of interest, as well as providing and encouraging learning at the advanced pace appropriate for accelerated learners” (Knopper & Fertig, 2005, p. 7). Along the same lines, according to Tomlinson (2002b), six important instructions should be implemented during the planning of effective differentiation in terms of curriculum for gifted and regular students: identification of an optimum curriculum, tasks designed to respect each learner, tasks arranged from easy to complex, rates that reflect each student’s growth, flexible grouping and multiple approaches for assessment. Thus, differentiated instruction can improve gifted students’ abilities, knowledge and skills and challenge other students. In the next three sections, the types of gifted programs will be discussed.

2.3.1 Enrichment

Enrichment is regarded as differentiation (intervention) in content and process to expand the knowledge and skills of gifted students in regular classes with their age peers (inclusive) or in exclusive classes by aiding students’ thinking to investigate, predict, analyse and evaluate a content area (Ferguson, 2006). According to Callow (1994), “enrichment is taken to mean the widening of the curriculum by means of additional activities or subjects, and may involve the study of some topics to a greater depth than is normal for the age group” (p. 15). Renzulli believed that systematic enrichment is appropriate and can develop gifted students; thus, Renzulli’s 1977 ETM was further developed in 1985 to a school-wide enrichment triad model (SEM), aiming to “encourage creative productivity on the part of young people, by exposing them to various topics, areas of interest, and fields of study, and to further train them to apply advanced content, process training skills, and methodology training to self-selected areas of interest” (Renzulli & Reis, 2000, p. 370).
The ETM is considered foundational for gifted students’ services because it provides three types of enrichment (see figure 2.4). The first type of enrichment (Type I) consists of general activities outside the regular curriculum that gifted students can select, such as hobbies, disciplines and occupations, as an area of individual interest to advance their level of involvement in the area selected through research and investigative activities. The second type of enrichment (Type II) involves grouping activities; students receive process-oriented instruction to help them investigate in depth their area of interest, enhance their awareness of other group perspectives, develop critical and creative thinking skills and improve their skills in learning, using reference materials and communicating. Notably, the first and second types of enrichment activities are usually provided by regular teachers in regular classes. The third type of enrichment (Type III) employs trained gifted intervention specialists who work with only a small group of gifted students in a separate resources room to investigate their intellectual interests through independent projects; this requires communication and cooperation between regular and gifted programme teachers (Renzulli & Reis, 1994; Renzulli, 1986). According to Renzulli and Reis (2006), Type III enrichment is intended to (1) supply opportunities for gifted students to explore their interests and apply their knowledge and creative thinking skills, (2) develop a thorough understanding of knowledge (content) and methodology (process) for use during their investigation, (3) develop authentic and reliable results, (4) improve self-directed learning and (5) enhance task commitment, self-confidence and feelings of creativity.

The ETM led to development of the SEM by Renzulli in 1985 and the revolving door identification model (RDIM) in 2008 by Renzulli and Reis. The SEM is applied in some countries such as the United Kingdom, which considers it an approach to identifying gifted students, to establish a plan to revive enrichment activities, accelerate and hasten the achievement of a service continuum that is integrated. In contrast, the RDIM is intended to encourage collaboration between regular teachers and other staff at schools. The SEM is more inclusive; using it, approximately 5 percent of the school’s pupils are identified as gifted. The SEM consists of three types of enrichment activities; Type I and Type II are provided to all students and classrooms whereas Type III is reserved for gifted students (Renzulli & Reis, 1994; 2008). According to Renzulli and Reis (1994), the ETM is the centre of the enrichment dimension and the SEM contains various acceleration options that provide opportunities for talent improvement in specific areas.
Another model of enrichment was provided by Gibson and Efinger (2001) when they introduced three types of enrichment activities for students. In their model, Type I enrichment involves creating general experiences outside the regular curriculum via demonstrations, guest speakers and video presentations in the area of interest. Type II requires studying, writing a report or working on a topic to improve thinking-process skills, while Type III includes an exchange of the students’ role through first-hand experience in mentorships, apprenticeships, science fairs and other problem-solving situations.

2.3.2 Acceleration

School levels and curricula are designed to meet the needs of average students. Thus, the acceleration strategy is considered an intervention option to challenge gifted students to speed up their work (Brody, 2004). According Cropley and Dehn (1996), acceleration is "completing the work specified in less time than foreseen" (p. 1.5). Likewise, Colangelo, Assouline, and Gross (2004) defined acceleration as an “educational intervention that moves students through an educational program at a faster than usual rate or younger than typical age” (p. 5).

Acceleration is often described in two models of intervention (see table 2.1): subject-based acceleration where gifted students are provided with advanced content and skills in special content areas at a younger age and lower level and grade-based acceleration that speeds up and shortens the number of levels/years gifted students spend in the
According to Rogers (2002), Southern and Jones (2004) and Gray et al. (2009), there are four types of subject-based acceleration and five types of grade-based acceleration (see table 2.1). The advantages and disadvantages of acceleration for gifted students were summarised by Petovich (2005), Rogers (2002) and Van Tassel-Baska (1992). Advantages include improving self-motivation, academic self-esteem, mental habits, professional training and processes of learning and reducing feelings of isolation; acceleration also results in an economical school system and shared intellectual camaraderie. In contrast, disadvantages of acceleration include the possibility of creating social and emotional issues, producing gaps in students’ knowledge and skills in some areas and negatively affecting the physical maturity of some younger students; in addition, some acceleration models do not provide for a differentiated curriculum, teacher training or the special skills required in some areas, such as management techniques.

<table>
<thead>
<tr>
<th>Subject-based acceleration</th>
<th>Grade-based acceleration</th>
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<td><strong>Early entrance to school</strong>: The child studies at school at an early age.</td>
<td><strong>Grade-skipping</strong>: Students reduce the school levels required.</td>
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<tr>
<td><strong>Compacting curriculum</strong>: Shortening or replacing the regular curriculum with material appropriate for the gifted child’s experience and ability.</td>
<td><strong>Multi-graded classes</strong>: In schools with few students, two school levels can be combined.</td>
</tr>
<tr>
<td><strong>Single-subject acceleration</strong>: The gifted student skips subjects in the specific curriculum so as to advance subjects based on the student’s mastery.</td>
<td><strong>Grade telescoping</strong>: In one year, the student completes the curriculum of several years.</td>
</tr>
<tr>
<td><strong>Advanced Placement (AP)</strong>: Advanced content and skills designed for secondary school.</td>
<td><strong>Testing out examination</strong>: If the students pass the test of subject matter for a semester or a year, they can move to a higher grade with advanced subjects.</td>
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<td></td>
<td><strong>Early admission to university</strong>: Students move into university at a younger age than others.</td>
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Table 2.1 Acceleration models (Rogers, 2002; Southern & Jones, 2004; Gray et al., 2009).
2.3.3 Ability Grouping

Ability grouping refers to placing students together for instruction in a small group based on their ability levels or performance (Kulik & Kulik, 1992; Gray et al., 2009); this is important for gifted education in terms of differentiated curriculum, especially for enrichment. According to Rogers and Span (1993), “...enrichment as part of a within-class ability grouping practice, or as a pull-out programme, produces substantial academic gains in general achievement, critical thinking, and creativity for the gifted and talented learner” (p. 590).

There are several ability grouping options, which can be divided into two categories. The first is whole-class strategies that contain two types of grouping (multi-level classes and full-time ability grouping). The second category is small-class strategies that contain five types of grouping (within-class grouping, pull-out programs, cluster grouping, cross-grade grouping, mixed-ability cooperative grouping) (Rogers, 2002; Shields, 2002; Gray et al., 2009) (see table 2.3). Lou et al. (1996) reported that small-class instruction is more effective than whole-class instruction because “[s]mall-group instruction means that a class of students is taught in several small groups; there is often an emphasis on diversity of instruction rather than on uniformity of instruction” (p. 425).

The review of gifted education literature has shown that ability groups hold advantages and disadvantages. As summarised by Daniel (2007) and Rogers (2002), the advantages of grouping by ability include helping teachers to define appropriate and different instruction to meet gifted students’ needs and providing an appropriate environment for progress in terms of social life or skills. However, the disadvantages of ability grouping include possibilities to create elitism and negative attitudes in some teachers or students and the effects on self-esteem and confidence among students with lower ability (see table 2.2).
### Whole-class strategies

**Multi-level classes (XYZ):** Based on the ability of students in the same grade, they are separated into groups and these groups are instructed, for the full day or a single subject, in different classrooms with the same curricular materials.

**Full-time ability grouping:** The curriculum adapts with more educational experiences to provide specifically for gifted students as a group.

### Small-class strategies

**Within-class grouping:** Gifted students are grouped in a single classroom, then divided into small groups with different instructional materials.

**Pull-out programmes:** For some hours during the school day, students move to a resources room to engage in enrichment activities with different-grade students and with gifted programme teachers.

**Cluster grouping:** Academically talented students in the same grade are grouped in a classroom of mixed ability and provided with different instruction (requires a highly qualified teacher).

**Cross-grade grouping:** Based on academic achievement in a subject, students from different grades are grouped so that teachers can teach the subject in different classrooms with different curricular material.

**Mixed-ability cooperative grouping:** Heterogeneous groups of students work on their own and cooperate to solve problems and prepare lessons.

<table>
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Table 2.2 Ability grouping strategies (Rogers, 2002; Shields, 2002; Gray et al., 2009).

It appears, however, that no ideal strategy with regards to meeting the needs of gifted students has emerged. Thus, most gifted education programmes around the world (e.g. Saudi Arabia, United Kingdom, Australia, United States) use a mix of strategies of enrichment, acceleration and ability grouping. For example, in Saudi Arabia, the
educational gifted programme is mixed between pull-out as an ability grouping strategy, problem solving as an enrichment strategy and compacting as an acceleration strategy (Aljugiman, 2007). In contrast, in the United Kingdom, educational gifted programmes are offered for gifted and talented pupils with some limited grade skipping as an acceleration strategy, shared classes with older pupils and whole groups as an ability grouping strategy and extracurricular activities and individual mentoring as an enrichment strategy (Mönks & Pflüger, 2005).

However, enrichment as a differentiation (intervention) strategy seems central to gifted education programmes; this approach can enrich both gifted and average students with knowledge, enjoyable experiences and challenges associated with real issues around them. Furthermore, the acceleration approach is viewed as the most effective strategy to increase gifted student achievement and motivation (Colangelo et al., 2004). Therefore, the literature (e.g. Davis & Rimm, 2004; Ferguson, 2006) has recommended that enrichment be combined with acceleration to provide an appropriate programme for gifted pupils.

2.4 Identification of the Gifted

Identification of the gifted seems more challenging today than in earlier eras of education because the conceptualisations of giftedness have evolved over time and no single definition has been agreed upon. Eyre (2001) mentioned that even though development of gifted education in the United Kingdom has addressed certain issues, the issues regarding identification of gifted and talent pupils is still of most concern for schools at the start of a gifted education initiative. In addition, the lack of agreement on assessment methods, design and implications across schools and districts has also resulted in distinguishing conceptions of gifted identification (Renzulli, 2002; Coleman, 2003; Davidson Institute, 2011). Thus, defining giftedness, program goals and curriculum offerings and provision of services should be an early consideration in developing an identification system. The system should follow a series of orderly and sequential steps, clarify the target and state the purpose of each component of the identification system (Feldhusen & Jarwan, 2000).
Identification of gifted students should take place as early as possible because early identification will allow early intervention to enhance gifted pupils’ potential as well as minimize the chances of missing a gifted pupil who is identified later (DECD, 2011; Hodge & Kemp, 2006). According to Silverman (2007), giftedness can be identified at any age although it can be observed at three years of age. The most appropriate time to test children for giftedness is between five and eight years old; after age nine, children may reach the limits of the test, and socialising effects can lead some gifted pupils to hide their ability.

The consensus is that there is no single universal approach to identify gifted students even as there is no single way to define giftedness; thus, multiple assessments are important and should be incorporated into the identification process (Fryndenberg & O’Mullane, 2000; Harrison, 2003; DECD 2011). Passow (1981) argued that “a variety of techniques, procedures, and instruments must be used to identify students who are gifted and talented, to differentiate their educational experiences” (p. 9). Multiple assessments can address the complexity involved in identifying gifted students and improve the reliability of such identification (Ross-Sisco, 2008). Brown, Avery and VanTassel-Baska (2003) said that “[n]o single test score ensures or precludes eligibility for services. The determination must include an assessment by a certified school psychologist. A separate team is convened to conduct the multidisciplinary evaluation, and parents are included on this team. As a result of this process, about 4% of the total student population is identified as gifted” (p. 44). That is, according to DECD (2011), the comprehensive identification of gifted students needs to balance the use and importance of objective and subjective procedures assessments.

2.4.1 Objective Identification Procedures

According to Gray et al. (2009), the objective procedures assessment requires group and/or standardized tests of general intellectual ability, creativity, achievement and intrinsic motivation scales.

A) Tests of General Intellectual Ability

The group-administered intelligence test, such as the Cognitive Ability Test (CogAT), and the individually administrated test are two types of test proposed to measure the
ability of students during school, although there are differences between them in that the group-administered test is relatively less expensive and more efficient, and it requires limited professional training. However, the individually administered test (e.g., Wechsler Intelligence Scale for Children-4th (WISC-IV)) is more expensive and requires testers to have professional training, but it is more accurate. Furthermore, the group-administered intelligence test assesses cognitive abilities (e.g. magmatic, language and problem-solving abilities) and ignores the thinking process, whereas individually administered tests can predict students’ achievement as well as their general and special abilities (Gray et al., 2009; Rogers, 2002). The concern with general intellectual ability testing with both types is that although they are accurate and in wide use, they do not necessarily allow for the identification of gifted students who speak different languages and come from different backgrounds or cultures (Colangelo & Davis, 2003). This is the reason why the primary schools in the United Kingdom, for example, use teacher and parent nominations as a main assessment to identify gifted and talent pupils in primary schools (Mönks & Pflüger, 2005).

B) Creativity Test
According to Renzulli’s three conceptions of giftedness, there are clusters of traits that involve fluency, flexibility, originality, openness to new experience, curiosity, willingness to take risks and sensitivity, and all these traits represent creativity; thus, a creativity test such as the Test of Creative Thinking for Torrance should be incorporated into the identification of gifted students so that the test can measure cognitive processes and non-cognitive aspects of gifted students (Renzulli, 2002; Renzulli & Reis, 2000, 2008; Torrance, 1984; Cropley, 2000). It is important to mention that the difference between creativity and intelligence tests is that creativity tests measure cognitive thinking divergently whereas intelligence tests measure convergent thinking. This implies that using only one of the tests is not sufficient to identify gifted students and that efficiency increases through the use of both, in addition to other instruments (Kerr & Gagliradi, 2003; Gray et al., 2009).

C) Achievement Test
In the context of school, achievement tests such as the Scholastic Achievement Test (SAT) are intended to measure both students’ overall knowledge of various subjects and the effects of instruction to indicate their skills in terms of reading, mathematics,
writing and other areas (Gray et al., 2009). The disadvantage of achievement testing is that it is not standardized across schools; in addition, it seems to be domain specific, which means that gifted students could achieve in one area and not achieve in others, which can lead to overlooking gifted students during the identification process (Maitra, 2000).

D) Intrinsic Motivation Scales

According to Gottfried and Gottfried (2004), the motivation aspect is involved in giftedness conceptualisation as a “prerequisite for, component of, catalyst of, and even an outcome of giftedness” (p. 121). This leads to the belief that motivation is part of giftedness and needs to be measured as one basis for identifying gifted students (Gray et al., 2009). Despite the old historical view of motivation as part of giftedness, the first test to measure intrinsic motivation was carried out in 1986 by Gottfried (Children’s Academic Intrinsic Motivation Inventory (CAIMI)) (Gottfried, Fleming, & Gottfried, 2001).

2.4.2 Subjective Identification Procedures

According to Gray et al. (2009), the subjective procedures assessment involves teachers, parents and peers of students who judge student giftedness from general observation.

A) Teacher Nomination

Teacher nomination is usually seen as a substantial and first step to identify gifted students due to teachers’ beneficial position to observe and test their students many times (Gray et al., 2009; Senate Select Committee Report, 1988). According to Painter (1989), “the opinion of very experienced and skilled teachers is generally accepted as the most reliable way of identifying a gifted child” (p. 39). This means that many teachers are not qualified to nominate gifted students because of their low knowledge with regards to the characteristics of gifted students, which leads many of them to identify students with high achievement and overlook students with potential and young gifted students (Gray et al., 2009; Maitra, 2000). Inan, Bayindir and Demir (2009) researched the level of awareness among 75 teachers with regards to the
characteristics of gifted students. The results indicated that the teachers had relatively low awareness of gifted children’s characteristics. Therefore, teachers must receive training courses in strategies involved in the identification process (e.g. characteristics of gifted students, using characteristics and behaviours checklists); this is an essential consideration when utilising the teacher nomination strategy along with other assessments in the identification process (Grubb, 2008).

B) Parent Nomination

Parent nomination can be more accurate than teacher nomination in identification of gifted primary school pupils because parents know their children, although their judgment can be affected by their biases (Gross, 1993; Rogers, 2002; Gray et al., 2009; Silverman, 2007). Therefore, Gray and Favaro, (2009) recommended that to obtain successful parental judgments as part of gifted pupil identification and to avoid parental biases, parents need to be provided with different reporting forms, such as questionnaires, rating scales and checklists (e.g. Thing My Child Likes to Do and Characteristics Checklist), to supply the school with varied information about their child’s characteristics, skills and behaviours, which will help the school identify gifted pupils.

C) Peer Nomination

For older gifted students, peer information from a checklist or questionnaire, in addition to other assessments, is considered appropriate as supplementary information about gifted students and the ways they are viewed by the group (Landvogt, 1997; Gray et al., 2009). However, this method can be affected by group competition or jealousy, students’ social adjustment problems and gifted students’ underachievement (Maitra, 2000).

2.5 Teacher Role and Education of Gifted Students

According to Gagne’s differentiated model of giftedness and talent, the most critical aspect of gifted education is teachers who, as part of the educational environment, exert significant influence on students’ development by offering them a learning
environment that is both nurturing and individualised (Lassig, 2003; Clark, 2008; Braggett, 1994). Clendening and Davies (1983) reported that:

> It is the “teacher who breathes life into unit or course plans; who imbues words with meaning; who shapes thoughts into insight; who infuses the spirit of challenge and adventure into the day to day business of learning itself. It is the teacher who seizes the teachable moment, sparks interest, changes pace and emphasis to accommodate individual, group, and class reactions, and above all, brings that special excitement to learning that reflects the true artistry of creative teaching” (p. 27).

In addition to developing these teacher qualities, teachers must provide a responsive learning environment. According to Clark (2008), a responsive learning environment is:

> “flexibly structured and presents a complex learning organisation for the student. This environment has the ability to meet all learners at their present level of cognitive, emotional, social, physical, and intuitive development and to help them move from that point. In this learning environment, gifted students can pursue interests in depth with a minimum of time limitations. They are no longer singled out, but they can be grouped flexibly with other students as their learning needs demand, or they can work individually whenever it is more appropriate. The gifted learner can function as a teacher, a challenged student, a researcher, an apprentice, a resident expert or a learning manager” (p. 379).

Research suggests that many factors can determine the success of teachers in meeting gifted students’ needs, and teacher knowledge of gifted students and their education is the most important factor that can help teachers understand how to meet gifted educational needs (Silverman, 2000). Furthermore, this type of knowledge is required for both regular and gifted programme teachers because of the recent trend in educational systems towards heterogeneous classrooms (enrichment programmes) in which gifted and regular students receive special instruction together using the same curriculum structure and class environment (Ehlers & Montgomery, 1999; Chipego, 2004).
Prevalent in the literature is that attitude is one factor that has an impact on an individual’s behavioural intentions, perceptions and judgments; thus, a negative attitude can lead to discriminatory behaviour, especially when it exists within a group (e.g. a group of teachers) (Bohner & Wänke, 2002). Gifted students can be affected by negative teacher attitudes and negative classroom environments. They may become non-achievers, develop poor attitudes or lose their motivation to excel (Copenhaver & McIntyre, 1992; Hansen & Feldhusen, 1994; Curtis, 2005; Geake & Gross, 2008). In contrast, teachers with a positive attitude tend to be more supportive of education for gifted students and more effective in identifying and catering to the needs of the gifted (e.g. help the gifted develop the self-discipline necessary for task commitment and improved performance) (Whitmore, 1986). Teacher attitudes and knowledge regarding the gifted and gifted education are discussed in more depth in the following parts.

2.6 Conceptualisation of Attitude

The word *attitude* comes from the Latin word *aptus* (Garg, 2012). Yet, there has been little agreement among psychology, sociology, education and science on the definition of the term. According to Allport (1955), "The concept of attitude is probably the most distinctive and indispensable concept in contemporary American social psychology" (Cited in Lars, 1990, p. 304). Thirteen years later, Eiser (1986) argued that "we all have a rough idea of what attitudes are" (p. 11).

However, based on a review of the relevant literature, it is apparent that various definitions of attitude have been provided by different authors at different times. For purposes of this study, a definition of attitude is necessary to add clarity to the thesis. Therefore, the classification provided by Eagly and Chaiken (1993) of attitude definitions has been adopted because of the clarity and practicality of their categorisation. They suggested that attitude should be viewed through the perspective of two types of models. The first type defines attitude as a tri-dimensional model and suggests that attitude is a combination of affective, behavioural and cognitive reactions to phenomena. The second type defines attitude as a uni-dimensional model and views attitude as one character holding an affective concept (positive or negative) on other concepts.
2.6.1 Tri-dimensional model-based definition

According to the tri-dimensional model, researchers should define attitude as a combination of affective, behavioural and cognitive components (see figure 2.5). The cognitive component of attitude is characterised by the belief, perception, concept and opinion of an individual towards an attitude object or phenomena (Hewstone & Stroebe, 2001; Hewstone, Stroebe, & Jonas, 2012; Papatheodorou, 1995). The second component is an affective component that contains emotions or feelings (positive or negative) attached to the attitude object or phenomena. In this context, Klausmeier (1985) reported that, “[t]he affective component of an attitude refers to the emotions one associates with an object, person, event or idea. That is, something is pleasing or displeasing; it is liked or disliked” (p. 376). The third behavioural component of attitude involves the action tendency or predisposition to the attitude object or phenomena (Hewstone & Stroebe, 2001; Hewstone et al., 2012).

![Figure 2.5 Tri-dimensional model of attitude (Hewstone & Stroebe, 2001, p. 241).](image)

Indeed, many authors have adopted this model in their definitions or studies of attitude (e.g. Allport, 1967; Smith, 1973; Rosenberg & Hovland, 1960; Breckler, 1984; Pennington, 1986; Stahlberg & Frey, 1988; Calhoun & Acocella, 1990; Rajecski, 1990; Havland & Rosenberg, 1994; Myers, 2005; Poon, 2007; Adediwura & Tayo, 2007). For example, Allport (1967) defined attitude as “a mental and neural state of readiness,
organised through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related” (p. 8). Along the same lines, Calhoun and Acocella (1990) expressed that “[a]n attitude is a cluster of ingrained beliefs and feelings about a certain object and a predisposition to act toward that object in a certain way” (p. 288). Myers (2005) defined an attitude as “a favourable (i.e., positive) or unfavourable (i.e., negative) evaluative reaction toward something or someone, exhibited in one’s beliefs, feelings, or intended behaviour” (p. 134). Eagly and Chaiken (2007) similarly defined attitude as “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (p. 598). Adediwura and Tayo in the same vein defined attitude as “a consistent tendency to react in a particular way – often positively or negatively – toward any matter” (p. 166).

According to the tri-dimensional model, there are deep linkages and interactions among these three components of attitude. Summers (1970) reported that “[i]t is generally accepted that there is a linkage between cognitive components—particularly evaluative beliefs—and the readiness to respond to the object” (p. 2). Furthermore, these three components produce different effects on attitude. For instance, the evaluation of individual beliefs (cognitive component) might help to define the individual's readiness (behavioural component) to respond to the attitude object (Hewstone & Stroebe, 2001; Hewstone et al., 2012; Papatheodorou, 1995).

### 2.6.2 Uni-dimensional model-based definition

According to the uni-dimensional model, researchers should evaluate the characteristics of attitudes by focusing on attitude as an affective component (Papatheodorou, 1995). Notably, this view of attitude does not ignore other components or concepts; rather, it distinguishes between beliefs, attitudes, behavioural intention and behaviour and concentrates more on exploring the correlations among them (Papatheodorou, 1995; Hewstone & Stroebe, 2001; Hewstone et al., 2012).

Many researchers have adopted the uni-dimensional model to define the term attitude. According to Sherif and Sherif (1973), attitude is “an individual's set of categories for evaluating a stimulus domain, which he has established as he learns about that domain
in interaction with other persons and which relate him to various subsets within the domain with varying degrees of positive or negative affect” (p. 396). Following the same line of thought, Petty and Cacioppo (1981) stated that the term attitude should be used to refer to "a general and enduring positive or negative feeling about some person, object or issue" (p. 7). A slightly more specific view is that “attitudes are associations between a given object and a given summary evaluation of the object—associations that can vary in strength and, hence, in their accessibility from memory” (Fazio, 2007, p. 608). Fishbein and Ajzen (Fishbein, 1966; Ajzen, 1985, 1991, 2002; Fishbein & Ajzen, 1975, 2010; Ajzen & Fishbein, 1977, 1980, 1994, 2005) and Ajzen (2005) also restricted attitudes to their affective and evaluative character as one component and studied them as being distinguishable from belief and behaviour; therefore, Fishbein and Ajzen (1975) described attitude as "[a] learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object" (p 6). Ajzen and Fishbein (1975) first proposed the theory of reasoned action; this theory evolved and became known as the theory of planned action by Ajzen in 1985 (see figure 2.6).

Figure 2.6 Theory of planned behavior (Ajzen, 1991, p. 182).

<table>
<thead>
<tr>
<th>Background factor</th>
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<tr>
<td><strong>Dispositions</strong></td>
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<tr>
<td><strong>Demographics</strong></td>
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<td><strong>Information</strong></td>
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Based on their cumulative findings, Ajzen and Fishbein (2004) concluded that an individual’s behavioural intention is guided by attitudes, perceived social norms and feelings of control. They further suggested that when identical action and target elements exist across attitudinal and behavioural measures, then attitudes will in fact predict behaviour.
2.6.3 Evaluation of the attitude models

The attitude models discussed thus far have clearly demonstrated that the definition of attitude remains problematic. No single definition has been specified as the best or all-embracing definition; as Green (1977) reported, "This fact is largely a consequence of the broadness of the concept, which permits various definitions reflecting the theoretical point of view of the individual of attitudes" (p. 111).

Researchers tend to provide two kinds of definitions of attitude based on the tri-dimensional or uni-dimensional models. The tri-dimensional model conceives attitude in terms of three separate entities, namely, affect, cognition and behaviour, while the uni-dimensional model emphasises the evaluative aspect of attitude in relation to other concepts. In terms of evaluating these models, McGuire (1985) argued that the high correlation across and within the tri-dimensional model has led many researchers to view them as being identical and thus reduce them to their evaluative-only aspects. In contrast, Rajecki (1990) argued that although not all attitudes conform to the uni-dimensional model, the tri-dimensional model seems to be a useful way to conceptualise many attitudes; even the uni-dimensional model can apply to certain attitudinal domains. Malhotra (2004) mentioned the acceptance of the uni-dimensional model to define the attitude aspect, although Malhotra believed that many issues remain to be resolved before this model can be employed in research. Malhotra argued that this model is weak because the correlations between intention and behaviour may be obtained during measurement of attitude, and consistency among beliefs, attitude and intent and behaviour may have little to do with the hypothesised relationship among them. Malhotra, furthermore, indicated that “[t]heories, such as the theory of reasoned action and the theory of planned behavior, [uni-dimensional model] need to be modified to account for automatic habitual behaviour, such as that engendered by past use” (p. 478).

However, based on less consistency and the drawbacks in the measurement method of the uni-dimensional model, and because most previous researchers who have studied teacher attitude regarding gifted students and their education have adapted the tri-dimensional model to define attitude in their studies (e.g. Coleman & Anastasiow, 2009; Song, 2001; Gagné, 1994a, b), the tri-dimensional model is generally preferred.
Therefore, the definition of attitude expressed by Myers (2005) was adopted; he viewed attitude as “a favourable (i.e., positive) or unfavourable (i.e., negative) evaluative reaction toward something or someone, exhibited in one’s beliefs, feelings, or intended behaviour” (p. 134).

The cognitive component refers to beliefs, opinions and ideas towards the object or phenomena. The affective component involves emotions (e.g. like and dislike, love and hate, agree and disagree), and the behavioural component refers to intentions or action tendencies (Armitage & Connor, 2001; Myers, 2005).

2.6.4 Characteristics of attitude

Based on a review of the general area of attitude theory and research, there are five main characteristics that distinguish attitude from other concepts:

A) Attitude is a psychological tendency: Shapiro (1999) stated that “[a]n attitude is a general tendency of an individual to act in a certain way under special conditions” (p. 8). Along the same lines, Eagly and Chaiken (2007) defined attitude as “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (p. 598).

B) Attitude is organised through experience: Allport (1953), for example, concluded that most investigators basically agreed that "attitude is a learned predisposition to respond to an object ...." (p. 818). Allport (1967) further defined attitude as “a mental and neural state of readiness, organised through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related” (p. 8). Likewise, Fishbein and Azjen (1975) described attitude as "[a] learned predisposition to respond in a consistently favourable or unfavourable manner with respect to a given object" (p. 6). This predisposition starts with young children, who learn attitudes from observing people important to them. Persuasion is another variable at work in forming attitudes; individuals can be persuaded into accepting a certain position or perception towards an object or a person. In addition, attitudes can be formed if an individual is rewarded or punished for a particular view or action (Shapiro, 1999; Johnston, 2002).
C) Attitudes are not directly observed: The private experience of the individual attitude occurs within the individual and is not immediately observable to an outsider. Outsiders can only infer attitude through an individual’s statements or actions (Hewstone & Stroebe, 2001; Hewstone et al., 2012; Papatheodorou, 1995). Sherif (1976) said that attitude is "a psychological concept designating something inside the individual. Just as we can never directly observe pain, psychological tension, or an unspoken idea, we cannot see an attitude" (p. 112).

D) Attitude can be changed: As attitudes are learned through experience, negative attitudes can be transformed into positive attitudes, and vice versa. This transformation usually involves a slow and gradual process because attitudes acquired through repeated experience are ingrained and not necessarily easy to modify. This means that attitudes change in different ways and with different amounts of effort. Generally, the more developed the attitude, the more difficult it is to change (Baron, Branscombe, & Byrne, 2009; Bohner & Wänke, 2002). Oppenheim (2000) pointed out that attitudes closer to one’s own philosophy of life are more enduring and resistant to change than superficial attitudes. Brown (2007) suggested that negative attitudes can be changed, often by exposure to reality. Sherif and Sherif (1976) also argued that “attitudes are not temporary states but are more or less enduring once they are formed. Of course, attitudes do change; but once formed they acquire a regulatory function, such that, within limits, they are not subject to change with the ups and downs of homeostatic functioning of the organism or with every just noticeable variation in stimulus condition” (p. 112). Several models attempt to explain the process of changing attitude. These models of attitude change have been reviewed in great detail by Eagly and Chaiken (1993, 2007), who concluded that there are five processes of attitude change: the new input given, how it is received by the person, the nature of the attitude already held by the person, how the person processes the new information and whether there are any gains to be made through the possible attitude development.

E) Attitudes tend to be specific or comprehensive: This is determined by the situation wherein the attitude object occurs and the individual’s experience with the attitude object (Baron et al., 2009). For example, attitudes can be highly general, such as "anomie", “the feelings of social uncertainty or dissatisfaction” (Lambert, 1963, p. 114), or they can be specific, as those towards gifted students. Thus, general or limited
attitudes are usually carried over from one situation to another, or they are transferred by other individuals or groups with a similar disposition towards the attitude object (Baron et al., 2009).

2.6.5 The relationship between attitudes, beliefs and behaviour

There is, as mentioned in the conceptualising of attitude section, agreement by both uni-dimensional and tri-dimensional models that attitude contains an affective component, although uni-dimensional models disagree (e.g. Ajzen & Fishbein, 2004; Fazio, 2007) about whether beliefs (cognitive component) and behaviours should be included as part of the attitude concept. The prevailing view (e.g. Allport, 1967; Smith, 1973; Rosenberg & Hovland, 1960; Breckler, 1984) among cognitive social psychologists who embrace the tri-dimensional theory of attitude is that attitude consists of an affective component (positive or negative), cognitive component (belief, opinion, conception) and behaviour component (intention or action tendency) (Alcock, Carment, Sadava, Collins, & Green, 1997).

Much research on the relationships among belief, behaviour and attitude has revealed that attitude influences belief and behavior. Bohner and Wänke (2002), for example, mentioned that the relationships among attitudes, belief and behaviour are complex and not usually consistent, although it is generally agreed that attitude affects behaviour or behavioural intents, beliefs, perceptions and judgments. Likewise, Krosnick (1988) and Schuman and Presser (1981) mentioned that attitude has a strong impact in guiding behaviour and selecting personal beliefs. Furthermore, Eagly and Chaiken (1998) defined an intra-attitudinal structure of attitude, which is a persuasive impact of cognitive (belief), affective and behavioral (three-attitudinal components) information on someone towards an attitude object. Rajecki (1990) stated that there is an impression shared by both laypersons and scientists that "...behavior is influenced by our attitudes, whereby attitude is seen as the cause and behaviour is seen as the effect" (p. 4). Gardner (1985) further supported this relationship between these aspects and reported that "an individual's attitude is an evaluative reaction to some referent or attitude object, inferred on the basis of the individual's beliefs or opinions about the referent" (p. 9). Thus, it seems there is an affective nature of the relationship among attitude, belief and behaviour.
Other researchers have suggested measured attitude can predict behaviour. Armitage and Connor (2001) and Myers (2005) suggested that when the measured attitude directly relates to a situation, it is predictive of an individual’s behaviour (intention or action tendency). Their suggestion appears to mesh with the tri-components model of attitude (e.g. Allport, 1967; Smith, 1973; Rosenberg & Hovland, 1960; Breckler, 1984) that attitude consists of three components (cognition, affect and behaviour) interacting with each other. Furthermore, it appears that this condition is “directly related to the situation” in predicting behaviour. Eagly and Chaiken (1993) described this condition such that "an attitude toward a specific behavior directed toward a given target in a given context at a given time should predict the specific behaviour quite well because this attitude corresponds to the specific behaviour" (p. 167).

Likewise, Ajzen and Fishbein (1977, 1980, 1994, 2005) and Ajzen (2005) suggested that if the action and target elements are identical across attitudinal and behavioural measures, then attitudes will indeed predict behaviour. In addition, the authors argued that behavioural intention is the immediate antecedent of overt behaviour; an appropriate measure of intention provides the most accurate prediction of behaviour. The individual’s intention to perform a specific act in reaction to a specific stimulus object in a specific situation is based on several assumptions. First, individuals rely on their beliefs about the consequences of specific behavior in any given situation. In addition, they take into account their own evaluation of the consequences. Finally, individuals are influenced by their normative beliefs (i.e. their understanding of what they should do) and their motivation to comply with the norm.

The implication of this research for education is that teacher attitudes can be used to understand teacher beliefs and behaviour. Therefore, teacher attitudes should become an important focus of educational research (Clark, 2008; Woolfolk, 2011). Pajares (1992) argued that fundamental assumptions, attitudes and beliefs must be understood in relation not only to each other but also in relation to other belief systems. Other research has suggested a strong relationship among teacher attitudes and planning, instructional decisions and classroom practices. Wood and Floden (1990) argued that understanding teacher attitudes towards diverse learners is important because these attitudes "shape the interpretations teachers make of their classroom experiences" (p. 9). Munby (1984) and Wilson (1990) suggested that attitude self-report instruments
answered by teachers reflect their classroom practices. High teacher commitment is regarded as a behavioral form of positive attitude and belief towards gifted pupils and their education (Ajzen, 2005).

2.6.6 Function and importance of teacher attitude

Attitude is often the research focus in education and psychology due to its function (Maio & Olson, 2000). Shavitt (1990) stated that "his role of attitudes is referred to here as the social identity function" (p. 125), a classification for motive that takes into account both private identity and public identity goals. Boninger, Krosnick and Berent (1995) observed that while attitudes appear to be shaped by reference groups and significant others, values contribute to strengthening the commitment to personal study and to regulating the impact of thought on attitude polarisation. Thus, teacher attitudes seem to directly affect the educational lives of all students, including gifted students.

A positive teacher attitude seems to contribute to classroom conditions in which learning is optimised for gifted students (Grantham, 2002). McCoach and Siegle (2007) mentioned that teacher attitude and perception influence teaching strategies for gifted students. In addition, Wood and Floden (1990) posited that teacher attitude has not only influencing power over teacher performance but also shapes the way teachers interpret the emotional and academic needs of regular and gifted students in their classroom.

Thus, the positive attitude of the teacher towards giftedness shows an acceptance of gifted students and an understanding of their emotional, social and academic needs (Curtis, 2005). Teachers with a positive attitude tend to be more supportive of education for gifted students and more effective in identifying and catering to the needs of the gifted (e.g. help the gifted develop the self-discipline necessary for task commitment and improved performance) (Whitmore, 1986). It follows that the positive attitude of teachers helps to create a positive and supportive environment for gifted students, one that helps to meet their needs. Morris (1987) mentioned that gifted students need a school environment that is positive. Lens and Rand (2002) also noted that academic achievement of gifted students requires support from teachers.
Gifted students, however, can also be affected by negative teacher attitudes and negative classroom environments. They may become non-achievers, develop poor attitudes or lose their motivation to excel (Copenhaver & McIntyre, 1992; Hansen & Feldhusen, 1994; Curtis, 2005). In addition, a negative teacher attitude can result in discriminatory behaviour towards gifted students (Bohner & Wänke, 2002). Jacobs (1972), in an early study, suggested that teachers tend to evoke attitudes in their students that are similar to their own; if a teacher’s attitude is not favorable to gifted students, a subtle negative transfer takes place, and vice versa. Other authors have extended this negative impact to include gifted students’ intellectual abilities in that gifted students may learn that their ability is not acceptable; this results in a negative impact on gifted students’ self-concept and social acceptance (Copenhaver & McIntyre, 1992; Hansen & Feldhuen, 1994; Megay-Nespoli, 2001).

Teacher attitude towards gifted students is also important because it has a direct effect on educational programmes for gifted students. Davis and Rimm (2004) mentioned that teacher attitude is significant when developing gifted programmes. Davis and Rimm (2004) recommended that the first question to be asked when devising a gifted program should be, “What is our attitude toward gifted children?” (p. 55). Because teacher attitude appears to significantly influence gifted students and their educational programmes, it is necessary to understand the attitudes of teachers towards gifted students. Tait and Purdie (2000) suggested that defining teacher attitude yields implications for the interconnected relationships among the behaviour of students, the behaviour of teachers and the attitudes or behaviour of the community.

2.7 Teacher Attitudes towards Gifted Students and Gifted Education

Although studying teacher attitude towards gifted students and gifted education has been a main aim of educational research for more than half a century (e.g. Justman & Wrightstone, 1956; Peachman, 1942), the picture is still not clear because these studies have had mixed results (McCoach & Siegle, 2007).

Some studies have concluded that teachers have positive attitudes toward gifted students and gifted education (e.g. Moore, 2009), while others have found a negative attitude (e.g. Colangelo & Kelly, 1983). In addition, some studies have reported that
teachers have both positive and negative attitudes towards gifted students and gifted education (McCoach & Siegle, 2007). It seems, however, that the mixed results of these studies about teacher attitudes towards gifted students and their education are due to researchers’ connection to various methodologies in their investigations. Begin and Gagné (1994a) mentioned the difficulty of comparing research finding due to methodological inconsistencies and inconsistencies in the identification of variables and trends.

Another important factor that may contribute to the mixed results of these studies is that different gifted programs have been provided to gifted students by different educational systems, countries and schools. Chipego (2004) mentioned that positive or negative teacher attitudes towards gifted students are a result of attitudes that teachers hold towards the type of gifted service delivery (i.e. inclusion versus “pull-out” programs). Along the same lines, Fourm (1980) designed a study of teacher attitudes towards gifted students and their education and found that regular teachers prefer to keep gifted students working in their classrooms rather than providing acceleration or other practices, including grade skipping and early admission to gifted programs. Fourm added that regular teachers frequently believe that gifted students “function within a curricular setting without additional help or instruction from the teacher because of their giftedness” (p. 89).

A third factor, however, that may contribute to the mixed results of teacher attitude studies is the differences among the teachers themselves. Rubenzer and Twaite (1979), in their study of the attitudes of 1,200 teachers towards the gifted and talented, found that the differences in attitudes were related to the teachers’ experience, the grade level they teach and whether or not they have had in-service training courses in gifted education. Begin and Gagné (1994a) further reported in their investigation to explore teacher attitudes that “[t]he opinions expressed range from complete rejection of such services, usually based on ideological grounds, to unreserved support for them” (p. 74). Begin and Gagné (1994a) added that because of the presence of such large individual variations in opinion, “[t]here must be a certain number of characteristics, related to the persons themselves or to their experiential background, whose combination would predict fairly accurately the direction and intensity of their general attitude toward the education of the gifted and talented” (p. 162).
2.7.1 Studies that show teachers have positive attitudes

Some studies have concluded that teachers have positive attitudes towards gifted students and gifted education. Mulraney (1986) and Braund (1993) attempted to assess attitudes towards gifted programmes of primary schools using different methodologies. Their samples consisted of non-teachers, teachers, administrators and pupils. Mulraney used a self-developed survey to measure attitudes of 60 teachers, whereas Braund used an array of measures with a maximum of 8 teachers responding to each measure. Both studies concluded that most teachers have a positive attitude towards gifted pupils and their education.

A study by Semmel, Abernathy, Butera and Lesar (1991) used a scale developed by them to assess regular and gifted programme teachers’ attitudes, beliefs and perceptions towards pull-out and in-class (inclusive) gifted programmes. Their study concluded that both regular and gifted programme teachers have positive attitudes, and both support the pull-out model more than the in-class model.

Downing, Eichinger and Williams (1997) attempted to investigate regular teachers’ attitudes and their support for heterogeneous classes. The results indicted that teachers held positive attitudes towards gifted students. Another point emerged that teachers with in-service training programmes in gifted education held more positive attitudes towards mixed-ability classes than teachers with no or little training. This study seems to support the Rubenzer and Twaite (1979) and Begin and Gagné (1994a) claim that teacher attitude is determined by training courses received by teachers.

Lummis (1999) measured teacher attitudes towards gifted pupils and their education before and after implementation of programs for teacher development in gifted education. A pre-test using Gagné and Nadeau’s attitude scale yielded 69 responses, and 63 teachers responded to a post-test. The findings showed that most teachers hold positive attitudes towards gifted pupils and that their attitudes become more positive after receiving instruction regarding the gifted and their education.

Lassig (2003) attempted to define the attitudes of primary school teachers in South-East Queensland towards gifted pupils and gifted education and the factors associated with these attitudes. The study consisted of two research phases. In the first phase, teachers’
(N=126) attitudes were surveyed using Gagné and Nadeau’s questionnaire (1991). The case study and semi-structured interview methods were used in the second phase to test associations between attitudes and biographical variables. The survey results indicated that teachers have a positive attitude towards gifted students and gifted education, but they do not support ability grouping and acceleration and are only minimally aware of the isolation felt by many gifted children. The main contributors to positive teacher attitudes were employment in a school that emphasises gifted education and experience with in-service training in gifted and talented education.

Moore (2009) attempted to identify nine teacher perceptions of gifted education and students identified as gifted through the use of metaphors. The results indicated that teachers hold a positive view towards gifted education and pupils identified as gifted, although they have a limited understanding of the various models designed to identify and serve students who are gifted. The analysis suggested the need for professional development for educators in the area of gifted education, particularly the need for the ability to identify the characteristics of giftedness and the various strategies to best meet the needs of those identified as gifted. Moore claimed that receiving knowledge and training courses in gifted education could influence what teachers regard as positive or negative. A study by Copenhaver and McIntryer (1992) supported this result; those teachers who participated in courses in gifted education have more knowledge about gifted children and thus a more positive attitude towards giftedness. This will be discussed in the knowledge section.

2.7.2 Studies that show teachers have negative attitudes

Few studies have found negative teacher attitudes towards gifted students and gifted education. The reason may be that these studies often use one type of teacher in the investigatory samples and, further, the development in teacher training courses, gifted programmes and services designed for and delivered to gifted students may have led teachers to hold positive attitudes toward them and their education. According to Kirk, Gallagher, Coleman and Anastasiow (2009) and Song (2001), awareness of individual differences began to change into a more positive attitude towards exceptional students. The greatest influence on this change was the development of public school programmes for exceptional children.
However, in his study to assess attitudes of regular teachers, Thomas (1973) found that they held negative attitudes towards giftedness and misconceptions regarding giftedness. Another study conducted by Colangelo and Kelly (1983) to determine attitudes towards gifted students and their education used a sample of gifted pupils, their peers and their teachers. The results indicated that gifted pupils felt positive about being labelled gifted although they were aware of negative attitudes held by their peers and teachers.

It seems, however, that the negative attitudes of teachers depend on knowledge and the amount of training attended. According to Tomlinson, Coleman, Allan, Udall and Landrum (1996), for example, “There’s a misunderstanding, even fear of, gifted students on the part of many classroom teachers. This kind of negative reaction is born of a great…lack of information and knowledge about gifted students” (p. 168). Smith and Chan (1998) further mentioned that identification of and programming for gifted students should be based on an understanding of the nature of giftedness and the issues regarding education of the gifted.

### 2.7.3 Studies that show teachers have both positive and negative attitudes

Some studies have reported that teachers have both positive and negative attitudes. Notably, most of these studies were conducted on different groups of teachers and participants. Mills and Berry (1979) compared attitudes of seven groups of participants towards gifted students and gifted education using the Wiener Attitude Scale (WAS). These groups were school administrators, teachers in programs for the gifted, teachers of regular classes, parents of gifted children, their children, community leaders and the lay public.

The results indicated that parents and teachers who have close contact with gifted individuals hold significantly more favourable attitudes towards gifted individuals and gifted education programs than regular program teachers, administrators and the general public. Mills and Berry concluded that persons in closest day-to-day contact with gifted individuals hold the most favourable attitudes. This study on schools implied the use of in-class programmes (inclusive). This is consistent with Fourm’s (1980) and Chipego’s (2004) suggestion that positive or negative teacher attitudes
towards gifted students are the result of attitudes teachers hold towards the type of
gifted programme offered.

A study by Bransky (1987) investigated administrators’ and teachers’ attitudes towards
gifted students and their education in relationship to their specific knowledge of full-
time, self-contained gifted programs. The results showed that administrators and gifted
programme teachers were more positive than regular teachers. This study seems to
support the notion that teachers with high knowledge about giftedness tend to have
positive attitudes (Tomlinson et al., 1996; Smith & Chan, 1998). Another explanation
provided by Purcell and Leppien (1998) is that regular teachers often hold negative
attitudes towards gifted students because they feel “an overwhelming sense of despair
that the problems are insurmountable and worsen” and “for large numbers of the
teaching profession, the pressure of the job has taken the joy out of teaching” (p. 179).
The increasing diversity in classrooms may increase the demands and pressures on
teachers (Chipego, 2004). Reis (1982) further mentioned that regular teachers may feel
threatened by gifted students and demand to have more time for gifted programmes.

Another study by McCoach and Siegle (2007) was designed to explore regular and
gifted programme teachers’ attitudes towards gifted students and gifted education. The
authors studied potential predictors of teacher attitudes toward the gifted, including
training or experience in gifted education, training or experience in special education
and self-perception of being gifted. The researchers used Gagné and Nadeau’s (1991)
Opinions About the Gifted and Their Education instrument, and 262 teachers
participated in the study. The results indicated that special education teachers hold
slightly more negative attitudes towards gifted students than regular teachers, although
the researchers did not explain the reason for this difference. However, McCoach and
Siegle’s research results seemed to support the belief that regular teachers have positive
attitudes towards gifted students and their education; according to Mills and Berry
(1979), this may be due to the close day-to-day contact between regular teachers and
gifted students when pull-out gifted programmes are applied.

Donerlson (2008) designed a study to examine the attitudes and beliefs of regular
teachers and gifted programme teachers towards gifted students and their education. A
quantitative design was used to determine if there was a significant difference in
attitudes and beliefs. Participants included 40 regular teachers and 30 gifted programme teachers from urban elementary school districts. Participants responded to 27 items on the Opinions About the Gifted and Their Education instrument using a five-point Likert scale. Descriptive statistics, the Pearson Product Moment Correlation coefficients and a t-test were used to analyse the data. Results revealed significant differences in the responses of regular teachers and gifted programme teachers on the majority of listed items, and significant correlations were revealed between subject characteristics and responses to items on the questionnaire. The author suggested the differences between the two groups of teachers occurred mainly because of a lack of experience and knowledge of understanding the needs of the gifted student. The author noted but did not explain differences in attitudes between regular and gifted programme teachers.

From a review of previous studies of teacher attitudes towards gifted students and gifted education, it appears that negative or positive teacher attitudes might be determined by different variables, such as knowledge (e.g. Bransky, 1987; Donerlson, 2008; Moore, 2009), in-service gifted training programmes (e.g. Copenhaver & McIntryer, 1992; Donerlson, 2008), experience (Mills & Berry, 1979; McCoach & Siegle, 2007), teacher’s degree (e.g. Bransky, 1987) and other variables that will be discussed in the following section.

2.8 Predictors of Teacher Attitudes

The research literature suggests that teacher attitudes towards gifted students and gifted education are influenced by the interplay of certain factors that can be used as predictive variables for teacher attitudes. An early study by Rubenzer and Twait (1979) found that years of experience, grade level taught and awareness of gifted education were significantly related to teacher attitudes towards gifted students. Likewise, Southern, Jones and Fiscus (1989) reported that teachers who were familiar with the gifted through personal or family experience tend to hold a positive attitude towards gifted students. Begin and Gagné (1994a) evaluated 35 studies on the prediction of attitudes towards gifted student and gifted education and identified 50 variables that have the potential to predict attitude. After an examination of these 50 variables, the authors determined that no single factor was “found to account for a significant and substantial proportion of the variation in attitude among educators,
parents, or the general public” (Began & Gange, 1994a, p. 174), although they found three predictive variables, including contact experience with gifted students, sex of respondent and occupation as a teacher, but these links were weak. Begin and Gagné (1994b) suggested that this lack of significance was related to “(1) the lack of a reliable and valid attitude scale, (2) an insufficient number of pertinent and adequately measured predictors, (3) the lack of a suitable sample from a relevant population, and (4) the lack of appropriate statistical procedures” (pp. 75-76).

To address the methodological problems of previous studies, Begin and Gane (1994b) conducted their own study of attitudes towards the gifted using a sample of teachers and parents, the instrument developed by Gagné and Nadeau (1985) and ten biographical questions. The results indicated that two biographical variables were statistically significant and explained about 22% of the variance in teachers’ and parents’ attitudes towards gifted students and gifted education: socioeconomic status (educational level, being an educator, family income, number of children and sex of respondent) with 12%, and contact with giftedness (perceiving of one's own children as gifted, knowing gifted people and perceiving oneself as gifted) with 10%. This means the higher the socioeconomic status and the more contact with giftedness of teachers, the more positive the attitude towards gifted students and gifted education.

After years of research, Tomlinson (1999) reported that the attitudes of teachers towards gifted students can be associated with grade level taught, nature of interaction with gifted students and experiences with gifted students. Chipego (2004) explored the attitudes of 392 elementary classroom teachers towards gifted education and identified seven variables that play a part in teacher attitude, including perceived level of district commitment, formal education, interest in teaching gifted students, socioeconomic status of district, age, having a gifted child and political philosophy.

It seems, however, that previous research including that by Begin and Gagné (1994a, 1994b) demonstrates the need for more investigation of significant predictors of attitude towards gifted and talented education. Thus, according to this research, age, years of teaching experience, highest qualification degree, have family member enrolled in a gifted programme, perceptions of self as gifted, received gifted training courses, number of training courses received, amount of hours of training courses
received and specialisation (RT or GPT) are biographical variables to examine to determine the relationships and potential predictive values of these variables on teacher attitudes towards gifted students and gifted education.

2.8.1 Teachers’ age

The first possible predictor of teacher attitude is teacher age. Although the studies by Rubenzer and Twaite (1979) and Southern et al. (1989) concluded that the age of the respondent had no significant predictive value on teacher attitudes towards gifted students and gifted education, an early study by Schey (1965), to measure attitudes of teachers towards the gifted, indicated that differences in attitude were more evident as the difference in age increased, and the most favourable attitude was found among the 26- to 35-year-old age group. Likewise, a study by Begin and Gagen (1994a) found that 4 of 12 studies were statistically significant but did not clearly demonstrate the nature of the relationships. Chipego (2004) supported the positive relationship between age of teacher and attitude towards gifted students and gifted education, although the results indicated there was no significant relationship between them when regression analysis was used.

Despite this, Nicely et al. (1980) found no difference between young (age 21-29) and older teachers (age 30 and above). However, it might be assumed that varied findings caused the researcher to investigate the relationship of age as a variable to predict teacher attitude towards the gifted and gifted education.

2.8.2 Teachers’ training on gifted education

Teacher training in giftedness and gifted education is one of the most common factors examined in relation to teacher attitudes towards gifted students and their education (Chipego, 2004). Comparing teachers trained with those untrained in gifted education, Hansen and Feldhusen (1994) utilized both a student questionnaire and classroom observation to assess teaching skills and classroom climate. Results indicated that the trained teachers had greater teaching skill, more positive classroom climates and more enthusiasm and energy than untrained teachers. Begin and Gagen (1994a) found that training in gifted education was positively related to attitude in five different studies,
although they suggested that problems in their methodologies would limit generalisability. Research by Plunkett (2000) investigated factors that impact teacher attitudes towards gifted students by conducting an interview, along with an assessment of a self-devised set of twenty attitude statements, based on Gange and Nadeau’s (1991) questionnaire. The results showed the relationship between specific training of teachers in identifying and teaching gifted students and their attitude towards the gifted. Likewise, Lassig (2003) attempted to define the attitudes of teachers in South-East Queensland state primary schools towards gifted pupils and their education, as well as factors that may influence their attitudes. The results indicated that experience with in-service training in gifted and talented education and a focus on gifted education were most significantly associated with positive teacher attitudes.

Despite that, Zietlow (1998) compared gifted and regular education teachers’ perceptions and practices related to higher level thinking and the needs of gifted students. This study suggested that teachers’ views of gifted students did not vary as a result of their training. In a study designed to investigate the attitude of 392 elementary classroom teachers towards gifted education, Chipego (2004) found no significant correlation between teachers’ attitudes and their training development. Likewise, McCoach and Siegle (2007) researched attitudes of regular and gifted programme teachers and found that training in gifted education was not related to teachers’ attitudes towards the gifted and their education. They did find, however, that attitude was positively related to teachers’ self-perception that training may increase their understanding of giftedness and the needs of gifted students, but it fails to support teachers in meeting those needs. It appears, however, that most studies support the importance of teacher training, although the relationship between attitude and training in gifted education is still unclear.

2.8.3 Teachers’ years of experience

It is often assumed that more highly skilled and more empathetic professionals are those who have years of experience. An early study was conducted by Juhasz and Jensen (1965) to determine the attitudes of 252 school psychologists, 52 psychometrics in California towards gifted children and programs for the gifted and whether relationships exist between certain selected variables and attitude toward the gifted. Juhasz and Jensen found that a correlation does exist between attitudes of participants
and their years of experience. Likewise, Rubenzer and Twaite (1979) determined that years of experience with gifted students were significantly associated with teacher attitudes towards gifted students. Furthermore, Copenhaver and McIntyre (1992) investigated the effect of years of experience on teacher attitudes towards the gifted by asking teachers to state the characteristics that come to mind when they think of gifted students. A significant difference was found between teachers with no experience and teachers with one to two years of experience; listing of negative characteristics decreased as teachers’ experience increased.

In contrast, Cramond and Martin (1987) in their study of in-service and pre-service teachers found there was no relationship between years of experience and attitude towards gifted students; pre-service and experienced teachers had similar attitudes, with slightly more negative attitudes among pre-service teachers. However, this assumes that most studies support the relationship between teachers’ years of experience and their attitudes towards gifted students and gifted education, although none of the studies attempted to use this variable to predict teacher attitude.

2.8.4 Teachers’ self-perception as gifted

Whether teachers’ perception of themselves as gifted affects their attitudes towards gifted students and gifted programming has been examined by several researchers. Begin and Gagné (1994a) found that respondents who viewed themselves as gifted have more positive attitudes towards gifted students than other groups. Zietlow (1998) compared gifted and regular education teachers’ perceptions and practices associated with high-level thinking and the needs of gifted students. Results of the investigation indicated that teachers’ interest in working with gifted students, as well as their perceptions of their own intelligence, did have significant effects on attitudes towards gifted students.

In contrast, Chipego (2004) in a study of 392 elementary classroom teachers’ attitudes towards gifted education, found no relationship between teachers’ attitudes and their self-perception of being gifted. Similarly, McCoach and Siegle (2007) in their investigation of the attitudes of regular and gifted programme teachers found that teachers’ self-perceptions of being gifted were unrelated to their attitudes towards
gifted education. Thus, it appears that teachers’ self-perceptions of being gifted as a predictor of teacher attitude towards gifted students and their education needs more investigation.

2.8.5 Degree of teacher in education

Whether the educational degree of teachers has an effect on attitude towards gifted students and their education is rarely reported in the literature. Forum (1980) investigated teachers’ knowledge and attitudes towards intellectually gifted students and found teachers who were older and had additional degrees had greater knowledge of gifted students and greater interest in in-service gifted education. Hansen and Feldhusen (1994) also found a significant relationship between teachers’ degrees in education (number of certificates earned) and positive attitudes towards gifted students. Begin and Gagné (1994a) found equal distribution between significant and non-significant relationships in eleven studies dealing with degree in education as a predictor of teacher attitude towards gifted students and gifted education. When the results were significant, there were more positive attitudes towards gifted education among the more educated, but the relationship was not strong and explained only 5% of the variance (p. 166). More recently, Chipego (2004) attempted to determine the attitude of 392 elementary classroom teachers towards gifted education and found that teachers who have master’s degrees in education had more favourable attitudes towards gifted students and gifted education than teachers with no advanced degrees, but there was only a weak correlation between teachers’ degrees and their attitude. However, given the lack of previous studies on the predictive effect of teachers’ degrees, teacher degree in education as a predictive variable needs more investigation.

2.8.6 Gifted family member of teacher

The effect, if any, of teachers having a gifted family member on the attitude towards gifted students and their education is rarely reported in the literature. Cavin (1980) observed that individuals who know gifted people or have a gifted family member hold more favourable attitudes towards gifted students and their education than other groups. Southern et al. (1989) also reported that personal experience with a gifted person, either self or a family member, is likely to result in a positive attitude towards acceleration of
gifted students. Begin and Gagné (1994a) found that those teachers who have a friend or family member who is gifted tend to have a slightly more positive attitude towards gifted students and their education as a result of their contact experience with giftedness. Thus, the more knowledge teachers have about giftedness, the more favourable their attitude towards the gifted and their education.

In contrast, Curtis (2005) investigated pre-service teachers’ attitudes towards gifted students and examined some predictor variables of their attitudes. The results indicated that pre-service teachers having or not having a gifted family member was completely unrelated to their attitudes, but age and gender had potently predictive effects on their attitudes. However, based on the lack of literature about the effect of having a gifted family member on teachers’ attitudes and various research results discussed here, it appears that this variable needs more testing.

2.8.7 Specialized or non-specialized teacher

Based on the effect of teachers’ contact experience with gifted students, gifted training programmes received and knowledge of giftedness on teacher attitudes, it seems that non-specialized teachers (regular teachers) have less favourable attitudes towards gifted students and gifted education than specialized teachers (gifted programme teachers). Mills and Berry (1979) compared attitudes of seven groups of participants towards gifted students and their education using WAS. These groups included school administrators, teachers in programs for the gifted, teachers of regular classes, parents of gifted children, their children, community leaders and the lay public. The results indicated that parents and teachers who had close contact with gifted individuals held significantly more favourable attitudes towards gifted individuals and gifted education programs than did regular program teachers, administrators and the general public. Similarly, Bransky (1987) investigated administrator and teacher attitudes towards gifted students and their education in relation to specific knowledge about full-time, self-contained gifted programmes. The results showed that administrators and gifted programme teachers had more positive attitudes than regular teachers. Pfeiffer (2003) found that although certified and general education teachers share common goals, they differ regarding implementation of classroom practices for gifted students in heterogeneous settings. Donerlson (2008) investigated the attitudes and beliefs of
regular teachers versus gifted programme teachers towards gifted students and their education. A quantitative design was used to determine if any significant differences in attitudes and beliefs existed. Participants included 40 regular teachers and 30 gifted programme teachers from urban elementary school districts. Participants were asked to respond to 27 items on the Opinions About the Gifted and Their Education instrument using a 5-point Likert scale. The results indicated significant differences in the attitudes and beliefs of regular teachers and gifted programme teachers regarding gifted students and gifted education. The author suggested that the differences could be attributed to variable experience and knowledge regarding the needs of gifted students.

In contrast, although gifted programme teachers may have more contact experience, gifted training courses and knowledge of giftedness, they sometimes hold less favourable attitudes towards gifted students and their education. Zietlow (1998) compared gifted programme and regular education teachers’ perceptions and practices related to higher level thinking and the needs of gifted students. This study suggested that teachers’ views of gifted students did not vary as a result of their training or experience. McCoach and Siegle (2007), in their investigation to determine the attitudes of regular and gifted programme teachers, found that gifted programme teachers have less favourable attitudes towards gifted education and acceleration practices than regular teachers. However, teacher specialty as a predictive variable for teacher attitude towards gifted education was not examined as far as known.

2.9 Defining Teacher Knowledge

Teacher knowledge is a relatively new area in educational research that has attracted attention for only the last 20 years or so (Lam & Law, 2008; McGurk, 2006). This dearth of research is even more pronounced when teacher knowledge about gifted students and gifted education is reviewed. According to Dvorak (2007), a surprising gap in the literature reveals that there is little research and only vague standards to describe teachers’ knowledge related to gifted education; this is due to the many operational conceptions of teacher knowledge, which produce several challenges in addressing this topic in research (Munby et al., 2001). Indeed, the 1983 publication of *A Nation at Risk* is considered the starting point for research into the identification of
teacher knowledge to improve the quality of teaching; several complex models have been developed to describe the elements of teacher knowledge (McGurk, 2006).

To define teacher knowledge, Leinhardt and Smith (1985) suggested that teacher knowledge consists of knowledge of lesson structure and subject matter. Shulman (1986) developed a more complex model by identifying three categories of science teachers’ knowledge: subject matter content knowledge (SMK) (understanding the structures of knowledge in a content domain), pedagogical knowledge (PK) (knowing effective ways to teach the content knowledge to students) and pedagogical content knowledge (PCK) (knowing the tools and materials available to support instruction). PCK is a new concept which combines SMK and PK to achieve more effective teaching. Other researchers (Bromme, 1994; Comiti & Ball, 1996; Durand-Guerrier & Winsløw, 2005) referred to these categories as content knowledge (CK), pedagogical knowledge (PK) and didactical knowledge (DK). Shulman (1987) also proposed the pedagogical reasoning model, which expanded his previous model. In the expanded model, PCK relies on content knowledge, general pedagogical knowledge and knowledge of learners. This leads to seven categories of knowledge: content knowledge, pedagogical content knowledge, curriculum knowledge, general pedagogical knowledge, knowledge of aims and purposes, knowledge of learners and knowledge of educational contexts, settings and governance. Shulman argued that these components of teacher knowledge form the foundation for pedagogical reasoning and action. Grossman (1990) narrowed Shulman’s model and defined four components of teacher knowledge: professional knowledge (PK), subject matter knowledge (SK), pedagogical content knowledge (PCK) and knowledge of context (KC).

Cochran-Smith and Lytle (1999) developed another model to describe teacher knowledge. This model consisted of (a) knowledge for practice in which the more teachers know, the more effectively they will teach, (b) knowledge in practice focused on the art of teaching and (c) knowledge of practice which highlights the role of teachers in generating knowledge about practice. This model concentrates more on teacher knowledge about classroom practices than Shulman’s. A study by Park and Oliver (2009) adapted Shulman’s three components model and developed the three knowledge components model to educate gifted students in science subjects: (a) subject matter content knowledge, (b) pedagogical content knowledge and (c) knowledge of gifted students. Park and Oliver referred to subject matter content knowledge as
teachers understanding their subject areas, being flexible enough to ask higher level questions, being better engaged with gifted students and enabling gifted students to apply and transfer knowledge. They added that pedagogical content knowledge is not only teachers’ knowledge of subject matter; it also should act as a bridge between the traditional areas of subject matter and pedagogy to produce an amalgamated knowledge base for teaching. This works in conjunction with teachers’ knowledge of the characteristics of gifted students both as individuals and as a group.

Another model was developed by Reynolds (1992), who listed nine areas in which teachers should be knowledgeable: pedagogy, students, content, curriculum, context, content-specific pedagogy, professional issues, general knowledge and enabling skills. Reynolds focused on content knowledge and described eight dimensions within a teacher’s content knowledge: (1) frameworks or paradigms used to direct inquiry and interpret data, (2) facts, terms and concepts in the discipline and the relationships among them, (3) methodologies used for inquiry in the discipline, (4) the relationships among concepts and theories across content areas, (5) how to judge the correctness of the content, (6) how to apply the concepts and methodologies to problems, (7) the nature of the discipline as an area of inquiry through history and (8) the discipline’s role in culture and society (p. 15). In the same context, Arends (2009) identified five categories of teacher knowledge: specific academic ability, leadership ability, general intellect, productive thinking and visual arts. Likewise, Hegarty (2000) reported four categories of teacher knowledge: subject knowledge, teaching knowledge, content knowledge of learners and knowledge of self.

Most models of teacher knowledge focus on teacher knowledge of regular students and only Park and Oliver’s (2009) model emphasises teacher knowledge of the gifted. Little research has addressed the combination of a gifted programme and gifted programme or regular teachers. Therefore, to define teacher knowledge of gifted students and gifted education, the NAGC-CEC (Teacher Knowledge & Skill Standards for Gifted and Talented Education) was developed through cooperation between the UK National Association for Gifted Children (NAGC) and the US Council for Exceptional Children (CEC) (2008) as ten standards for teacher preparation that emphasise a cohesive implementation strategy: foundations, development and characteristics of learners’ gifts and talents, individual learning differences associated with gifts and talents,
instructional strategies to address gifts and talents, learning environments and social interactions associated with gifts and talents, language and communication, instructional planning, assessment, professional and ethical practice and collaboration. According to VanTassel-Baska and Johnsen (2007), this model is important in both defining the essential knowledge and skills teachers need to teach gifted and talented students effectively and helping to prepare teacher training programmes.

2.9.1 Evaluation of Teacher Knowledge Models

Based on previous models, it is apparent that teacher knowledge is viewed from different perspectives. McGurk (2006) stated that the different theories defining teacher knowledge are important due to the implications for teacher education and ongoing professional development. McGurk added that if the need for specific teacher knowledge is recognized, teachers will take traditional courses to gain that knowledge. Teacher knowledge of gifted students and gifted education is categorized as a different kind of knowledge based on NAGC-CEC’s (2008) view that teachers need different types of knowledge to teach gifted students. VanTassel-Baska (2005) focused on specific components of teacher knowledge of gifted students. Weiss and Gallagher (1986) adapted this view and defined teacher perceived knowledge as knowledge of general academics regarding gifted students and their education, behaviour management, gifted student assessment, curriculum instruction and planning for gifted students and working with other personnel (collaboration) in the gifted education program. Therefore, according to this research, teacher knowledge of gifted students and gifted education is defined as “[t]eacher perceived knowledge in terms of foundation, characteristics, learning, curriculum instruction and planning, communication and assessment of gifted students as well as collaboration with other”.

These types of knowledge are related and interwoven; for example, identifying gifted students requires teacher knowledge of characteristics and assessment of gifted students. Furthermore, these types of knowledge apply not only to gifted programme teachers but also to regular teachers due to the recent trend in education systems towards inclusive classrooms. These programmes (enrichment, acceleration and ability grouping) integrate gifted and non-gifted students so that they receive instruction together using the same curriculum structure and class environment (Ehlers &
Montgomery, 1999). Subsequently, teacher knowledge of gifted students and gifted education was divided into different schemas, as discussed below.

A) Foundations

The conception of giftedness has tended to be accompanied by the development of inelegant models, and various descriptions of giftedness have been based on theories from Galton’s (1865) general laws of distribution through Sternberg’s (1985) triarchic model of intelligence (VanTassel-Baska & Johnsen, 2007). Thus, teachers who teach gifted students should understand the theoretical conception of giftedness based on the historical perspective of intelligence models and their views of giftedness. Clark (2008) mentioned that teachers do not need to be highly intelligent to work effectively with the gifted students, but they need to definitely value intelligence, understand its implications, and know how to nurture it. Gardner (1983) also recommended an understanding of multiple intelligences by classroom teachers. Recognition of the inelegant development of intelligence models and their views of giftedness will, subsequently, help teachers in their practice, assessment, instructional planning and evaluation of gifted programmes (NCATE, 2008; NAGC, 2010).

B) Identification and characteristics of gifted students

Various theories (e.g. Gardner, 1983) distinguish gifted students from other students in their cognitive, physical, emotional and social characteristics (VanTassel-Baska & Johnsen, 2007). Silverman (1993) mentioned that “gifted children not only think differently from their peers, they also feel differently” (p. 3). Thus, gifted students need to be understood as unique human beings whose characteristics and development differ from other students (NCATE, 2008; NAGC, 2010). Rotigel (2003) pointed out that the unique characteristics of gifted students affect the way they learn, develop and plan.

Therefore, in school, the classroom teacher not only teaches gifted students but also acts as counsellor and provides social support as well as academic support. Thus, gifted students "need to understand their own exceptionality, their intensity and sensitivity of feelings, their need for coping strategies, to help them deal with their own perfectionism and vulnerability" (VanTassel-Baska, 1993, p. 382). Moon (2002) stated that “the most common counselling need of this population is assistance in coping with..."
stressors related to growing up as a gifted child in a society that does not always recognize, understand, or welcome giftedness” (p. 213).

This means the lack of knowledge regarding characteristics of gifted students can influence not only academic achievement, but also the social and emotional development of the student (Morris, 1987). In her review study to determine the essential reasons behind gifted underachievement, Montgomery (1996) concluded that there is "the need for the teacher to provide a warm, friendly, flexible and supportive classroom climate" (p. 197). Colangelo (1993) reported feedback received from gifted students: “I never knew anyone else felt like that—thought like that” (p. 114).

The identification of gifted students has been linked to teacher knowledge of gifted characteristics. Eyre (1997) noted that teachers are often asked to judge children's ability, and nomination by teachers is seen as an important and significant procedure in the gifted student identification process. Painter (1989) further stated that "the opinion of very experienced and skilled teachers is generally accepted as the most reliable way of identifying a gifted child" (p. 39). Teachers appear to play a central role in the identification of young gifted students, especially at the primary school level where more formal instruments such as standardized testing are less likely to be employed than nomination (Gross, 1999). The failure to identify the gifted student in primary school has negative implications for cognitive, academic, social and affective development (Moon, 2002). Using a 30-question survey, Inan et al. (2009) conducted a study to determine the level of awareness of the characteristics of gifted children among 75 teachers. The results indicated that the teachers were not aware of some characteristics of gifted children. Thus, the teacher nomination process for selecting gifted students may not be reliable. Denton and Postlethwaite (1985) suggested that teacher training courses on identifying characteristics of gifted students will increase the reliability of the teacher nomination process.

C) Individual gifted learning differences

Gifted students have individual learning processes and their achievement can be affected by various factors such as family background (e.g. Renzulli & Park, 2002; Solow, 1995), learning style (e.g. Melear & Alcock, 1999) and having a disability (e.g. Baum & Olenchak, 2002). Teachers therefore need to understand these issues and their
influences on student learning, achievement and general behaviour; teachers must learn
to use alternative procedures, such as different instructional strategies (e.g. Matthews &
Matthews, 2004), alternative assessment procedures (e.g. Kirschenbaum, 2004) and
other procedures that could have a positive effect on the learning and behaviour of
gifted students (NCATE, 2008; NAGC, 2010; VanTassel-Baska & Johnsen, 2007).
Darling-Hammond (1998) stated that teachers need “to decide which kinds of learning
are most necessary in different contexts. Teachers must be able to use different
teaching strategies to accomplish various goals and many means for evaluating
students' knowledge and assessing students' approaches to learning. Teachers must be
able to identify the strengths of different learners while addressing their weaknesses”
(p. 8). Understanding the learning differences of gifted students, the effect certain
issues have on their life and alternative teaching solutions will help teachers in planning
instruction for gifted students that is meaningful and challenging for their learning
(NCATE, 2008; NAGC, 2010).

D) Curriculum instruction

Gifted students have special learning needs, potentials and social-emotional needs that
require instructional strategies that differentiate curriculum and offer an optimal
learning environment to meet their needs (Chan, 2001; NCATE, 2008; NAGC, 2010).
Tomlinson (1995) defined curriculum differentiation as “the consistent use of a variety
of instructional approaches to modify content, process, and/or products in response to
the learning readiness and interest of academically diverse students” (p. 79). To use a
differentiated curriculum, teachers should be aware of a variety of curriculum
instructional approaches, including acceleration, enrichment, problem-based learning
and curriculum compacting (Ferrara, 2006), and they must also be aware of technology
that will improve gifted learning (VanTassel-Baska & Johnsen, 2007). Thus, teachers
with more knowledge about differentiated curriculum strategies will be more effective
in addressing gifted students' needs adequately (Nevitt, 2000). Indeed, the selection,
adoption and use of these strategies and technology will promote challenging learning
opportunities that can enhance self-awareness, self-efficacy, critical and creative
thinking, problem solving and performance skills of gifts students (NCATE, 2008;
NAGC, 2010). Lens and Rand (2000) found that if teachers do not provide an advanced
curriculum to challenge gifted students, the students become bored, which influences
their level of motivation to learn and achieve. In contrast, gifted students will succeed when teachers plan and implement their curriculum based on differentiated strategies that provide challenges for them (Tomlinson, 2000). According VanTassel-Baska and Johnsen, (2007), providing effective curriculum instruction enhances gifted students’ ability to become experts in how/what they learn and how they employ that knowledge.

Although a differentiated curriculum is important to meet gifted students’ needs, teachers of the gifted have had limited success. For example, Westberg and Daoust (2004) found little differentiation in instructional and curricular practices provided for gifted learners in regular classrooms. Similarly, Archambault et al. (1993) conducted a survey of 7,300 third and fourth grade primary teachers and found that many teachers did not provide differentiated operations for gifted students, mostly as a result of poor teacher training programmes in gifted education. VanTassel-Baska and Little (2003), and VanTassel-Baska and Stambaugh (2005), noted that a differentiated curriculum (a) requires depth and complexity in models for thinking, reasoning, problem solving and analyzing literature and (b) uses various instructional strategies; many teachers have not acquired this knowledge base.

E) Instructional planning

The centre of gifted education is instructional planning (NCATE, 2008). According to Tomlinson (2000), when teachers plan curriculum based on differentiated (intervention) strategies, gifted students succeed and achieve. This curriculum planning must be developed for the long term and further must aim to enhance in the general curriculum but reflect consideration of gifted students’ needs, abilities and learning environments (NCATE, 2008; NAGC, 2010). In the same context, Tomlinson (2002b) suggested six precepts that teachers need to consider when planning curriculum: The curriculum must be sound; tasks should respect each student; tasks should be neither difficult nor easy; grouping should be flexible; assessment should be made using multiple approaches; scores indicate students’ progress. Because teachers plan, implement and evaluate gifted students curriculums, however, they need high knowledge of differentiated instructional models (e.g. integrated curriculum, enrichment model) and, further, the skills to tap colleagues, students’ families and technology for designing and implementing a ‘suitable’ curriculum (VanTassel-Baska & Johnsen, 2007).
F) Language and communication

Teachers should understand the role of language and communication strategies in developing gifted students and differentiating the curriculum (NCATE, 2008; NAGC, 2010). Darling-Hammond (1998) stated that “because language is the gateway to learning, teachers must understand how students acquire language, so that they can build language skills and create accessible learning experiences” (p. 8). Davalos and Griffin (1999) conducted a study observing teachers training to individualise instruction and the resulting effects on students; they concluded that gifted students can be served in a regular classroom if the teacher shares the language of learning among students and instructors.

There are, however, many communication strategies for communicating with gifted students, such as private speech, public speaking, writing, empathy and technologies. Technologies communication strategies, for example, can facilitate understanding of subject matter for gifted students, encourage communication between teachers and parents and provide parents with professional development (VanTassel-Baska & Johnsen, 2007).

G) Classroom management

Teacher classroom management knowledge and skills are important in developing classroom-based opportunities for gifted students (VanTassel-Baska & Johnsen, 2007; NAGC, 2010). Teacher management techniques, in particular, are essential factors of differentiation for gifted students (Tomlinson & Allan, 2000). Surveys conducted during teacher differentiation workshops resulted in the conclusion that teachers are concerned about classroom management skills when they attempt the differentiation procedure (VanTassel-Baska & Stambaugh, 2005) because differentiation frequently requires reorganising the classroom, using the resources room, providing mobility in the classroom, recording progress for individuals and groups, managing time and organising between teachers and staff. Thus, lack of knowledge and skills in these areas could contribute to the failure of differentiation (VanTassel-Baska & Stambaugh, 2005).
H) Assessment

Teacher knowledge and assessment skills are vital in terms of identification and differentiation (intervention) for gifted students (VanTassel-Baska & Johnsen, 2007; NCATE, 2008; NAGC, 2010). To identify gifted students, most authors recommend employing multiple assessments (e.g. standardized assessments, portfolio assessments, teacher nominations) as part of the identification process because students have different areas of giftedness, such as creativity, leadership, arts and general intelligence abilities (VanTassel-Baska & Johnsen, 2007; Gaudet, 2008). In addition, successful differentiation for gifted students requires teacher knowledge of multiple assessment types to adjust instruction to focus on each and every individual student and to enhance each student’s progress (Ferrara, 2006; NCATE, 2008). Thus, teachers should be aware of measurement theory and practices to interpret assessment results so that they understand the appropriate application and limitations of assessments (NCATE, 2008; NAGC, 2010).

I) Collaboration

Recent trends in education systems have shifted from the notion of separate schools to inclusive classrooms, where gifted and normal students receive special instruction together using the same curriculum structure and class environment. As a result, regular teachers face a variety of challenges in meeting the academic, social and emotional needs of students who have a wide range of readiness skills, learning styles and curriculum needs (Ehlers & Montgomery, 1999). It is logical to assume that gifted programme teachers have the knowledge, skills and experience regarding gifted students, curriculum and instructional strategies to help regular teachers meet gifted students’ needs (Schack, 1996). This collaboration is supported by research. For example, Purcell and Leppien (1998) examined collaboration among 289 enrichment specialists, classroom teachers and administrators. The results indicted that 82% of enrichment specialists use collaboration, 80% of classroom teachers use collaboration and 88% of administrators use collaboration. This means not only regular teachers rely on collaboration, but both regular and gifted programme teachers must involve school staff, student families and the community to facilitate successful transitions for gifted students (VanTassel-Baska & Johnsen, 2007; NCATE, 2008; NAGC, 2010).
2.9.2 Teachers’ knowledge about the gifted and gifted education

A surprising gap in the literature reveals that there is little research describing teachers’ knowledge of gifted students and gifted education (Dvorak, 2007). However, this knowledge is fundamental to meeting the needs of gifted students. Erickson (2001) indicated that “[w]hen teachers delight in the uniqueness of children, they come to know each child well. They look for the gift that each child brings and take opportunities to fan the ember into flame” (p. 209). Indeed, teacher knowledge of the gifted is necessary to effectively teach gifted students (Renzulli, 1992) because the more knowledge teachers have about gifted students and gifted education, the better they become at meeting the needs of gifted students (Reis & Park, 2001).

However, as mentioned earlier, teachers’ knowledge about gifted students and gifted education often presents in a variety of forms, such as knowledge of foundation, characteristics, learning, curriculum instruction and planning, communication and assessment of gifted students, as well as collaboration with others. Darling-Hammond (1998) stated that "[t]eachers must be able to use different teaching strategies to accomplish various goals and many means for evaluating students' knowledge and assessing students' approaches to learning. Teachers must be able to identify the strengths of different learners while addressing their weaknesses. In addition, all teachers need tools to work with students who have specific learning disabilities or needs. And because language is the gateway to learning, teachers must understand how students acquire language, so that they can build language skills and create accessible learning experiences" (p. 8). Likewise, Rogers (1989) noted that teacher competencies must include knowledge of the nature of giftedness, identification of gifted students, affective skills of the gifted and higher order questioning skill development of gifted students. Clark (2008) mentioned that teachers also should understand the affective needs of gifted students and how particular cultures value those gifts. VanTassel-Baska (2005) stated that “teachers of gifted learners need to be lifelong learners themselves, open to new experiences and able to appreciate the value of new learning and how it applies to the classroom. Second, they need to be passionate about at least one area of knowledge that they know well, and be able to communicate that passion and its underlying expertise to students…Third, they need to be good thinkers, able to manipulate ideas at analysis, synthesis, and evaluation levels with their students within and across areas of knowledge. Fourth, teachers of gifted students must be capable of
processing information in a simultaneity mode, meaning that they need to be able to address multiple objectives at the same time, recognize how students might manipulate different higher level skills in the same task demand” (p. 91). Thus, teachers need to have various types of knowledge about gifted students and their education to meet the specific needs of those students. The NCATE (2008) suggested that, to help students develop and learn, teachers need knowledge in multiple areas and skills in several domains that support student learning.

Research has revealed, however, that some gifted students are disadvantaged as a result of teachers’ lack of knowledge about the needs of the gifted and their education (Carrington & Bailey, 2000). In this context, Renzulli (2004) argued that gifted students can quickly outdistance their teachers in subject matter competency; thus, teachers should develop classroom management skills. Likewise, VanTassel-Baska & Stambaugh (2005) reported that gifted students will be neglected if teachers are unaware of their needs. Inan et al. (2009) used a questionnaire with 75 teachers to determine teacher knowledge of the characteristics of the gifted. The results indicated that teachers were confused and used a non-academic method to identify gifted children. Reis and Westberg (1994) observed third and fourth grade primary teachers and found no differentiated experiences in 84% of the instructional activities received by gifted students. Whitton (1997) examined the practices of 606 primary school teachers and found that they lacked knowledge regarding gifted students and made only minor modifications to accommodate them. Similarly, McKinnon's (1998) study of early childhood teachers found little awareness of the characteristics and needs of gifted students; these teachers were unable to differentiate the curriculum for gifted students. McKinnon suggested that most teachers lack knowledge because they have not participated in training programmes about gifted students’ needs.

Teacher knowledge about the gifted and gifted education, based upon the previous discussion, is often shaped by training courses. This is supported by existing research (e.g. Copenhaver & McIntyre, 1992; Cheung & Phillipson, 2008; Hansen & Feldhusen, 1994; Ferrara, 2006; Reis & Westberg, 1994). Copenhaver and McIntyre (1992), for example, conducted a study to determine the effect of teachers’ years of experience and training courses on their perception of the characteristics of gifted pupils. The results indicted that teachers with years of experience and training courses held significantly different perceptions than teachers without such experience and training. Similarly,
Cheung and Phillipson (2008) conducted a study of 177 in-service teachers to determine their characteristics and competencies. One main finding was that in-service teachers with training and years of experience in teaching gifted students expressed self-ratings that were significantly higher on characteristics and competencies than teachers without training and experience. Likewise, to compare trained and untrained teachers of gifted students, Hansen and Feldhusen (1994) conducted a study of 82 teachers of gifted students using both student questionnaires and observation of classroom teachers to assess teaching skills and classroom climate. The results indicated that trained teachers have more teaching skills and establish more positive classroom climates than untrained teachers. Thus, the effect of teachers’ gifted training courses and years of experience is an improvement in their knowledge of gifted students and their education to meet gifted students’ needs.

Based on the strong link between teachers’ knowledge of gifted students’ needs, the training they have received regarding the gifted and their years of experience teaching gifted students, it becomes clear that gifted programme teachers tend to be more knowledgeable about the needs of the gifted than regular teachers. Meyers (1984) stated that “[e]nrichment teachers knew more than regular teachers about what to do with the gifted for additional regular class enrichment and knew why certain modifications had to be made in their teaching” (p. 33). Comparing regular and gifted teachers’ knowledge about the gifted and gifted education, Pfeiffer (2003) found differences in educational practices for gifted students in heterogeneous classrooms because regular teachers lacked experience, training and knowledge about the gifted students’ needs. Likewise, Siegle and Powell (2004), in their study to determine teacher accuracy in identifying gifted students, found that regular teachers rated students as gifted or non-gifted less accurately than gifted programme teachers. In the same vein, Westberg and Daoust (2004) and Tomlinson (1995) found that gifted students receive little differentiation by regular teachers in the instructional curriculum in heterogeneous classrooms. Tomlinson (1995) suggested that this result may be due to regular teachers being responsible for too much work, being less knowledgeable about differentiation or teaching in a school that does not apply a differentiation model.

Based on these research results, it appears that gifted programme teachers are more knowledgeable about gifted students than regular teachers due to their experience
teaching gifted students and the training courses received, although regular teachers should now understand gifted students’ needs because of the recent trend in educational systems towards heterogeneous classrooms (enrichment programme) in which gifted and normal students receive special instruction together using the same curriculum structure and class environment (Ehlers & Montgomery, 1999; Chipego, 2004). Jones (1983) stated that “in most programs, gifted children spend between 80 and 90 percent of their time with a regular classroom teacher” (p. 26). Thus, regular classroom teachers are responsible for identifying and teaching gifted students. To do this, they should understand the characteristics of gifted students, the process of identifying gifted students and instructional curriculum and assessment (Jenkins-Friedman et al., 1984).

Davalos and Griffin (1999) conducted a study to determine the impact of regular teachers’ practices on gifted students in heterogeneous classrooms. Results indicated that gifted students’ needs can be met in a regular classroom if regular teachers (a) understand the benefits of individualised education and are willing to employ different instructional techniques, (b) give control over learning to the students themselves, (c) understand the emotional, social and academic needs of gifted students, (d) receive gifted training courses, (e) apply appropriate language to communicate with students during learning and (f) share with gifted programme teachers. We should also recognize that even regular classroom teachers who have high knowledge will not be able to meet all gifted student needs due to complexities such as acceleration strategy and complex problem-solving investigations, which require aid from gifted programme teachers who are assumed to be expert and have more knowledge (Martin, 1997).

2.10 The Relationship between Teachers’ Knowledge and Attitudes

It is functional and beneficial in educational research to study teachers’ attitudes with respect to their knowledge. Based on this perspective, Wood and Floden (1990) reported that identifying teachers’ attitudes and knowledge towards diverse students is essential because these "shape the interpretations teachers make of their classroom experiences" (p. 9). Likewise, Cooney, Grows and Jones (1988) stated that "[w]e must look at attitudes, beliefs, and knowledge. We must look for ways to try to work this into teacher education" (p. 257). Along the same line, Vaidya and Zaslavsky (2000)
indicated that exploring teachers’ knowledge is vital for developing positive attitudes towards the concept of inclusion. Most theories and researchers have defined attitude in relation to knowledge.

According to the tri-dimensional model (e.g. Calhoun & Acocella, 1990; Rajecki, 1990; Havland & Rosenberg, 1994; Myers, 2005; Poon, 2007), attitudes have a combination of affective, behavioural and cognitive components. For example, Ruffell, Mason and Alien (1998) reported that attitudes contain three aspects: beliefs aspect (cognitive), behaviour aspect (affective) and expressions of behavioral intention (cognitive). They suggested that beliefs are part of cognitive expressions that are based on stored knowledge. Zimbardo and Leippe (1991) viewed the cognitive aspect as a combination of beliefs and knowledge, whereas he viewed the affective concept as a combination of feelings and emotions. Similarly, Rokeach (1970) identified 'cognition' as knowledge about what is true or false, but the affective concept does not become manifest under all conditions until the belief is challenged by the attitude object (cited in Zimbardo & Leippe, 1991). This means that certain situations involving a person's knowledge may give rise to a specific attitude, but in other situations, that person may not have knowledge of an object, and thus attitude may be tainted by prejudice (Fiske & Taylor, 1991; Zimbardo & Leippe, 1991). Therefore, a person without knowledge of the object may have to depend on prior attitudes, which can be positive or negative (Fiske & Taylor, 1991). Fishbein and Ajzen (1975) indicated that when the person has little information, he or she must depend on inference, indicating a high degree of dubiety. Thus, attitudes can be either spontaneous when there is no previous knowledge about an attitude object or informed by previous knowledge of the attitude object. According to this study, teachers’ knowledge of gifted students and gifted education is required for favourable attitudes towards gifted students and their education, and these attitudes may be spontaneous or informed based on perceived knowledge.

Prevalent in the literature is that teachers with more knowledge about gifted students and gifted education hold more favourable attitudes towards the gifted and their education (Tomlinson, 1995; Smith & Chan, 1998). In this context, Proctor (1967) attempted to determine the relationships among teachers’ knowledge of exceptional children (e.g. gifted), kind and amount of experience with exceptional children and attitudes towards regular classroom integration of exceptional children. Findings indicated that personnel with extensive course work pertaining to, and more knowledge
of, exceptional children had significantly more favourable attitudes towards integration of exceptional children into the regular classroom than teachers with less coursework and knowledge. Likewise, Nicely et al. (1980) studied the relationships among understanding programme purposes, function of the programme to enrich or remedy and age of respondent as variables that could affect teacher attitude. The results revealed that the more teachers know about and understand the gifted program, the more positive their attitudes will be towards gifted education. Another study by Bransky (1987) investigated administrators’ and teachers’ attitudes towards gifted students and their education in relation to their specific knowledge of full-time, self-contained gifted programmes. The results showed that administrators and gifted programme teachers held more positive attitudes than regular teachers. The findings support the notion that teachers with high knowledge about giftedness tend to have positive attitudes towards the gifted. Similarly, Copenhaver and McIntryer (1992) found that teachers who have more knowledge about gifted students have a more positive attitude towards them, and these teachers often participate in courses in gifted education. Furthermore, a recent study by Donerlson (2008) investigated the attitudes and beliefs of regular teachers and gifted programme teachers towards gifted students and their education. The results indicated there were significant differences in the attitudes and beliefs of regular teachers and gifted programme teachers regarding gifted students and gifted education. The author suggested that the differences between the two groups of teachers could be explained by regular teachers’ lack of experience with and knowledge of gifted students’ needs.

However, most research described in the literature supports the importance of teachers’ knowledge and the effect of teachers’ knowledge on their attitudes, although the nature of this relationship needs to be studied with different groups of teachers and in isolation to examine the potential of teacher knowledge to predict teacher attitude.

2.11 Teachers’ Need for Professional Development

Over the past few decades, research has documented the unique learning and social-emotional needs of gifted students (VanTassel-Baska & Little, 2003). These needs can be met if gifted programme and regular teachers are given the opportunity for professional development to meet gifted students’ needs in effective ways (Hansen &
Feldhusen, 1994; Mendoza, 2006). According to Bolam (2002), professional development is an ongoing process that includes “education; training; learning and support activities aimed to promote teachers’ knowledge; skills; and values changes in teaching to more effective education of gifted students; and a balance between individual, school and national needs” (pp. 103-104).

However, it is believed that teachers with little or no training in teaching the gifted have difficulty in meeting gifted students’ needs and this can lead to feelings of resentment and inadequacy. Research conducted at the University of New England on primary preservice teachers found that most participants considered average pupils more desirable than the gifted, with a clear preference for students not to be studious (Lassig, 2003). Clinkenbeard and Kollhoff (2001) found in their study of a sample of regular teachers that most teachers have a limited amount of preparation, with only one course in special education, to teach gifted students. Archambault et al. (1993) in their study of almost 4,000 third and fourth grade teachers found that 61% of them had not received gifted training courses. This means that teachers will be more knowledgeable and have more professional teaching skills if they receive more professional development. Johnson, Haensly, Ryser and Ford (2002) investigated the change in teachers’ practices to meet gifted students’ needs in the elementary classroom. The Classroom Instructional Practices Scale was employed to measure the change in teacher practices during the two years after they received training. The results indicated extremely beneficial changes in teachers’ practices due to teacher training courses received.

Several researchers have concluded that there are differences between teachers who receive professional development to meet gifted students’ needs and those who do not. Copenhaver and McIntyre (1992), for example, conducted a study to determine the effect of years of experience and training courses received on teachers’ perception of the characteristics of gifted pupils. The results indicted that teachers with years of experience and training courses differ significantly from those without these advantages. Cheung and Phillipson (2008) conducted a study of 177 in-service teachers to determine their characteristics and competencies. One main finding was that in-service teachers with training and years of experience in teaching gifted students self-rated significantly higher on characteristics and competencies factors than teachers without experience and training. Likewise, to compare trained and untrained teachers of
gifted students, Hansen and Feldhusen (1994) conducted a study of 82 teachers of gifted students using both student questionnaires and observation of classroom teachers to assess teaching skills and classroom climate. The results indicated that trained teachers have more teaching skills and establish more positive classroom climates than untrained teachers. Thus, it appears that the effect of teachers’ gifted training courses is an improvement in teachers’ knowledge of gifted students and gifted education to meet gifted students’ needs.

Teacher professional development produced more favourable attitudes towards both gifted children and gifted education programmes. According to Begin and Gagen’s (1994a) review study, teacher training in gifted education was positively related to attitude in five different studies, although they suggested that problems in their methodologies would limit generalisability. Plunkett (2000) investigated factors that impact teacher attitudes towards gifted students by conducting an interview, along with an assessment of a self-devised set of 20 attitude statements based on Gange and Nadeau’s (1991) questionnaire. The results showed the relationship between specific training of teachers in identifying and teaching gifted students and their attitude towards the gifted. Likewise, Lassig (2003) attempted to define the attitudes of teachers in South-East Queensland state primary schools towards gifted pupils and their education, as well as factors that may influence their attitudes. The results indicated that experience with in-service training in gifted and talented education and a focus on gifted education were most significantly associated with positive teacher attitudes.

Because of a relationship between teachers’ professional development and a better education for gifted students, a significant amount of attention has been paid to determining teacher professional development needs in the area of giftedness. Traditionally, teacher professional development in gifted education was provided through advanced instruction at the training graduate level at college. To improve gifted education, the schools and the government elected in-service training for teachers (VanTassel-Baska & Stambaugh, 2005; Rogers, 1989). Adkins and Harty (1984) argued that appropriate in-service training of teachers depends on the capacity and the degree to which the needs of gifted students are met in a school system. They also said that in-service training should ensure understanding of gifted pupils,
Other authors have recommended that teacher training courses include understanding identification methods, curriculum strategy and gifted student assessment (Borland, 1989; Maker, 1986). In contrast, Rogers (1989) argued that any teacher development programme needs to incorporate differentiating characteristics, gifted educational needs, creative thinking and the nature of intelligence and giftedness. To assess in-service training, Weiss and Gallagher (1986) proposed the TARGET project (Teacher Assessment Related to Gifted Education Training) to develop an in-service training model by measuring teachers’ perceived knowledge in terms of gifted general academics, behaviour management, assessment, instructional planning and collaboration with others. Based on teachers’ self-rating on each item, the results indicated that the majority of teachers have low perceived knowledge and skills in terms of planning time, scheduling, funds and materials, identification methods, class size and communication skills. Using these results, the author built a model designed to improve teachers’ knowledge and skills, which constitutes a 10-hour programme provided on each school’s site. Thus, both gifted programme teachers and regular teachers will receive professional development. This approach provides in-service training to understand the process of pedagogical reasoning and action for gifted students for teachers who did not receive it during university study.

2.12 Summary of the Chapter

The summary of the literature review has been organised into two sections. The first summarises the gifted education literature regarding theoretical and study-based assumptions and arguments (conceptualising giftedness, gifted programmes and identification of gifted students). The second section summarises the literature regarding teachers’ attitudes towards gifted pupils and their education (conceptualising attitude, characteristics of attitude, function and relationship between attitudes and other concepts, teacher attitudes and predictors of teacher attitudes) and, finally, teacher knowledge of gifted pupils and their education (defining teacher knowledge, teachers’ knowledge of the gifted and gifted education, the relationship between teachers’ knowledge and attitudes and professional development for teachers).
2.12.1 Summary of gifted education literature

The growth and development of the concept of giftedness has had a direct impact on the gifted education system in all countries of the world because understanding giftedness and improving related practices are the ultimate goals of gifted education. This progress has been the subject of much debate, and the term giftedness has been used interchangeably in the literature based on different researchers’ theories/models, emphases and culture. These theories/models of giftedness moved our understanding of giftedness over time from a uni-dimensional perspective (e.g. Terman’s theory of superior ability) involving simple definitions focused only on intelligence and applied IQ scores as a means of identifying giftedness to multi-dimensional concepts (e.g. Renzulli’s theory of three-ring conceptions) which criticises the single-dimensional conception of giftedness. Multi-dimensional concepts emphasise a variety of personal characteristics, general/special abilities, creativity and the influence of personality and environmental factors on development ability and, further, use multi-dimensional measurements to identify giftedness. This clearly had implications for the educational environment of schooling and increasingly broadened the concepts of giftedness.

In my view, this debate among theories/models for conceptualising giftedness has led to non-universal definitions of giftedness. This ambiguity has also resulted in an absence of an ideal strategy to identify gifted students or meet their needs. By considering the different educational systems that apply models/theories of giftedness as frameworks to provide gifted programmes, we can see that gifted programmes often fall into the three categories: enrichment, acceleration and ability grouping as differentiation (intervention). These categories apply to meet the needs of gifted students and to capture their interest as well as allowing them to enhance their abilities and skills. As mentioned above, no ideal strategy to meet gifted students’ needs has been identified. Therefore, most gifted education programmes throughout the world apply a balance of mixed strategies in their gifted programmes. This procedure has led to comprehensive identification of gifted students that is balanced between the objective (general intellectual ability, creativity, achievement tests and intrinsic motivation scales) and the subjective (teacher, parent and peer nomination).

However, as giftedness is a dynamic concept that reflects changes in society’s needs and priorities, in Saudi Arabia, it is essential for its definition to be flexible and to
acknowledge the cultural and social interests of Saudi schools and the communities they serve. Gifted education in Saudi Arabia relies on Renzulli’s (1978) enrichment triad model (ETM), a multi-dimensional model, as the main component in its gifted programmes. According to this model, giftedness consists of intelligence and creative productivity, and this creative-productive giftedness draws on aspects of human activity that involve designing situations to develop original materials and products. Thus, intelligence and the creative-productive in the three-ring model are adapted as a conceptualisation of giftedness in the current study because Saudi education’s adaptation of ETM as a gifted programme was based on Renzulli’s three-ring model. In addition, because the three-ring model of giftedness is multi-dimensional rather than unitary (i.e. giftedness is based on a number of contributing dimensions), this in turn requires different types of assessment to identify gifted students. Furthermore, this model emphasises the role of teachers in the design of learning situations (e.g. real problem-oriented, inductive thinking skills) that promote creative-productive giftedness. Finally, this model uses the concept of giftedness to indicate gifted versus talented students, which can decrease the confusion surrounding the terms because gifted and talented are widely accepted as interchangeable (e.g. Gardner). Thus, giftedness is presented in this study in the context of Saudi gifted education to mean excels, or has the potential to excel, and is applied to those pupils identified by the Saudi gifted education system as having general or specific ability, creativity and skill exceeding that of their age peers. Gifted pupils need a good balance of mixed strategies to meet their needs, and a mixed method should be used to identify them.

### 2.12.2 Summary of teacher attitude and knowledge regarding the gifted and gifted education literature

Research has suggested that one factor that can determine the success of teachers in meeting gifted students’ needs is teacher attitudes towards gifted students and their education. The influence of teachers’ attitude on beliefs and behaviour can directly affect the educational lives of gifted students. Thus, assessing and predicting the attitudes of regular education teachers and gifted programme teachers represents an important endeavour in improving the quality of gifted education. Therefore, according to Davis and Rimm (2004), the first question to be asked when devising a gifted education programme should be, “What is our attitude towards gifted pupils?” (p. 55).
Definitions of attitude have been provided by different authors at different times based on tri-dimensional or uni-dimensional models. In defining attitude, however, the tri-dimensional is generally employed because the prevailing view (e.g. Allport, 1967; Smith, 1973; Rosenberg & Hovland, 1960; Breckler, 1984) among cognitive social psychologists who embrace the tri-dimensional theory of attitude is that attitude consists of an affective component (positive or negative), cognitive component (belief, opinion, conception) and behaviour component (intention or action tendency) (Gyimah, 2006; Fabrigar & Krosnick, 1995). Therefore, the definition of attitude expressed by Myers (2005) was adopted; he viewed attitude as “a favourable (i.e., positive) or unfavourable (i.e. negative) evaluative reaction towards something or someone, exhibited in one’s beliefs, feelings, or intended behaviour” (p. 134).

Although for more than half a century a considerable number of studies explored the attitudes of teachers towards gifted pupils and gifted education, the picture of teachers’ attitudes is still an ambiguous one. Some studies show that teachers tend to have positive attitudes towards the gifted and gifted education (e.g. Gagné, 1983), but others suggest negative attitudes (e.g. Cramond & Martin, 1987), and still others find both positive and negative attitudes (e.g. McCoach & Siegle, 2007). Furthermore, the results of these studies have suggested that negative or positive teacher attitudes might be determined by different variables, such as knowledge (e.g. Moore, 2009), in-service gifted training programmes (e.g. Donerlson, 2008), experience (McCoach & Siegle, 2007) and other variables. Therefore, many researchers have examined these predictors of teacher attitudes towards gifted pupils and their education, but they have reached little agreement. According to this research, age, years of teaching service, highest qualification degree, family member enrolled in a gifted programme, perception of self as gifted, gifted training courses received or not and amount (number and hours) of training with regards to gifted education received are biographical variables to examine in determining the relationships and potential predictive values of these variables on teacher attitudes towards gifted students and gifted education.

Prevalent in the literature is the notion that teachers’ knowledge can affect and predict their attitudes. However, a surprising gap in the literature revealed that there is little research describing the knowledge of teachers regarding gifted students and gifted education (Dvorak, 2007). Munby et al. (2001) reported several challenges in addressing teacher knowledge in research because different conceptions of teacher
knowledge exist, such as knowledge of theory and practice, that may lead researchers to develop more complex theories for characterising these knowledge components. Given the paucity of literature regarding teacher knowledge of gifted students and their education, this information becomes fundamental. Therefore, to define teacher knowledge of gifted pupils and gifted education, the NAGC and CEC (2008) published different standards for teacher preparation that emphasise a cohesive implementation strategy: foundations, development and characteristics of learners’ gifts and talents, individual learning differences associated with gifts and talents, instructional strategies to address gifts and talents, learning environments and social interactions associated with gifts and talents, language and communication, instructional planning, assessment, professional and ethical practice and collaboration.

From a review of previous studies of teacher knowledge, it is apparent that teachers with more knowledge of gifted students and gifted education hold more favourable attitudes towards the gifted and their education. Based on these research results, it appears that gifted programme teachers are more knowledgeable about gifted students than regular teachers due to their experience teaching gifted students and the training courses they have received, although regular teachers should now understand gifted students’ needs because of the recent trend in educational systems towards heterogeneous classrooms (enrichment programmes) in which gifted and normal students receive special instruction together using the same curriculum structure and class environment (Ehlers & Montgomery, 1999; Chipego, 2004). Thus, both gifted programme teachers and regular teachers need to receive professional development.

After reviewing the literature, I became aware that most of these issues were addressed in separate studies using one type of teacher group and one type of methodology, leading to ambiguous results. Thus, the aim of the current study is to explore the attitudes and knowledge of regular teachers and gifted programme teachers towards gifted primary pupils and towards gifted education. Moreover, the study aims to identify associated and predictive variables regarding specific attitudes. A combination of quantitative and qualitative research strategies will be used to increase the reliability and validity of the results. Therefore, the study has the potential to enrich the literature on teachers’ attitudes and knowledge regarding gifted education. The goal is to investigate the success of gifted programmes in Saudi Arabia because identifying teachers’ attitudes and knowledge is important for the success of such programmes.
CHAPTER THREE:
THE EDUCATION SYSTEM AND GIFTED EDUCATION IN THE KINGDOM OF SAUDI ARABIA

3.1 Introduction

The previous chapter sought to clarify the theoretical and methodological background of the study and provide a review of relevant research evidence. Given that this study was undertaken in the Kingdom of Saudi Arabia (KSA), the purpose of the first section of this chapter is to provide an overview of key aspects of the context in which the study was conducted. The second section provides general information regarding the KSA, with an emphasis on those factors that influence the provision of education. The third section describes the main characteristics and feature of the KSA educational system. The next section describes KSA general education from pre-school through secondary school. This is followed, in the fifth section, by a description of the setting, examinations and school calendar system. Teacher duties in general education schools are presented in the sixth section. Gifted education in the KSA is presented in the seventh section; it includes a description of the history, system bodies, provision and identification of gifted students in the KSA, as well as teacher qualifications and in-service training courses. The main obstacles for gifted education in the KSA are discussed in the eighth section, and the last section contains a summary of this chapter.

3.2 Kingdom of Saudi Arabia: Background

Although the Kingdom of Saudi Arabia has roots that extend back thousands of years to the earliest of civilizations, it has been unified under this name only since 1932. The KSA is in southwest Asia at the crossroads of three continents: Europe, Asia and Africa (see figure 3.1). The largest country in the Middle East, the KSA covers approximately four-fifths of the Arabian Peninsula; it is similar in size to the whole of Western Europe or one-half of the United States, from the Mississippi River to the East Coast (Rashid & Shasheen, 2002; Central Intelligence Agency, 2012).
According to the Central Intelligence Agency (CIA) census (2008), the population of Saudi Arabia is 26,534,504, including 5,576,076 non-nationals; males constitute 54.3% of the population, females account for 45.7%, and nearly 50% of the population is under 20 years old. The official language of Saudi Arabia is Arabic and the official religion is Islam; thus, Arabic and Islam are at the heart of Saudi education and all other aspects of Saudi life. The Saudi Arabian economy has depended on oil since it was discovered in the eastern province in 1938; thus, Saudi Arabia is considered one of the world’s major oil producers. In recent years, the private sector has become more involved in economic industry for future development (Rashid & Shasheen, 2002; CIA, 2012).

![Map of the Kingdom of Saudi Arabia](image)

Figure 3.1 Map of the Kingdom of Saudi Arabia (CIA, 2012).

### 3.3 Features of the Education System in the Kingdom of Saudi Arabia

The government of the KSA has centralised the administration of education and dictates educational policy. Three main authorities are responsible for education policy and its implication. First, the Ministry of Education, which was established in 1953, is
in charge of providing free education for boys and girls at all general stages from pre-
school through secondary school. The Ministry includes a number of regional
education agencies responsible for supervision of the public schools in their region
(Ministry of Education, 2009). The Ministry provides and oversees the following types
of education: general education (pre-school, primary, intermediate and secondary),
teacher training, special education and adult education. The second authority is the
Ministry of Higher Education, which was established in 1975 to impose higher
education policy by supervising scholarships, universities, international academics and
academic offices abroad (Al-Abdulkareem, 2004; UNESCO, 2011). The KSA is home
to 14 universities. The General Organization of Technical Education and Vocational
Training is the authority in the Saudi educational system concerned with industrial,
commercial and agricultural education, technical foremanship training and commercial
training (Al-Abdulkareem, 2004; UNESCO, 2011). For the purposes of this study, the
focus will be on general education and gifted education in the KSA educational system
below the university level.

3.4 General Education in Saudi Arabia

The general education system in Saudi Arabia, supervised by the Ministry of
Education, consists of three compulsory stages plus one non-compulsory pre-school
phase: pre-school (2-6 years); primary school (6-12 years); intermediate school (12-15
years) and secondary school (15-18 years) (Ministry of Education, 2005; UNESCO,
2011). The following section contains a discussion of these stages, concentrating on
details related to the primary school stage.

3.4.1 Pre-school stage (kindergarten)

The pre-school level of education in Saudi Arabia is not compulsory; attendance is not
required and the sexes are not segregated. Different instruction is provided during the
pre-school stage based on age group: infant (ages 2-4), nursery (ages 4-5) and
preliminary (ages 5-6). In 2009/2010, there were 1,521 kindergartens, with 106,301
children enrolled. Educational objectives at this stage are to educate children in good
behaviour, simple hygiene and basic concepts, skills and knowledge to prepare them for school life (Ministry of Education, 2009; UNESCO, 2011).

3.4.2 Primary school stage

Primary education consists of six grade levels and begins for pupils at the age of six and ends at age twelve (Ministry of Education, 2009). In 2009/2010, there were 13,602 primary schools, with a total of 2,493,125 pupils enrolled, while the total number of teachers was 223,511. The main objectives of the primary stage of education are as follows:

- Help pupils develop various basic skills, especially language, numeracy and physical abilities.
- Develop feelings of responsibility in pupils so that they understand their rights and duties (within the limits of the children’s age and the characteristics of their stage of development) and foster love for their country and loyalty to their rulers.
- Create in children the desire to learn, as well as the motivation to perform useful work, and train them to make good use of their leisure time (UNESCO, 2011, p. 9).

In this stage, pupils are provided with different curricula covering the Islamic religion, the Arabic language, mathematics, history, geography, science and the English language in six grade levels. The curricula and number of lessons differ from level to level (see table 3.1). In the first, second and third grade levels, one teacher, who usually has 10 to 15 years of experience, teaches all subjects, whereas in the fourth, fifth and sixth grade levels, teachers specialize in different areas and teach only in those areas. The school day starts at seven in the morning in the winter and half past six in the summer and ends at midday five days a week from Saturday to Friday (Ministry of Education, 2005; 2009).

A pupil at primary school progresses automatically to the next year level unless his or her teacher assesses that the pupil has not acquired the necessary skills and knowledge to progress.
### Table 3.1 The curricula and number of lessons from grades one through six in primary school (Ministry of Education, 2005).

<table>
<thead>
<tr>
<th>Hours of classroom study assigned to each area</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Semester.1</td>
</tr>
<tr>
<td>Religious</td>
<td>9</td>
</tr>
<tr>
<td>Arabic language</td>
<td>12</td>
</tr>
<tr>
<td>Social science</td>
<td>-</td>
</tr>
<tr>
<td>Mathematics</td>
<td>2</td>
</tr>
<tr>
<td>Science</td>
<td>-</td>
</tr>
<tr>
<td>Art</td>
<td>2</td>
</tr>
<tr>
<td>National education</td>
<td>-</td>
</tr>
<tr>
<td>Physical education</td>
<td>3</td>
</tr>
<tr>
<td>English</td>
<td>-</td>
</tr>
<tr>
<td>Weekly class hours</td>
<td>28</td>
</tr>
</tbody>
</table>

3.4.3 Intermediate school stage

Intermediate education consists of three grade levels, from age 12 to 15, that open to pupils who succeed in completing primary education (Ministry of Education, 2009). In 2009/2010, there were 7,910 intermediate schools, with a total enrolment of 1,118,342...
The main objectives of the intermediate stage of education are as follows:

- Supply students with skills and knowledge suitable to their age, enabling them to learn the general principles and fundamental rules of education and science.
- Stimulate students to search for knowledge and help them become accustomed to reflection and scientific thinking.
- Develop, orient and refine various mental faculties and skills in the students.
- Nurture the students in their social life, which is marked by fraternity, cooperation, a sense of duty and the shouldering of responsibility.
- Stimulate a desire on the part of the students to accelerate the development of their world, so they can face the challenges of the contemporary world with dignity.
- Train students to fill their time with useful reading and activities and to employ their efforts to strengthen and advance their values (UNESCO, 2011, p. 11).

This stage continues to build on levels of knowledge achieved in the primary grades in the Arabic language, sciences, mathematics, art education, geography, history, information technology, home economics (for girls), Islamic culture and the English language. Of the 33 lesson periods per week and six to seven lessons per day at the intermediate stage, eight are devoted to integrated resource sessions (IRSs) and six to Arabic. Over five days, from Saturday to Friday, the students begin at seven in the morning in winter and half past six in summer and stay until one in the afternoon in winter and half past twelve in summer. To be promoted in grade level or to the next stage, the student needs to pass an examination at the end of each grade (Ministry of Education, 2009).

### 3.4.4 Secondary school stage

Secondary schooling also spans three grade levels, from age 15 to 18. All students entering this stage must hold a certificate from intermediate school (Ministry of Education, 2009). In 2009/2010, there were 4,909 secondary schools, with a total
enrolment of 1,069,174 students, and 99,753 teachers. The main objectives of secondary education are the following:

- Look after the students’ gifts and various capabilities that unfold at this stage and direct students appropriately, thus achieving the objectives of education in its general sense.
- Develop the students’ scientific thinking and instil in them the spirit of research, systematic analysis, the use of reference sources and the practice of sound academic methods.
- Open opportunities to competent students and enable them to continue their studies in more advanced institutions and universities of all specialties.
- Impart to the students the best and most useful reading habits and the desire to broaden their scope of knowledge and use their leisure time in activities that improve their personality and the conditions of their community (UNESCO, 2011, p. 12).

The first grade level of this stage is committed to general education; in the second and third grade levels, students specialise in either the arts or the sciences. In the first grade level, students study the same curriculum: the Arabic language, sciences, mathematics, art education, geography, history, information technology, home economics (for girls), Islamic culture and the English language. Based on marks in these courses and students’ preferences, the students choose to specialise in science or art. The students who specialise in science focus their curriculum on mathematics and sciences, while those who specialise in art focus on Arabic literature and the humanities. Similar to the intermediate stage, there are 33 lesson periods per week and six to seven lessons per day; eight are devoted to IRS and six to Arabic depending on the science or art specialty. Over five days, from Saturday to Friday, the students begin at seven in the morning in winter and half past six in summer and stay until one in the afternoon in winter and half past twelve in summer. To be promoted in grade level or to the next stage, the student needs to pass an examination at the end of each grade. Based on the average of a student’s examination marks in the second and third stages, plus the results of a general abilities examination administered by the Ministry of Education, the student will select which university to enter (Ministry of Education, 2009).
3.5 The Setting, Examinations and School Calendar System in General Education

In the KSA, about 85% of schools are public and 60% of these schools’ buildings are owned by the government; 40% are rented and modified by the Ministry of Education. Usually, the school buildings are devoted to one general education stage and are single-sex establishments. The average number of students enrolled for each school building and each education stage is 250 students at primary school, 300 students at intermediate school and 400 students at secondary school. The average number of students in each class is between 20 and 32; generally, classes are bigger in public schools than in private schools. In each class for all stages, there is a desk and chair for each student and teacher and a chalkboard or whiteboard.

New regulations for student achievement assessment were introduced by the Ministry of Education in 1999 to allow primary pupils from grades one through six to be promoted automatically based on teacher assessment of pupils’ knowledge and skills in different subjects. For intermediate and secondary school stages, students need to pass different tests during the year. For all general school stages, 100 marks are allocated for each subject with 15 marks for assignments during the first and second semester and 35 marks at the end of each semester. The minimum mark required to pass differs from subject to subject, but ranges from 50% for Islamic culture, science and the Arabic language to 40% for the remaining subjects. Students who fail in the first or second semester can be re-examined before the beginning of a new grade level. If the student fails to achieve the minimum marks again, he or she will repeat the same grade level.

The average school year for all general school stages is 153 days, or 30 weeks, with one to two weeks of holiday between semesters and often two to three months of holiday at the end of year. The length of the school day is different for each stage, although the lesson period for all general stages is often 45 minutes with five minutes’ break between each lesson and a 40-minute break after the third lesson of the day. The school year runs from the middle of September to the end of June for secondary and intermediate grades; primary school grades finish two to three weeks earlier (Ministry of Education, 2009).

Throughout the KSA, primary, intermediate and secondary schools share a common approach to curricula, schemes of work, textbooks, lessons per day and assessments.
Textbooks are free of charge and are written and published by the Ministry of Education. Each grade level in each education stage uses different textbooks, which are usually changed from year to year based on changes in economic, social, cultural and development policy. Furthermore, each grade level in each education stage uses a different number of textbooks based on the different subject areas students need to study. For example, pupils in primary school receive eight textbooks on average. Teachers and students are required to cling to their textbooks very intimately. Usually student homework is derived from the questions at the end of each lesson or unit in the textbook. The homework for students increases gradually from lower grade levels through higher grade levels. For example, in primary school, students may have homework two to three times a week whereas in secondary school they often have homework from four to six times a week. Independent projects and studies are rarely assigned to regular students and usually are reserved for gifted students (Al-Sadan, 2000; Ministry of Education, 2009).

3.6 Teacher duties in general education schools

In the KSA, the number of teachers in primary schools is 223,511; it is 117,370 in intermediate schools and 99,753 in secondary schools (UNESCO, 2011). Teachers have to teach about 24 lessons per week in primary school, about 22 lessons per week in intermediate school and about 20 lessons per week in secondary school. In the first, second and third grade levels in the primary school stage, one teacher, who usually has more than 10 to 15 years of experience, teaches all subjects, whereas in the fourth, fifth and sixth grade levels, teachers specialise and teach only one subject; in addition, teachers move from one classroom to another. Most teachers in primary schools have graduated from teacher institutes, intermediate colleges or colleges for teachers supervised and controlled by the Ministry of Education. In contrast, in intermediate and secondary schools, most teachers have graduated from an education school at a university. Although they may have specialised in one area during their study, they teach different subjects in the primary school curriculum. Teachers who graduated from education schools specialised in one area and most of their courses related to their specialties; this qualified them to teach students in intermediate and secondary school who required more in-depth knowledge. All teachers have to prepare and plan once or twice daily for lessons and homework for students (Ministry of Education, 2009).
According to the Ministry of Education, teachers assume a variety of duties at each level. For the purposes of this study, teacher duties in primary schools include the following:

1. In addition to providing pupils with knowledge, teachers need to educate them in moral and human values and give them a sense of love and kindness.

2. Teachers need to arrive at school in the morning before the pupils arrive and leave at the end of the school day after pupils leave.

3. Teachers should treat pupils equally during and after class.

4. Teachers need to pay attention to each pupil’s tidiness, movements and discipline.

5. Teachers need to stay at school during school hours and not leave school without permission from the head teacher.

6. Teachers should be willing to accept additional lessons dictated by need.

7. Teachers should plan all lessons in the preparation book and submit lesson plans to the head teacher, as requested.

8. Teachers should concentrate during class and throughout the school day on pupils and lessons.

9. Teachers need to be fair in assessing pupil achievement and progress.

10. Teachers should use grade books and instructions during assessment.

11. Teachers are not allowed to be absent without a compelling reason or previous permission.

12. Teachers should submit any complaint to the head teacher personally; collective complaints are not allowed.

13. Teachers need to pay attention to classroom and pupil cleanliness and notify the supervisor as required.

14. Teachers need permission to engage in work assigned to other staff.

15. Teachers should be ideal models for pupils in their behaviour, reflecting the good image of community (Bin-Salama, 2001).
3.7 Gifted Education in the Kingdom of Saudi Arabia

3.7.1 A brief history of gifted education in the KSA

In the KSA, targeted education of gifted students is relatively new. Although the KSA is one of the first countries in the Middle East to adopt the concept of “gifted education”, it is still in the rudimentary stages of providing education for the gifted. The history is presented in point form with major events related to gifted education listed chronologically (Bushnak, 2007). In 1970, the Saudi government unveiled its General Document of Educational Policy, which includes several major regulations or sets of laws that relate to the fostering/nurturing of gifted learners. It specifically mentioned this rule: “It is very important to discover and identify the gifted learners among all Saudi young children and youth, nurture them by all means to unveil their potentials, and pay extra attention and efforts to provide them with special programs and appropriate opportunities that can be integrated easily into the Country’s Public Educational System” (Rule 57). However, it took some time for a practical step to be taken. Between 1990 and 1996, the Ministry of Education with King Abdulaziz and his Companions Foundation for Giftedness and Creativity (KACGC) made huge efforts to establish the National Research Project for Identifying and Nurturing Gifted and Talented Children. A distinguished group of researchers from King Saud University and the Ministry of Education received financial funding from KACGC for a research project to conclude at the end of 1996; both legislative and scientific aspects of gifted education in the KSA were considered in three stages of this project:

I. Writing the conceptual framework literature on giftedness and gifted education.

II. Designing a battery of instruments to identify gifted students, which consisted of and was based on the Torrance Test of Creative Thinking, the Scales for Rating the Behavior Characteristics of Superior Students (SRBCSS), tests for cognitive abilities and the Wechsler test for individual intelligence (WISC-R).

III. Designing and applying enrichment activities as a gifted programme for two samples of elementary school gifted students (Mawhiba, internet reference, n.d.).

To execute the KSA policies for gifted education, between 1997 and 1999, the Ministry of Education commissioned the Gifted Identification and Fostering Programme in selected schools in some of the larger cities. This programme for male students began
in 1997 and it started a year later for female students. The aims of this programme were to:

- Modify the school environment and prepare to offer special services and education to gifted students.
- Offer appropriate services and programmes to meet the needs of the gifted.
- Introduce and evaluate enrichment activities.
- Provide all school students with flexible, equal educational opportunities to grow and contribute to themselves, society and the world.
- Educate and train teachers and other staff members to work professionally with gifted learners.

To fulfill these goals and objectives, in the year 2001, an independent unit was created in the Ministry of Education to monitor and be responsible for the education of gifted students in the KSA. This unit is referred to as the General Administration for Gifted Students. In tandem with this process, the Ministry of Education established the Gifted Care Centre, which is responsible for educational, social and psychological care for gifted students. Thirty-one of these centres for male students and 20 for female students were established throughout the KSA under the supervision of the General Administration for Gifted Students. Consequently, by the end of 2004, there were 264 male and 97 female students benefitting from the gifted education programme (Alwasruh, 2005). A conservative estimate of the percentage of gifted pupils in the KSA is 2% (Bondagjy, 2000). Since there were about four million students in the KSA by the end of 2009, the number of those who are gifted may be around 80,000 (Alqefari, 2010).

Each stage of this development required huge preparations for gifted education; thus, the Ministry of Education needed support from other organisations within the government. Muammar (2006) suggested that: "[t]he development of gifted education in Saudi Arabia should be carried out in partnership with educational, industrial and governmental institutes across the nation" (p. 308). Consequently, in 2001, the Ministry of Education and KACGC devised a new strategic plan for all members of society, including gifted students; the plan was called “Mawhiba” and was intended to help generally the society to be creative by developing a critical mass of gifted and
talented young leaders who are innovative, highly educated and well trained to support the sustained growth and prosperity of the KSA. Thus, the Mawhiba objectives were to:

- Foster giftedness and creativity and support innovation. This includes supporting talented and creative people.
- Strengthen national capacities to generate innovative ideas.
- Find pioneers among young people who are creative and talented in natural sciences, mathematics, medicine and technology.
- Support and provide enriched educational activity for gifted and talented Saudi students.
- Create awareness and educate the public (parents, teachers and employers) about methods of nurturing gifted and talented individuals.
- Assist educational and professional institutions across Saudi Arabia in the creation of comprehensive programmes for gifted and talented individuals (Mawhiba, internet reference, n.d.).

It is apparent from a historical review of the development of gifted education in Saudi Arabia that the main bodies catering to gifted people, including students, are the Saudi Ministry of Education and King Abdul-Aziz and his KACGC. These organisations are explained in more detail in the following section.

### 3.7.2 Bodies of the gifted education system in the KSA

The government of the KSA has centralised the administration of gifted education and controls gifted educational policy. There are two main authorities responsible for education policy and its implications, as mentioned earlier. These institutional authorities are the Ministry of Education and King Abdulaziz and his Companions Foundation for Giftedness and Creativity.

**Ministry of Education:** The Ministry of Education was established in 1953 and is responsible for providing free education for boys and girls at all general stages from pre-school until secondary school. The Ministry includes a number of regional education agencies responsible for supervising the public schools and education in their
region (Mawhiba, internet reference, n.d.). The Ministry provides and oversees the following types of education: general education (pre-school, primary, intermediate and secondary), teacher training, special education and adult education. Since gifted education is considered to be special education for which the Ministry of Education is responsible, an independent unit, the General Administration for Gifted Students, in the Saudi Ministry of Education in Riyadh and 31 Gifted Care Centres throughout Saudi Arabia were created by the Ministry of Education in 2001.

**General Administration for Gifted Students:** This unit is responsible for monitoring gifted education and defining different policies to provide a high level of services and programmes for gifted students and training teachers. For this purpose, the Ministry of Education founded 31 male and 20 female Gifted Care Centers supervised by the General Administration for Gifted Students.

**Gifted Care Centre:** To apply the policy of the General Administration for Gifted Students, 31 male and 20 female centres were founded. These centres are responsible for offering educational programmes, social and psychological care for gifted students and training courses for teachers. The administrative body in each of these centres includes a centre director, assistants, behavioural specialists, learning source specialists, general support technicians, teachers and laboratory technicians (Alqefari, 2010; Aljgiman, 2007).

**King Abdulaziz and his Companions Foundation for Giftedness and Creativity:**
The KACGC was established in 1996 to be the main and official establishment in Saudi Arabia responsible for providing support for gifted people, including gifted students. The objectives of the KACGC, as mentioned in section 3.6.1, are to oversee the identification of the gifted and to provide support for them in their educational and social efforts by helping institutions of higher learning across the KSA create a general, comprehensive programme for gifted people. The KACGC has members who represent different professional councils in the field of gifted education, including the American National Association for Gifted Children (NAGC) and the World Council for Gifted and Talented Children (CGTC). The KACGC is the largest foundation that supports gifted education in the KSA; its board of directors includes prominent members of Saudi society, from princes to businessmen, and educational specialists. The KACGC provides support for students in the Ministry of Education’s six main centres of gifted
education: Riyadh, Jeddah, Taif, Madinah, Dammam and Al-Hassa. The goal is to invest in students’ creativity and innovative ideas and to bring students’ ideas to fruition through products introduced in the marketplace. It is important to note that the most recent KACGC annual report (2006) suggested that the development of gifted education tends to concentrate on creativity by implementing enrichment programmes as part of the education system of Saudi Arabia. According to the 2006 KACGC report, the agency has conducted 40 national enrichment programmes and three international enrichment programmes where students travelled to the U.S. for specialized programmes. In addition, the KACGC has organised various conferences to improve gifted education in Saudi Arabia. For example, in 2006, it sponsored the Scientific Regional Conference for Giftedness as an international event to enhance awareness of gifted education around the world. The KACGC also has sponsored an annual award for scientific creativity designed for male and female innovators up to the age of 25 and two competitions in robotics. In 2008, the KACGC organised the National Portal for Giftedness, Creativity and Innovation for young people, their parents, teachers and educators (Mawhiba, internet reference, n.d.; Bushnack, 2007; Alqefari, 2010).

### 3.7.3 Provision of gifted programmes in the KSA (Mawhiba)

Most gifted education programmes around the world use a mix of strategies with regards to meeting the needs of gifted and talented students. In the KSA, the educational gifted programme (Mawhiba) is a mix of ability grouping, enrichment and acceleration (Mawhiba, internet reference, n.d.; Aljugiman, 2007), similar to the United States, Australia, New Zealand and the United Kingdom (Ferguson, 2006). However, enrichment as a differentiation (intervention) strategy seems central to gifted education programmes (Mawhiba); this approach can enrich both gifted and average students with knowledge, enjoyable experiences and challenges associated with real issues surrounding them. Therefore, the enriched pull-out gifted programme was introduced by the KSA government in 2001 to improve the quality of gifted education (Mawhiba, internet reference, n.d.; Aljugiman, 2007). This Mawhiba programme aims to explore and develop the potential of gifted pupils systematically and strategically by providing them with challenges, experiences and enrichment education within regular schooling through a flexible teaching and learning environment (Mawhiba, internet reference, n.d.; Aljehany, 2007). The enriched pull-out gifted programme in the KSA relies on the
enrichment triad model (ETM) by Renzulli (see section 2.3.1) as its main component (Mawhiba, internet reference, n.d.; Aljugiman, 2007). The organisation of the ETM model is based on a cluster of three-ring conceptions of giftedness, and this model exercises even greater influence on gifted education than academic ability in terms of intelligence and creative-productive achievement (Renzulli, 1986).

The provision of the Saudi gifted programme (Mawhiba) includes ability grouping as a second strategy. Ability grouping refers to placing students together for instruction in a small group based on their ability levels or performance (Kulik & Kulik, 1992; Gray et al., 2009); this is important for gifted education in terms of differentiation (intervention), especially for enrichment. According to Rogers and Span (1993), “... enrichment as part of a within-class ability grouping practice or as a pull-out programme produces substantial academic gains in general achievement, critical thinking, and creativity for the gifted and talented learner” (p. 590). There are several ability grouping options, which can be divided into two categories. The first is whole-class strategies that contain two types of grouping (multi-level class and full-time ability grouping). The second category is small-class strategies that contain five types of grouping (within-class grouping, pull-out programme, cluster grouping, cross-grade grouping, mixed-ability cooperative grouping) (Rogers, 2002; Shields, 2002; Gray et al., 2009) (see table 2.3 in chapter 2). In the KSA, the pull-out programme with different-grade grouping was used in addition to enriched programmes for the gifted programme (Mawhiba).

The Mawhiba (enriched pull-out programme) in primary schools has the pupils enrolled in a regular classroom for the most of the day. The gifted pupils from grades four through six are pulled out to a gifted class (resources room) three days a week for two hours per day on an end-of-day basis for enrichment activities with different-grade students and with gifted programme teachers (Aljugiman, 2007). A variety of creative, lateral-thinking, problem-solving and long-project approaches as enrichment activities is provided in the resources room. These activities need to be based on theoretical models that encourage the higher order thinking of gifted and talented pupils (e.g. Bloom’s taxonomy, Renzulli’s enrichment triad model, Bett’s autonomous learner model, Williams, Maker, Kaplan, and Gardener’s multiple intelligences model). The pull-out enriched programme is supported by many authors, including Vaughn,
Feldhusen and Asher (1991) and Feldhusen, Sayler, Nielsen and Kolloff (1990), who have concluded that pull-out programmes are effective and offer the opportunity to build a creative learning atmosphere. In contrast, some researchers have criticised pull-out programmes. For example, Cox, Daniel and Boston (1985) complained about the use of withdrawal in teaching gifted pupils, claiming that it was only a part-time solution to a full-time problem. Slavin (1990) mentioned that such programmes must include acceleration because otherwise there would not be much progress (Ferguson, 2006). Ferguson (2006) reported that withdrawal programmes need more examination.

Primary gifted pupils in special classes (resources room) are provided with an enrichment programme that is both related and unrelated to the general curriculum. The enrichment activities aim to develop the individual’s potential and creativity by providing experience and challenge activities (Aljugiman, 2007).

The enriched mixed-ability cooperative grouping often applied during summer programmes (Mawhiba Summer Programmes) for four weeks’ duration is based on programmes at domestic and international universities and covers fourth grade in primary school through twelfth grade in intermediate and secondary schools, but is open to students from partnership schools and other schools. The aim of summer programmes is to develop students’ cognitive abilities as well as their personal, social and emotional skills. The initial series comprised 16 events catering to 550 students. In 2010, there were 27 domestic summer schools in science and technology, all of two to four weeks’ duration, provided by 22 different universities, colleges and research centres. They were attended by 1,369 students drawn mostly from grades 5 and 6 and grades 9 through 11 (Bushnak, 2007; Mawhiba, internet reference, n.d.).

School levels and curricula are designed to meet the needs of average students. Thus, the acceleration strategy is considered an option to challenge gifted students to speed up their work (Brody, 2004). According Cropley and Dehn (1996), acceleration is "completing the work specified in less time than foreseen" (p. 15). Thus, in 2001, the Ministry of Education and KACGC took into account in their policy the acceleration option to meet gifted and talented students’ needs (see section 3.6.1). Grade-skipping (students reduce the number of school levels required) and compacting the curriculum (shortening or replacing the regular curriculum with material appropriate for the gifted
child’s experience and ability) are two versions of Saudi acceleration. Grade-skipping was initially applied in 2001 in some primary schools, but after two years was discontinued due to unresolved problems. Along the same line, compacting the curriculum was applied in 2001 in most primary schools, but unfortunately, for many reasons, in 2010 the number of primary schools that applied this type of acceleration constituted less than 5% of all primary schools (Alzhrany, 2010). Bushnak (2007) reported that “the concept of curriculum compacting as a strategy for education of the gifted is growing in Saudi Arabia. Although it is not implemented, there were still in-service workshops given to teachers of gifted education about it” (p. 53). The most important reasons for the decline were unclear strategy for applying compacting the curriculum, a high number of curricula and students in class and a low number of gifted programme teachers (one teacher) in each school to apply the gifted programme.

3.7.4 Identification of the gifted in the KSA

The Ministry of Education in the KSA defined gifted students as “those who provide evidence of unusual or outstanding performance compared with peers in areas valued by the community such as mental superiority, original thinking, academic achievement, skills and special abilities who need to be provided with an education that public schools cannot provide as part of the regular school curriculum” (Mawhiba, internet reference, n.d.). Thus, the Ministry’s mission is to identify gifted students in public schools, starting from fourth grade in primary school. To define students as gifted, they must meet three of five criteria that were developed for the Saudi culture by the KACGC and applied by the General Administration for Gifted Students. These criteria are:

- Academic achievement test scores of 90% to 100%
- Performance on the WISC-R of 124 to 140 or higher
- Performance on the figural test from Torrance Tests of Creative Thinking (TTCT) of 124 to 140 or higher
- General mental ability tests
- Teachers' nomination
From the criteria mentioned above, it is apparent that the agency for gifted education has chosen identification methods that are widely used in other gifted education programmes (Bushnak, 2007; Alqefari, 2010; Mawhiba, internet reference, n.d.).

### 3.7.5 Teacher qualification and duties in the KSA

The provision of gifted education (Mawhiba) is an initiative designed to help schools that apply gifted programmes be more effective at fostering giftedness and creativity by enabling their gifted students to reach high levels of educational performance (Mawhiba, 2011). To achieve these goals, in 2006, the Ministry of Education established standards for selected gifted programme teachers. The standards consist of several qualified conditions, from general to specific, based on completion of three stages required to become a full-time gifted programme teacher (Al Jugaiman, 2007). These qualified condition stages are:

- **Stage one. Required qualification in terms of:**
  - Bachelor’s degree in any field of education with a grade higher than “average”
  - Three or more years of experience as a teacher in a public school
  - Recommendation from the head teacher and academic advisor at school
  - Completion of 35 hours of training courses in giftedness and gifted education

- **Stage two. Required qualification in terms of:**
  - Passing a personal interview
  - Receipt of all documents for any computer skills and attended seminars and workshops

- **Stage three. A specialist in gifted education’s observation of the teacher in terms of:**
  - Suitable personal characteristics
  - High knowledge of the subject
  - High skills in teaching
Based on KACGC research and cooperation with various professional councils in the field of gifted education, such as the United Kingdom, NAGC and the CGTC, in 2011 the KACGC published standards for educators (regular and gifted programme teachers) regarding how to work in schools that apply gifted programmes (Mawhiba); these standards described outstanding qualities, attributes, knowledge, understandings and skills teachers need to foster high performance in all students, including gifted and talented students, at these schools.

The standards are divided into three sections, as follows:

First section: Professional qualities and attributes, which captures the capacity of teachers to fulfil their roles and responsibilities and their commitment to underpinning values. According to this section, teachers need to:

1. Have high expectations of students, including a commitment to improving educational opportunities, outcomes and well-being for all.
2. Hold positive attitudes towards students, including a commitment to establish fair, respectful, trusting, supportive and constructive relationships with them.
3. Hold positive values and attitudes towards nurturing giftedness and creativity in all students.
4. Be aware of their professional duties and adopt high standards of professional behaviour.
5. Be committed to their own professional learning and take responsibility for updating and developing their practice.
6. Work with others (colleagues, parents and other members of the community) in a collaborative, constructive and evidence-based way to raise educational standards.
7. Be committed to seeking out and developing expertise in innovative curricular practices to inform their own practice and that of their colleagues within and beyond their own school.
8. Be willing to take a lead role in developing policies and practices and take individual — and promote collective — responsibility for their implementation (Mawhiba, 2011, p. 9).
Second section: Professional knowledge and understanding, which captures the knowledge and understanding that underpins effective performance. According to this section, teachers need to:

1. Have thorough knowledge and understanding of their subject and what it means to develop subject expertise and high performance in students.

2. Have extensive knowledge and understanding of what it means to nurture giftedness and creativity in the school and class context.

3. Have thorough knowledge and understanding of what deep learning is and how to foster an effective learning environment.

4. Have an extensive and deep understanding of the curriculum aims, context, processes and desired outcomes.

5. Have working, up-to-date knowledge and understanding of contemporary approaches to teaching and learning.

6. Have comprehensive knowledge and understanding of how to select, use and adapt strategies, including how to personalise learning, to provide opportunities for all learners to achieve their potential, including those with specific learning needs.

7. Know and understand the characteristics of effective assessment to maximise opportunities for high attainment.

8. Have thorough knowledge and understanding of new technology in advancing teaching and learning.

9. Understand the need to deepen and extend their knowledge of effective contemporary teaching and learning approaches to inform their own practice and that of their colleagues within and beyond their own school.

10. Understand the need for deepening and extending their knowledge of subject expertise and for developing high performance in students to inform their own practice and that of their colleagues within and beyond their own school.

11. Know and understand the characteristics of effective professional learning to lead others in developing their understanding and practice within and beyond their own school (Mawhiba, 2011, p. 10).
Third section: Professional skills, which encompasses clear expectations about promotion of positive attitudes towards learning and relates to the skills of teaching, including planning, assessing, monitoring, giving feedback, teamwork and collaboration. According to this section, teachers need to:

1. Plan for student progression, designing sequences of learning within and across series of lessons informed by thorough subject or curriculum knowledge.
2. Use a range of teaching and learning approaches that make best use of modern teaching techniques and new technologies and respond to contemporary theories of learning.
3. Build on prior knowledge and understanding of those they teach so that students meet learning objectives and make sustained progress.
4. Manage and deploy motivating and engaging strategies that develop positive learning attitudes and behaviours in students.
5. Support and guide students to reflect on their learning, identify the progress they have made and identify their emerging learning needs.
6. Provide timely, accurate and constructive feedback on learners’ attainment, progress and areas for development.
7. Monitor student progress through timely and appropriate summative assessment.
8. Use and analyse data in supporting and shaping learning.
9. Communicate effectively with students, colleagues and parents.
10. Model and promote effective teaching and learning strategies for colleagues.
11. Analyse and use data with colleagues to support and shape learning.
12. Support colleagues in innovative and effective curriculum planning.
13. Create professional development opportunities for colleagues and lead them where appropriate (Mawhiba, 2011, p. 11).

So that both regular and gifted programme teachers could meet these standards, the Ministry of Education and KACGC offered various training courses that are described in the followed section.
3.7.6 Teacher in-service training courses in the KSA

To enhance teacher skills and performance, the Ministry of Education in the KSA established the Department of Training in 1974 to sponsor 42 training centres around the KSA; each administrative region has its own centre. These centres offer in-service training programmes for school staffs, including teachers. The number of trainers in each centre grew gradually; in the Riyadh centre, for example, the number of trainers was 557 in 1999 and had increased to 11,244 in 2005. The Ministry of Education provides several training programmes in the educational training centres under six main programme types:

1. General educational programmes
2. Intellectual skills programmes
3. Management and leadership programmes
4. Information technology programmes
5. Special educational programmes

Within these main programmes, in 2001, the Ministry of Education began to provide training courses to teachers who work in Mawhiba schools in its educational training centres to educate teachers about subjects related to giftedness and gifted education. These training courses covered:

- Gifted identification methods
- Special awareness of gifted types and care
- Training regarding the gifted and development of thinking in regular classes
- Correction of default concepts regarding giftedness and gifted education
- Coordination with parents to provide supplementary service to their gifted children
- Introduction to gifted education (theories and background of giftedness)
- Development of enrichment programmes for the gifted
- Teaching strategies; seminars on brainstorming, CoRT thinking strategies and curriculum compacting (acceleration)
- Methods for developing thinking skills: seminars on creative problem solving, future problem solving and independent investigation method
Also, the Ministry of Education offered another programme to earn a one-year diploma in gifted education in teacher colleges, but this programme ended in 2007 due to a change in supervision of teacher colleges from the Ministry of Education to educational colleges under the supervision of universities and the Ministry of Higher Education (Bushnak, 2007; Al Jugaiman, 2007; Mawhiba, internet reference, n.d.). Recently, to improve gifted education, the Ministry of Higher Education, through King Faisal University in 2009 and Al-Baha University in 2008, established the postgraduate programme as a master’s of science degree in gifted education.

3.8 Obstacles for Gifted Education in the KSA

Gifted education in the KSA faces serious obstacles in implementing the objectives established by the Ministry of Education and KACGC. The main obstacle is the limitations of the policy, provision and gifted education system itself; the Ministry of Education and KACGC are still having trouble establishing certain standards and regulations for the organisation and development of gifted education to meet gifted and talented students’ needs (Bushnak, 2007). Alqefari (2010) mentioned in his study to explore the effectiveness and weaknesses of gifted programmes in the KSA that the educational provision and policy for gifted students seem to be patchy and inadequate (e.g. applied gifted acceleration only in 5% of primary schools). According to Muammar’s (2006) report, one of the challenges Saudi Arabia faces in the field of gifted education is the complexity of the definition of gifted itself: “Especially now with the new conceptualization of giftedness as a multifaceted concept of multiple abilities…types of giftedness and services need to be prioritized on the basis of defensible criteria and rationale; hence a vision needs to be developed by the policy makers in Saudi Arabia to provide a road map of development for the education of the gifted” (p. 308). Bushnak (2007) agreed with this report and added that the provision of gifted education in the KSA suffers from lack of clarity, with significant limitations since it is concentrated on improving science and technology aspects for only male gifted students. Al-Ghamdi (2007) and Alqefari (2010) argued that schools have primary responsibility with respect to identifying and fostering gifted students, even though the system does not encourage gifted education and school facilities are inadequate. In a similar vein, Hanoreh (2003) found that schools have fallen short in
promoting gifted education and do not help students develop critical thinking skills. Al-Alola (2004) reported that another limitation of Saudi gifted education is that most gifted education systems around the world emphasise family contributions to gifted education; however, the family’s role in planning, implementing or even supporting gifted programmes in the KSA is really underestimated. Ibrahim and Al-jughaiman (2009) reported that one limitation of gifted education in the KSA is that enrichment programmes for nurturing giftedness are applied only from the fourth grade in the elementary stage, neglecting lower grades.

Teachers are the most important contributors to gifted education. Scott (2000) indicated that “[i]n education, the most crucial leaders for change are the teachers who have the final say in whether a great idea is actually put into practice in a way that works for students” (p. 8). Consequently, teachers must be sufficiently trained to plan and implement special programmes in their classes to serve gifted pupils in the regular environment. Teachers need to be aware of how to enrich curriculum and differentiate teaching methods to meet the needs of their gifted students. Theoretically, the Ministry of Education and KACGC are concerned with teacher training (see 3.6.6).

However, not much research has been conducted to explore teacher issues in relation to gifted education. Alhammed, Zeadah, Alotaiby, and Motawaly (2004), for example, summarised issues related to teachers, including gifted programme teachers, with these points: (a) Huge numbers of teachers are not qualified and do not have the capacity to teach based on low knowledge and skills; (b) teachers have low knowledge of student needs in terms of content, psychology and current educational approaches to achieve desired aims as well as low knowledge in understanding key concepts, such as reward, punishment, assessment and classroom management; (c) there is a gap between teachers’ learning of theory and their practice of teaching in schools (applying their knowledge in real-world conditions). In terms of gifted education, Al-Magid (2003) studied the nature of gifted programme provision in the KSA and found that there were negative trends among teachers regarding the education of gifted students and an unfavourable environment in schools based on teachers not modifying the curriculum to develop the thinking and creativity of students, not encouraging students to raise questions without fear or embarrassment and not taking advantage of the techniques of modern science (such as computers) in the development of creativity in gifted students.
where freedom, tolerance and acceptance prevail. Likewise, Alemselm and Zainal (1992a, b) found an absence of educational devices and facilities that are required for gifted students’ programmes and highlighted the low number of gifted education teachers (one in each school) and the lack of expertise among regular teachers in designing and carrying out gifted programmes. Along the same line, Ibrahim (2002) mentioned that issues relating to the identification of gifted and talented students are due to the large numbers of students in regular classes and the unsuitable methods for identification as well as the lack of expert and creative teachers. Al-Alola (2004) explained the issues of gifted education by saying that teachers now need to be expert in gifted education but have received much less training than supposed.

In contrast, Bushnak (2007) studied the perspectives of teachers towards training programmes for gifted education using the interview method with six teachers and found that teachers were aware of what their programmes and institutions offered and what had to change to improve training programmes for teachers of the gifted; in addition, teachers had positive opinions regarding gifted education in the KSA and the development of the KSA gifted programme based on international standards. She added that the problem of slow development of gifted education is more a policy problem than a problem with lack of professional training or a shortage of funding.

It is apparent, however, that "Saudi Arabia's experience in the field of gifted education is young, but there is huge potential for success in the light of the determination of the KACGC…” (Muammar, 2006, p. 308). Muammar (2006) and Alqefari (2010) emphasised the role of the KACGC and Ministry of Education in Saudi Arabia to develop structured gifted education programmes as well as to establish and fund new research because of the general lack of scientific studies on gifted education in the KSA. This finding was confirmed by Suliman (2006), who also reported a lack of scientific and field studies in gifted education (cited by Alqefari, 2010). Almaraee (2003) reported that “[a] major problem that faces any researcher while studying teacher education programs in some developing countries, particularly Saudi Arabia, is the lack of research, studies, and information resources” (p. 49).

Thus, the aim of the current study is to explore the attitudes and knowledge of regular teachers and gifted programme teachers towards gifted primary pupils and towards
gifted education in general by seeking to establish the strength of the correlation between teachers’ attitudes and knowledge. Moreover, the study aims to identify associated and predictive variables regarding specific attitudes. A combination of quantitative and qualitative research strategies will be used to increase the reliability and validity of the results. Therefore, the proposed study has the potential to enrich the literature on teachers’ attitudes and knowledge regarding gifted education. The goal is to investigate the success of gifted programmes in Saudi Arabia because identifying teachers’ attitudes and knowledge is important for the success of such programmes.

3.9 Summary of the Chapter

This chapter has reviewed and outlined the most important information within the context of the current study. In this chapter, the general education system in the KSA was reviewed. The policy for education and its objectives were explored, the different stages of general education were reviewed, progression and the school calendar and examinations were highlighted and the curriculum and teachers’ duties were outlined. In addition, this chapter focused on gifted education as it exists in the KSA and its development history, policy and objective. A review of the literature illustrated the magnitude of the Ministry of Education and KACGC’s commitment to gifted education. Several methods are used to identify gifted students, and the Mawhiba provision was created to meet the needs of gifted and talented students. This chapter also contributed to the identification of barriers to the development of gifted education in the KSA and suggested avenues for future research.
CHAPTER FOUR:
METHODOLOGY AND RESEARCH DESIGN

4.1 Introduction

This chapter provides a description of the study design and is divided into the following sections:

- Section 4.2 discusses the methodological debate and how the choice of scientific methodology and the process of designing research must be guided by a research paradigm.
- Section 4.3 describes the study design and provides the rationale for the combination of qualitative and quantitative methods.
- Section 4.4 discusses the strengths and weaknesses of each method and the complementarity of mixed methods.
- Section 4.5 describes the instruments used in this study and details how different phases were conducted to develop the questionnaire and semi-structured interview instruments.
- Section 4.6 describes the population and site of the study.
- Section 4.7 describes the sampling technique used to select the study sample.
- Section 4.8 describes ethical issues considered in the study.
- Section 4.9 describes the procedures for collecting study data.
- Section 4.10 illustrates the data analysis techniques.
- Section 4.11 describes how validity was established in the current study.
- Section 4.12 describes how reliability was assessed.
- Section 4.13 describes limitations of the study.

4.1.1 Research Questions

This study sought to address ten main research questions (RQs) concerning regular teachers’ (RTs’) and gifted programme teachers’ (GPTs’) attitude and knowledge regarding gifted pupils and their education in Saudi Arabia:

RQ1. What are the attitudes of RTs and GPTs towards gifted pupils and their education in Saudi Arabia?
RQ2. Are there significant differences between RTs and GPTs in their attitudes towards gifted pupils and their education in Saudi Arabia?

RQ3. What is the level of RT and GPT knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ4. Are there significant differences between RTs and GPTs in their knowledge level regarding the gifted and gifted education in Saudi Arabia?

RQ5. What are the needs of RTs and GPTs in terms of improving their knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ6. What are the attitudes of RTs and GPTs regarding in-service gifted training programmes in Saudi Arabia?

RQ7. Are there significant differences between RTs and GPTs in their attitudes regarding in-service gifted training programmes in Saudi Arabia?

RQ8. What is the relationship between RTs’ and GPTs’ attitudes towards gifted pupils and their education and RTs’ and GPTs’ knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ9. What biographical characteristic factors of RTs and GPTs predict their attitudes towards gifted pupils and their education in Saudi Arabia?

RQ10. What biographical characteristic factors of RTs and GPTs predict their knowledge regarding the gifted and gifted education in Saudi Arabia?

4.2 The Methodological Debate

Methodology is associated with the research paradigm that guides the whole research project; thus, understanding the meaning and different types of paradigms is significant to progress in social science research (Phillips, 2001; Lather, 1992; Guba & Lincoln, 1994) because paradigms are considered the “[b]asic belief systems based on ontological, epistemological and methodology assumptions” (Guba & Lincoln, 1994, p. 107). According to Guba and Lincoln (1994), “[a] paradigm may be viewed as a set of basic beliefs … that deals with ultimates or first principles. It represents a worldview that defines for its holder the nature of the ‘world’, the individual’s place in it, and the range of possible relationships to that world and its parts … The beliefs are basic in the sense that they must be accepted simply on faith; there is no way to establish their ultimate truthfulness” (pp. 107-108). Guba and Lincoln (1994) summarised the
paradigm types into positivism, post-positivism, critical theory and constructivism/interpretive paradigm (see table 4.1).

<table>
<thead>
<tr>
<th>Issue</th>
<th>Positivism</th>
<th>Post-positivism</th>
<th>Critical Theory</th>
<th>Constructivism (Interpretive)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontology</td>
<td>Naive realism—&quot;real&quot; reality but apprehendable</td>
<td>Critical realism—&quot;real&quot; reality but only imperfectly and probabilistically apprehendable</td>
<td>Historical realism—virtual reality shaped by social, political, cultural, economic, ethnic, and gender values, crystallized over time</td>
<td>Relativism—local and specific constructed realities</td>
</tr>
<tr>
<td>Epistemology</td>
<td>Dualist/objectivist, findings true</td>
<td>Modified dualist/objectivist, critical tradition/community, findings probably true</td>
<td>Transactional/subjectivist, value-mediated findings</td>
<td>Transactional/subjectivist, created findings</td>
</tr>
<tr>
<td>Methodology</td>
<td>Experimental/manipulative, verification of hypotheses, chiefly quantitative methods</td>
<td>Modified experimental/manipulative, critical multiples, falsification of hypotheses, may include qualitative methods</td>
<td>Dialogic/dialectical</td>
<td>Hermeneutical/dialectical</td>
</tr>
<tr>
<td>Inquiry aim</td>
<td>Explanation</td>
<td>Prediction and control</td>
<td>Critique and transformation; restitution and emancipation</td>
<td>Understanding; reconstruction</td>
</tr>
<tr>
<td>Nature of knowledge</td>
<td>Verified apprehendable established as facts or laws</td>
<td>Non-falsified apprehendable that are probable facts or laws</td>
<td>Structural/historical insight</td>
<td>Individual reconstructions coalescing around consensus</td>
</tr>
<tr>
<td>Knowledge accumulation</td>
<td>Accretion -“building blocks” adding to “edifice of knowledge”, generalizations and cause-effect linkages</td>
<td></td>
<td>Historical revisionism, generalization by similarity</td>
<td>More informed and sophisticated reconstructions, vicarious experience</td>
</tr>
<tr>
<td>Quality criteria</td>
<td>Conventional benchmarks of &quot;rigor&quot;; internal and external validity, reliability, and objectivity</td>
<td></td>
<td>Historical situatedness; erosion of ignorance action stimulus</td>
<td>Trustworthiness and authenticity and misapprehensions</td>
</tr>
</tbody>
</table>

Table 4.1 Paradigm types (Adapted from Guba & Lincoln, 1994, p. 109; Ben-Motreb, 2010, p. 202).
The approaches to paradigms, and ontology and epistemology, are linked through associations between paradigm and methodology as well as the definitions of qualitative and quantitative methods. Therefore, in social science, the positivist/post-positivist paradigm is usually employed in quantitative research while the constructivist (interruptive paradigm) is used in qualitative research, whereas in terms of critical methodology the paradigm is not discussed under different methodologies since social science has not fully accepted it as a discrete, authorised and independent methodology (Creswell, 2009; Bryman, 2012). Bryman (2012) reported that “[t]here is a long-standing debate about the appropriateness of the natural science model for the study of society, but, since the account that is offered of that model tends to have largely positivist overtones, it would seem that it is positivism that is the focus of attention rather than other accounts of scientific practice such as critical realism” (p. 28).

The difference between the positivist/post-positivist paradigm and the constructivist (interruptive) paradigm is first related to ontology, which asks, “[I]s there a ‘real’ world ‘out there’ that is independent of our knowledge of it?” (Marsh & Furlong, 2002, p. 17). Knowledge of the positivist paradigm exists, but for post-positivists such knowledge does not exist; however, it can exist imperfectly when behaviour and human action are studied, because researchers are limited by their own humanness (Mertens, 2010; Creswell, 2009). In contrast, in the constructivist (interruptive) paradigm, all of reality is not "out there" but social reality exists in people's minds and experiences (Cohen, Manion, & Morrison, 2007). Schwandt (1994) wrote that “we are all constructivists if we believe that the mind is active in the construction of knowledge. Most of us would agree that knowing is not passive—a simple imprinting of sense data on the mind—but active … constructivism means that human beings do not find or discover knowledge so much as construct or make it” (p. 125).

The second reason for debate between the positivist/post-positivist paradigm and the constructivist (interruptive) paradigm is found in their views of epistemology, which involve not only what and how we can learn about the world, but also that which is discovered during inquiry and how knowledge is defined, constructed, justified and stored (Marsh & Furlong, 2002; Creswell, 2009; Mertens, 2010). The knowledge that develops through a positivist/post-positivist paradigm is based on careful assessment of the objective because researchers seek to base their findings on various hypotheses, experiments and quantitative data. Therefore, quantitative approaches work well with
this paradigm. However, the constructivist (interpretive) paradigm emphasises an understanding of the meaning of events for people, which means that life experiences are viewed as co-created (Patton, 1990). Findings are based on data that are not measured or controlled. Thus, qualitative research is preferred for examining this paradigm. Therefore, it is apparent that both methodologies can be used to describe social reality (O’Leary, 2010; Cohen et al., 2007; Creswell, 2009; Mertens, 2010).

Based on the ontology and epistemology of the positivist/post-positivist paradigm that employed quantitative research and the constructivist (interpretive) that employed qualitative research, the debate emerged regarding which of these approaches is superior—the quantitative-qualitative debate (Bryman, 2012; Bazeley, 2004; Guba & Lincoln, 1994). This debate about superiority not only emerged because of different paradigms available for use but also because of their limitations; the dilemma of quantitative paradigms is the clarity of answers since the focus is not on the meaning of people’s behaviour and actions but on the explanation, causes and correlation of the behaviour and actions with other variables around people. Thus, the notion of ‘objectivity’ is questionable. While the richness of information cannot be disputed, qualitative researchers face the problem of reliability, validity and generalisability (O’Leary, 2010; Cohen et al., 2007; Creswell, 2009; Mertens, 2010).

Such criticisms highlight the importance of employing quantitative and qualitative methods in research in a mixed-method approach. Mertens (2010) mentioned the importance of developing a paradigm that can focus on the ontology, epistemology and methodology instead of divorcing entities. Johnson and Onwuegbuzie (2004) defined mixed method research (MMR) as “the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study” (p. 12). There are two paradigmatic positions within MMR: the pragmatist position and the dialectical position. The pragmatist position means “whatever philosophical and/or methodological approach works for the particular research problem under study” (Tashakkori & Teddlie, 2008, p. 9).

In contrast, the dialectical stance is “an approach that views different paradigms as social constructions. They are formulated in a certain time, place and conditions, and are, therefore, mutable and dynamic. The dialectical study identifies and engages intentionally with the multiple sets of assumptions, models, or ways of knowing in the
process of gaining better understanding of the reality” (Greene & Caracelli, 2003, p. 97). Rocco, Bliss, Gallagher, and Pèrez-Prado (2003) recommended that for researchers to better understand human phenomena, the dialectical position should be taken. The study adapted paradigmatic positions since “[t]he researcher holds no a priori commitment to using mixed methods; all are compatible and potentially useful. Mixing may occur in a particular study if the researcher decides it will help make the data collection more useful” (p. 21). This position does not require selection of only one paradigm, but uses both quantitative and qualitative methods to understand the phenomenon (Greene & Caracelli, 2003; Tashakkori & Teddlie, 2008).

In terms of the type of research objective, the present study is considered a descriptive study using a “mixed methods design” with a statistical method of analysis for quantitative data and interpretative analysis for qualitative data (Creswell, 2009). According to Gay and Airasian (2000), descriptive research is “useful for investigating a variety of educational problems, and concerned with the assessment of attitudes, opinions” (p. 275). This descriptive study employed an MMR combining paradigms to ensure maximum insight and understanding in characterising the attitudes and knowledge of regular and gifted programme teachers regarding gifted pupils and their education in Saudi Arabia.

The design of mixed methods is discussed in the second part (Research Design) since design of the study was based on a combination of quantitative and qualitative methods.

4.3 Research Design

This study employed a mixed methods design utilizing both quantitative and qualitative methodologies, reflecting the fact that gifted education research began as primarily quantitative research but has developed in recent years to include qualitative methods (Patton, 1997). The combination helps researchers to “build greater understanding and insight of the social world than is possible from one approach alone” (Ritchie & Lewis, 2003, p. 22) so as to generate insights that are deep and broad and to develop important knowledge about participants’ responses. The use of mixed methods research (MMR) also assists with triangulation, which increases the reliability and validity of the
results and makes the research stronger and more complementary (Patton, 2004; O’Leary, 2010; Cohen et al., 2007; Creswell, 2009; Mertens, 2010). Greene, Caracelli and Graham (1989) summarised the advantage of MMR after reviewing 57 studies that employed the mixed methods design; they concluded that the purposes for adopting a mixed method are triangulation, complementarity, development, initiation and expansion.

The quantitative and qualitative data were employed sequentially. The quantitative data were collected prior to the qualitative data because the quantitative method allows for the description of attitude (positive or negative), knowledge (high or low) and biographical characteristics from a large number of primary school teachers (n=933) in 10 districts of Saudi Arabia. The qualitative interviews allowed for an in-depth exploration and elaboration of the reasons behind the positive or negative attitudes and the high or low teacher knowledge obtained from the main sample (see section 6.2). Creswell (2009) mentioned that MMR is useful when the researcher “want[s] to follow up a quantitative study with a qualitative one to obtain more detailed specific information than can be gained from the results of statistical tests” (p. 510); thus, quantitative research was conducted as the first phase. The quantitative approach is considered a formalised and structured scientific approach to research that deals with “hard, external and objective reality” (Cohen et al., 2007, p. 8) and stresses empirical measurement and analysis of variables inside a value-free framework (Patton, 2004; O’Leary, 2010; Cohen et al., 2007; Creswell, 2009; Mertens, 2010; Johnson & Christenson, 2008).

In the quantitative aspect of the study data was collected via a questionnaire (from October 1 through December 25, 2010) to answer all 10 main study questions (see figure 4.1). The questionnaire (as the first phase) is appropriate since “fitness for purpose” (Cohen et al., 2007, p. 78) is met in that the questionnaire is able to describe the attitudes and knowledge of RTs and GPTs regarding gifted pupils and their education, in addition to capturing their attitudes (positive or negative), knowledge and training needs regarding gifted pupils and their education. In addition, the questionnaire can be used to examine the relationship between the dependent variable (attitude) and selected independent variables (e.g. age, experience) and several potential predictors of teacher attitudes and knowledge regarding the gifted and gifted education. Indeed, the strength of the questionnaire method is commented on by many researchers. For
example, Rojas and Serpa (2005) reported the questionnaire as the preferred method for information collection because it can be used to describe, compare and explain knowledge, attitude, behaviour and socio-biographical characteristics of the sample. Likewise, Johnson and Christensen (2008) suggested that the questionnaire is effective if the researcher wants to measure different characteristics, such as attitudes, beliefs, values, feelings, thoughts and perceptions.

The qualitative phase is less formally structured and is based on verbal descriptions rather than hard numbers to emphasise the individual experience. The emphasis is the subjective, experiential life world of human beings (Burns, 2000) to “understand the meaning individuals give to a phenomenon inductively” (Creswell & Clark, 2007, p. 29). Likewise, Corbin and Strauss (2008) reported that “[q]ualitative research allows researchers to get at the inner experience of participants, to determine how meanings are formed through and in culture, and to discover rather than test variables” (p. 12).

Thus, the follow-up qualitative method was used to elaborate on the results of quantitative analysis and hence obtain a more complete overall picture since this approach offers participants the opportunity to expand on their opinions rather than restricting them to closed questions (complementarity purpose) (Bryman, 2012; Johnson & Christenson, 2008). Creswell (2009) argued that qualitative approaches “offer many different perspectives on the study topic and provide a complex picture of the situation” (p. 510). Likewise, Merriam (2001) said that qualitative research “is an umbrella concept covering several forms of inquiry that help us understand and explain the meaning of social phenomena with as little disruption of the natural setting as possible” (p. 5). Johnson and Christenson (2008) reported that “[i]n fact, we view the quantitative and qualitative research approaches and the specific quantitative and qualitative research methods as complementary” (p. 49). Furthermore, qualitative methods help to improve both validity and reliability of the findings from the questionnaire (triangulation and strength purpose) (Bryman, 2012). Denzin (1989) suggested that “[b]y combining multiple observers, theories, methods, and data sources, [one] can hope to overcome the intrinsic bias that comes from single-methods, single-observer, and single-theory studies” (p. 307).

The research study used the semi-structured interview (as the second phase) for the qualitative aspect of data collection from February 1 through April 28, 2011. The aim
of the interviews was to develop an in-depth understanding of RTs’ and GPTs’ attitudes towards gifted pupils and their education and to verify the validity of the outcomes from the questionnaire and hence enhance the triangulation dimension of the findings. Creswell and Clark (2007) reported that the interview’s purpose is to “understand the meaning individuals give to a phenomenon inductively” (p. 29).

In particular, the semi-structured interviews yielded answers to 8 of the 10 main research questions that were addressed through quantitative analysis (see figure 4.1). The interviews, not only helped to answer the research questions but also described the meaning behind, for example, how positive and negative attitudes were formed and the reasons behind high and low knowledge levels, which lead to better understanding of the overall findings (see Appendix A). Two main questions, RQ9 and RQ10, regarding biographical characteristic factors to predict teachers’ attitudes and knowledge towards the gifted and gifted education were excluded from the interview data because some independent variables required interviewees to answer questions considered sensitive in Saudi culture. (During the pilot study, that was conducted to test the interview approach, some interviewees avoided answering or refused to answer two biographical characteristic questions related to having a family member enrolled in a gifted programme and perceiving oneself as gifted). Even though the interviews did not address RQ9 and RQ10, the results of the questionnaire and the interview were compared, and in each section the relationship between other biographical characteristic variables and independent variables was examined to determine the level of triangulation to ensure validity.

4.4 Research Methods

MMR using quantitative and qualitative paradigms was conducted to ensure maximum insight and understanding in characterising the attitude and knowledge of primary RTs and GPTs regarding gifted pupils and their education in Saudi Arabia. Quantitative and qualitative data were gathered sequentially with priority given to the quantitative method.

The research study used the questionnaire method for the quantitative aspect and the semi-structured interview method for the qualitative aspect of data collection and
analysis. The reason for selection of these methods was that attitude and knowledge of RTs and GPTs regarding gifted pupils and their education are based on their opinion (positive or negative) or attitude (high or low) in terms of knowledge (perceived knowledge). According to Ary et al. (1996), “opinion is not directly observable but must be inferred from responses made by the subjects to questionnaires or interviews” (p. 429). The other motivation for selecting these methods was that in reviewing relevant literature, it was apparent that questionnaires and interviews are the most frequently employed methods to define attitude and knowledge of participants. The mixed methods between questionnaire and interview were used in a single study (e.g. Adler, 2008), while some studies conducted the questionnaire alone to define attitude (e.g. Begin & Gagné, 1994a; Chipego, 2004; Siegel & McCoach, 2007) and knowledge (e.g. Weiss & Gallagher, 1986) or interview alone to define attitude (e.g. Shapiro, 1961) and knowledge (e.g. Hashman, 2001). In addition, through application of the questionnaire and interview methods, trustworthiness and triangulation will occur. Furthermore, this will make the research stronger and complementary. Data triangulation consists of using multiple data methods to better understand and complement the research topic (Merriam, 2001; O’Leary, 2010; Cohen et al., 2007; Creswell, 2009; Mertens, 2010). That is, “each highlights ‘reality’ in a different, yet complementary, way” (Lazaraton, 2005. p. 209).

The advantage of the questionnaire as a research tool is that it is considered to be convenient, easy to analyse and reliable and to encourage honesty and be less influenced by the researcher’s bias and attitudes since the questionnaire gives the participants freedom to reflect their ideas as they complete it; this will foster candour (Cohen et al., 2007). Furthermore, other advantages of conducting questionnaires are the low cost in time and money, as well as the generalisation of results since questionnaires are conducted with large samples. Munn and Drever (1999) said that “postal questionnaires are by far the cheapest way of gathering information from hundreds or thousands of people” (p. 1). In contrast, the questionnaire has disadvantages, including incorrect interpretations of question and answer options. Cohen et al. (2007) mentioned that the choice of “e.g. agree or strongly agree” has meaning that differs across people. Thus, the questionnaire as a research method is rarely adequate on its own (Cohen et al., 2007).
The advantages of the interview method are to explore topics in depth, yield rich data and add new insights into gifted programmes and RT attitudes and knowledge. In contrast, since the interview is subjective and conducted with a small sample (40), the main disadvantage is low reliability and limited generalisation (O’Leary, 2010; Cohen et al., 2007; Creswell, 2009; Mertens, 2010). Thus, the study used both the questionnaire and the interview method that complement each other and provide advantages to each other that can benefit the researcher.

There is wide variety in interview formats (e.g. unstructured, non-directive, focused, semi-structured). In this study, a semi-structured interview (between a structured and unstructured interview) with individuals on a face-to-face basis was used after the questionnaire analysis was completed. The semi-structured interview was conducted informally using natural conversation that gave flexibility to RTs and GPTs to express themselves freely and at some length since the interview was guided by questions to ensure that issues of importance to the study were discussed (Corbin & Strauss, 2008).

4.5 Instrumentation

The research objectives of the study guided the methodology, which consequently guided the selection of appropriate instruments. The quantitative questionnaire was distributed, in the first data collection phase, for self-administration (Groves et al., 2009). The objectives of the questionnaire were to (a) determine the attitudes and knowledge of primary RTs and GPTs regarding gifted pupils and their education, (b) determine if there is a significant difference in the attitudes and knowledge of primary RTs and GPTs regarding gifted pupils and their education, (c) point out the relationship between the attitudes and knowledge among the two groups of teachers, (d) determine if there is a significant difference in the attitudes of primary RTs and GPTs regarding in-service training courses, (e) point out the relationship between the attitudes of primary RTs and GPTs regarding in-service training courses and their knowledge of gifted pupils and their education, (f) identify the variables predictive of both teacher groups’ attitudes and knowledge regarding gifted pupils and their education and (g) investigate both teacher groups’ opinions regarding gifted training needs.
Due to the limitations of the questionnaire approach, such as the difficulty of finding in-depth results, and to ensure triangulation of methods and measures, phase two of the study involved a qualitative study using an in-depth interview instrument based on an open-ended interview schedule. The objective of the semi-structured interview was to obtain answers to 8 of the 10 main questions under study that were addressed through quantitative analysis (see figure 4.1). Two main questions, RQ 9 and RQ10, regarding biographical characteristic factors to predict teachers’ attitudes and knowledge towards the gifted and gifted education were excluded from the collected interview data because some independent variables required interviewees to answer questions considered sensitive in Saudi culture. (During the pilot study conducted to test the interview approach, some interviewees avoided answering or refused to answer two biographical characteristic questions related to having a family member enrolled in a gifted programme and perceiving oneself as gifted.) Even though the interview did not address RQ9 and RQ10, the results of the questionnaire and the interview were compared, and in each section the relationship between other biographical characteristic variables and independent variables was examined to determine the level of triangulation to ensure validity.
Figure 4.1 Mapping of the instruments against research questions

RQ1. What are the attitudes of RTs and GPTs towards gifted pupils and their education in Saudi Arabia?

RQ2. Are there significant differences between RTs and GPTs in their attitudes towards gifted pupils and their education in Saudi Arabia?

RQ3. What is the level of RT and GPT knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ4. Are there significant differences between RTs and GPTs in their knowledge level regarding the gifted and gifted education in Saudi Arabia?

RQ5. What are the needs of RTs and GPTs in terms of improving their knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ6. What are the attitudes of RTs and GPTs regarding in-service gifted training programmes in Saudi Arabia?

RQ7. Are there significant differences between RTs and GPTs in their attitudes regarding in-service gifted training programmes in Saudi Arabia?

RQ8. What is the relationship between RTs’ and GPTs’ attitudes towards gifted pupils and their education and RTs’ and GPTs’ knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ9. What biographical characteristic factors of RTs and GPTs predict their attitudes towards gifted pupils and their education in Saudi Arabia?

RQ10. What biographical characteristic factors of RTs and GPTs predict their knowledge regarding the gifted and gifted education in Saudi Arabia?
4.5.1 Teachers’ Questionnaire Instrument

The teachers’ questionnaire instrument consisted of 52 statements and questions (see Appendix A). A letter describing the aim of the research and asking for the informed consent of the participants was written as the first page covering questionnaire papers (see Appendix B). According to Cohen et al. (2007), the purpose of informed consent is to indicate the aim of the questionnaire, convey its importance to the respondents, assure them of confidentiality and encourage their replies. The participants were asked to respond to three sections of the questionnaire.

**First section:** Teachers’ Attitudes towards the Gifted and Gifted Education Scale (TAGES).

The first section consisted of 31 statement items. Primary RTs and GPTs were asked to rate their level of agreement with 31 items on the questionnaire using a 5-point Likert scale (see Appendix A). The range of responses extended from strongly disagree (coded as 1) to strongly agree (coded as 5) to determine attitudes towards the gifted and gifted education. To decide whether primary RTs and GPTs hold negative or positive attitudes towards gifted pupils and their education, Gagné (1991) and Curtis’s (2005) recommendation was applied. Means below 2.00 indicate a very negative attitude; means between 2.00 and 2.75 indicate a slightly negative attitude; means above 4.00 through 5.00 indicate a very positive attitude; means above 2.75 through 3.25 reflect an attitude of ambivalence; and means above 3.25 through 4.00 indicate a slightly positive attitude.

**Second section:** Teachers’ Knowledge and Training Needs about the Gifted and Gifted Education Scale (TKTGES).

This section consisted of 15 statement items in two parts (see Appendix A). The first part comprised 14 statement items. Primary RTs and GPTs were asked to rate their level of knowledge of 14 items using a 5-point Likert scale. The range of responses extended from lowest (coded as 1) to highest (coded as 5) to determine both groups’ knowledge and training needs regarding gifted pupils and their education. Group means for self-ratings on each item of knowledge were tabulated. “If the received rating was higher
than perceived knowledge level for a particular item, that item was identified (as low knowledge and) as a needed area for in-service training” and vice versa (Weiss & Gallagher, 1986, p. 114). The second part contained one direct question and used a 5-point Likert scale (not at all, very little, well, extremely well, excellently) to determine both groups’ attitudes toward in-service gifted training programmes. To decide whether primary RTs and GPTs hold negative or positive attitudes towards gifted training programmes, the smaller Gagné (1991) and Curtis (2005) recommendation was applied. Means below 2.00 indicate a very negative attitude; means between 2.00 and 2.75 indicate a slightly negative attitude; means above 4.00 through 5.00 indicate a very positive attitude; means above 2.75 through 3.25 reflect an attitude of ambivalence; and means above 3.25 through 4.00 indicate a slightly positive attitude.

**Third section: Teachers’ biographical information.**

This section consisted of six questions used to describe the characteristics of the target population and to determine which variables are associated with their positive or negative attitudes and high or low knowledge towards gifted pupils and gifted education, as well as which of these variables could be used as predictive variables for specific attitudes and knowledge. The biographical information was gathered from each participant. This information included age, years of teaching service, highest qualification degree, family member enrolled in gifted a programme, perception of self as gifted, gifted training courses received or not and amount (number and hours) of training with regards to gifted education received (see Appendix A). At the end of this section, the participants were asked whether they would seek an internship based on the research and, if so, to put the name of the school and mobile or email address required in case of agreement.

**4.5.1.1 Teachers’ questionnaire development**

Three phases were utilized to develop the teachers’ questionnaire. The first phase was item collection and development of the English-language instrument. The second phase was expert review and translation of the questionnaire. The final phase included the
pre-pilot and pilot studies. Every phase was planned and constructed carefully to ensure
the credibility of the questionnaire design process. Each phase of the questionnaire
development is described in detail below.

**Phase one. Development of the English-language instrument.**

The first phase was item collection and development of the English-language
instrument. This phase consisted of three main steps; the first was to determine the
question content and scope and objectives of the study. Verma and Mallick (1999)
noted that the first step in constructing a questionnaire is reviewing the questions and
the purposes of the study. The objective of defining the questions and purposes of the
research is to identify and read related literature. The literature was reviewed as the
second step to identify concepts and scales previously used to measure the constructs
under investigation. This led to producing a draft questionnaire that involved adaptation
and modification of items from earlier studies in light of questions and purposes as one
side and culture and understanding of the target respondents as the other. We followed
the guidelines provided by Cohen et al. (2007) that the questionnaire should not lead to
answers and should avoid highbrow, complex, irritating negatives and double negatives
of item questions and statements. Thus, the teachers’ questionnaire consisted of 52
statement and question items divided into three sections.

**First section:** Teachers’ Attitudes towards the Gifted and Gifted Education Scale
(TAGES).

This section consisted of 31 statement items and used a 5-point Likert scale to
determine attitudes towards the gifted and gifted education. The following instruments
were used in addition to the regulations of the Saudi Arabia gifted education policy as
resources to build this section:

1- Opinions about the Gifted and Their Education: Designed by Gagné and
Nadeau (1991) to assess six factors related to attitudes towards the gifted
and gifted education. A 7-point Likert scale was used to measure all 34
items on the scale, where 1 was strongly disagree and 7 was strongly agree.
The first subscale assessed the participants’ belief in the needs of gifted
pupils and the provision of special services for them. The second subscale
evaluated the participants’ objections on ideological grounds and other
priorities. The third subscale measured the participants’ attitudes towards the social usefulness of gifted pupils in the community. The fourth subscale measured participants’ awareness of the isolation of gifted pupils from others. The fifth subscale measured perceptions and attitudes regarding special homogeneous classes. The last subscale measured perceptions and attitudes towards acceleration for academically gifted pupils. High scores on these subscales indicated positive attitudes towards the gifted (Gagné & Nadeau, 1991; Gagné & Nadeau, 1985; McCoach & Siegle, 2005).

In light of the research questions and consistent with gifted programme education as applied in Saudi Arabia, the modification was carried out. Consequently, the last subscale, which measured attitudes towards acceleration, was excluded and replaced by the enrichment subscale because gifted programmes in Saudi Arabia do not apply grade-skip acceleration in their gifted programme strategy. The 7-point Likert scale was modified to become a 5-point Likert scale (1 was strongly disagree and 5 was strongly agree) since most studies adapted by Gagné and Nadeau employed a 5-point Likert scale (e.g. Donerlson, 2008; McCoach & Siegle, 2005).

Furthermore, the 5-point Likert scale was used in the questionnaire instrument due to Saudi culture and to establish consistency between the attitude and knowledge scales since the knowledge scales used a 5-point Likert scale. The reliability of this Gagné and Nadeau scale is elevated by conducting multiple inquiries to measure the same construct. Furthermore, reliability and validity have also been presented through the work of several researchers across different cultures (e.g. McCoach & Siegle, 2005, in the United States; Donerlson, 2008, in Australia; Allodi & Rydeliud, 2008, in Sweden).

2- The Key Features Model for Evaluation of Attitudes towards Special Programs: Designed by Renzulli (1975) and adopted from Bransky (1987). The items survey was adapted and modified for use in this study as a subscale in the teacher attitudes questionnaire that evaluated teacher attitudes regarding current gifted programmes in Saudi Arabia. All items on
the subscale were measured using a 5-point Likert scale, where 1 was strongly disagree and 5 was strongly agree (see Appendix A).

**Second section: Teachers’ Knowledge and Training Needs about the Gifted and Gifted Education Scale (TKTGES).**

This section consisted of 15 statement items in two parts. The first part comprised 14 statement items and used a 5-point Likert scale to determine both groups’ (RTs and GPTs) knowledge and training needs regarding gifted pupils and their education. The second part contained one direct question and used a 5-point Likert scale to determine both groups’ attitude towards in-service gifted training programmes.

The following main resources were used in addition to the regulations of the Saudi Arabia gifted education policy as resources to build this section:

1- **Teacher Assessment Related to Gifted Education Training (TARGET):**

TARGET was originally designed by Weiss and Gallagher (1986) using 5-point Likert-type/open-ended questions to draw a broad picture of what in-service teachers’ knowledge and training needs were concerning gifted education. The survey included areas typically related to teachers’ knowledge and skills in general academic terms, behaviour management, student assessment, instructional planning and working with other personnel in gifted education. The TARGET instrument was developed by the author based on the Teacher Knowledge & Skill Standards for Gifted and Talented Education (first edition), which was published in 1983 by CEC.

2- The NAGC-CEC’s standard was developed through cooperation between the UK National Association for Gifted Children (NAGC) and the US Council for Exceptional Children (CEC) (NAGC, 2010; NCATE, 2008; VanTassel-Baska & Johnsen, 2007). This standard admits 70 indicators (32 knowledge and 38 skills) that introduce teacher knowledge needs and preservice training programme quality in 10 areas: foundations, development and characteristics of learners’ gifts and talents, individual learning differences associated with gifts and talents, instructional strategies to address gifts and talents, learning environments and social interactions
associated with gifts and talents, language and communication, instructional planning, assessment and professional and ethical practice and collaboration. According to VanTassel-Baska and Johnsen (2007), “[t]eacher standards for gifted education are a necessary feature of ensuring that the top learners in our society are adequately identified and nurtured in the context of school settings. [I]t is essential that teachers are educated in relevant theory, research, pedagogy, and management techniques important to developing and sustaining classroom based opportunities to learn for these students” (p. 182).

Third section: Teachers’ biographical information: This section consisted of six questions used to describe the characteristics of the target population and to determine which variables were associated with their positive or negative attitudes towards gifted pupils and gifted education, as well as which of these variables could be used as predictive variables for specific attitudes. The biographical information was gathered from each participant. At the end of this section, the participants were asked whether they would seek an internship based on the research and, if so, to put the name of the school and mobile or email address required in case of agreement.

Phase Two. Expert review and translation of the questionnaire.

A draft of the English-language questionnaire instrument was reviewed by experts in educational psychology, special needs education and gifted education. These experts included my supervisor, Professor Farrell, a specialist in educational psychology and special needs, and Al-jugimain, who is experienced in gifted education in Saudi Arabia since he holds the position as head of the gifted education department at King Faisal University. The final two experts came from the departments of psychology and education at Umm Al-Qura University. These experts reviewed items for fluency and content. For each item, the experts were asked to read the question, consider the clarity of the question stem and response options, and determine, in their opinion, whether the items were representative. The questionnaire was modified to reflect suggestions of the experts. In general, comments from expert reviewers were consistent. For example, they suggested deleting some irrelevant items (e.g. “Since we invest supplementary funds for pupils with difficulties, we should do the same for the gifted”; “The gifted
waste their time in regular classes”; “It is parents who have the major responsibility for helping gifted pupils develop their talents”). On the other hand, they suggested adding some items (e.g. “The enrichment programme for gifted pupils makes them more motivated to learn”) and changing some items in the questionnaire (e.g. “Pupils with difficulties have the most need of special education services”; “Pupils with learning difficulties have the most need of special education services”).

The questionnaire had to be translated into Arabic since the setting for the study was Saudi Arabia. Maxwell (1996) suggested several translation types: back translation, multiple-forward translation, translation review by bilingual judges and statistical review. The back translation technique was used to translate the questionnaire because, according to Brislin (1970), the back translation procedure is effective in cross-cultural translations, and most research conducted by Arabic researchers has applied this technique in PhD theses (e.g. Almotrab, 2010; Al-Harbi, 2007). Brislin (1970) described the process of the back translation technique as follows: (a) Translate the original transcript into the target language, (b) grammatically check the target transcript, (c) translate the target transcript back into the original language and check against the original and (d) pre-test before the actual application.

The procedures start by selecting appropriate characteristics for translating that, according to Maxwell (1996), required high knowledge of English and the target language (Arabic), cultural experience of the target population and high skills in questionnaire development. Thus, three bilingual Saudi specialists in Arabic/English translation who had experience in questionnaire development were contacted. The first, who specialises in Arabic/English translation, was given the assignment of translating the questionnaire from English into Arabic. The result was then given to another judge to check the grammar and review the validity of the questionnaire translation. The process of back translation into the original language was carried out by the third person to check it against the original. The result of the process of translation made sense and there was comparability of meaning between the English and Arabic versions. However, the wording of some passages changed based on consultation suggestions since some words hold complicated, different meaning and require a background in the subject investigated.
Phase three. Pre-pilot and pilot study.

- **Pre-pilot**

The pre-pilot and pilot studies are different and important stages in developing the questionnaire. According to Cohen et al. (2007), "it is important to pilot and pre-pilot a survey. The difference between the pre-pilot is usually a series of open-ended questions that are used to generate categories for closed, typically multiple choice questions. The pilot is used to test the actual survey instrument itself" (p. 211). Thus, after finalizing the Arabic questionnaire version, the pre-pilot was conducted with four primary teachers (2 RTs and 2 GPTs). These teachers did not participate in the pilot or main study. To check whether the questions were ambiguous and whether the instructions were clear, participants were asked to comment about the clarity of questions, items and instructions at the end of each part of the questionnaire. The questionnaire was modified based on feedback from the pre-pilot. For example, the two regular teachers commented that item four in the second part (TKTGES) is asking for an example (Application of a variety of instructional models/educational strategies appropriate for use with the gifted pupils); thus, examples were created beside this item to enhance clarity (Application of a variety of instructional models/educational strategies appropriate for use with the gifted pupils (e.g. acceleration, enrichment, grouping)).

- **Pilot study**

Toward the end of the questionnaire development and modification process, the important pilot step was conducted as a small-scale study administered to detect any problems before conducting an actual study (Fraenkel & Wallen, 2000). According to Fraenkel and Wallen’s (2000) definition, a pilot study is “a small scale trial of the proposed procedures. Its purpose is to detect any problems so that they can be remedied before the study proper is carried out” (p. 618). Likewise, NeIsen and Buchanan (1991) said that "[a] pilot test constitutes a mainstay to establish the [usefulness] of the instrument" (p. 298). The successful pilot study requires administering to a sample of respondents having the same characteristics as those intended for the main study. Thus, the pilot instrument was administered to a sample of 36 teachers (18 RTs and 18 GPTs) in Saudi Arabia at the first of August 2010. Wiersma (1995) suggested that participants in the pilot stage "should be familiar with the variables under study and should be in a position to make valid judgments about the items" (p. 183). In terms of number of participants, according to Rossi, Wright and
Anderson (1985), 20 to 50 participants in the pilot study stage is a sufficient number to discover major flaws in a questionnaire.

The pilot study was intended to verify the questionnaire’s usability, validity and reliability, identify and eliminate vague expressions, develop an idea of how long it would take to complete the questionnaire, identify items and technical issues that may be misinterpreted, obtain comments on the suitability of the questions and determine whether there were problems with the research design (Cohen et al., 2007). Similarly to the pre-pilot stage, the space box was given to participants for comments, but at the end of the questionnaire to make the questionnaire responses smoother.

Of the target sample (N=36), 23 responses were returned (16 RTs and 7 GPTs). Most reasons given for non-return involved teachers being away for short courses. The time taken to collect the data for the pilot study was two weeks, whereas the time taken by participants to complete the questionnaire was between 10 to 28 minutes. The collected data from the pilot study were used to establish the reliability of this study. To check the reliability of the pilot data, Cronbach’s alpha for internal reliability was carried out. The result indicated that alpha was .74. This is considered coefficient reliability because anything above the cutoff of .70 is commonly accepted in the social sciences. The respondents’ feedback helped to improve the quality of the survey in terms of content coverage and content validity of the questionnaire.

The pilot stage reflected the need for some changes in terms of instructions, some questions, the choice of answers and some language before moving forward with the main study. The change are summarised in the following points:

- The informed consent form was stapled to the questionnaire and became a covering letter so that the participant would not answer the questionnaire before he had been informed of the purpose of the study and agreed to participate in it.
- Low return of questionnaires during the pilot stage was observed, as nearly 40% of questionnaires were not returned. Thus, to increase the number of returned questionnaires during main study, the study sample needed to be large.
- Missing data in some returned questionnaires were noticed in terms of teachers’ biographical information. To solve this issue, more encouragement and reassurance regarding confidentiality was added.
Based on participants’ comments, some items were changed in the questions (e.g. “What courses did you receive and for how many days?” was changed to “What courses did you receive and for how many hours?”) and options (e.g. in “Please indicate the highest degree that you possess”, the options changed from four to six).

4.5.2 Semi-structured Interview Instrument

Typically, to collect qualitative data through the interviewing process, the interview needs to be semi-structured. The semi-structured interview conducted using informal and natural conversations provides flexibility to gifted programme and regular teachers to express themselves freely and at some length since interviews are guided by questions and topics to ensure that issues of importance to the study are discussed and all topics considered to be crucial to the study are covered (Bell, 2005; Robson, 2002). Cohen et al. (2007) mentioned that the semi-structured interview “permits flexibility rather than fixity of sequence of discussions, and it also enables participants to raise and pursue issues and matters that might not have been included in a pre-devised schedule” (p. 182). Another advantage of the semi-structured interview is that it allows the interviewer to take notes on body language and facial expressions of interviewees.

Robson (2002), however, suggested that the semi-structured interview should include a list of topic headings, possible questions and a set of associated prompts as an adjunct to the main questions in the schedule. Thus, topics of interest and related questions are selected in advance and flexibility is incorporated through careful analysis. As can be seen from the English copy of the interview guide in Appendix A, questions and prompts were organised under topic headings to represent primary RT and GPT attitudes and knowledge regarding gifted pupils and gifted education, reasons behind positive or negative attitudes and high or low knowledge primary RT and GPT attitudes toward in-service gifted training programmes and the type of training needed to improve their knowledge. For the semi-structured interview guideline, the informed consent and participant information sheet were prepared (see Appendix A). This final version of the interview schedule was developed through a different process, described below.
4.5.2.1 Semi-structured Interview Development

Two phases were used to develop the semi-structured interview instrument. The first phase was expert review and translation. The second was the pilot study. Each phase was designed carefully because the final results rely on the semi-structured interview development process. Thus, each phase of the questionnaire development is described in detail below.

Phase one. Expert review and translation of semi-structured interview schedules.

Interview schedules were first formulated in English and scrutinised by my supervisor, Professor Farrell, professor in the field of educational psychology and special needs, at the University of Manchester and two experts from the departments of psychology and education at Umm-Al-Qura University. The back translation technique was used to translate the schedules of the semi-structured interview, similar to the questionnaire translation. Thus, three bilingual Saudi specialists in Arabic/English translation who had experience in questionnaire development were contacted. The first, who specialises in Arabic/English translation, was assigned to translate the schedules of semi-structured interviews from English into Arabic. The results were then given to another judge to check the grammar and review the validity of the schedules of the semi-structured translation. The process of back translation into the original language was carried out by the third person to check it against the original. The result of the process of translation made sense and there was comparability of meaning between the English and Arabic versions. To refine our Arabic version of interview schedules, two teachers (1 RT and 1 GPT) not included in main study were asked to comment on the clarity of questions.

Phase two. The pilot semi-structured interviews.

The pilot test of the semi-structured interview was conducted in Saudi Arabia with two teachers (1 RT and 1 GPT) at the end of January 2011 (after analysis of quantitative data). Those teachers were not part of the main study, had participated in the pilot study during questionnaire development and agreed to become an interviewee. Interviewees agreed to be interviewed before the actual interview was conducted. For ethical reasons, the interviewees were informed of the purpose of the pilot test through a
participant information sheet, and informed consent to participate was signed before starting the interview session.

The interviews of teachers were conducted face to face and recorded on a cassette tape recorder in a quiet room at their schools. All interviews lasted between 20 and 35 minutes. Notes were taken during the interview sessions. The respondents were asked at the end of the interview for comments and criticisms of the questions and about any ambiguity. The reflections of pilot interviewees helped us improve the questions and structure the interviews for the main study more logically. They also gave the researcher an opportunity to practise semi-structured interview techniques.

During the pilot study conducted to test the interview approach, some interviewees avoided answering or refused to answer two biographical characteristic questions related to having a family member enrolled in a gifted programme and perceiving oneself as gifted; as a result, these two independent variables were excluded from the collected main interview. Interviewees did not suggest that the questions should be amended, although for the main study interviews, it was noted that warm-up questions should be included to make the interviewee relax. The need to add a closing question in the main study asking the interviewee if he wanted to add information was found during the pilot test. Both interviewees were either not able to express their view clearly or had forgotten important information they wanted to add. The last point mentioned that interviews needed to be conducted in a relaxed environment because it was noted during the pilot test that some pupils interrupted the interviewee and interviewer during the interview session. However, all notices from the first and second phases greatly added to confidence in the quality of the semi-structured interview during the main study.

4.6 Population of the Study

A target population can be defined as the population of any well-defined set that incorporates all persons, events or physical objects required to understand the study results to generalise on them. The aim of defining the target population in a study clearly and precisely is to ensure an appropriate and representative sample and to help
other researchers determine how appropriate the findings are to their own situations (Fraenkel & Wallen, 2000).

The target population of this study was all male gifted programme teachers and regular teachers, because female teachers are not allowed to study for cultural reasons, in 800 primary schools that applied the gifted education program in 13 geographic regions and 6,000 cities and villages throughout Saudi Arabia. All 800 primary schools applied the same system of gifted education programme under the supervision of 31 care centres for gifted students controlled by the Ministry of Education, from fourth to sixth primary grades. Each of these schools had one full-time gifted programme teacher, which means 800 gifted programme teachers, whereas the number of regular teachers who teach in fourth, fifth and sixth grades equals 5,000 teachers, or between five and eight teachers in each school based on the size of the school and the number of pupils enrolled (Mawhiba, internet reference, n.d.).

4.7 The Sample

Social research quality is based on rightness of methodology, instrumentation and sampling strategy (Cohen et al., 2007). According to Collins, Onwuegbuzie and Jiao (2006), the sampling strategy in the research process is considered an important stage to determine the quality of the results. Sample strategy or sampling involves selecting a sample that is representative of a specific population. Thus, in the preliminary stage of research, the researcher needs to determine sample strategy (i.e. the sampling scheme) (Collins et al., 2006). According to Fraenkel and Wallen (2000), random and non-random are sample strategies based on probability. The random sample strategy can be formed in simple random sampling, stratified random sampling and cluster sampling, whereas the non-random sampling strategy can be formed in systematic sampling, convenience sampling and purposive sampling (Fraenkel & Wallen, 2000). These random and non-random sampling strategies can be used as unique sampling methods or according to a multistage sample method that includes, for example, stratification, clustering and unequal probabilities of selection (SAS, 2008; Johnson & Christenson, 2008).
The type of sample strategy can ensure the maximum preciseness of the result based on different factors. These factors include amount of time available to the researcher, total size of the population and permission to access money and human resources (Bell, 2005; Trochim & Donnelly, 2007; Johnson & Christenson, 2008; Bryman, 2012). Taking into consideration factors of self-investigation and financed research, the limited amount of time available and the large size of the population from which to select a suitable sample strategy, a multi-stage sample strategy was employed in this study in terms of questionnaire and interview methods to achieve a large sample size (decrease error of sampling) and, at the same time, ensure a diverse sample of regular (n=5000) and gifted programme teachers (800) working in 800 primary schools through different geographic regions and locations as maximally representative of the target population. However, to conduct the multi-stage sample strategy, several procedures were undertaken.

The first stage of the multi-stage sample strategy was selecting educational regions since regular (n=5000) and gifted programme teachers (800) work in 800 primary schools throughout different geographic regions. Thus, the Najd, Eastern, Al-Hijaz, Southern and Northern regions were selected as the biggest educational regions. From these educational regions, the educational districts in each region were chosen as the second stage, based on their large size and the distance between each district; thus, we identified the Riyadh district in the Najd region; Dammam and Al-Ahsa in the eastern region; Mecca, Medina and Jeddah districts in the Al-Hijaz region; Abha and Jazan in the Southern region; and Tabouk and Al-jof districts in the Northern region. The third stage involved the primary schools that applied gifted education programmes (see table 4.2), chosen based on the care centres for gifted students in each district; as a result, there were 262 primary schools over all districts.

All 262 primary schools had two different teacher characteristics: each school had one full-time gifted program teacher and a different number of regular teachers (between 5 and 8) based on the number of pupils enrolled in each school. Subsequently, the fourth stage was that all gifted programme teachers received questionnaires since they taught gifted pupils whereas for regular teachers only teachers who taught pupils in the fourth, fifth and sixth grades received questionnaires since the gifted programme system in Saudi Arabia was applied in these grades at the primary school level. As to the regular
and gifted program teacher sample, all teachers teaching in the selected schools were targeted; 1,248 questionnaires were therefore distributed to 262 gifted programme teachers and 986 regular teachers. Nine hundred thirty-three questionnaires were returned (233 gifted program teachers and 700 regular teachers) for analysis purposes (see table 4.2). The reason for 315 questionnaires not being returned was that teachers in primary schools had received many questionnaires from several researchers, which means that many were saturated when it came to answering study questionnaires.

In terms of the semi-structured interview, as mentioned above, a multi-stage sample strategy was employed. Based on GPTs’ and RTs’ agreement to be volunteer interviewees, the first stage was conducted as a cluster sample in which teachers were divided into two clusters; one cluster comprised GPTs \( (n=96) \) and the second RTs \( (n=198) \). These two clusters of primary teachers were then divided into 10 clusters based on district. Twenty primary schools were selected from all districts. For each district, two primary schools that had implemented a gifted programme were purposively selected based on conditions described below and on their proximity to each other (see table 6.1).

The quantitative analysis results (see section 5.4.1) showed that all GPTs have received gifted training courses while most RTs (88.86%) have not. Based on this result, and to determine both teachers’ attitudes towards in-service gifted training programmes and the reason why most RTs have not received gifted training courses, purposive sampling was applied. In the two primary schools selected for study, all GPTs were interviewed since there was only one GPT for each school. In contrast, RTs in these schools were divided into two clusters based on having received gifted training programmes or not.

In the first primary school, an RT who had not received gifted training programmes was selected for interview, while in the second school, one RT who had received such training was selected. Furthermore, the conditions of number of training courses received and highest qualification degree for both groups were taken into consideration during interviewee selection due to questionnaire analysis results that revealed an effect of these variables on teachers’ knowledge. The total number of interviewees was 20 for GPTs and 20 for RTs. The RTs were divided into two groups: 10 RTs who had received gifted training courses and 10 RTs who had not (see section 6.2).
<table>
<thead>
<tr>
<th>Name of District</th>
<th>Number of school</th>
<th>Number of GPRs</th>
<th>Number of RTs</th>
<th>Number of GPTs completed questionnaire</th>
<th>Number of RTs completed questionnaire</th>
<th>Number of GPTs agreed to interview</th>
<th>Number of RTs agreed to interview</th>
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</thead>
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<tr>
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<td>100</td>
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<tr>
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<td>19</td>
<td>82</td>
<td>16</td>
<td>48</td>
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<td>16</td>
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<tr>
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<td>18</td>
<td>71</td>
<td>16</td>
<td>50</td>
<td>6</td>
<td>11</td>
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<td>43</td>
<td>11</td>
<td>36</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
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<td>96</td>
<td>16</td>
<td>72</td>
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<tr>
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<tr>
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<td>60</td>
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<tr>
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<td>45</td>
<td>14</td>
<td>35</td>
<td>7</td>
<td>13</td>
</tr>
</tbody>
</table>

| N=10 districts | N=262 school | N=262 GPTs | N=986 RTs | N=233 GPTs | N=700 RTs | N=96 GPTs | N=198 RTs |

Table 4.2 Number of RTs and GPTs in each stage of multi-stage sampling.

### 4.8 Ethical Considerations

Ethics are considered an essential dimension in any research project for data collection processes and to make generalisations. According to Johnson and Christenson (2008), “treatment of research participants is the most important and fundamental issue that researchers must confront” (p. 98). Indeed, the application of appropriate ethics can reduce the harm during the research process when the researcher creates tension between his or her aims to identify the truth and generalise results against data from people at one side and people’s rights and values from another side (Cohen et al., 2007).
Subsequently, the British Educational Research Association (BERA) published guidelines for any educational research to be conducted with an ethic of respect for persons, democratic values and knowledge to enable educational researchers to improve in all aspects of research and to reach an ethically acceptable position in which their process is viewed as justifiable and sound (BERA, 20011). The BERA’s (2011) second revisions of ethical guidelines were taken into account to ensure that ethical issues were fully explored and considered. In addition, to fulfil the researcher’s role as an ethical researcher, prior to commencement of the investigation, the Committee on the Ethics of Research on Human Beings at the University of Manchester approval application form was completed. The required details were provided, including that the participants were not considered to be exposed to physical, psychological or social risk, the Participant Information Sheet and the Consent Form (see Appendix B), the questionnaire, and the semi-structured schedule. Upon reviewing the application and to ensure the safety, rights, dignity and well-being of the participants, approval of the committee was obtained before any research began.

To start the fieldwork and to gain access to the primary GPTs and RTs as participants and their location, letters were sent to different departments to obtain their permission to conduct the study. Permission was obtained after review of the instruments, Participant Information Sheet and Consent Form by the supervisor, Department of Gifted Education at the Ministry of Education in Saudi Arabia, branches of the Ministry of Education in different locations and Umm Al-Qura University (see Appendix C).

Before beginning the data-gathering process, several ethical standards towards participants needed to be addressed. According to Johnson and Christensen (2008), these ethical standards are anonymity, confidentiality and privacy. Likewise, De Vaus (2002) and Gorman (2007) suggested that all kinds of research, including educational research, needs to be based on four ethical standards: informed consent, anonymity, non-harm or beneficence and confidentiality. As a result, the researcher acted within these standards. All participants were given information sheets that outlined the research aims, contained information about the nature of the research and explained the extent of their involvement. The researcher provided participants with a consent form to be signed before the questionnaire and semi-structured interview session (see
Appendix B). Gorman (2007) and De Vaus (2002) suggested that the consent form include indications of the identity of the organization conducting the research, that participant cooperation was voluntary and that participant responses are guarded with respect to confidentiality. This was achieved through the informed consent attached to the questionnaire and semi-structured interview (see Appendix B).

The informed consent explained the identity of the researcher, voluntary participation, anonymity and confidentiality. In terms of voluntary participation, participants had the option on the consent form to indicate whether they wanted to participate in the study or not. Another meaning of voluntary is that they were free to withdraw from the research for any or no reason, and at any time, and that their data would be destroyed if this happened. In terms of anonymity and confidentiality, “anonymity means that the researcher will not and cannot identify the respondents whereas confidentiality means that the researcher can match names with responses but ensures that no-one else will have access to them” (De Vaus, 2002, p. 62).

However, this study attempted to ensure that confidentiality and anonymity were continuously maintained. In terms of confidentiality, this was done through outlining the information sheet and consent form to participants before they participated in the questionnaire and face-to-face interviews so that we were certain they understood that everything associated with the study (including discussions and activities) must be kept confidential and not accessible to anyone other than the researcher and that the data would not be used for anything other than this study and the publication of results. As for anonymity, participants were notified that their identities would not be explicitly made known at any stage of this research (i.e. their identities were coded to protect participants’ confidentiality). Every effort was made to preserve the participants’ anonymity and to avoid any contrary impact to them. Data were stored securely and will be destroyed three years after the completion date of the study.

In addition, the research avoided journalistic devices such as picking out more striking features, selective reporting, presenting only the evidence supporting a particular conclusion, anecdotal style, blandness, unquestioningly accepting only the respondents’ views and including only those aspects of the research on which they might disagree (Cohen et al., 2007; Maxwell, 1996; Bryman, 2012).
4.9 Data Collection Procedures

To conduct the data-collection process, several procedures were undertaken. Upon arrival in Saudi Arabia, where the fieldwork was to be conducted, I reported to my employer, the Faculty of Education at Umm Al-Qura University, which, in turn, issued a letter to the Minister of Education asking for his support for and full cooperation with the study. Then, I obtained a list of primary schools that have applied gifted education programmes (n=800 schools) and gifted care centres (n=31) around Saudi Arabia and in each district from the Department of Gifted Education at the Ministry of Education. Following that, the Ministry of Education was asked for an official letter for school administrators to explain the data collection. Each district was asked to provide the official letter to all primary school administrators in their district. Data were collected in two stages in 2010 and 2011. The first stage involved the questionnaire and the second involved the semi-structured interview.

4.9.1 Procedure for the questionnaire

The period for data collection for the questionnaire using a self-administered, structured questionnaire was October 1 through December 25, 2010. Visits to schools and administration of the questionnaire instruments were planned to avoid, as much as possible, inconvenience to the schools and disruption of procedures. I decided to visit between three and four schools each day based on distance between them, and arrived about half an hour after the start or break of the school day, when all pupils were in their classes and the school had settled. In each school, the researcher presented himself to the head teacher first and then to both the gifted programme teacher and regular teacher participants and explained the nature and purpose of the research project verbally and in writing (information sheet). Upon explaining the project to both GPTs and RTs, the researcher provided each participant with a consent form, which was attached to the questionnaire, to be signed; it indicated that participation was voluntary and provided a brief explanation of the study and information about how the results would be used. Based on the contact form assigned, the participants completed 933 questionnaires (233 GPTs and 700 RTs) for analysis purposes (see table 4.2). These questionnaires were collected by the researcher.
The procedure of questionnaire data collection was generally successful. However, a few problems emerged in that some teachers were busy teaching all day, were absent or had training courses on the day of questionnaire distribution. Taking into account the research ethics, the limited time for fieldwork and the distance between districts in Saudi Arabia, those teachers did not receive the questionnaire.

4.9.2 Procedure for the semi-structured interview

The period of semi-structured interview data collection as the second part of the fieldwork ran from February 1 through April 28, 2011, immediately after the first fieldwork phase had been finished and analysed. Two main questions, RQ9 and RQ10, regarding biographical characteristic factors to predict teachers’ attitudes and knowledge towards the gifted and gifted education were excluded from the collected interview data because some independent variables required interviewees to answer questions considered sensitive in Saudi culture; for example, during the pilot study conducted to test the interview approach, some interviewees avoided answering or refused to answer two biographical characteristic questions related to having a family member enrolled in a gifted programme and perceiving oneself as gifted. Before the interview session, the researcher drew up a schedule containing important agenda items (e.g. welcome, review of the questions/topic guideline, introduction, warm-up, use of field notes, tape recorder, consent form, prompts if necessary and close).

Appointments were made with interviewees before the interview occurred. Participants were contacted individually by e-mail and telephone about participation in the interview session two days before the interview session. The researcher arranged to meet interviewees at their schools at a time convenient to them. Interviews were conducted privately in the school library, the teacher's office or a common room to secure privacy and avoid any upsetting disruptions.

The interviews of teachers were conducted face to face and recorded on a cassette tape recorder. The researcher began by welcoming the interviewee, presenting himself and his affiliation, presenting a brief outline of the research project, explaining the general purpose of the interview, mentioning that the interview would take between 20 and 35 minutes, assuring the interviewee with regard to confidentiality and anonymity of the
data and asking permission to take field notes and use the tape recorder. The interviewee confirmed his agreement by signing a consent form (see Appendix B).

After that, the researcher started by offering a warm-up question to reduce anxiety and encourage the participant to relax. After receiving the answer, the researcher started the discussion with a general question, then narrowed the scope of the interview by seeking more detailed information. Throughout the interview, the researcher tried to make the interview seem like a friendly conversation, but made sure that all the question were asked by following the interview guide. Furthermore, the interviewee was encouraged to give a full response to questions asked. If a one-word or unclear answer was given, additional and specific questions were asked to obtain more details. Throughout, the researcher used field notes to highlight issues and observations made during the session. However, near the end of interview, the researcher summarised the conversation and asked the participant if he wanted to add any information. The interviewee then was asked if he wanted an e-mail a copy of the interview transcript so that he could check the accuracy of the interview. The researcher closed the discussion by thanking the interviewee and giving him e-mail contact details to allow him to send anything else that he might like to add.

Immediately, the process of transcribing the interview was undertaken to make sure that nothing was missed. Interviews took from 21 to 35 minutes to conduct, depending on the depth of replies and the number of examples given by interviewees. The individual interview records ranged from 4 to 7 pages per participant. In respect of the analysis method, the data were manually analysed due to the small number of participants (n=40).

4.10 Data Analysis Techniques

Two research methods were used in this study, as previously illustrated: the questionnaire and the semi-structured interview. Thus, different analysis techniques were used for each. These techniques were descriptive analysis, correlation coefficients, independent sample t-test, factor analysis for questionnaire data and thematic and saliency analysis for semi-structured interview data.
4.10.1 Analysis of questionnaire data

After collecting the questionnaires from participants, the data were coded and entered in a database. To analyse questionnaire variables, there are a number of specialist software applications available to support quantitative data analysis. In this study, SPSS v16 was used to analyse questionnaire data since it provides both descriptive and inferential statistical analysis techniques to answer study questions. These questions and analysis techniques are as follows:

RQ1. What are the attitudes of RTs and GPTs towards gifted pupils and their education in Saudi Arabia?
Analysis techniques: Exploratory factor analysis (principal component analysis) was conducted as a data reduction technique to explore the factors or subscales underlying RT and GPT responses on the Teachers’ Attitudes towards the Gifted and Gifted Education Scale (TAGES). In addition, descriptive analysis was used by collection of means and standard deviations on each subscale (factor) and whole scale for each group (RT and GPT) and across all groups of teachers.

RQ2. Are there significant differences between RTs and GPTs in their attitudes towards gifted pupils and their education in Saudi Arabia?
Analysis techniques: Comparative analysis techniques were employed such that two independent sample t-tests were used to examine the significant differences between RTs and GPTs on each subscale and whole scale in terms of TAGES (attitude scale).

RQ3. What is the level of RT and GPT knowledge regarding the gifted and gifted education in Saudi Arabia?
Analysis techniques: Descriptive statistics were employed by collection means and standard deviation on each item and the whole Teachers’ Knowledge about the Gifted and Gifted Education (TKGES) scale for each group (RT and GPT) and across all groups of teachers.

RQ4. Are there significant differences between RTs and GPTs in their knowledge level regarding the gifted and gifted education in Saudi Arabia?
Analysis techniques: Comparative analysis techniques were employed such that two independent sample t-tests were used to examine the significant differences between RTs and GPTs on each item and whole scale in terms of TNGES (knowledge scale).
RQ5. What are the needs of RTs and GPTs in terms of improving their knowledge regarding the gifted and gifted education in Saudi Arabia?

Analysis techniques: Descriptive statistics were employed by grouping means for self-ratings on each knowledge item of TNGES (knowledge scale) from lowest to highest knowledge levels for each group (RTs and GPTs) to illustrate discrepancies between perceived knowledge levels and need for in-service training courses and staff development.

RQ6. What are the attitudes of RTs and GPTs regarding in-service gifted training programmes in Saudi Arabia?

Analysis techniques: Descriptive analysis was used by collection of means and standard deviations from one variable for each group (RTs and GPTs) and across all groups of teachers.

RQ7. Are there significant differences between RTs and GPTs in their attitudes regarding in-service gifted training programmes in Saudi Arabia?

Analysis techniques: Comparative analysis techniques were employed such that two independent sample t-tests were used to examine the significant differences between RTs and GPTs on their attitudes regarding the in-service gifted training programme.

RQ8. What is the relationship between RTs’ and GPTs’ attitudes towards gifted pupils and their education and RTs’ and GPTs’ knowledge regarding the gifted and gifted education in Saudi Arabia?

Analysis techniques: Correlation coefficient analysis was employed for all groups of teachers to examine the size of the relationship between TAGES (attitude scale) and TKGES (knowledge scale).

RQ9. What biographical characteristic factors of RTs and GPTs predict their attitudes towards gifted pupils and their education in Saudi Arabia?

Analysis techniques: Stepwise regression analysis was conducted as the first stage in which all predictors are entered in the regression so as to examine the output to determine which predictors contribute substantially to the models’ ability to predict the outcome. If the initial analysis reveals two or more significant predictors in different models, then standard multiple regression analyses are run to find out how variables contribute to the outcome variable.
RQ10. What biographical characteristic factors of RTs and GPTs predict their knowledge regarding the gifted and gifted education in Saudi Arabia?

*Analysis techniques:* Stepwise regression analysis was conducted as the first stage in which all predictors are entered in the regression so as to examine the output to determine which predictors contribute substantially to the models’ ability to predict the outcome. If the initial analysis reveals two or more significant predictors in different models, then standard multiple regression analyses are run to find out how variables contribute to the outcome variable.

4.10.2 Analysis of semi-structured interview data

The purpose of analysing qualitative data is to discover the themes, relationships and assumptions that inform the respondents’ view of the world generally, and of the topic in particular (McCracken, 1988). Corbin and Strauss reported that “[q]ualitative analysis is a process of examining and interpreting data in order to elicit meaning, gain understanding, and develop empirical knowledge” (p. 1). Consequently, analysing qualitative data is the most difficult and most crucial aspect of qualitative research. The difficulty often lies with the question of how to analyse data once transcripts have been completed (Burnard, 1991; Bryman, 2012). The data analysis needs to incorporate both creativity and systematic exploration. The researcher needs to be patient and must pay careful attention to the data, but must also have a clear and insightful mind, able to find codes and themes in the raw data (Boyask, Rees, & Taylor, 2004; Bryman, 2012).

The purposes of the semi-structured interview were to obtain in-depth data and to verify the validity of outcome results from the questionnaire to enhance the triangulation dimension of the findings. To address the concerns associated with how to undertake the analysis, it is important that the researcher selects the appropriate method of analysis. Burnard (1991) acknowledged that identifying the method of analysis is essential before data collection begins. The literature review revealed a variety of approaches that differ significantly in their epistemological stance, method of analysis and examination of the analysis itself, all of which claim to be the most appropriate. However, it is believed that the selection of a particular method must suit, first, the type of data and, second, the research question. Indeed, analysis should not be considered in isolation of the data. As Coffey and Atkinson (1996) reported,
“...analysis is not a separate set of procedures applied to an inert body of data,..... it should be viewed as an integral part of the whole” (1996, p. 11-139).

The thematic analysis (TA) was conducted as the first analysis method with regards to the semi-structured interview data. The reason for this decision was that thematic analysis is considered to be a basic method of analysis. Braun and Clarke (2006) stated that the learner, as in my position, should learn to use thematic analysis as the first qualitative method of analysis because it is the first form of analysis and it provides the researcher with a useful skill for conducting other methods of qualitative analysis. Likewise, Buetow (2010) reported that “[t]hematic analysis is characteristic of most qualitative research” (p. 123). In the same line, Bryman (2012) described that “[o]ne of the most common approaches to qualitative data analysis entails what is referred to as thematic analysis” (p. 578). The second reason was that by reviewing the literature, it became evident that some researchers (e.g. Donerlson, 2008) had used thematic analysis with very similar data to those which supported the research choice.

Thematic analysis was employed to identify, analyse, interpret and report codes and themes within the data. Thematic analysis offers an accessible and theoretically flexible approach for analysing data. Furthermore, thematic analysis reduces and categorises the large volume of material into more meaningful units from which interpretations can be made and which provide a rich and detailed, yet complex, account of data (Buetow, 2010; Braun & Clarke, 2006; Bryman, 2012). Buetow (2010) mentioned that thematic analysis ignores the necessarily sufficient criterion of codes importance. In the current study, furthermore, the recurrence of codes would not be high since the number of interviewees was 40. To enhance the thematic analysis through consideration of the recurrence and importance of individual codes, saliency analysis was used in addition to thematic analysis. Saliency analysis can help in structuring both themes emerging from codes and non-thematic codes to help in analysis of coded excerpts, including those that occur only once (Buetow, 2010; Bryman, 2012). Buetow (2010) reported that "[c]odes of high importance are ones that advance understanding or are useful in addressing real world problems, or both. Thus saliency analysis can expose what is non-recurrent but potentially important to the aims of a study” (p. 123). Thus, in addition, a statistical thematic and saliency analysis (TSA) was conducted with regards to the semi-structured interview data to analyse the responses.
The outline guide prescribed by Braun and Clarke (2006) and Buetow (2010) was used to analyse the semi-structured interview data in the current study. They provided a six-phase guide to conducting thematic and saliency analysis, which is summarised in table 4.3.

<table>
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<tr>
<th>Phase</th>
<th>Description of the process</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <strong>Becoming familiar with the data</strong></td>
<td>Transcribe data, review the research and re-read the data, noting initial ideas.</td>
</tr>
<tr>
<td>2. <strong>Generating initial codes</strong></td>
<td>Code interesting features of the data in a systematic fashion across the entire dataset based on recurrence and importance of each code and designate items as one of the following: (1) highly important and recurrent; (2) highly important but not recurrent; (3) not highly important but recurrent; (4) not highly important and not recurrent.</td>
</tr>
<tr>
<td>3. <strong>Searching for themes</strong></td>
<td>To reduce the number and complexity of these codes, and to reveal their interrelationships, collate codes of cell 1 and cell 3 into potential themes and gather all data relevant to each potential theme, but keep codes for cell 2 salient since the highly important codes do not converge into themes.</td>
</tr>
<tr>
<td>4. <strong>Reviewing themes</strong></td>
<td>Check whether the themes work in relation to the coded extracts (Level 1) and the entire dataset (Level 2 for cell 1 and cell 3), upgrade codes for cell 2 to be themes and gather all data relevant to them (Level 1). Finally, generate a thematic ‘map’ of all themes of the analysis.</td>
</tr>
<tr>
<td>5. <strong>Defining and naming themes</strong></td>
<td>Conduct ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and labelling of the themes.</td>
</tr>
<tr>
<td>6. <strong>Producing the report</strong></td>
<td>This is the final opportunity for analysis. Select vivid, compelling extract examples, finalise analysis of selected extracts, relate back from the analysis to the research question(s) and literature, produce a scholarly report of the analysis.</td>
</tr>
</tbody>
</table>

Table 4.3 Six-phase guide to conducting thematic and saliency analysis (TSA); Adopted from Braun and Clarke (2006, p. 87) and Buetow (2010, p. 124).
4.11 Validity

To be useful, any social science research study must achieve validity of any data collection instrument (Nielsen & Buchanan, 1991; Burns, 2000; Johnson & Christenson, 2008). According to Cohen et al. (2007), “validity is an important key to effective research” (p. 133). Thus, the validity needs to be addressed before reliability since a demonstration of validity is sufficient to establish reliability and since reliability is not a sufficient condition for validity (Lincoln & Guba, 1985). Ary, Jacobs and Razavieh (1996) believed that “[v]alidity is a more important and comprehensive characteristic than reliability. It is also more difficult to determine” (p. 292). However, there are many different points of view regarding academic definitions of validity although, at a basic level, it is defined as "whether a measure of concept really measures that concept” (Bryman, 2012, p. 170). Likewise, according to Fraenkel and Wallen (2000), the definition of validity is “referring to the appropriateness, correctness, meaningfulness, and usefulness of the specific inferences researchers make based on the data they collect” (p. 158). Traditionally, in controlling validity, there are four different approaches used to make sure the instruments measure what they purport to measure, which are as follows:

- **Face validity**: This refers to the ability of instruments to measure what they are supposed to measure. This type of validity is judgmental and subject to interpretation (Fraenkel & Wallen, 2000; Hernon & Schwartz, 2009). Face validity is measured “by having experts examine the measure and agree that it does assess what it is supposed to assess. The measure looks right, reads right, feels right” (Light, Singer, & Willet, 1990, p. 152).

- **Content validity**: This is most commonly used in the social sciences and is concerned with the representativeness of the instrument items to represent the content of the concept under investigation (Hernon & Schwartz, 2009). Wallen and Fraenkel (2001) defined content validity as “a matter of determining if the content that the instrument contains is an adequate sample of the domain of content it is supposed to represent” (p. 91). Thus, the main question involves how substantially the content of the instrument represents the universe of the content of the concept under investigation. Nevertheless, there is no agreement regarding standards for validation in the social sciences; the recommendation to obtain content validity is through the use of expert judgment and to conduct a pre-pilot test of the instruments (Wallen & Fraenkel, 2001; De Vaus, 2002).
- **Criterion-related validity:** This is used to demonstrate the accuracy of the instrument by comparing the scores of the instrument to certain instruments commonly known to measure the attribute under investigation. A difficulty with this application is that many kinds of behaviour cannot be converted into an appropriate criterion (Hernon & Schwartz, 2009). There are, however, two different types of criterion-related validity: predictive and diagnostic (concurrent). The difference between these types is the time at which the data depicting the criterion are collected. That is, predictive validity estimates or predicts a future outcome of a subject by defining the correlation between the test scores and the criterion at a later time whereas diagnostic validity diagnoses the existing or current state of a subject with regards to the criterion by correlation at approximately the same time (Hernon & Schwartz, 2009).

- **Construct validity:** This has the most generalised application; it seeks to confirm that the theoretical construct of the concept is actually measured. Therefore, construct validity of an instrument can be demonstrated if an association is found between its results and the prediction of a theoretical trait by defining the correlated items on locally produced tests to those on standardized tests. If the correlation is high, one assumes that the new instrument measures what is intended (the construct) (Hernon & Schwartz, 2009). To establish construct validity, Carmines and Zeller (1991) suggested three stages to assess it. The initial stage is identifying theoretical relationships among concepts; the second is verifying the empirical relationship between a particular measure and other measures of the concept; and the final stage gathers the empirical evidence in a way that explains how the construct validity of a particular measure should be interpreted.

The important point to bear in mind is that social research is conducted by humans for humans. Therefore, considering probabilities, the ‘human error’ factor can possibly accrue twice, either on the part of the researcher or on the part of the participant. However, while conducting the study, the researcher attempted to take all necessary precautions to reduce bias and increase validity. Merriam and Simpson (1995) listed strategies that can be used to ensure that we are getting as close to reality as possible. One of these strategies is triangulation; this was mainly employed since multiple sources (mixed methods) of data were used. According to Fellow and Liu (2008), triangulation is using mixed methods or instruments to answer the same question or test the same hypothesis to reach validity since each method has different but
complementary strengths and weaknesses. In this study, triangulation of data obtained from the questionnaire and semi-structured interview as mixed methods of data collection was employed so that convergence of findings could provide evidence of validity (Dörnyei, 2007). Patton (2004) reported that “....the strategy of triangulation really pays off, not only in providing diverse ways of looking at the same phenomenon but in adding to credibility by strengthening confidence in whatever conclusions are drawn” (p. 556).

In addition, face validation and content validation were used in this study. Face validation is made by verifying that questionnaire and semi-structured interview instruments are filled out before data collection. To help establish face and content validity of the instruments, a panel of experts in the area of gifted education, special needs and educational psychology (supervisor, head of department of gifted education, two experts in departments of psychology and education at Umm-Al Qura University) was asked to review the instruments and make suggestions concerning the completeness, clarity and relative importance of the items on both instruments. These experts made good suggestions that helped in refining the items on the instruments. The second stage was translation. When the researcher initially translated the items of the questionnaire and semi-structured interview into Arabic, special attention was given to the comparability of meaning, and not to the exact translation of words, by using the back translation technique. The researcher consulted and collaborated with three bilingual Saudi specialists in Arabic/English translation. This focus was emphasized to increase the validity of the translation. Through the pre-pilot and pilot study, items of both instruments were further refined to meet their intended purpose.

4.11.1 Factor analysis

Factor analysis is conducted primarily by statisticians concerned with psychometric measurement. Factor analysis is considered a data reduction technique for summarising larger numbers of variables through means to a lower number of factors within the dataset and exploring whether a specific variable might contribute to each factor. The factor analysis technique is often employed to confirm the structure or to explore the structure of variables that exist within the data. To do that, confirmatory and exploratory factor analysis are two different approaches of factor analysis used. In
exploratory factor analysis, subsets of variables form as a result of the analysis. In confirmatory factor analysis, the a priori suggested formations are tested. The multiple group method uses confirmatory factor analysis most frequently.

However, the most frequently used exploratory factor analysis is principal component analysis (Kinnear & Gray, 2009; Field, 2010). In this study, principal component analysis (PCA) as the standard of exploratory factor analysis was conducted with teacher attitude towards gifted pupils and their education scale (TAGES). The target of the employed principal component analysis was, first, to identify the factors that explain variance in the collected data and, second, to verify the construct validity for the last TAGES used in data collection and that the items in TAGES were loaded on the same factor (Garson, 2011; Kinnear & Gray, 2009; Field, 2010). In contrast, the factor analysis did not use teachers’ knowledge and training needs about the gifted and gifted education scale (TKTGES) because of the low number of items (14 variables) and because each item scale was based on one factor of NAGC-CEC standards to measure one type of teacher knowledge and training need. Field (2010) said that “[i]n most circumstances the default of 25 is more than adequate for SPSS to find a solution for a given data set” (p. 653). Along the same line, Chatfield and Collins (1980) argued that “[f]actor analysis should not be used in most practical situations” (p. 89).

4.12 Reliability

Reliability is essentially that “[t]o have validity, a measure must also have reliability” (Ary et al., 1996, p. 292). This study employed both qualitative and quantitative methods (mixed methods) of data analysis and, therefore, required varying protocols for reliability. The reliability of qualitative analysis is not similar to the reliability in quantitative analysis (Merriam, 2002; Cohen et al., 2007). In quantitative analysis, reliability refers to the consistency of collected data whereas reliability, called credibility in qualitative analysis, refers to dependability (Golafshani, 2003). Ary et al. (1996) defined reliability in quantitative analysis as “the degree of the consistency with which it measures whatever it is measuring” (p. 268). In contrast, Bogden and Biklen (2006) explained credibility in qualitative analysis as a fit between recorded data of the researcher and what really happened in the natural setting. Thus, measuring reliability in quantitative analysis differs from measuring credibility in qualitative analysis.
(Merriam, 2002). The measurement of accuracy as a reliability means in quantitative analysis is based on the replication of results (Golafshani, 2003; Merriam, 2002). In contrast, the measurement of dependability as credibility means in qualitative analysis “lies in others concurring that given the data collected, the results make sense” (Merriam, 2002, p. 29).

External and internal consistency are two types of reliability in quantitative analysis. The test-retest is a method to assess the external consistency in quantitative analysis. To obtain the external consistency from the test-retest method, the same participants respond to the same test twice and the correlation score between both tests is then obtained (Hernon & Schwartz, 2009; Runder & Schafer, 2001). According to Rudner and Schafer (2001), the limitation of this method is that “[i]t requires two administrations of the same test with the same group of individuals. This is expensive and not a good use of people’s time. If the time interval is short, people may be overly consistent because they remember some of the questions and their responses. If the interval is long, then the results are confounded with learning and maturation, that is, changes in the persons themselves” (p. 2). Pre-testing is the second method to define the external reliability such that the researcher’s sample of participants who do not participate in the main study reviews the wording of questions and clarity of meaning (Hernon & Schwartz, 2009). In this study, the external consistency of questionnaire data was obtained through applying the pre-test on four primary teachers.

Internal consistency is the second type of reliability in quantitative analysis. The internal consistency rates range from 0, which means no reliability at all, to 1, the maximum possible coefficient. Several techniques are used to assess internal consistency, including split-half coefficients and Cronbach’s alpha, but the second method is more advisable because it calculates the average of the possible range of split-half reliability. In this study, the internal consistency of questionnaire data was obtained by Cronbach’s alpha for the pilot and main studies. The pilot study showed that Cronbach’s alpha was .74, which is considered coefficient reliability since it is above the cutoff of .70, which is commonly accepted in social science (Fraenkel & Wallen, 2000; Hernon & Schwartz, 2009). The findings from Cronbach’s alpha of the main study are presented in the following chapters.
To establish the credibility of the semi-structured interview procedure, the following stages were undertaken. Permission was obtained from interviewees to tape record their conversation. After finishing the interview session, the tapes were played back and a transcript of each conversation session in Arabic was written. The tapes were then given to a colleague, who was asked to listen to them and write his own transcript. Patton (2002) reported that “[i]t is in data analysis that the strategy of triangulation really pays off, not only in providing diverse ways of looking at the same phenomenon but in adding to credibility by strengthening confidence in whatever conclusions are drawn” (p. 556). Colleagues’ and the researcher’s transcripts were compared to agree some slight differences found, but these changes did not change the meaning or interpretation of the transcript. This high degree of agreement confirmed the reliability of the interview and the transcription. However, triangulation by comparing the analysis results from the questionnaire and semi-structured interview was conducted to enhance reliability.

4.13 Limitations of the Study

In carrying out any empirical study, it is necessary to note a number of limitations so as to improve the interpretation, implementation and generalisability of the study findings. The following are basic limitations of the study:

1. Because this study adopted questionnaire items developed in a different culture, a different educational setting and with a different language, the interpretation might have been affected by these factors despite precise procedures to translate and design the questionnaire.

2. The study was conducted on teachers at the elementary level, limiting its generalisability to teachers at the secondary and high school levels.

3. According to gifted education literature, it is important to include the voices of adults and gifted children in meeting the needs of the gifted. However, the voices of gifted children and their parents are missing from this study due to time and funding limitations.

4. The study's findings were derived from data provided by public primary school teachers, thereby excluding teachers who work in private schools.

5. Participation in the study was voluntary; therefore, it included only those who chose to participate.
6. Respondents’ perceptions might have been biased because of self-reported data, particularly if respondents completed the questionnaire immediately or answered in a way they believed the researcher wanted them to answer (i.e. provided a response that might not have been typical of the respondent’s usual attitudes or perceived knowledge).

7. The study was limited to male primary teachers for cultural reasons that result in separate schools segregated by gender and because of the different ages of pupils involved in gifted education between boys’ and girls’ schools.

8. A single researcher interpreted all the data. Although the interpretation was reviewed by other researchers, the interpretation was still limited by the individual analysis.

9. The study was limited to investigating teachers’ perceived knowledge factor because the evaluation of participants’ knowledge level was based on their opinion, rather than their actual knowledge, due to the difficulty of defining knowledge measures and identifying scales that are standardized to the Saudi environment and gifted education system.

4.14 Summary of the Chapter

This chapter has described the methods used to collect data for this study. The chosen methods were considered in some depth, highlighting their strengths and drawbacks. The mixed methods approach was selected as an appropriate design to answer the research questions and define the triangulation. The fieldwork was carried out in Saudi Arabia, from different primary schools in five different geographic regions from October 1, 2010, through April 28, 2011. The target population comprised primary regular and gifted program teachers working in 800 primary schools that applied the gifted programme. The multi-stage strategy was used to select the study sample. The choice of research instruments (i.e. the questionnaire and semi-structured interview), their contents, development phases and their reflection, translation procedures and statistical methods employed to analyse data have all been described in detail. The procedure of data collection was also described in detail. The ethical considerations of the research were addressed and dealt with when the study was designed. Validity and reliability were considered when designing the instruments. This chapter completes the discussion of the research methodology. Findings from the questionnaire survey are presented in the following chapter.
CHAPTER FIVE:
ANALYSIS OF THE QUESTIONNAIRE DATA

5.1 Introduction

This chapter provides results of quantitative analysis of questionnaire data from regular teachers (\(n=700\)) and gifted programme teachers (\(n=233\)). The results of the analysis are reported in the American Psychological Association (APA) format. This chapter presents different aspects of the quantitative analysis of the questionnaire in seven sections:

- Section 5.2 describes how reliability (internal consistency) was assessed using Cronbach’s alpha.
- Section 5.3 describes how the principal components analysis (PCA) was implemented to identify which attitude factors exist within the data of Teachers Attitudes towards the Gifted and Gifted Education Scale (TAGES).
- Section 5.4 describes how description statistics were implemented to present the participants’ biographical characteristics.
- Section 5.5 describes how the independent \(t\)-test was implemented to identify and compare both groups of participants (regular and gifted programme teachers) in terms of (a) their attitudes towards gifted pupils and their education, (b) their knowledge level regarding the gifted and gifted education and (c) their attitudes towards in-service gifted training programmes.
- Section 5.6 describes how correlation coefficients (Pearson’s \(r\)) were implemented to identify the relationship between participants’ attitudes towards gifted pupils and their education as the dependent variable and their knowledge regarding the gifted and gifted education as the independent variable.
- Section 5.7 describes how multivariate analysis (stepwise and standard multiple regression) was implemented to identify the best biographical characteristic factors to predict (a) participants’ attitudes towards gifted pupils and their education and (b) participants’ knowledge level regarding the gifted and gifted education.
5.2 Reliability of the Questionnaire Instrument

Internal consistency rates range from 0, which means no reliability at all, to 1, the maximum possible coefficient. Several techniques are used to assess internal consistency, including split-half coefficients and Cronbach’s alpha (α), but Cronbach’s alpha is preferred because it calculates the average of the possible range of split-half reliability. In this study, the internal consistency of each scale and whole-questionnaire data were obtained from RTs (n=700) and GPTs (n=233) using the Cronbach’s alpha method. To successfully produce internal consistency, Cronbach’s alpha for each item should be .70 or higher; if not, researchers must return to an earlier step to revise the questionnaire (Fraenkel & Wallen, 2000; Hernon & Schwartz, 2009). The Cronbach’s alpha for the TAGES, the Teachers Knowledge and Training Needs Regarding the Gifted and Gifted Education Scale (TKTGES) and the whole questionnaire are presented in table 5.1.

Table 5.1 Reliability statistics (Cronbach’s alpha) for questionnaire

<table>
<thead>
<tr>
<th>Scale</th>
<th>Cronbach's Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAGES</td>
<td>.76</td>
<td>31</td>
</tr>
<tr>
<td>TKTGES</td>
<td>.94</td>
<td>15</td>
</tr>
<tr>
<td>Whole questionnaire</td>
<td>.86</td>
<td>46</td>
</tr>
</tbody>
</table>

The reliability coefficients were .76 for TAGES, .94 for TKTGES and .86 for the whole questionnaire instrument, which are sufficient to indicate that the internal consistency of each scale and the whole questionnaire instrument is higher than commonly accepted in the social sciences.

5.3 Principal Components Analysis

PCA, as the standard of exploratory factor analysis, was conducted with TAGES. The goal of the employed PCA was to identify the factors that explain variance in the collected data and how a particular variable (item) might contribute to that component (Garson, 2011; Kinnear & Gray, 2009; Field, 2009).
To achieve these goals, different analysis processes were conducted based mainly on Kinnear and Gray’s (2009) suggestion that an exploratory factor analysis usually take place in three general stages:

1- A matrix of correlation coefficients is generated for all possible pairings of the variables.
2- From the correlation matrix, factors are extracted. The most common method of extraction is called principal components analysis.
3- The factors (axes) are rotated to facilitate the interpretation of the results of factor analysis.

Therefore, the first step in conducting principal components analysis is to look at the inter-correlation between variables to define the large correlation coefficients between subsets of variables that measure aspects of the same underlying factors (or latent variables). Thus, many variables do not have correlation with other variables, and very few should be excluded (Field, 2009). To check the inter-correlation between variables, a correlation matrix, or R-matrix, was used for all variables. The diagonal elements of an anti-image correlation matrix show the correlations that are not due to common factors, which should be above 0.5 for all variables, and any variables with values below 0.5 should be considered for exclusion (Kinnear & Gray, 2009; Field, 2009).

After examining the anti-image matrix for the current data, one item was excluded (q17) (by separating pupils into gifted and other groups, we increased the labelling of pupils as strong-weak, good-less good, etc.) because its value (0.49) was below 0.5 on the diagonal of the anti-image matrix.

To test the adequacy of the remaining 30 items, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett’s test of sphericity were used. The KMO statistic ratio of the squared correlation between variables to the squared partial correlation between variables shows the proportion of variance in the variables that can be caused by underlying factors. According to Field (2009), ‘[t]he KMO statistic varies from 0 to 1 in value. A value of 0 means that the sum of partial correlations is large relative to the sum of the correlation, indicating diffusion in the pattern of correlation; a value close to 1 means that patterns of correlations of factor analysis should yield distinct and reliable factors’ (p. 647). Kaiser (1974) suggested that values greater than 0.5 be accepted as marginal, values between 0.5 and 0.7 as mediocre, values between 0.7 and 0.8 as good, values between 0.8 and 0.9 as great and values above 0.9 as superb (cited in Field, 2009).
Bartlett’s test of sphericity shows whether the R-matrix differs significantly from the identity matrix. Bartlett’s values less than 0.05 indicate that the correlations between variables may be significant, whereas values higher than approximately 0.10 show no significant correlation between variables and thus the data would not be suitable for statistical treatment with PCA (Field, 2009). However, table 5.2 shows that the value of the KMO test for the TAGES dataset is large (.810), with a significance level of Bartlett’s test <.001. This means that the TAGES questionnaire data were suitable for factor analysis. Therefore, the researcher moved to the next step to conduct factor analysis.

Table 5.2 KMO and Bartlett's test

<table>
<thead>
<tr>
<th>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</th>
<th>.810</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bartlett's Test of Sphericity</strong></td>
<td></td>
</tr>
<tr>
<td>Approx. Chi-Square</td>
<td>7207.980</td>
</tr>
<tr>
<td>df</td>
<td>435.000</td>
</tr>
<tr>
<td>Sig.</td>
<td>.001</td>
</tr>
</tbody>
</table>

Since the TAGES dataset is appropriate for factor analysis, the next stage is to apply three consecutive steps of analysis: defining the method of factor extraction is first step, selecting the number of factors to be used is the second step and determining the factor rotation type is the third step. The options and trial factor analyses for each of these steps were conducted using different methods to determine the primarily right solution, or the theoretical grounds of this study.

To define the factor extraction of underlying dimensions of a dataset, there are two approaches to factor extraction: factor analysis (FA) and PCA. The differences between FA and PCA arise largely from calculation, although it is difficult to conceptualise this difference since both FA and PCA are linear models. The FA approach can compute the underlying factors and relies on the accuracy of these factors in various assumptions even though it may result in substantially different factor interpretations of the same original data. The PCA approach involves establishing linear components from a dataset and examining how each variable (item) contributes to these components. Thus, PCA was chosen for exploratory analysis to determine the factor structures of the TAGES dataset and to understand how each item contributes to each component (Field, 2009).
The PCA required identifying the number of factors from 30 items or variables to be retained. The eigenvalue and scree plot are two statistical methods that represent the number of factors (Field, 2009). The method of eigenvalue (latent root) is based on the idea that the variance of all variables accounted for by the factor can be represented by the eigenvalue (Field, 2009; Kinnear & Gary, 2009). According to Kaiser criteria, the factors with eigenvalues greater than 1 should be retained, and factors closer to 1 are best to explain the original dataset. This criterion was criticised by Jolliffe (1986), who described the Kaiser criterion as too strict and recommended that eigenvalues greater than 0.7 be used to retain the factor number (Kaiser, 1960, as cited in Field, 2009).

However, using Kaiser and Jolliffe’s criteria, the number of factors found from the 30 items was 9 and 13, respectively. It is apparent that the number of factors for both criteria is high. The reason is that both criteria are better when the number of variables (items) is less than 30 and the commonalities after extraction are all greater than 0.7 (Field, 2009). This was not the case for the current database, so the scree plot method was employed to determine the factor number. Stevens (1992) recommended a scree plot in other circumstances to reduce the number of retained factors. Field (2009) advised employing a scree plot to reduce the number of factors when the sample size is greater than 200 respondents. The scree plot graphs the eigenvalues from large to small. The cutoff for selecting factors should be those with eigenvalues greater than 1 at the point of inflexion of the curve where the slope of the line changes dramatically. Figure 5.1 shows the scree plot for the current data.

Figure 5.1 Scree plot for the TAGES data
The curve in the scree plot begins to tail off after the sixth factor (first cutoff point), but there is another drop after seven factors in the eighth factor (second cutoff point) before a stable plateau is reached. Therefore, one can justify retaining six or eight factors. But after careful examination, consultation with the supervisor and a review of the literature, the researcher fashioned an authentic account of Saudi teachers’ attitudes towards the gifted and gifted education and the design of TAGES that is based on seven original subscales/factors (see section 5.4.1); the seven factors, rather than six or eight, were selected as a suitable and meaningful solution for interpretation of the TAGES data. The seven factors formed a coherent set of TAGES data to explain about 55% of the total variance, as shown in table 5.3.

Table 5.3 Total variance explained by the seven factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Eigenvalue</th>
<th>Factor’s variance</th>
<th>Cumulative variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.119</td>
<td>17.064</td>
<td>17.064</td>
</tr>
<tr>
<td>2</td>
<td>2.717</td>
<td>9.058</td>
<td>26.122</td>
</tr>
<tr>
<td>3</td>
<td>2.302</td>
<td>7.672</td>
<td>33.795</td>
</tr>
<tr>
<td>4</td>
<td>2.063</td>
<td>6.878</td>
<td>40.672</td>
</tr>
<tr>
<td>5</td>
<td>1.669</td>
<td>5.562</td>
<td>46.234</td>
</tr>
<tr>
<td>6</td>
<td>1.319</td>
<td>4.395</td>
<td>50.630</td>
</tr>
<tr>
<td>7</td>
<td>1.270</td>
<td>4.234</td>
<td>54.863</td>
</tr>
</tbody>
</table>

The remaining 30 items loaded onto the seven factors differently, although most items had high loadings for the most important factor and small loading for other factors, which created difficulty in interpreting the factors extracted. Therefore, the factor rotation technique was used to determine which item related to each factor by maximising the loading of each item to one factor. Factor rotation can be performed using orthogonal rotation with three different choices (varimax, quartimax and equamax) or oblique approaches with two choices (direct oblimin and promax). The difference between these two rotation approaches lies in the independence of the factors; while orthogonal rotation keeps the factors independent when rotated, oblique rotation allows the factors to be related. Which rotation to use is a theoretical rather than a statistical, choice (Field, 2009). According to Field (2009), ‘[i]n practice there
are strong grounds to believe that orthogonal rotations are a complete nonsense of naturalistic data, and certainly for any data involving humans’; he added that ‘[i]f the oblique rotation reveals a correlated factor structure, then the orthogonally rotated solution should be discarded’ (p. 643).

Based on the reviewed literature, and after using both rotations and examining their factors, oblique rotation was selected because theory has shown that dependence between study factors does not cause concern. Furthermore, some studies have used direct oblique rotation (e.g. Tirri, Tallent-Runnells, Adames, Yuen, & Patrick, 2002) to find the main factors that can emerge from Gagné and Nadeau’s (1991) attitude questionnaire, which was used as a main source of the TAGES data. Table 5.4 shows that the seven factors formed a coherent set of TAGES data to explain about 53% of the total variance after rotation.

Table 5.4 Total variance explained by the seven factors after oblique rotation

<table>
<thead>
<tr>
<th>Factor</th>
<th>Eigenvalue</th>
<th>Factor’s variance</th>
<th>Cumulative variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.051</td>
<td>16.293</td>
<td>16.293</td>
</tr>
<tr>
<td>2</td>
<td>2.717</td>
<td>8.764</td>
<td>25.057</td>
</tr>
<tr>
<td>3</td>
<td>2.308</td>
<td>7.446</td>
<td>32.503</td>
</tr>
<tr>
<td>4</td>
<td>2.071</td>
<td>6.682</td>
<td>39.185</td>
</tr>
<tr>
<td>5</td>
<td>1.677</td>
<td>5.411</td>
<td>44.596</td>
</tr>
<tr>
<td>6</td>
<td>1.333</td>
<td>4.301</td>
<td>48.897</td>
</tr>
<tr>
<td>7</td>
<td>1.305</td>
<td>4.210</td>
<td>53.107</td>
</tr>
</tbody>
</table>

When rotation is implemented, it is important to determine which variables make up which factor. However, since factor loading is important in relation to a given variable and a given factor, the value loading of variables is associated with the factor. Generally, a value greater than 0.3 for factor loading is considered an important value to use since the criterion of meaningful correlation is usually 0.3 or larger (Tabachnick & Fidell, 2001). Stevens (2002) recommended that only factors with loading values greater than 0.4 be interpreted since a loading of 0.4 explains around 16% of variance in the variable.
Table 5.5 shows all seven rotated factors with loading values greater than 0.4 for each variable. These variables or items are ordered by size; variables with high loadings on the same factor are displayed together. The default value is sensible; thus, any variable with a highest value less than 0.4 should be excluded (Field, 2009). Table 5.5 shows that all variables load substantively with values greater than 0.4 and, therefore, all were included in the extracted factors.

Table 5.5 The seven factors and their loading variables

<table>
<thead>
<tr>
<th>Items</th>
<th>F1</th>
<th>F2</th>
<th>F3</th>
<th>F4</th>
<th>F5</th>
<th>F6</th>
<th>F7</th>
</tr>
</thead>
<tbody>
<tr>
<td>q23. It is unfair to deprive gifted pupils of the enrichment that they need.</td>
<td>.826</td>
<td>- .039</td>
<td>.046</td>
<td>.027</td>
<td>.073</td>
<td>.054</td>
<td>-.011</td>
</tr>
<tr>
<td>q20. Enriched school programmes respond to the needs of gifted pupils.</td>
<td>.785</td>
<td>.002</td>
<td>-.023</td>
<td>.028</td>
<td>.052</td>
<td>-.041</td>
<td>.070</td>
</tr>
<tr>
<td>q24. Whatever the school programme, the gifted will succeed in any case.</td>
<td>.741</td>
<td>.014</td>
<td>.003</td>
<td>-.033</td>
<td>-.027</td>
<td>.013</td>
<td>-.064</td>
</tr>
<tr>
<td>q16. The enrichment programme for gifted students makes them more motivated to learn.</td>
<td>.732</td>
<td>.051</td>
<td>-.024</td>
<td>-.034</td>
<td>-.026</td>
<td>-.120</td>
<td>.101</td>
</tr>
<tr>
<td>q13. An enriched school programme can help gifted children to completely develop their abilities.</td>
<td>.702</td>
<td>-.062</td>
<td>-.059</td>
<td>-.020</td>
<td>-.077</td>
<td>-.104</td>
<td>.010</td>
</tr>
<tr>
<td>q31. I’m satisfied with gifted programme activities in our primary schools for gifted pupils.</td>
<td>-.002</td>
<td>-.898</td>
<td>-.032</td>
<td>.011</td>
<td>.033</td>
<td>-.039</td>
<td>-.028</td>
</tr>
<tr>
<td>q15. I’m satisfied with gifted services in our primary schools.</td>
<td>.006</td>
<td>-.890</td>
<td>-.002</td>
<td>-.011</td>
<td>.018</td>
<td>-.025</td>
<td>-.009</td>
</tr>
<tr>
<td>q21. I’m satisfied with selection criteria and the processes of gifted programme teachers in our primary schools.</td>
<td>.046</td>
<td>-.808</td>
<td>.052</td>
<td>.017</td>
<td>-.041</td>
<td>.016</td>
<td>-.026</td>
</tr>
<tr>
<td>q12. I’m satisfied with selection criteria and the processes of gifted pupils in our primary schools.</td>
<td>-.037</td>
<td>-.777</td>
<td>.010</td>
<td>-.068</td>
<td>.030</td>
<td>-.037</td>
<td>.042</td>
</tr>
<tr>
<td>q3. Pupils with learning difficulties have the most need for special education services.</td>
<td>-.085</td>
<td>-.095</td>
<td>.762</td>
<td>.081</td>
<td>.130</td>
<td>-.072</td>
<td>.096</td>
</tr>
<tr>
<td>q6. We have a greater moral responsibility to give special help to pupils with learning difficulties than to gifted pupils.</td>
<td>-.038</td>
<td>.002</td>
<td>.751</td>
<td>.089</td>
<td>-.019</td>
<td>-.149</td>
<td>.006</td>
</tr>
<tr>
<td>q14. Average pupils are the major resource of our society, so they should receive special education.</td>
<td>.065</td>
<td>-.002</td>
<td>.668</td>
<td>-.014</td>
<td>-.029</td>
<td>-.008</td>
<td>.062</td>
</tr>
<tr>
<td>q4. Special programmes for gifted pupils have the drawback of creating elitism.</td>
<td>.055</td>
<td>.057</td>
<td>.460</td>
<td>-.155</td>
<td>-.063</td>
<td>.313</td>
<td>-.003</td>
</tr>
<tr>
<td>q29. Our schools are already adequate in meeting the needs of the gifted.</td>
<td>-.009</td>
<td>.064</td>
<td>.427</td>
<td>-.147</td>
<td>-.147</td>
<td>-.009</td>
<td>-.197</td>
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<td>Item</td>
<td>Correlation Matrix</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q25. Gifted pupils are often unsociable.</td>
<td>.052 .027 .030 -.777 .068 -.109 .041</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q19. Often, gifted pupils are rejected because people are envious of them.</td>
<td>.015 -.021 .091 -.771 .136 -.051 .023</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q22. Some teachers feel their authority is threatened by gifted pupils.</td>
<td>-.048 -.043 -.177 -.735 -.048 .026 -.013</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q8. A pupil who has been identified as gifted has more difficulty in making friends.</td>
<td>.005 -.033 .041 -.711 -.101 .042 -.040</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q30. To progress, a society must develop the talents of gifted individuals to the maximum.</td>
<td>-.008 .008 -.094 -.060 -.694 -.107 .026</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q9. Gifted pupils do not need special education service.</td>
<td>-.029 .032 .163 .001 -.677 .026 -.008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q28. The gifted need special attention to fully develop their talents.</td>
<td>.040 .052 -.091 -.013 -.631 -.083 .066</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q1. Our schools should offer special education services to the gifted.</td>
<td>-.073 -.043 .089 .036 -.616 -.230 .139</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q18. All special programmes for the gifted should be abolished.</td>
<td>.212 -.112 .039 .063 -.499 .164 -.171</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q7. The leaders of tomorrow’s society will come mostly from the gifted of today.</td>
<td>.185 -.079 .087 .003 .052 -.688 -.075</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q2. I would very much like to be considered a gifted person.</td>
<td>.055 -.058 .021 -.059 -.037 -.668 -.052</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q5. Gifted pupils are a valuable resource for our society.</td>
<td>.125 .022 .008 -.091 -.169 -.646 .034</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q11. By offering special educational services to the gifted, we prepare future members of the profession.</td>
<td>-.005 -.034 .057 -.025 -.336 -.641 .006</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q26. The best way to meet the needs of the gifted is to put them in special classes for some time.</td>
<td>.015 .043 .093 .064 -.026 .025 .766</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q27. Ability grouping provides an effective method for instruction of pupils with different ability.</td>
<td>.045 .078 .007 -.005 .049 -.086 .636</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>q10. When the gifted are put in special classes for some hours, other pupils feel devalued.</td>
<td>-.014 .123 .025 .062 .104 -.165 -.420</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Based on common threads among the variables (items) and a review of the literature, and considering the prior conceptualisation of TAGES, the following factors underlie the study data (see table 5.5):
• Factor one: *Attitude towards enrichment programme*. This subscale consists of five items that measure respondents’ attitude towards enrichment programmes and activities. High scores indicate positive attitudes towards the gifted.

• Factor two: *Attitude towards policy and the implications of Saudi gifted programme*. This subscale consists of four items that measure respondents’ attitude towards policy and implications of the Saudi gifted programme in terms of selection criteria and processes to identify gifted pupils and gifted programme teachers and activities and service offerings for gifted pupils. High scores indicate positive attitudes towards the gifted.

• Factor three: *Ideology towards special services*. This subscale consists of five items that measure respondents’ ideology towards special services and other priorities. High scores indicate more positive attitudes towards the gifted.

• Factor four: *Acceptance*. This subscale consists of four items that measure respondents’ perceptions of acceptance of gifted students by others in the immediate environment. High scores indicate more positive attitudes towards the gifted.

• Factor five: *Needs and support*. This subscale consists of four items that measure respondents’ belief in the needs of gifted children and their support for special services for the gifted. High scores on this subscale indicate positive attitudes towards the gifted.

• Factor six: *Social value*. This subscale consists of four items that measure respondents’ perceptions of the social usefulness of gifted persons in society. High scores indicate positive attitudes towards the gifted.

• Factor seven: *Ability grouping*. This subscale consists of three items that measure respondents’ attitudes towards special homogeneous groups or classes. High scores indicate positive attitudes towards the gifted.
5.4 Descriptive Statistics

The purpose of this section is to describe the responses quantitatively by summarising, organising and graphing the study data (Vogt, 2005). The descriptive statistics of frequency distribution, central tendency, spread measurements and graph were provided for each scale and variable of the questionnaire. The results of descriptive statistics for biographical data in the study sample and responses to TAGES and TKTGES are presented in the paragraphs that follow.

5.4.1 Description of the sample

Participants in this investigation included both primary regular teachers (RTs) and gifted programme teachers (GPTs). The RTs \(n=700\) and GPTs \(n=233\) represented a multi-stage sample of 262 primary schools across the five different regions of Saudi Arabia (for more, see section 4.7). All teachers \(N=933\) were asked to complete the questionnaire, which consisted of three parts: TAGES as the first part (31 items), TKTGES as the second part (15 items) and biographical information (6 items) as the final part (see Appendix A). The biographical part was used to describe the characteristics of both RTs and GPTs and to determine which variables were associated with their positive or negative attitudes towards gifted pupils and gifted education, as well as which variables could be used as predictive of specific attitudes. This information included age, years of teaching service, highest qualification degree, family member enrolled in a gifted programme, perception of self as gifted, gifted training courses received or not and amount (number and hours) of training with regards to gifted education received (see Appendix A).

The age of teachers was divided into five categories. As seen in table 5.6, approximately half of the RTs (50.3%) and three-quarters of the GPTs (72.1%) were between the ages of 31 and 40, while nearly a quarter of the RTs (25.7%) and GPTs (18.9%) were between the ages of 41 and 50. Table 5.6 also lists teachers’ number of years of teaching experience in five categories. Responses showed that most RTs’ years of experience fell into three categories with nearly equal numbers: 6-10 (26.4%), 11-15 (23.7%) and 21 or more (22.0%), and most GPTs’ years of experience were also in three categories: 6-10 (35.2%), 11-15 (30.9%) and 16-20 (24.0%).
Table 5.6 Participants classified by age and years of teaching experience

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<tr>
<th>Variable</th>
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<th></th>
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</thead>
<tbody>
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<td></td>
<td></td>
<td>RT</td>
<td>GPT</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Age</td>
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<td></td>
</tr>
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<td>5.2</td>
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<td>352</td>
<td>50.3</td>
<td>168</td>
<td>72.1</td>
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<td>180</td>
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<td>18.9</td>
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<td>46</td>
<td>6.6</td>
<td>7</td>
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<td>0</td>
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<td>.1</td>
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<td>Years of teaching experience</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5 and below</td>
<td></td>
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<td>13.3</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>6-10</td>
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<td>26.4</td>
<td>82</td>
<td>35.2</td>
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<tr>
<td>11-15</td>
<td></td>
<td>166</td>
<td>23.7</td>
<td>72</td>
<td>30.9</td>
</tr>
<tr>
<td>16-20</td>
<td></td>
<td>102</td>
<td>14.6</td>
<td>56</td>
<td>24.0</td>
</tr>
<tr>
<td>21 and more</td>
<td></td>
<td>154</td>
<td>22.0</td>
<td>19</td>
<td>8.2</td>
</tr>
<tr>
<td>Total</td>
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<td>700</td>
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<td>233</td>
<td>100.0</td>
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<td>0</td>
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<td>0</td>
</tr>
</tbody>
</table>

The results of descriptive analysis for highest qualification earned revealed six categories of respondents. As shown in table 5.7, nearly half (43.7%) of RTs have a bachelor’s degree from teachers training college as their highest degree, while approximately half of GPTs (43.8%) hold a university bachelor’s degree. The highest qualification degree for both groups was a master’s degree, with a percentage nine times greater for GPTs (9.5%) than for RTs (1.1%).

171
Table 5.7 Participants classified by specialisation and highest qualification degree

<table>
<thead>
<tr>
<th>Variable</th>
<th>Options</th>
<th>Participants</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RT (n=700)</td>
<td>GPT (n=233)</td>
<td>Total (n=933)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>f</td>
<td>% (75%)</td>
<td>f</td>
<td>% (25%)</td>
</tr>
<tr>
<td>Highest qualification degree</td>
<td>Diploma of the Institute for Teachers</td>
<td>51</td>
<td>7.3</td>
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<td>.9</td>
</tr>
<tr>
<td></td>
<td>Intermediate College Diploma</td>
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<td>7.1</td>
<td>4</td>
<td>1.7</td>
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<tr>
<td></td>
<td>Bachelor of Teachers Training College</td>
<td>306</td>
<td>43.7</td>
<td>58</td>
<td>24.9</td>
</tr>
<tr>
<td></td>
<td>BA College of Education</td>
<td>99</td>
<td>14.1</td>
<td>45</td>
<td>19.3</td>
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<tr>
<td></td>
<td>BA University</td>
<td>185</td>
<td>26.4</td>
<td>102</td>
<td>43.8</td>
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<tr>
<td></td>
<td>Master's</td>
<td>8</td>
<td>1.1</td>
<td>22</td>
<td>9.4</td>
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<tr>
<td></td>
<td>Total</td>
<td>699</td>
<td>99.9</td>
<td>233</td>
<td>100</td>
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<td>Missing</td>
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<td>.001</td>
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</tbody>
</table>

Additionally, teachers were asked to indicate whether they have a family member enrolled in a gifted programme. Table 5.8 illustrates that an approximately equal number (n=365 and n=327) of RTs responded positively (52.1%) and negatively (46.7%), whereas more than half (58.8%) of the GPTs responded positively (n=137). Table 5.8 also provides the distribution of teachers who perceive themselves as gifted. The data indicated that a nearly equal number (n=324 and n=353) of RTs perceived themselves as gifted (46%) or not (50.4). In contrast, the majority (n=166) of GPTs perceived themselves as gifted (71%).
Table 5.8 Participants who have a family member enrolled in a gifted programme and whether they perceive themselves as gifted

<table>
<thead>
<tr>
<th>Variable</th>
<th>Options</th>
<th>Participants</th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>RT (n=700)</td>
<td>GPT (n=233)</td>
<td>Total (N=933)</td>
</tr>
<tr>
<td></td>
<td>f %</td>
<td>f %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have family member in gifted programme</td>
<td>No</td>
<td>365 52.1</td>
<td>95 40.8</td>
<td>460 49.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>327 46.7</td>
<td>137 58.8</td>
<td>464 49.7</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>692 98.9</td>
<td>232 99.6</td>
<td>924 99.0</td>
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<td></td>
<td>Missing</td>
<td>8 1.1</td>
<td>1 .04</td>
<td>9 1.0</td>
<td></td>
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<tr>
<td>Perceives self as gifted</td>
<td>No</td>
<td>324 46.3</td>
<td>57 24.5</td>
<td>381 40.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>353 50.4</td>
<td>166 71.2</td>
<td>519 55.6</td>
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<tr>
<td></td>
<td>Total</td>
<td>677 96.7</td>
<td>223 95.7</td>
<td>900 96.5</td>
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<tr>
<td></td>
<td>Missing</td>
<td>23 3.3</td>
<td>10 4.3</td>
<td>33 3.5</td>
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</table>

Teachers were asked to indicate whether they had taken a gifted training course. As shown in figures 5.2 and 5.3, most of the RTs (88.86%) had not received gifted training, while all of the GPTs (100%) had.

Figure 5.2 Gifted training courses received by RTs
Those teachers who had received a gifted training course were also asked to indicate the number of hours and amount of training received. As seen in table 5.9, GPTs had received higher amounts of training in terms of number of courses ($M=25.84$, $SD=17.94$) and hours ($M=121$, $SD=55.11$) than RTs— for courses, $M=1.76$, $SD=.96$, and for hours, $M=25.84$, $SD=17.94$.

Table 5.9 Amount (number and hours) of gifted training courses received by participants

<table>
<thead>
<tr>
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<td>RT</td>
<td>GPT</td>
</tr>
<tr>
<td>Number of courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>1.76</td>
<td>25.84</td>
</tr>
<tr>
<td>$SD$</td>
<td>.96</td>
<td>17.94</td>
</tr>
<tr>
<td>Total (N)</td>
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<td>221</td>
</tr>
<tr>
<td>Missing (N)</td>
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</tr>
<tr>
<td>Number of hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>25.84</td>
<td>121.1</td>
</tr>
<tr>
<td>$SD$</td>
<td>17.94</td>
<td>55.11</td>
</tr>
<tr>
<td>Total (N)</td>
<td>74</td>
<td>221</td>
</tr>
<tr>
<td>Missing (N)</td>
<td>4</td>
<td>12</td>
</tr>
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</table>
5.5 Independent Sample T-Test

The independent sample *t*-test is used to compare means of a variable between two groups or samples. If the two samples belong to the same population, it is unlikely that the *t*-test will reveal a difference between the means of the two samples. However, if the two samples belong to two populations that differ in mean values, the *t*-test will likely find a difference between the means of the two samples (Field, 2009).

The independent sample *t*-test makes assumptions about the data, although the test is fairly robust against departures from these assumptions (Muijs, 2008). To conduct an independent *t*-test, the first step is to meet three basic assumptions because the *t*-test is considered a parametric test. These assumptions were met as shown: (a) the dependent variable must be continuous; ‘However, many researchers have used *t*-tests for ordinal variables (e.g. self-concept, as in dataset 1), and the test is reasonably robust in these circumstances’ (Muijs, 2008, p. 135); (b) the *t*-test can compare means of only two groups (comparing two groups that have different specialisation); and (c) there must be random selection of the sample from the population. ‘These conditions are often quite difficult to meet in educational research, and it is something of a relief that research has found that the *t*-test is quite robust to violations of these assumptions, as long as the samples are large enough’ (Muijs, 2008, p. 136).

For the second step, after conducting an independent *t*-test, the researcher must manually calculate the effect size to measure the strength of the relationship. This kind of measurement with a *t*-test is called Cohen’s *d*. Subsequently, the *t*-test was employed to measure statistical significance, whereas Cohen’s *d* was used as a measure of the effect size (Muijs, 2008).

The most commonly used rule to interpret the effect size is the one suggested by Cohen (1988):

\[ d = 0 - 0.20 \text{ (weak effect)} \]

\[ d = 0.21 - 0.50 \text{ (modest effect)} \]

\[ d = 0.51 - 1 \text{ (moderate effect)} \]

\[ d = >1.00 \text{ (strong effect)} \]

(as cited in Muijs, 2008).
In the current study, the independent \(t\)-test was conducted to identify and compare RTs’ and GPTs’ attitudes towards gifted pupils and their education, their knowledge level regarding the gifted and gifted education and their attitudes towards in-service gifted training programmes.

### 5.5.1 Teachers’ attitudes towards the gifted and gifted education

The aim of this section is to answer the following research questions (RQs):

**RQ1.** What are the attitudes of RTs and GPTs towards gifted pupils and their education in Saudi Arabia?

**RQ2.** Are there significant differences between RTs and GPTs in their attitudes towards gifted pupils and their education in Saudi Arabia?

As stated previously, primary RTs’ and GPTs’ attitudes about gifted pupils and their education were assessed through TAGES. This scale was used to measure seven factors related to the attitudes of teachers regarding gifted pupils and their education: *attitude towards enrichment programmes, attitude towards policy and the implications of Saudi gifted programmes, ideology toward special services, acceptance, needs and support, social value and ability grouping*. Participants were asked to rate their level of agreement with 30 items on TAGES using a 5-point Likert scale (see Appendix A). The range of responses extended from strongly disagree (1) to strongly agree (5) to determine attitudes towards the gifted and gifted education.

An independent \(t\)-test was conducted to determine the average score (mean) and to compare the attitudes towards gifted pupils and their education of RTs \((n=700)\) and GPTs \((n=233)\) in each attitude subscale (factor) and in the overall attitude scale (TAGES) to identify the broad spectrum of participants’ attitudes. Table 5.10 summarises the mean \((M)\), standard deviation \((SD)\), \(t\)-test and effect size (Cohen’s \(d\)) results for RTs and GPT in seven subscales and the overall TAGES.

As seen in Table 5.10, the results of the \(t\)-test analysis indicate that the seven subscales and overall TAGES scores were significantly different between the two major groups.
The independent $t$-test showed that, in terms of the enrichment programme subscale, the mean score was different and higher ($M=3.84, SD=.79$) for GPTs than for RTs ($M=3.69, SD=.81$). This test was found to be statistically significant, $t(931)=-2.52$, $p=0.012$, with a weak effect size, $d=0.15$.

In terms of the Saudi gifted programme subscale, the independent $t$-test indicated that the mean score for GPTs was significantly different and higher ($M=2.78, SD=1.02$) than for RTs ($M=2.43, SD=1.0$). This test was found to be statistically significant, $t(931)=-4.56$, $p<0.001$, with a moderate effect size, $d=0.35$. 

Table 5.10 Mean differences between RT and GPT in TAGES

<table>
<thead>
<tr>
<th>Attitude Factor</th>
<th>Teachers</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RT</td>
<td>GPT</td>
<td>$t$</td>
<td>df</td>
<td>sig</td>
<td>$d$</td>
</tr>
<tr>
<td>Enrichment programme</td>
<td>$M$</td>
<td>3.69</td>
<td>3.84</td>
<td>-2.52*</td>
<td>931</td>
<td>.012</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>.81</td>
<td>.79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saudi gifted programme</td>
<td>$M$</td>
<td>2.43</td>
<td>2.78</td>
<td>-4.56***</td>
<td>931</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>1.0</td>
<td>1.02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideology toward special service</td>
<td>$M$</td>
<td>2.68</td>
<td>3.14</td>
<td>-8.23***</td>
<td>931</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>.74</td>
<td>.76</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceptance</td>
<td>$M$</td>
<td>3.53</td>
<td>3.24</td>
<td>4.68***</td>
<td>931</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>.80</td>
<td>.82</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Needs and support</td>
<td>$M$</td>
<td>4.31</td>
<td>4.57</td>
<td>-6.01***</td>
<td>931</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>.61</td>
<td>.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social value</td>
<td>$M$</td>
<td>4.10</td>
<td>4.36</td>
<td>-4.97***</td>
<td>931</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>.75</td>
<td>.48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability grouping</td>
<td>$M$</td>
<td>3.56</td>
<td>3.70</td>
<td>-2.80**</td>
<td>931</td>
<td>.005</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>.70</td>
<td>.62</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall attitude</td>
<td>$M$</td>
<td>3.47</td>
<td>3.66</td>
<td>-6.80***</td>
<td>931</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>.38</td>
<td>.34</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05, **p<0.01, ***p<0.001
The third subscale is ideology toward special service. The $t$-test showed that the mean score for GPTs was significantly different and higher ($M=3.14$, $SD=.76$) than for RTs ($M=2.68$, $SD=.74$). This test was found to be statistically significant, $t$ (931)$= -8.23$, $p<0.001$, with a moderate effect size, $d=0.61$.

The $t$-test indicated that the mean score for the acceptance subscale for RTs was significantly different and higher ($M=3.53$, $SD=80$) than for GPTs ($M=3.24$, $SD=.82$). This test was found to be statistically significant, $t$ (931)$=4.68$, $p<0.001$, with a modest effect size $d=0.36$.

The fifth subscale is needs and support. The $t$-test showed that the mean score for GPTs was significantly different and higher ($M=4.57$, $SD=.48$) than for RTs ($M=4.31$, $SD=.61$). This test was found to be statistically significant, $t$ (931)$=-6.01$, $p<0.001$, with a modest effect size, $d=0.48$.

In terms of the social value subscale, the independent $t$-test indicated that the mean score for GPTs was significantly different and higher ($M=4.36$, $SD=.48$) than for RTs ($M=4.10$, $SD=.75$). This test was found to be statistically significant, $t$ (931)$=-4.97$, $p<0.001$, with a modest effect size, $d=0.42$.

The final subscale is ability grouping. The $t$-test showed that the mean score for GPTs was significantly different and higher ($M=3.70$, $SD=.62$) than for RTs ($M=3.56$, $SD=.70$). This test was found to be statistically significant, $t$ (931)$=-2.80$, $p<0.005$, with a moderate effect size, $d=0.21$.

It is apparent that the $t$-test revealed statistically significant differences between RTs and GPTs in $p<0.001$ for five subscales, $p<0.005$ for the ability grouping and $p<0.012$ for the enrichment programme subscale, with higher mean scores for GPTs than for RTs in six subscales. Subsequently, the independent $t$-test showed that, as seen in table 5.10 above, the mean score was different and higher ($M=3.66$, $SD=.34$) for GPTs in the overall TAGES than for RTs ($M=3.47$, $SD=.38$). This test was found to be statistically significant, $t(931)= -6.80$, $p<0.001$, with a moderate effect size, $d=0.53$.

These results of an independent $t$-test are graphed in figure 5.4, which represents the mean of each group and the overall TAGES score. To determine whether responses
reflect a negative or positive attitude, Gagné (1991) and Curtis (2005) recommended that, in the absence of norms, only general guidelines can be articulated. For individual scores, means below 2.00 indicate a very negative attitude; means between 2.00 and 2.75 indicate a slightly negative attitude; means above 4.00 indicate a very positive attitude; means above 2.75 through 3.25 reflect an attitude of ambivalence; and means above 3.25 through 4.00 indicate a slightly positive attitude.

We can see that the error bars for each subscale and the overall TAGES scores indicate that the two groups differ significantly in terms of mean. The graph 5.4, indicates that although there are significantly higher differences for GPTs in the overall TAGES scores, the primary teachers generally hold a slightly positive attitude towards the gifted and their education, with $M=3.66$ for GPTs and $M=3.47$ for RTs. Likewise, in terms of the subscales, the means of enrichment programme, acceptance and ability grouping for both groups of primary teachers show that their attitude is slightly positive. Furthermore, both groups of primary teachers show very positive attitudes in terms of needs and support and social value subscales. In contrast, the means of RTs on Saudi gifted programmes ($M=2.43$) and ideology towards special service ($M=2.68$) subscales shows that attitude is slightly negative in RTs, whereas the means of GPTs in the same subscales ($M=2.78$ and $M=3.14$) reveal an attitude of ambivalence.
Figure 5.4 Comparing the means of RTs and GPTs on each subscale and overall TAGES scores.
5.5.2 Teachers’ knowledge and training needs regarding the gifted and

gifted education

The aim of this section is to answer the following RQs:

RQ3. What is the level of RT and GPT knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ4. Are there significant differences between RTs and GPTs in their knowledge level regarding the gifted and gifted education in Saudi Arabia?

RQ5. What are the needs of RTs and GPTs in terms of improving their knowledge regarding the gifted and gifted education in Saudi Arabia?

As stated previously, primary RTs’ and GPTs’ perceived knowledge and training needs regarding gifted pupils and their education were assessed using TKTGES. This scale consisted of 14 statement items (see Appendix A). Primary RTs \( (n=700) \) and GPTs \( (n=233) \) were asked to rate their level of knowledge of these items using a 5-point Likert scale. The range of responses extended from lowest (1) to highest (5) to determine both groups’ knowledge and training needs regarding gifted pupils and their education.

The independent \( t \)-test was conducted to find the average score (mean) and to compare the knowledge level regarding gifted pupils and their education of RTs \( (n=700) \) and GPTs \( (n=233) \) in each item and in the overall knowledge scale (TKTGES) to identify the broad spectrum of participants’ knowledge. Table 5.11 summarises the mean, standard deviation, \( t \)-test and effect size results for RTs and GPTs on 14 items and the overall TKTGES.
<table>
<thead>
<tr>
<th>Perceived knowledge item</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RT</td>
</tr>
<tr>
<td>Characteristics and identification of gifted pupils</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Procedures and instruments for selecting gifted pupils</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Theoretical models of giftedness (e.g., Bloom, Guilford)</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Application of a variety of instructional model strategies</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Ability to modify, adapt, design appropriate curricula units</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Classroom organisation for individualising and grouping</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Classroom behaviour management techniques</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Planning for the individual and group of gifted pupils</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Evaluating the individual gifted pupil and group progress</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Making use of school and community resources</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Collaborating with other teachers, staff, parents</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Counselling for unique psychological, social needs</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Language and communication strategies</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Use of information communication technology</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
<tr>
<td>Overall knowledge scale</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>SD</td>
</tr>
</tbody>
</table>

***p<0.001
As seen in Table 5.11, the results from the *t*-test analysis showed that there were statistically significant differences between RTs and GPTs in all 14 items of the TKTGES in *p*<0.001 and in higher mean scores for GPTs than RTs in all knowledge items. Subsequently, the mean score was found to be different and higher (*M*=3.19, *SD*=.78) for GPTs in the overall TKTGES than for the RTs (*M*=2.29, *SD*=.66) (see figure 5.5). The independent *t*-test was statistically significant, *t* (931)=17.27, *p*<0.001, with a strong effect size, *d*=1.25.

Figure 5.5 Comparing the means of RTs and GPTs in the overall TKTGES

![Box plot comparing RT and GPT means](image)

Grouping means for self-ratings on each knowledge item were graphed (see figures 5.6 and 5.7) from lowest to highest knowledge levels for each group (RTs and GPTs) to illustrate discrepancies between perceived knowledge levels and need for in-service training courses and staff development. Based on Weiss and Gallagher’s (1986) study, “[i]f the perceived ratings were higher than perceived knowledge level for a particular item (Topic), that item was identified (as low knowledge and) as a needed area for in-service training” and vice versa (p. 114).
From figure 5.6, we can see that the RT group reported lower means of perceived knowledge than training needs on 13 of 14 items (topics) in the TKTGES. These 13 topics in order from highest to lowest training needs were: (1) theoretical models of giftedness; (2) application of a variety of instructional models/educational strategies appropriate for use with gifted pupils; (3) procedures and instruments for selecting gifted pupils; (4) ability to modify, adapt and design appropriate curricula units of study for use with the gifted; (5) planning for the individual and group of gifted pupils; (6) collaborating with other teachers, staff and parents in supporting gifted pupils; (7) evaluating and assessing the individual gifted pupil and group progress; (8) classroom organisation for individualising and grouping activities; (9) language and communication strategies in developing gifted pupils; (10) classroom behaviour management techniques for gifted pupils; (11) making use of school and community resources to help gifted pupils; (12) characteristics and identification of gifted pupils; and (13) counselling for unique psychological and social-emotional needs of the gifted pupil.
From figure 5.7, we can see that the GPT group reported higher means of perceived knowledge than training needs in all 14 items (topics) in the TKTGES, although three topics were most frequently mentioned as topics for training needs (knowledge below $M=3$): theoretical models of giftedness; ability to modify, adapt and design appropriate curricula units of study for use with the gifted; and application of a variety of instructional models/educational strategies appropriate for use with gifted pupils. The smallest training need was on the use of information communication technology (ICT).

For both RT and GPT groups of teachers, it is apparent that (a) there are higher means of perceived knowledge than training needs in the use of ICT and (b) the theoretical models of giftedness topic had the lowest perceived knowledge and highest training needs.
5.5.3 Teachers’ attitudes towards in-service gifted training programmes

The aim of this section is to answer the following RQs:

RQ6. What are the attitudes of RTs and GPTs regarding in-service gifted training programmes in Saudi Arabia?

RQ7. Are there significant differences between RTs and GPTs in their attitudes regarding in-service gifted training programmes in Saudi Arabia?

As stated previously, primary RTs’ and GPTs’ attitudes regarding in-service gifted training programmes were assessed through one direct question using a 5-point Likert scale (not at all=1, very little=2, well=3, extremely well=4, excellently=5) to determine both groups’ attitudes towards in-service gifted training programmes.

The independent *t*-test was conducted to find the average score (mean) and to compare the attitudes of RTs (*n*=700) and GPTs (*n*=233) regarding in-service gifted training programmes. Table 5.12 summarises the mean, standard deviation, *t*-test and effect size (*d*) results for RTs’ and GPTs’ attitudes towards in-service gifted training programmes.

Table 5.12 Mean differences between RTs and GPTs in their attitude regarding in-service gifted training programmes

<table>
<thead>
<tr>
<th>Attitude Variable</th>
<th>Teachers</th>
<th></th>
<th></th>
<th>df</th>
<th>sig</th>
<th>Cohen’s d</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RTs</td>
<td>GPTs</td>
<td><em>t</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-service gifted training programmes</td>
<td><em>M</em> 1.12</td>
<td>2.77</td>
<td>32.34 ***</td>
<td>931</td>
<td>.001</td>
<td>1.94</td>
</tr>
<tr>
<td></td>
<td><em>SD</em> .43</td>
<td>1.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***p<0.001

As can be seen from Table 5.12, the results from the *t*-test analysis showed statistically significant differences between RTs and GPTs in their attitudes regarding in-service gifted training programmes. The *t*-test showed that the mean score for attitude regarding in-service training programmes for GPTs was significantly different and higher (*M*=2.77, *SD*=1.14) than for RTs (*M*=1.12, *SD*=.43). This test was found to be statistically significant, *t* (931)=32.34, p<0.001, with a strong effect size, *d*=1.94.
These results of an independent $t$-test represent the mean of each group of teachers’ attitude regarding in-service training programmes. To determine whether primary RTs and GPTs hold negative or positive attitudes regarding gifted training programmes, the smaller Gagné (1991) and Curtis (2005) recommendation was used that, in the absence of norms, only general guidelines can be articulated. For individual scores, means below 2.00 indicate a very negative attitude; means between 2.00 and 2.75 indicate a slightly negative attitude; means above 4.00 to 5 indicate a very positive attitude; means above 2.75 to 3.25 reflect an attitude of ambivalence; and means above 3.25 to 4.00 indicate a slightly positive attitude.

The mean for GPTs was $M=2.88$, which reflected ambivalence in their attitude regarding gifted training programmes. Figure 5.8 shows that nearly 40% of GPTs select very little and nearly 30% choose well, extremely well and excellently to show their attitude regarding gifted training programmes. In contrast, the mean for RTs was $M=1.21$, which showed a very negative attitude regarding gifted training programmes. Figure 5.8 also shows that the majority (92%) of RTs select not at all to show their attitude regarding gifted training programmes.

Figure 5.8 Percentages of RT and GPT responses to each in-service gifted training programmes option
5.6 Correlation Coefficients

Correlation reflects the degree of relationship between two variables; it ranges from +1 as a perfect positive relationship to -1 as a perfect negative relationship and includes 0, which indicates no relationship whatsoever between the variables (Muijs, 2008). Roughly speaking, correlation coefficients between .00 and .30 are considered weak relationships, those between .30 and .70 are considered moderate and correlations between .70 and 1.00 are considered strong (Field, 2009).

Different correlation coefficients can be used depending on the variables’ level of measurement. For example, Pearson’s $r$ is a correlation coefficient that describes the strength of an association between two continuous variables. Therefore, Pearson’s $r$ is used with variables measured at an interval level. However, if the variables are measured at an ordinal level, the Spearman rank-order correlation is usually employed (Muijs, 2008).

There are some limitations for correlation coefficients in interpretation. First, correlation does not mean influence. Second, the Pearson’s $r$ correlation coefficient assumes linear relationships between two variables. Third, when a small sample is used, the correlation coefficients are sensitive to outliers in a dataset (Field, 2009).

In the current study, the Pearson’ $r$ correlation was used to examine the correlation between teachers’ attitude and knowledge regarding the gifted and gifted education.

5.6.1 Relationship between teachers’ attitude and knowledge regarding the gifted and gifted education

The aim of this section is to answer the following RQ:

RQ8. What is the relationship between RTs’ and GPTs’ attitudes towards gifted pupils and their education and RTs’ and GPTs’ knowledge regarding the gifted and gifted education in Saudi Arabia?

Pearson’s $r$ was calculated to evaluate the relationship between RT and GPT attitudes towards the gifted and gifted education (TAGES) and their knowledge regarding the gifted and gifted education (TKTGES). Table 5.13 summarises the Pearson’s $r$
correlation between the overall TAGES and TKTGES, the significance \( (p) \) of this correlation and number in the sample \( (n) \) for each group of teachers.

Table 5.13 Correlation coefficients between teacher attitude and knowledge by Pearson \( r \)

<table>
<thead>
<tr>
<th></th>
<th>Attitude (TAGES)</th>
<th>Knowledge (TKTGES)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teachers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Attitude</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( r )</td>
<td>.221***</td>
<td></td>
</tr>
<tr>
<td>( sig )</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>( n )</td>
<td>933</td>
<td></td>
</tr>
<tr>
<td><strong>Knowledge</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( r )</td>
<td>.221***</td>
<td></td>
</tr>
<tr>
<td>( sig )</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>( n )</td>
<td>933</td>
<td></td>
</tr>
</tbody>
</table>

Table 5.13 shows a significant positive relationship between the TAGES and TKTGES for primary teachers (RT and GPT), \( r=.221, p<0.001 \), at the weak-level correlation \( (r=.221, \text{between}.00 \text{ and } .30) \). This indicated that RTs and GPTs who had reported high grades in terms of TAGES (e.g. very positive attitudes) are also likely to have high grades in TKTGES (e.g. high knowledge level). In the same way, RTs and GPTs who had low grades in TKTGES (e.g. low knowledge level) tended to have the same grade level in TAGES (very negative attitude).

**5.7 Regression Analysis**

Regression analysis refers to a broad class of statistical techniques that are designed to predict an outcome variable from a predictor variable (simple regression) or several predictor variables (multiple regression) (Field, 2009). The values of one variable (the dependent, target or criterion variable \( Y \)) are estimated from those of two or more variables (the independent or regressor \( X \)). The means through which the study is effected is a regression equation, which is an equation of general form:
\[ Y = b_0 + b_1X_1 + b_2X_2 + \ldots + b_pX_p \]

where the parameters \( b_1, b_2, \ldots, b_p \) are the partial regression coefficient and the intercept \( b_0 \) is the regression constant (Kinnear & Gray, 2009).

The predictors selected and the way in which they are entered in the regression model can have a significant impact. In addition to the problem of selecting predictors, researchers must choose from among several methods for entering variables in a regression model: hierarchical (blockwise entry), standard multiple method (forced entry) and stepwise methods (forward, backward and stepwise). To select which method to use, Field (2009) recommended that ‘[w]hen there is sound theoretical literature available, then base your model upon what past research tells you’ (p. 214).

The literature review revealed that some studies (e.g. Rubenzer & Twaite, 1979; Begin & Gagné, 1994a, b; Chipeco, 2004; McCoach & Siegle, 2007) have attempted to examine how participants’ biographical variables can predict their attitude towards the gifted and gifted education. Most of these studies used stepwise or standard regression methods.

In stepwise regression, the forward, backward and stepwise methods are all considered stepwise methods because the selected predictors are entered in the model for all the methods based on mathematical criteria. SPSS searches for the predictor that best predicts the outcome variable based on the highest simple correlation with the outcome. If this predictor significantly improves the ability of the model to predict the outcome, then this predictor is retained in the model and SPSS searches for a second predictor. The criterion used for selecting this second predictor is that it be the variable that has the largest semi-partial correlation with the outcome (Field, 2009). Field (2009) suggested that stepwise methods are best, except for building exploratory models.

In this study, stepwise regression analysis was conducted as the first stage in which all predictors are entered in the regression so as to examine the output to determine which predictors contribute substantially to the models’ ability to predict the outcome. If the initial analysis reveals two or more significant predictors in different models, then standard multiple regression analyses are run to find out how variables contribute to the outcome variable.
The second stage was conducted using standard multiple regression analysis because stepwise techniques are influenced by random variation in the data and so seldom yield replicable results if the model is retested (Field, 2009). There are several theoretical and practical assumptions about standard multiple regression analysis:

I. Initially, before starting the standard multiple regression analysis, or any type of regression, we checked the outcome variable and predictor variables as suggested by Brace, Kemp and Snelgar (2003). They reminded us that the first step in conducting standard multiple regression is to ensure that the outcome variable is measured on a continuous scale. In terms of predictor variables, we created dummy variables under the assumption that regression analysis in theory does not handle nominal variables. As a result, the specialisations of teachers (RTs, GPTs), as nominal variables, were replaced by dummy variables but maintained as reference variables. In terms of ordinal variables, we added more than one variable (to achieve robustness) to improve our model (Muijs, 2008).

II. Multicollinearity did not exist: it exists only when there is a strong relationship between two or more predictors in a regression analysis. One approach used to identify multicollinearity is checking a correlation matrix of all the predictors’ variables. The Variance Inflation Factor (VIF) indicates whether a predictor has a strong or weak linear correlation with other predictors, and it must be below 10 (Field, 2009).

III. Linearity (residual) and outliers did not exist. An outlier is a case that differs substantially from the main trend of the data. Outliers can cause bias in regression models because they affect the values of the estimated regression coefficient. The difference between the values of the outcome predicted by the model and the values of the outcome observed in the sample is known as linearity or residual. Linearity represents the errors present in the model. Thus, outliers are found in cases with large residuals in the sample and often arise in regression analyses. According to Muijs (2008), the outliers need to represent less than 10 percent of the sample to achieve a predictable regression analysis. One
method to check for linearity is to find the casewise diagnostic statistics. A second method is the plot, which is used to test for histogram and normality probability of the residual. According to Field (2009), the plot ‘should look like a random array of dots evenly dispersed around zero. If the graph funnels out, then the chances are that there is heteroscedasticity in the data. If there is any sort of curve in the graph then the chances are that the data have broken the assumption of linearity’ (p. 247).

5.7.1 Biographical characteristic factors predict teachers’ attitudes towards the gifted and gifted education

The aim of this section is to answer the following RQ:

RQ9. What biographical characteristic factors of RTs and GPTs predict their attitudes towards gifted pupils and their education in Saudi Arabia?

To answer this question, regression analysis was conducted to predict the TAGES total score, which reflects the general attitude of both groups of teachers (RTs and GPTs) towards the gifted and gifted education based on biographical characteristic predictor factors, and to determine which predictor factors have a significant relationship with and influence the TAGES total score. These biographical characteristic predictor factors were age, years of teaching experience, highest qualification degree, have family member enrolled in a gifted programme, perceptions of self as gifted, received gifted training courses, number of training courses received, amount of hours of training courses received and specialisation (RT or GPT).

In the first stage, stepwise multiple regression was used to determine the biographical characteristic factors that were significant predictors of the TAGES total score. Table 5.14 shows the two prediction models produced by the stepwise multiple regression for the TAGES total score. Two predictor factors, which contributed significantly to the equation, were included in the second-stage regression equation: the specialisation of teacher (RT or GPT) and perception of self as gifted. The other seven factors (age, years of teaching experience, received gifted training courses or not, number of training
courses received, hours of training courses received, have gifted family member enrolled in gifted programme and highest qualification degree earned) were excluded as they did not contribute successfully to the regression equation.

Table 5.14 Confidence conception predictive models by stepwise multiple regression analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( B )</td>
<td>( SE B )</td>
</tr>
<tr>
<td>Specialisation (RT or GPT)</td>
<td>.192</td>
<td>.028</td>
</tr>
<tr>
<td>Perceived of self as gifted</td>
<td>.121</td>
<td>.025</td>
</tr>
<tr>
<td>( R )</td>
<td>.217(^a)</td>
<td></td>
</tr>
<tr>
<td>( R^2 )</td>
<td>.047</td>
<td></td>
</tr>
<tr>
<td>Adjust ( R^2 )</td>
<td>.046</td>
<td></td>
</tr>
</tbody>
</table>

**\( p<0.01 \)

To define how these two predictor factors together and apart can account for, or explain, the variation in the TAGES total score, the second stage was run using standard multiple regression analysis since stepwise techniques are influenced by random variation in the data and so seldom provide replicable results if the model is retested (Field, 2009). Altogether, multicollinearity, linearity (residual) and outlier conditions were met before we conducted the multiple standard regression analysis.

Multicollinearity did not exist for our current model showing that the VIF values (see Table 5.15) are all below 10; therefore, we can safely conclude that there was no collinearity within our data (Field, 2009; Muijs, 2008).

Linearity and outliers did not exist. As a first step, residuals were checked and did not appear when we added the casewise diagnostics statistic (12 cases with a residual of more than 3, which means outlier cases constituted less than 1.02% of our sample). The
second method used to check the residuals was the plot, to provide a test for histogram and normality probability of the residual. Visual inspection of the assumption of normality, the histogram of residuals and the observed distribution of residuals to the expected distribution for the entire scale, referred to as the normal probability plot (P-P) in SPSS, is presented in figure 5.9. In the P-P probability plot, the straight line represents a normal distribution, and the points represent the observed residuals. Therefore, in a perfectly normally distributed dataset, all points will lie on the line (Field, 2009).

Figure 5.9 Normal P-P plot of regression standardised residual

In figure 5.9, one can see that residuals are above the normal line for some data cases. However, since there are more small positive residuals than expected, they appear above the normal line. Although residuals’ observed and expected distribution is not identical, since a straight line is not established, the discrepancy does not appear to be significant.
Table 5.15 displays the standard regression coefficients ($B$), the standard error for each factor ($SE\ B$), the Beta parameters ($\beta$), $R$ square ($R^2$), Adjust-$R^2$ and VIF to check the multicollinearity condition.

Table 5.15 Confidence conception predictive models by standard multiple regression analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE\ B$</th>
<th>$\beta$</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>3.119</td>
<td>.050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialisation (RT or GPT)</td>
<td>.166</td>
<td>.028</td>
<td>.188**</td>
<td>1.038</td>
</tr>
<tr>
<td>Perceived self as gifted</td>
<td>.121</td>
<td>.025</td>
<td>.154*</td>
<td>1.038</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.070</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjust-$R^2$</td>
<td>.068</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05, **p<0.01

The standard multiple regression analysis revealed that our model is considered a poor fit with our sample data, $R^2=.070$ (Muijs, 2008). In other words, $R^2=.070$ indicates that the predictor variables together can account for, or explain, only 7% of the variation in the TAGES total score. Therefore, other variables must also have an influence. Similarly, the adjusted $R^2=.068$ indicated that our model tended to be a poor fit for the population of the sample.

On the other hand, the two predictor factors (specialisation of teacher and perception of self as gifted) demonstrated significant effects on the TAGES total score ($p<0.01$). The stronger predictor was the specialisation of teacher ($\beta=.188$), which had a positive but highly significant relationship ($B=.166, p<0.01$). The second predictor variable was perception of self as gifted ($\beta=.154$), with a positive but significant relationship ($B=.121, p<0.05$).
5.7.2 Biographical characteristic factors predict teachers’ knowledge regarding the gifted and gifted education

The aim of this section is to answer the following RQ:

RQ10. What biographical characteristic factors of RTs and GPTs predict their knowledge regarding the gifted and gifted education in Saudi Arabia?

To answer this question, regression analysis was conducted to predict the TKTGES total score, which reflects the general knowledge (perceived knowledge) of both groups of teachers (RTs and GPTs) regarding the gifted and gifted education based on biographical characteristic predictor factors and to determine which predictor factors have a significant relationship with and influence the TKTGES total score. These biographical characteristic predictor factors were age, years of teaching experience, highest qualification degree, have family member enrolled in gifted programme, perception of self as gifted, received gifted training courses, number of training courses received, amount of hours of training courses received and specialisation (RT or GPT).

In the first stage, stepwise multiple regression was used to determine the biographical characteristic factors that were significant predictors of the TKTGES total score. Table 5.16 shows the five prediction models produced by the stepwise multiple regression for the TKTGES total score. Five predictor factors, which contributed significantly to the equation, were incorporated into the second-stage regression equation: specialisation of teacher (RT or GPT), received gifted training courses or not, number of training courses received, have family member enrolled in gifted programme and highest qualification degree earned. Four factors (age, years of teaching experience, perception of self as gifted and hours of training courses received) were excluded as they did not contribute successfully to the regression equation.

To define how these five predictor factors together and apart can account for, or explain, and influence the variation in the TKTGES total score, the second stage was run using standard multiple regression analysis because stepwise techniques are influenced by random variation in the data and so seldom provide replicable results if the model is retested (Field, 2009). Altogether, multicollinearity, linearity (residual) and outlier conditions were met before we conducted the multiple standard regression analysis.
Table 5.16 Confidence conception predictive models by stepwise multiple regression analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th></th>
<th>Model 2</th>
<th></th>
<th>Model 3</th>
<th></th>
<th>Model 4</th>
<th></th>
<th>Model 5</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SEB$</td>
<td>$\beta$</td>
<td></td>
<td>$B$</td>
<td>$SEB$</td>
<td>$\beta$</td>
<td></td>
<td>$B$</td>
<td>$SEB$</td>
</tr>
<tr>
<td>Specialisation in (RI or GFT)</td>
<td>.90</td>
<td>.05</td>
<td>.49**</td>
<td></td>
<td>.65</td>
<td>.09</td>
<td>.36**</td>
<td></td>
<td>.45</td>
<td>.11</td>
</tr>
<tr>
<td>Received gifted training courses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.28</td>
<td>.083</td>
<td>.16**</td>
<td></td>
<td>.46</td>
<td>.10</td>
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<tr>
<td>Number of training courses received</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.07</td>
<td>.02</td>
<td>.13**</td>
<td></td>
<td>.06</td>
<td>.02</td>
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<tr>
<td>Have family member enrolled in gifted programme</td>
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<td></td>
<td></td>
<td></td>
<td>.12</td>
<td>.05</td>
<td>.08*</td>
<td></td>
<td>.12</td>
<td>.05</td>
</tr>
<tr>
<td>Highest qualification degree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.09</td>
</tr>
<tr>
<td>$R$</td>
<td>.493a</td>
<td></td>
<td>.502b</td>
<td></td>
<td>.512c</td>
<td></td>
<td>.517d</td>
<td></td>
<td>.521e</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>.243</td>
<td></td>
<td>.252</td>
<td></td>
<td>.262</td>
<td></td>
<td>.268</td>
<td></td>
<td>.271</td>
<td></td>
</tr>
<tr>
<td>Adjust $R^2$</td>
<td>.242</td>
<td></td>
<td>.250</td>
<td></td>
<td>.260</td>
<td></td>
<td>.265</td>
<td></td>
<td>.268</td>
<td></td>
</tr>
</tbody>
</table>

* $p<0.05$, ** $p<0.01$

Multicollinearity did not exist for our current model requiring that the VIF values (see Table 5.17) are all below 10; therefore, we can safely conclude that there was no collinearity within our data (Field, 2009; Muijs, 2008).
Linearity and outliers did not exist. As a first step, the residuals were checked and did not appear when we added the casewise diagnostics statistic (4 cases with a residual of more than 3, which means outlier cases constituted less than 1% of our sample). The second method used to check the residuals was the plot, to provide a test for histogram and normality probability of the residual. Visual inspection of the assumption of normality, the histogram of residuals and the observed distribution of residuals against the expected distribution for the entire scale, referred to as the normal P-P probability plot in SPSS, is presented in figure 5.10. In the P-P probability plot, the straight line represents a normal distribution, and the points represent the observed residuals. Therefore, in a perfectly normally distributed dataset, all points will lie on the line (Field, 2009).

Figure 5.10 Normal P-P plot of regression standardised residual

In figure 5.10, one can see that residuals are above the normal line for some data cases. However, since there are more small positive residuals than expected, they appear above the normal line. Although residuals’ observed and expected distribution is not identical, since a straight line is not established, the discrepancy does not appear to be significant.
Table 5.17 displays the standard regression coefficients ($B$), the standard error for each factor ($SE\ B$), the Beta parameters ($\beta$), $R$ square ($R^2$), Adjust-$R^2$ and VIF to check the multicollinearity condition.

Table 5.17 Confidence conception predictive models by standard multiple regression analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>$SE\ B$</th>
<th>$\beta$</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Constant</strong></td>
<td>.727</td>
<td>.148</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialisation (RT or GPT)</td>
<td>.424</td>
<td>.111</td>
<td>.231**</td>
<td>4.703</td>
</tr>
<tr>
<td>Received gifted training courses</td>
<td>.410</td>
<td>.096</td>
<td>.243**</td>
<td>4.173</td>
</tr>
<tr>
<td>Number of training courses received</td>
<td>.060</td>
<td>.018</td>
<td>.118**</td>
<td>1.580</td>
</tr>
<tr>
<td>Have family member enrolled in gifted programme</td>
<td>.117</td>
<td>.045</td>
<td>.073*</td>
<td>1.027</td>
</tr>
<tr>
<td>Highest qualification degree</td>
<td>.091</td>
<td>.042</td>
<td>.063*</td>
<td>1.057</td>
</tr>
</tbody>
</table>

$R^2$ = .271

Adjust $R^2$ = .268

*p<0.05, **p<0.01

The standard multiple regression analysis revealed that our model is considered to be a modest fit with our sample data, $R^2$=.271 (Muijs, 2008). In other words, $R^2$ = .271 indicated that the predictor variables together can account for, or explain, only 27.1% of the variation in the TKTGES total score. Therefore, other variables also must exert influence. Similarly, the adjusted $R^2$ = .268 indicated that our model tended to be a modest fit with the population of the sample.
On the other hand, five predictor factors demonstrated significant effects on the TKTGES total score. The strongest predictor factor, received gifted training courses or not, was ($\beta=0.243$), with a positive significant relationship ($B=0.410, p<0.01$). The second strongest predictor factor was the specialisation of teacher ($\beta=0.231$), with a positive significant relationship ($B=0.424, p<0.01$). The third strongest predictor factor was number of training courses received ($\beta=0.118$), with a positive significant relationship ($B=0.060, p<0.01$). The fourth strongest predictor factor was having a gifted family member enrolled in a gifted programme ($\beta=0.073$), with a positive significant relationship ($B=0.117, p<0.05$). The final predictor factor was the highest qualification degree earned ($\beta=0.063$), with a positive significant relationship ($B=0.091, p<0.05$).

5.8 Summary of the Chapter

This chapter provided quantitative analysis results of questionnaire data from regular teachers ($n=700$) and gifted programme teachers ($n=233$). Data analysis began with describing how reliability was assessed using Cronbach’s alpha. The reliability coefficients were .76 for TAGES, .94 for TKTGES and .86 for the whole questionnaire instrument, which is sufficiently large to indicate internal consistency for each scale and the whole questionnaire instrument. Principal components analysis was implemented to identify seven attitude factors existing within the TAGES data. The descriptive statistics of RTs’ and GPTs’ biographical characteristics included age, years of teaching service, highest qualification degree, family member enrolled in a gifted programme, perception of self as gifted, received gifted training courses or not and amount (number and hours) of training with regards to gifted education received.

The statistical results using an independent $t$-test showed that both groups of teachers hold a slightly positive attitude towards gifted pupils and their education. The mean score for GPTs was significantly different and higher than for RTs on most subscale and the overall TAGES scores. Furthermore, the $t$-test analysis revealed statistically significant differences between RTs and GPTs in all 14 items of the TKTGES, with a higher mean score for GPTs than for RTs, in all knowledge items and the overall TKTGES scores. In terms of their attitude towards in-service training programmes, the $t$-test showed that the mean score for GPTs (ambivalent attitude) was significantly higher than for RTs (very negative attitude).
The statistical results using Pearson’s \( r \) showed a significant positive relationship between the TAGES and TKTGES for primary teachers (RT and GPT), \( r = .221, p < 0.001 \), at the weak-level correlation \( (r = .221, \text{between .00 and .30}) \). This indicated that RTs and GPTs who had reported high grades in terms of TAGES (e.g. very positive attitudes) are also likely to have high grades in TKTGES (e.g. high knowledge level). In the same way, RTs and GPTs who had low grades in TKTGES (e.g. low knowledge level) tended to have the same grade level in TAGES (very negative attitude).

The statistical results using multiple regression analysis demonstrated that two biographical characteristic predictor factors were significant with regards to teachers’ attitudes towards gifted pupils and gifted education. In contrast, five biographical characteristic predictor factors demonstrated significance on teacher knowledge regarding the gifted and gifted education. The chapter findings will be discussed in chapter seven.
CHAPTER SIX:
ANALYSIS OF THE INTERVIEW DATA

6.1 Introduction

Due to inherent limitations of the questionnaire approach, such as the difficulty of obtaining in-depth data, and to ensure triangulation of methods and complementarity, phase two of the study was conducted during fieldwork with a qualitative study using an in-depth interview instrument. Thematic and saliency analysis (TSA) in six phases and statistical analysis of the semi-structured interview data were employed to analyse the responses of primary teachers. The results of qualitative analysis are discussed in the light of quantitative analysis results. Based on the interview protocol, this chapter comprises four sections: statistics information of primary teachers, attitude of primary teachers towards gifted pupils and their education, primary teachers’ knowledge and training needs regarding the gifted and gifted education, and primary teacher attitudes towards in-service gifted training programmes. The chapter concludes with a summary of the findings.

6.2 Statistics of Interviewees

The objective of the semi-structured interview was to obtain answers to 8 of the 10 main questions under study that were addressed through quantitative analysis (see figure 4.1). Two main questions, Research Question 9 (RQ9) and RQ10, regarding biographical characteristic factors to predict teachers’ attitudes and knowledge towards the gifted and gifted education were excluded from the collected interview data because some independent variables required interviewees to answer questions considered sensitive in Saudi culture. (During the pilot study conducted to test the interview approach, some interviewees avoided answering or refused to answer two biographical characteristic questions related to having a family member enrolled in a gifted programme and perceiving oneself as gifted.) Even though the interview did not address RQ9 and RQ10, the results of the questionnaire and the interview were compared, and in each section the relationship between other biographical
characteristic variables and independent variables was examined to determine the level of triangulation to ensure validly.

Based on gifted programme teachers’ (GPTs’) and regular teachers’ (RTs’) agreement to be volunteer interviewees, the first stage was conducted as a cluster sample in which teachers were divided into two clusters; one cluster comprised GPTs (*n*=96) and the second RTs (*n*=198). These two clusters of primary teachers were then divided into 10 clusters based on district. Twenty primary schools were selected from all districts. For each district, two primary schools that had implemented a gifted programme were purposively selected based on conditions described below and on their proximity to each other.

The quantitative analysis results (see section 5.4.1) showed that all GPTs have received gifted training courses while most RTs (88.86%) have not. Based on this result, and to determine both teachers’ attitudes towards in-service gifted training programmes and the reason why most RTs have not received gifted training courses, purposive sampling was applied. In the two primary schools selected for study, all GPTs were interviewed since there was only one GPT for each school. In contrast, RTs in these schools were divided into two clusters based on having received gifted training programmes or not. In the first primary school, an RT who had not received gifted training programmes was selected for interview, while in the second school, one RT who had received such training was selected. Furthermore, the conditions of number of training courses received and highest qualification degree for both groups were taken into consideration during interviewee selection due to questionnaire analysis results that revealed an effect of these variables on teachers’ knowledge. The total number of interviewees was 20 for GPTs and 20 for RTs. The RTs were divided into two groups: 10 RTs who had received gifted training courses and 10 RTs who had not.

The 40 teachers selected as volunteers to be interviewed represented two types of specialisation (RT or GPT), 10 districts, 20 gifted primary schools and two types of RTs (10 for each type categorised by those who received gifted training programmes and those who did not). Table 6.1 provides details of the 40 teachers, who represent a wide range of Saudi districts, primary schools in each district, number of GPTs and RTs selected from each school, number of training courses received for each GPT and RT and qualification degree.
Table 6.1 Statistics information of interviewees

<table>
<thead>
<tr>
<th>Name of District</th>
<th>Number of GPTs who agreed to interview</th>
<th>Number of RTs who agreed to interview</th>
<th>Number of schools selected</th>
<th>Number of GPTs selected for interview in each district</th>
<th>Number of RTs selected for interview in each district</th>
<th>Number of training courses received by GPTs and qualification</th>
<th>Number of training courses received by RTs and qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Riyadh (R)</td>
<td>19</td>
<td>61</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>R1=7 (M)</td>
<td>R1=0 (I)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R2=3 (B)</td>
<td>R2=2 (BAC)</td>
</tr>
<tr>
<td>Dammam (D)</td>
<td>9</td>
<td>16</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>D1=5 (B)</td>
<td>D1=0 (I)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>D2=4 (B)</td>
<td>D2=3 (B)</td>
</tr>
<tr>
<td>Al-Ahsa (AS)</td>
<td>6</td>
<td>11</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>AS1=4 (B)</td>
<td>AS1=0 (D)</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>AS2=3 (I)</td>
<td>AS2=3 (M)</td>
</tr>
<tr>
<td>Mecca (MC)</td>
<td>5</td>
<td>9</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>MC1=9 (M)</td>
<td>MC1=0 (I)</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>MC2=5 (I)</td>
<td>MC2=2 (B)</td>
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<tr>
<td>Medina (MD)</td>
<td>10</td>
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<td>2</td>
<td>2</td>
<td>2</td>
<td>MD1=9 (M)</td>
<td>MD1=0 (BAC)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MD2=4 (B)</td>
<td>MD2=1 (B)</td>
</tr>
<tr>
<td>Jeddah (JE)</td>
<td>11</td>
<td>23</td>
<td>2</td>
<td>2</td>
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<td>JE1=7 (B)</td>
<td>JE1=0 (BAU)</td>
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<td>AB1=4 (B)</td>
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<td>T1=8 (B)</td>
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</tr>
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<td>Al-jof (AL)</td>
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<td>AL1=4 (B)</td>
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<td></td>
<td></td>
<td>AL2=4 (B)</td>
<td>AL2=1 (B)</td>
</tr>
</tbody>
</table>

(D): Diploma of the Institute of Teachers; (I): Intermediate College diploma; (B): Bachelor of Teachers Training College; (BAC): BA College of Education; (BAU): BA University; (M): Master.
6.3 Teachers’ Attitudes towards Gifted Pupils and Their Education

The aim of this section is to answer the following RQs:

RQ1. What are the attitudes of RTs and GPTs towards gifted pupils and their education in Saudi Arabia?

RQ2. Are there significant differences between RTs and GPTs in their attitudes towards gifted pupils and their education in Saudi Arabia?

The purposes of the semi-structured interview were to develop an in-depth understanding of RTs’ and GPTs’ attitudes towards gifted pupils and their education and to verify the validity of outcome results from the questionnaire to enhance the triangulation dimension of the findings. The interview guide (see Appendix A) was based on the literature review as well as the outcome results from the questionnaire analysis. Subsequently, a set of categories with sub-categories was developed to investigate the questions of the interview guides. RTs’ and GPTs’ attitudes towards gifted pupils (sub-categories: ideology towards special services, acceptance, needs and support, social value) constituted the first category, whereas their attitudes towards gifted pupils’ education was the second (sub-categories: enrichment programme, ability grouping, policy and related implications). To help the researcher understand the interviewees’ attitudes towards these categories, interviewees were asked how they felt or thought about each category, and sub-category if needed. To determine the levels and differences in their attitudes, they were asked to rate from 0 (very negative attitude) to 10 (very positive attitude) their opinion, feeling and belief about each category, and sub-category if needed.

6.3.1 Teachers’ attitudes towards gifted pupils

More than three-quarters of both groups of RTs and the GPTs questioned in the semi-structured interview generally held positive attitudes towards gifted pupils. The data revealed four major themes in teacher responses through a TSA. These themes were used to categorise responses. The four themes were:

1. Gifted pupil needs special attention: Thirteen interviewees pointed out that the gifted pupil is considered special, exclusive and different and needs
special attention offered through special programmes, services, advanced curricula, exclusive treatment, appropriate resources for learning and additional ancillary support to improve their abilities and skills to the maximum. For example, one interviewee mentioned that “[g]ifted pupils are intelligent and creative … I believe they require extra support from schools and society….” (GPT-D1, showed needs and support, special services for gifted pupils). Another interviewee said that “I feel that gifted pupils like others who have difficulty learning in my class need more support and extra work …. advanced teaching and curriculum” (RT-S2, showed needs and support, acceptance, special service for gifted pupils).

II. Importance of gifted pupil: Eleven interviewees mentioned the value of gifted pupils in their schools since these students benefit school systems, other pupils and society. For example, one interviewee said, “To have a good future for society, I think, the government should invest in gifted students in many ways…. ” (RT-R2, showed needs and support, social value for gifted pupils). Another interviewee expressed that “[g]ifted pupils have special characteristics which reflect positively in my teaching and other pupils inside my classroom… I’d like to have more of them in my classroom” (RT-D2, showed needs and support, acceptance, social value for gifted pupils).

III. Duty of teacher: Seven interviewees stated that part of their duties as a teacher required them to help gifted pupils, even consider them over regular pupils, by offering support, special education and services to meet their needs. For example, one interviewee mentioned that “[i]n my classroom, there are different groups of pupils…. I think it is my responsibility to look after them all to achieve in their studies” (RT-MC2, showed needs and support, acceptance for gifted pupils). Another interviewee said, “I think it is not easy to teach gifted pupils but our job as educator requires us to offer good teaching for all regular and special needs pupils (gifted pupils)” (GPT-D1, showed needs and support, acceptance for gifted pupils).

IV. Development excellence: Five interviewees said they believe that gifted pupils cannot excel in school, life or the development of their abilities without
assistance form staff at schools and society and without special services. For example, one interviewee mentioned that “…I believe they require extra support from schools and society to improve their abilities and to achieve in their life” (GPT-D1, showed needs and support, social value, acceptance, special services for gifted pupils). Another interviewee expressed that “[g]ifted pupils cannot cope with their school and out of school without enough help…” (RT-AB2, showed needs and support, special services for gifted pupils).

In contrast, less than one quarter of RTs and GPTs in the semi-structured interview held a negative attitude towards the needs and support for special services to gifted pupils sub-categories. Two major themes emerged from the TSA of their responses:

I. **Public school is geared to average pupils:** Three interviewees reported that public primary schools are designed to meet the needs of average pupils and these schools cannot offer special education to meet other groups’ needs. For example, one of those interviewees mentioned that “I have an average of 30 pupils in my classrooms… I have 24 teaching hours per week…. I do not have time or ability to look after them all …. I try to offer basic education and learning for all” (RT-JZ1, showed no needs or support, no acceptance, no special services for gifted pupils). The second interviewee expressed that “my school has different programmes for different groups of children, which creates pressure on teachers …. I think we need to focus on average pupils since they are the majority…” (RT-AL1, showed no needs or support, no social value, no acceptance for gifted pupils).

II. **Gifted pupil can academically achieve by himself:** Only one of the GPT interviewees commented that he believed that gifted pupils can achieve academically without help. He said that “gifted pupils can get high scores in all curriculums in the end of year without help from teachers”. When asked how, he mentioned that “the gifted pupil has high ability…. and this is the reason why he named him gifted” (GPT-AS2, showed no needs or support, no special services for gifted pupils).
6.3.2 Teachers’ attitudes towards gifted education

Two major themes emerged through analysis of the responses of RTs and GPTs to the question regarding their attitudes towards the gifted pupils’ education category (sub-categories: enrichment programme, ability grouping, policy and related implications). Attitude towards gifted education programme was the first theme, whereas attitude towards gifted education policy and related implications was the second. These two themes incorporated sub-themes.

The first theme: Attitude towards gifted education programme

When asked about their feelings towards gifted education (to determine their attitude towards gifted education), interviewees used both direct and indirect expressions to represent the name, the type of gifted programme and gifted education in Saudi Arabia. These expressions included “current gifted programme”, “the gifted programme in Saudi”, “primary school gifted programme” and “provision of the Saudi gifted programme”. These expressions were considered indirect. In contrast, direct expressions included “pull-out enrichment”, “ability grouping”, “acceleration” and “Mawhiba” as the current name of the educational gifted programme of Saudi Arabia. The results of TSA of their responses revealed that more than half have positive feelings towards gifted education programmes. The results revealed three sub-themes:

I. Gifted programme can meet gifted pupils’ needs: Ten interviewees pointed out that they believe pull-out enrichment, ability grouping and acceleration as strategies for gifted programmes are important to meet gifted pupils’ needs. For example, one interviewee said that “[t]he Mawhiba programme is designed to meet the gifted pupils’ needs generally and to improve their creativity, knowledge, explore their interest, self-learning…” (GPT-D1). Another interviewee said that “[t]he current programme of Saudi can assist teachers to define appropriate instruction to meet gifted pupils’ needs and provide an appropriate environment for them” (GPT-T1). Furthermore, one interviewee pointed out that “the most important advantage of the pull-out enrichment programme is to improve the social life of gifted pupils” (GPT-AB1). Another interviewee said that “pull-out enrichment and ability grouping enrich gifted pupils’ knowledge, enjoyable experiences, challenges
and cooperation between them to find solutions for real issues around them” (GPT-R1).

II. **The internationality of the Saudi gifted programme**: Nine interviewees said that they felt positive towards their version of the Saudi gifted programme because it was originally created and applied in developed countries. For example, one interviewee mentioned that “…I think the current gifted programme that was applied in my country (Saudi Arabia) is the same gifted programme in the USA which can make our programme successful” (GPT-AB2). Another interviewee expressed that “…most Gulf and Arabic countries around us applied a pull-out enrichment programme… I think it is the main strategy to improve gifted education” (RT-JE2).

III. **Gifted programme needs to apply to all primary schools**: Four interviewees said that they felt that the provision of the current gifted programme needs to apply to all primary schools in Saudi Arabia to meet all gifted pupils’ needs. For example, one interviewee mentioned that “I believe there are many or a few gifted pupils in each primary school… they need to receive the benefits of the Mawhiba programme” (RT-D2). Another interviewee said that “there are few schools around Saudi Arabia that applied the gifted programme. I think the Ministry of Education needs to implement the gifted programme in all primary schools” (GPT-JE2).

In contrast, less than half of RTs and GPTs in the semi-structured interview held negative feelings towards gifted educational programmes overall or towards some aspects of the gifted programme. Through TSA, their responses revealed three sub-themes:

1. **Limited provision of Saudi gifted programme**: Although the provision of the Saudi gifted programme policy includes acceleration (compacting curriculum), enrichment and ability grouping to meet gifted pupils’ needs, nine interviewees pointed out that acceleration strategy needs to be applied in their schools, and enrichment strategy and ability grouping need to be applied in regular classrooms in addition to the resource room. For example, one interviewee mentioned that “…the gifted programme in my school will not
meet gifted pupils’ needs because of concentrating on enriched creativity outside the curriculums...They need shortening (compacting) or replacing the regular curriculum (differentiation) (GPT-MC1). Another interviewee expressed that “curricula in primary schools are designed to meet the needs of average pupils... the acceleration needs to challenge gifted pupils to speed their study” (RT-MC2). One interviewee said, “gifted pupils need to receive enrichment activity and ability grouping in regular classroom also not only in resources room to get benefit from programmes” (GPT-AL2).

II. **Negative effect of Saudi gifted programme provision on gifted pupils’ achievement:** Six interviewees felt that the current gifted programme that applied in their school had a negative effect on gifted pupils’ achievement. For example, one interviewee mentioned that “the current gifted programme required withdrawal of gifted pupils from regular class to resources room for two to three days, which makes them lose some important class...I think the enrichment programmes should be done during the evening” (RT-MC1). Another interviewee expressed that the “Mawhiba programme did not benefit gifted pupils in their academic progress” (GPT-AS2). One interviewee said, “I don’t like pulling gifted pupils from my classroom because these are kids who are usually academically very strong ... when they are pulled, they miss some subjects which negatively affects their achievement” (RT-AL2).

III. **A school-within-a-school is an important option to meet gifted pupils’ needs:** Four interviewees felt that the school-within-a-school approach can provide both special gifted programming and also opportunities for gifted pupils to interact with standard pupils in ways that can be mutually and sociality enriching. For example, one interviewee mentioned that a “special class for gifted pupils is better to meet what they need than the current programme... I think the Ministry of Education needs to apply this programme” (RT-JZ1). Some interviewees believe that unless the acceleration and modification of curricula is applied as strategy for the current gifted programme, the school-within-a-school approach is needed for gifted pupils. For example, one interviewee said that “unless the Ministry of Education applied acceleration and curriculums modification as the main...
The second theme: Attitude towards gifted education policy and related implications

The results of TSA for RTs’ and GPTs’ responses in the semi-structured interview revealed that more than two-thirds hold generally negative attitudes towards gifted education policy and related implications. Three sub-themes emerged from their responses:

I. Gap between policy and implications: Half of interviewees pointed out that they believe a gap exists between policy and related implications of the Saudi gifted programme in terms of:

a. Activities of gifted programme provision (Mawhiba): Although the provision of the Saudi gifted programme policy includes acceleration (compacting curriculum), enrichment and ability grouping to meet gifted pupils’ needs, nine interviewees pointed out that acceleration strategy needs to be applied in their schools, and enrichment strategy and ability grouping need to be applied in regular classrooms in addition to resource rooms.

b. The selection of gifted pupils: According to Saudi gifted policy, pupils must meet three of five criteria to be selected as gifted (see section 3.6.4). However, three interviewees reported the selection of gifted pupils based on two criteria. For example, one interviewee said that “In my school, only academic and regular teacher nomination is used to select gifted pupils… these criteria are very weak to use since primary curricula are based on memories and some regular teachers don’t have high knowledge regarding gifted pupils’ characteristics” (GPT-MC1). Three interviewees even said that tests were used to select gifted pupils at their school, but these tests are not suitable because of pupils’ limited reading, the long time required to complete the tests and the differences between the
tests’ and the pupils’ cultures. For example, one interviewee mentioned that “the tests used as standard (e.g. WISC-R) to select gifted pupils were brought from abroad... I think the Saudi government needs to establish new research to define intelligence and ability tests for our country” (GPT-MC1).

c. Selection of GPTs: The Ministry of Education has established standards for selecting GPTs. The standards consist of several qualifying conditions, from general to specific, based on completion of three stages (see section 3.6.5). Five of the RT and two of the GPT interviewees reported that the selection of GPTs does not meet the standards. For example, one RT said, “I know some teachers who studied with me at college and then selected to be full-time gifted programme teachers... you know that some of them graduated with a low average ... how can they teach gifted pupils if they have low knowledge in their subjects...?” (RT-D1). One GPT expressed that “the Ministry of Education needs to select teachers with real potential to be gifted programme teachers...” (GPT-T2).

d. Improving RT knowledge and skills: According to Saudi gifted policy, RTs must receive training courses in different aspects of giftedness and gifted education to acquire high knowledge and professional skills to teach gifted pupils, although most RTs (69%) reported in the questionnaire that they did not receive any in-service training courses. One RT interviewee said, “I have not received any training courses in gifted education... the Ministry of Education offers gifted education training only for resources teachers (GPTs) and neglects regular teachers” (RT-AB1).

II. Deficiencies in policy quality and in depth of application: More than half of interviewees believe that the gifted education policy and related implications need more development in terms of:

a. Planning and management: Six interviewees felt that effective planning and management are two elements missing from the arena
of gifted education in Saudi Arabia. For example, one interviewee mentioned that “strategies and techniques on how to teach gifted pupils, enrich the gifted, how to differentiate the current curriculum to suit these students’ academic needs are still unclear” (GPT-D2).

b. Collaboration between the Ministry of Education and King Abdulaziz and his Companions Foundation for Giftedness and Creativity (KACGC): Four interviewees felt the lack of communication between the Ministry of Education (General Administration and Gifted Care Centres) and KACGC results in clashes in policy and programme application. For example, one interviewee said, “During the semester, I received many documents from the Ministry of Education and Companions City for Science… Some of these documents confused me… I could not find which one needed to be followed and this implies … the government needs to improve the collaboration between different ministries to create one viewpoint” (GPT-JE1).

c. Defining gifted pupil methods: Four interviewees felt the policy and implications of criteria for selecting gifted pupils need to be changed since these criteria are designed for Western cultures. For example, one interviewee mentioned that the tests used as standard (e.g. WISC-R) to select gifted pupils were brought from abroad…. I think the Saudi government needs to establish new research to define intelligence and ability tests for our country (GPT-MC1).

d. Extended policy and implications: Three interviewees felt the policy and implications of the gifted programme need to start from an early stage in primary school. For example, one interviewee mentioned that the “Mawhiba programme starts from fourth grade in primary school as I know; I think the right way to apply this programme is from the first grade to benefit the gifted student throughout his school life” (RT-JE2). Three interviewees said that enrichment strategies need to include academic activities in addition to non-academic activities in regular and resources rooms. For example, one
interviewee said that “pull-out enrichment activities focus on non-academic creativity. I think the Ministry of Education needs to improve creativity by offering academic activities (inside curriculums) in addition to non-academic activities…..in regular and resources classrooms” (GPT-MD2).

e. Need support: Ten interviewees felt they need more support: “more financial support is needed” (GPT-AL1); “more time for teachers needs to be incorporated into this gifted programme” (RT-AS2); “improving the existing school structure and curriculums to the differentiation” (GPT-MC1); “offering care centres for the gifted in each city” (GPT-MD1); “including new model strategy …. in the Mawhiba programme” (RT-JZ2); “specialised courses for all staff in school” (RT-AB1); “communication among regular teacher, gifted teacher and parent of gifted pupil” (RT-R2).

In contrast, a minority of RTs and GPTs (three interviewees) in the semi-structured interview held a positive attitude towards gifted education policy and related implications. TSA revealed one sub-theme for their responses. They believe that the Saudi education programme is still in its first stage and it aims to establish an effective programme for gifted education in which gifted pupils can benefit and teachers can flourish. One interviewee mentioned that the “Mawhiba programme is new to be judged. It was started in 2002 and is limited to some Saudi schools. This programme needs time to see its results” (RT-T2).

In summary, the results of TSA of primary teachers’ responses to determine their attitudes towards gifted pupils and their education were: (I) The majority of both groups of teachers hold positive attitudes towards gifted pupils and their education, and for some teachers the problem is not with gifted education itself but with the policy and provision of the gifted education programme; and (II) there were differences between both groups of teachers in their attitudes towards the gifted and their education, with GPTs having a more positive attitude. These results will be described in more detail in the next section.
6.3.3 Comparing questionnaire and interview analysis results in terms of teachers’ attitudes towards gifted pupils and their education

The questionnaire analysis results showed that both groups of interviewees hold positive attitudes towards gifted pupils in terms of social value, acceptance, needs and support, but offering special service to them had more support from GPTs. Furthermore, it is apparent that both groups hold positive attitudes towards gifted education, with more support from GPTs, but negative attitudes towards the Saudi gifted policy and related implications, with RTs having stronger negative attitudes.

To define the significant level of both groups’ attitudes towards gifted pupils and their education and to compare their attitudes in each attitude sub-category (factors) against the broad spectrum of interviewees’ attitudes, participants were asked to rate their attitude on each sub-category from 0 (very negative) to 10 (very positive). The rating from 0 to 10 was used to limit the effect of Likert-type ratings (0 to 5) used in the questionnaire for interviewees’ attitudes and, further, because previous studies (e.g. Bushnak, 2007; Saunders, 2004) have used the same rating when they employed an interview instrument to determine interviewees’ attitudes. To determine a level of negative or positive attitude among interviewees, the Gagné (1991) and Curtis (2005) recommendation was used, but with an increased guideline rate from 5 to 10. Therefore, for interviewee scores, means below 4.00 indicate a very negative attitude; means between 4.00 and 5.50 indicate a slightly negative attitude; means above 8.00 indicate a very positive attitude; means above 5.50 through 6.50 reflect an attitude of ambivalence; and means above 6.50 through 8.00 indicate a slightly positive attitude.

To compare the questionnaire with interview analysis results, the independent $t$-test (see section 5.5 for more information about $t$-tests) was conducted initially to find the average score (mean) and to compare the attitude category and sub-categories for interview data, but the analysis led to insignificant $t$-tests due to the low number of participants in each group ($n=20$). The ranks of rating were from 0 to 10, which led to high differences in figures selected and high numbers of sub-categories (seven subcategories). Subsequently, the average score (mean) was applied. Table 6.2 summarises the mean differences between RTs and GPTs in each sub-category and overall attitude.
Table 6.2 Mean differences between RTs and GPTs in their attitudes

<table>
<thead>
<tr>
<th>Attitude sub-categories</th>
<th>Teachers</th>
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<tbody>
<tr>
<td></td>
<td>RT</td>
</tr>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td>Enrichment programme</td>
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</tr>
<tr>
<td>M</td>
<td>7.55</td>
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<tr>
<td>SD</td>
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<td>Saudi gifted programme</td>
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<td>M</td>
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<td>SD</td>
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<td>Ideology towards special service</td>
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<td>M</td>
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<td>Acceptance</td>
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<td>M</td>
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</tr>
<tr>
<td>SD</td>
<td>1.06</td>
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<tr>
<td>Needs and support</td>
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</tr>
<tr>
<td>M</td>
<td>8.40</td>
</tr>
<tr>
<td>SD</td>
<td>1.70</td>
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<tr>
<td>Social value</td>
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</tr>
<tr>
<td>M</td>
<td>8.35</td>
</tr>
<tr>
<td>SD</td>
<td>1.35</td>
</tr>
<tr>
<td>Ability grouping</td>
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</tr>
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<td>M</td>
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<td>SD</td>
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<td>M</td>
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</tr>
<tr>
<td>SD</td>
<td>1.34</td>
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</tbody>
</table>

As seen in table 6.2, the results of the mean analysis indicate that the seven sub-categories and overall attitude scores were different between the two major groups, which supports the results of the questionnaire analysis. The average score showed that both groups of interviewees hold ‘very’ positive attitudes in terms of needs and support, with social value sub-categories having a higher mean for GPTs than for RTs. This result also supports the results of the questionnaire instrument since quantitative analysis revealed that both groups of teachers hold ‘very’ positive attitudes, although significantly different and higher for GPTs in terms of needs and support and the social value sub-scales (factors).
In terms of the ideology towards special service and the acceptance sub-categories, the results showed that both groups of interviewees hold slightly positive attitudes towards these sub-categories, with a higher mean for GPTs than for RTs. This result differs slightly from the questionnaire analysis results in terms of ideology towards special factors. The questionnaire analysis showed that the GPTs hold an attitude of ambivalence whereas RTs hold ‘slightly’ negative attitudes.

In terms of the enrichment programme and ability grouping sub-categories, the result showed that GPTs hold very positive attitudes and RTs hold ‘slightly’ positive attitudes towards the enrichment programme, whereas both groups hold ‘slightly’ positive attitudes towards ability grouping, with a higher mean for GPTs. This result differs slightly from the questionnaire analysis results in terms of the enrichment programme. The questionnaire analysis showed that both groups of teachers hold ‘slightly’ positive attitudes towards the enrichment programme sub-scale.

The average score of both groups of interviewees towards Saudi gifted programme policy and implications showed that they hold ‘very’ negative attitudes, with a higher mean for GPTs. Similarly, the questionnaire analysis showed that both groups hold ‘very’ negative attitudes towards the Saudi gifted programme policy and implications sub-scale.

Although slight differences in results for the questionnaire in two sub-categories exist, the average scores of the overall attitude category indicate that the two groups differ in terms of mean, with a higher mean for GPTs, and hold ‘slightly’ positive attitudes towards gifted pupils and their education. The same conclusion was reached based on the questionnaire analysis; both groups hold a ‘slightly’ positive attitude towards the gifted and their education, with significantly higher differences for GPTs in the overall Teachers’ Attitudes towards the Gifted and Gifted Education Scale scores (TAGES).

The multiple regression analysis for questionnaire data also showed a positive correlation between teachers’ specialisation as RT or GPT and their attitude towards gifted pupils and their education. The interview analysis (see table 6.3) using correlation coefficients (Pearson $r$) support the correlation between them ($r=0.303$, $p<0.05$).
Table 6.3 Correlation coefficients between teacher attitude and their specialisation by Pearson $r$

<table>
<thead>
<tr>
<th>Attitude towards gifted pupils and their education</th>
<th>Specialisation (RT or GPT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$r$</td>
<td>$r$</td>
</tr>
<tr>
<td>$1.000$</td>
<td>$0.303^*$</td>
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<tr>
<td>$\text{sig}$</td>
<td>$\text{sig}$</td>
</tr>
<tr>
<td>$0.029$</td>
<td>$0.029$</td>
</tr>
<tr>
<td>$n$</td>
<td>$n$</td>
</tr>
<tr>
<td>$40.000$</td>
<td>$40$</td>
</tr>
</tbody>
</table>

$^*p<0.05$

However, it is apparent that to some extent the triangulation of attitude analysis results obtained from the questionnaire and semi-structured interview as mixed methods of data collection provide evidence of validity (Dörnyei, 2007).

### 6.4 Teachers’ Knowledge and Training Needs Regarding the Gifted and Gifted Education

The aim of this section is to answer the following RQs:

RQ3. What is the level of RT and GPT knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ4. Are there significant differences between RTs and GPTs in their knowledge level regarding the gifted and gifted education in Saudi Arabia?

RQ5. What are the needs of RTs and GPTs in terms of improving their knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ8. What is the relationship between RTs’ and GPTs’ attitudes towards gifted pupils and their education and RTs’ and GPTs’ knowledge regarding the gifted and gifted education in Saudi Arabia?
The purposes of the semi-structured interview were to explore an in-depth understanding of RTs’ and GPTs’ knowledge and training needs regarding the gifted and gifted education and to check the validity of outcomes from questionnaire analysis to enhance the triangulation dimension of the results. The interview guide (see Appendix A) was based on the literature review as well as on the outcome results of the questionnaire analysis. Subsequently, RTs’ and GPTs’ knowledge and training needs regarding the gifted and gifted education were formulated as one category that reflected the questions asked in the interview guides.

The first question (determine high knowledge topic) and second question (determine low knowledge topic) were formulated to determine teacher knowledge and training needs. The participants were asked to respond to 14 items (sub-categories). These items are considered the most important in which primary teachers should have high knowledge based on the NAGC-CEC (Teacher Knowledge & Skill Standards for Gifted and Talented Education) and policy of gifted education of Saudi Arabia. To define teachers’ overall knowledge levels regarding the gifted and gifted education, respondents were asked to answer one direct question regarding their overall knowledge and to rate their knowledge from 0 (lowest knowledge level) to 10 (highest knowledge level). As mentioned earlier, the rating from 0 to 10 was used to limit the effect of Likert-type (0 to 5) ratings used in the questionnaire.

6.4.1 Teachers’ knowledge of 14 items regarding the gifted and gifted education

The statistical analysis results for semi-structured interview responses showed that more than three-quarters of GPTs have high knowledge in all topics regarding the gifted and gifted education. In contrast, more than three-quarters of RTs showed high knowledge in one topic and low knowledge (training needs) in most other topics regarding the gifted and gifted education. Table 6.4 summarises the number results for RTs and GPTs on 14 knowledge items.
## Table 6.4 Numbers differences between RTs and GPTs on 14 knowledge items

<table>
<thead>
<tr>
<th>Perceived knowledge item</th>
<th>High knowledge Teacher number</th>
<th>Low knowledge Teacher number</th>
<th>GPT</th>
<th>RT</th>
<th>GPT</th>
<th>RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics and identification of gifted pupils</td>
<td>9</td>
<td>7</td>
<td>4</td>
<td>11</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Procedures and instruments for selecting gifted pupils</td>
<td>7</td>
<td>2</td>
<td>5</td>
<td>12</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Theoretical models of giftedness (e.g. Bloom, Guilford)</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>16</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Application of a variety of instructional model strategies</td>
<td>9</td>
<td>0</td>
<td>7</td>
<td>13</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Ability to modify, adapt, design appropriate curricula units</td>
<td>10</td>
<td>2</td>
<td>6</td>
<td>11</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Classroom organisation for individualising and grouping</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>8</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Classroom behaviour management techniques</td>
<td>11</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Planning for the individual and group of gifted pupils</td>
<td>12</td>
<td>5</td>
<td>4</td>
<td>8</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Evaluating the individual gifted pupil and group progress</td>
<td>13</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Making use of school and community resources</td>
<td>12</td>
<td>7</td>
<td>6</td>
<td>10</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Collaborating with other teachers, staff, parents</td>
<td>14</td>
<td>4</td>
<td>3</td>
<td>8</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Counselling for unique psychological, social needs</td>
<td>10</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Language and communication strategies</td>
<td>8</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Use of information communication technology</td>
<td>15</td>
<td>9</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

As seen in table 6.4, the results of the number analysis indicate that the 14 sub-categories of teacher knowledge regarding the gifted and gifted education differed between the two major groups with more knowledge for GPTs in all knowledge items,
which supports the results of the questionnaire analysis. For only one knowledge item (use of information communication technology), most members of the RT groups showed that they have high knowledge \( (n=9) \) rather than low knowledge \( (n=3) \) whereas for the other 13 knowledge items, most RTs showed low knowledge rather than high knowledge. This means that RTs need to receive gifted training courses on these 13 knowledge topics. This result supports the results of the questionnaire analysis, although there was a slight difference between questionnaire and semi-structured interview analysis results in terms of ranking these 13 knowledge items from lowest to highest training need, but this did not affect the results since all 13 items require training courses. It seems that the difference between the questionnaire and interview ranking of knowledge topics results for RTs stems from 50% of RTs having received in-service training courses.

The number of GPTs who reported they have high knowledge rather low knowledge was larger on the 14 knowledge items. Similarly to RTs’ above result, this result supports the results of the questionnaire analysis although there was a slight difference between the questionnaire and semi-structured interview analysis results in terms of ranking these 14 knowledge items from lowest to highlight training need, but this did not affect the results since all 14 items require training courses. It seems the difference between the questionnaire and interview ranking for knowledge topics results for GPTs is because some GPTs and RTs did not report all 14 knowledge items when asked about their high or low knowledge level regarding them.

6.4.2 Teachers’ overall knowledge regarding the gifted and gifted education

As mentioned above, to define teachers’ overall knowledge levels regarding the gifted and gifted education, they were asked one direct question to rate their knowledge from 0 (lowest knowledge level) to 10 (highest knowledge level). The independent \( t \)-test (see section 5.5 for more information about \( t \)-test) was conducted to find the average score (mean) and to compare the overall knowledge level regarding gifted pupils and their education among RTs \( (n=20) \) and GPTs \( (n=20) \). Figure 6.1 summarises the mean for RTs and GPTs on overall knowledge.
As seen in figure 6.1, the results from the $t$-test analysis showed statistically significant differences between RTs and GPTs in overall knowledge in $p<0.001$ and in higher mean scores for GPTs than RTs. The mean score was found to be different and higher ($M=7.50$, $SD=.76$) for GPTs in overall knowledge than for RTs ($M=5.15$, $SD=1.73$). The independent $t$-test was statistically significant, $t (38)=5.57$, $p<0.001$, with a strong effect size, $d=1.89$. This result supports the previous questionnaire analysis result indicating statistically significant differences between RTs and GPTs in overall knowledge regarding the gifted and gifted education, with higher mean scores for GPTs than RTs.

The TSA of interviewees’ responses showed different sources of their knowledge regarding the gifted and gifted education. All GPTs referred to training courses received as the main source of their knowledge regarding the gifted and gifted education. Nearly 70% of GPTs added internet use, reading or both as secondary resources in addition to the training courses received, whereas few (5%) mentioned perceived knowledge during their study at university as a source of their knowledge in addition to other sources listed above. In contrast, 20% of RTs referred to training courses received as one source of their knowledge regarding the gifted and gifted
education. It is assumed that this is because only 50% of RTs in the interview sample had received gifted training and even they had received a low number of gifted training courses. The majority of RTs (60%) mentioned that the main source of their knowledge was internet use alone or in addition to reading, training received or both resources. A low percentage of RTs (4%) referred to their perceived knowledge during their study at university as one source of their knowledge. However, since only 5% of GPTs and 4% of RTs considered their perceived knowledge during their study at university as one source of their knowledge regarding the gifted and gifted education, it is apparent that there is a weakness in higher education in terms of including gifted education in the curricula and policy and in teaching teachers about giftedness and gifted education. This result and other results will be discussed in chapter 7.

6.4.3 Comparing questionnaire and interview analysis results in terms of teachers’ knowledge and training needs regarding the gifted and gifted education

The triangulation of knowledge analysis results obtained from the questionnaire and semi-structured interview as mixed methods of data collection provide evidence of validity (Dörnyei, 2007). The questionnaire and interview analysis showed the same result in terms of teachers’ knowledge regarding the gifted and gifted education; there were differences between RTs and GPTs in all 14 knowledge items and overall knowledge, with higher mean scores for GPTs than RTs. Furthermore, both instruments’ analysis showed the same result in terms of the difference between RTs and GPTs regarding training needs and training type but they also showed different results in terms of ranking from high to low the training needs for both teacher groups, likely because some GPTs and RTs did not report all 14 knowledge items or reported only a few when asked about their high or low knowledge level regarding them.

In terms of the correlation between the overall attitude and overall knowledge, the questionnaire and interview analysis showed the same result. The questionnaire analysis results showed a more significant positive relationship between the TAGES (overall attitude) and TKTGES (Teachers’ Knowledge and Training Needs about the Gifted and Gifted Education Scale overall knowledge) for RTs and GPTs, $r=.221$, $p<0.001$, at the weak correlation level ($r=.221$, between .00 and .30). This indicated that RTs and GPTs who had reported high grades in terms of TAGES (e.g. very
positive attitudes) are also likely to have high grades in TKTGES (e.g. high knowledge level). In the same way, RTs and GPTs who had low grades in TKTGES (e.g. low knowledge level) tended to have the same grade level in TAGES (very negative attitude). The interview analysis results were the same as the questionnaire analysis results when using Pearson’s $r$ (see table 6.5); there was a significant positive relationship between the TAGES (overall attitude) and TKTGES (overall knowledge) for RTs and GPTs, $r=.69$, $p<.001$, at the moderate correlation level ($r=.69$, between .30 and .70). This indicated that RTs and GPTs who had reported high grades in terms of overall attitude (e.g. very positive attitudes) are also likely to have high grades in overall knowledge (e.g. high knowledge level). In the same way, RTs and GPTs who had low grades in overall knowledge (e.g. low knowledge level) tended to have the same grade level in attitude (very negative attitude).

Table 6.5 Correlation coefficients between teacher attitude and knowledge by Pearson $r$

<table>
<thead>
<tr>
<th></th>
<th>Overall attitude</th>
<th>Overall knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interviewees</td>
<td></td>
<td><strong>.69</strong>*</td>
</tr>
<tr>
<td>Overall attitude</td>
<td>$r$</td>
<td><strong>.69</strong>*</td>
</tr>
<tr>
<td>sig</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Interviewees</td>
<td></td>
<td><strong>.69</strong>*</td>
</tr>
<tr>
<td>Overall knowledge</td>
<td>$r$</td>
<td><strong>.69</strong>*</td>
</tr>
<tr>
<td>sig</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

***$p<0.001$

The questionnaire analysis result using regression analysis showed that specialisation (RT or GPT), receipt of gifted training courses, number of training courses received, having a family member enrolled in a gifted programme and highest qualification degree as predictor factors have a significant relationship with and influence on the TKTGES (overall knowledge) (see section 5.7.2). The interview analysis using correlation coefficients (Pearson $r$) showed the same result, excluding one variable, having a family member enrolled in a gifted programme, for culturally sensitive
reasons (see section 6.2). As seen in table 6.6, there were effects and correlations between the specialisation, receipt of gifted training courses, number of training courses received, highest qualification degree and overall knowledge at a significant level, ($p<0.001$).

Table 6.6 Correlation coefficients between teacher overall knowledge and other biographical variables

<table>
<thead>
<tr>
<th></th>
<th>Overall knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specialisation (RT or GPT)</strong></td>
<td>$r$</td>
</tr>
<tr>
<td></td>
<td>sig</td>
</tr>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td><strong>Received gifted training courses</strong></td>
<td>$r$</td>
</tr>
<tr>
<td></td>
<td>sig</td>
</tr>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td><strong>Number of training courses received</strong></td>
<td>$r$</td>
</tr>
<tr>
<td></td>
<td>sig</td>
</tr>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td><strong>Highest qualification degree</strong></td>
<td>$r$</td>
</tr>
<tr>
<td></td>
<td>sig</td>
</tr>
<tr>
<td></td>
<td>n</td>
</tr>
</tbody>
</table>

$***p<0.001$

6.5 Teachers’ Attitudes towards In-service Gifted Training Programmes

The aim of this section is to answer the following RQs:

RQ6. What are the attitudes of RTs and GPTs regarding in-service gifted training programmes in Saudi Arabia?

RQ7. Are there significant differences between RTs and GPTs in their attitudes regarding in-service gifted training programmes in Saudi Arabia?

RQ9. What is the relationship between RTs’ and GPTs’ attitudes towards in-service gifted training programmes and their knowledge regarding the gifted and gifted education in Saudi Arabia?
The purposes of the semi-structured interview were to explore an in-depth understanding of RTs’ and GPTs’ attitudes towards in-service gifted training programmes and to check the validity of outcomes from the questionnaire analysis to enhance the triangulation dimension of the results. The interview guide (see Appendix A) was based on the literature review and on the outcome results of the questionnaire analysis. Subsequently, RTs’ and GPTs’ attitudes towards in-service gifted training programmes fell into one category since the quantitative analysis did not use any factors during analysis. This category was reflected in the question asked in the interview guide.

As mentioned (see section 6.2), the quantitative analysis results showed that all GPTs have received gifted training courses while most RTs (88.86%) have not. Based on this, and to examine both their attitude towards in-service gifted training programmes and the reason behind not receiving gifted training courses, purposive sampling was applied. Subsequently, three groups of interviewees were identified. The first group were 10 RT interviewees who had received a gifted training course. The second were 10 RT interviewees who had not received a gifted training course. The third were 20 GPT interviewees since all of them had received gifted training programmes.

To find the level and difference in their attitude and relationship between this category and other variables, participants were asked to rate from 0 (very negative) to 10 (very positive) their attitudes towards this category. To understand the interviewees’ attitudes towards this category, they were asked why they selected a high or low rating for their attitudes towards this category.

6.5.1 Teachers’ attitudes rating for in-service gifted training programmes category

As mentioned above, to determine the level and difference among group attitudes, participants were asked one direct question, to rate from 0 (very negative) to 10 (very positive) their attitudes towards in-service gifted training programmes as one category. To determine the level of negative or positive attitude of interviewees, the Gagné (1991) and Curtis (2005) recommendation was used, but with an increased guideline from 5 to 10. Subsequently, for interviewee scores, means below 4.00 indicate a very negative attitude; means between 4.00 and 5.50 indicate a slightly negative attitude;
means above 8.00 through 10 indicate a very positive attitude; means above 5.50 through 6.50 reflect an attitude of ambivalence; and means above 6.50 through 8.00 indicate a slightly positive attitude.

The independent \( t \)-test (see section 5.5 for more information) was conducted to find the average score (mean) and to compare teachers’ attitudes towards this category. Figure 6.2 summarises the mean for RTs’ and GPTs’ attitudes rating for this category.

Figure 6.2 Mean differences between RTs and GPTs in their attitudes towards in-service gifted training programmes

As seen in figure 6.2, the results from the \( t \)-test analysis showed statistically significant differences between RTs and GPTs in their attitudes towards in-service gifted training courses in \( p<0.001 \), and with higher mean scores for GPTs than RTs. The mean score was found to be different and higher (\( M=6, SD=1.50 \)) for GPTs than for RTs (\( M=2.35, SD=1.1 \)). The independent \( t \)-test was statistically significant, \( t (38)=8.9, p<0.001 \), with a strong effect size, \( d=2.77 \). Furthermore, the average score showed that GPT interviewees hold an attitude of ambivalence (\( M=6 \)) whereas RT interviewees hold very negative attitudes (\( M=2.35 \)). Thus, this result supports the previous questionnaire analysis result that statistically significant differences exist between RTs and GPTs in their attitudes towards in-service gifted training programmes, with higher mean scores for GPTs with ambivalent attitudes than RTs with very negative attitudes.
The independent $t$-test was conducted to find the average score ($mean$) and also to compare RTs who received (50%) and did not receive (50%) gifted training courses. Table 6.7 summarises the mean, standard deviation, $t$-test and effect size (Cohen’s $d$) results for RTs who received and did not receive training courses with regards to their attitudes towards in-service gifted training programmes.

Table 6.7 Mean differences between RTs who received and did not receive training courses with regards to their attitude towards in-service gifted training programmes

<table>
<thead>
<tr>
<th>Category</th>
<th>RTs</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Received</td>
<td>Did not receive</td>
<td>$t$</td>
<td>$df$</td>
</tr>
<tr>
<td>Attitude towards in-service training programmes</td>
<td>$M$</td>
<td>3.10</td>
<td>1.60</td>
<td><strong>4.32</strong>*</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>$SD$</td>
<td>.99</td>
<td>.52</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

***$p<0.001$

As can be seen from table 6.7, the results from the $t$-test analysis showed statistically significant differences between RTs who received and did not receive gifted training courses with regards to their attitudes towards in-service gifted training programmes. The $t$-test showed that the mean score for attitude regarding in-service training programmes for RTs who received training courses was significantly different and higher ($M=3.10$, $SD=.99$) than for RTs who did not receive gifted training courses ($M=1.60$, $SD=.52$). This test was found to be statistically significant, $t$ (18)=4.32, $p<0.001$, with a strong effect size, $d=1.90$. The results also showed that although there were significant differences between both groups of RTs, they hold the same very negative attitudes towards in-service training programmes since both their means for attitude are below 4.00. This might be because the very negative attitudes of RTs who received gifted training courses reflect the low number of training courses they received, since the mean number of training courses received was only $M=1.90$. However, the effect of receiving or not receiving training courses on teachers’ attitudes towards in-service gifted training programmes is apparent because the attitudes of RTs who received training courses were significantly different and higher than for those who did not receive gifted training courses.
6.5.2 Reasons for teachers’ level of attitudes towards in-service training programmes

As mentioned above, the mean of both groups of RTs who received or did not receive training showed that both groups hold very negative attitudes towards in-service training programmes. The rating level for each RT interviewee towards in-service training programmes also showed that all of them hold very negative attitudes and no one holds another level of attitude towards this category. In contrast, the mean of GPTs showed that they hold ambivalent attitudes towards in-service gifted training courses. The rating level for each GPT interviewee towards in-service training programmes showed they hold different attitude levels, but most hold ambivalent attitudes. However, the TSA of their responses about the reasons behind the ratings selected regarding in-service gifted training programmes revealed three themes:

I. **Number of gifted training courses received:** Nearly all of the RTs and three GPTs reported very negative attitudes towards in-service gifted training programmes due to not receiving or receiving low numbers of gifted training courses. For example, one interviewee mentioned that “…I have not received any training courses” (RT-R1). Another interviewee expressed that “[e]ven though I work as a gifted programme teacher in my school, the number of training courses I have received is not that high…I have joined only three training courses related to gifted education” (GPT-R2). However, when those interviewees were asked about the reason for not receiving training or receiving a low number of courses and why they did not become more involved in gifted training courses, they mentioned drawbacks that hinder them in obtaining the necessary gifted training courses. These drawbacks were:

   a) High number of weekly class hours for RTs (24 hours).
   b) Ministry of Education only offering gifted training courses to GPTs.
   c) Gifted care centres in some cities not offering many types and numbers of gifted training courses for GPTs.

In contrast, 10 GPTs provided above average ratings for in-service gifted training courses because they had received a high number of training courses. For example, “I have received many gifted training courses… These courses improved my knowledge and skills to deal with gifted pupils in my school” (GPT-JZ1).
II. **Quality of gifted training courses**: Eight GPTs showed average and below average ratings of gifted training programmes, five GPTs showed slightly positive ratings of gifted training programmes, three GPTs showed high positive ratings of gifted training programmes, and five RTs who had received gifted training courses and four RTs who had not reported a low quality of gifted training courses received and offered by the Ministry of Education due to:

a) Gifted training courses tend to be theoretical rather than practical: Ten interviewees reported they received information during training courses but did not have an opportunity to practice what they learned. For example, one interviewee mentioned that “unfortunately I found that most training I had received did not benefit me that much in my fieldwork as a gifted programme teacher ...I think the problems with these training courses were they took the form of theories or lectures and neglected the practice of these theories ... the workshop is important to understand how to apply the theories of gifted education in reality” (GPT-JE1).

b) Gifted training courses are not up to gifted international standards (e.g. NAGC-CEC) and the Saudi policy of gifted education: Six interviewees reported that gifted training courses tend to focus on general aspects of gifted education and miss the depth of gifted education and special areas required according to international standards and the gifted education policy of Saudi Arabia. For example, one interviewee mentioned that “…gifted training courses offered in my country are very general, and neglected important facets of gifted education need more training such as creativity and psychological aspects of gifted students” (GPT-MC1). Another interviewee expressed that “in-service training needs to focus on more specialised subjects in the area of gifted education...Subjects such as counselling and assessment are important to the education of gifted students” (RT-D2).

c) Need to recruit professional trainers to train teachers: Five interviewees claimed that many trainers in gifted training courses are from developing countries or do not have sufficient professional
knowledge and skills to train them. For example, one interviewee mentioned that “some trainers whose training courses I joined were from Arab neighbouring countries… the Ministry of Education needs to bring professional trainers from Western countries since they are considered developed and applied the gifted programmes many years before us” (GPT-T1). Another interviewee said, “You know some of the trainers graduated with me from the same college... I do not understand how they teach us if they do not have high knowledge or skills because they did not specialise in special needs or gifted education during their baccalaureate or they have master or PhD degree after that” (RT-AB2).

d) Low quality of training courses generally: Four RTs who had not received gifted training courses and one RT who had believed most training courses, including gifted education training courses, in Saudi Arabia were of low quality. For example, one interviewee said, “Even I did not receive any training courses in gifted education but I think the quality of gifted training will be similar to other training courses in terms of consuming time with low knowledge benefit to me” (RT-AL1). Another interviewee expressed that “I have received many types of training courses; one of them was gifted training... unfortunately the Ministry of Education is offering many training courses without evaluating the benefit of these courses for teachers and education....” (RT-MD2).

It is apparent from the TSA themes that there were: (I) gaps between Saudi Arabia’s gifted education policy and implications of this policy since most of the RTs and some of the GPTs had not received or had received only a low number of gifted training courses; and (II) positive correlations between teacher attitudes towards in-services gifted training programmes and their knowledge since the first theme showed that the number of training courses received can lead some interviewees to hold positive attitudes towards gifted training courses. This correlation is examined later in this chapter.
6.5.3 Voice of teachers regarding improving in-service gifted training programmes

Questions about the effectiveness of gifted training programmes were not part of this research, although some interviewees reported their opinions about how gifted training should be improved:

1- Providing diversity in theory and practice of gifted training courses.

2- Making available more specialized courses in all aspects of giftedness and gifted education for all teachers.

3- Offering more diplomas, master’s degrees and scholarships to developed countries in the field of gifted education for all teachers, which can increase the number of local professional trainers in this area and improve gifted education overall.

4- Following international standards such as NAGC-CEC during organisation or establishing gifted training courses sponsored by the Ministry of Education.

5- Establishing accreditation committees to ensure the quality of gifted training programmes available for teachers.

6.5.4 Comparing questionnaire and interview analysis results in terms of teachers’ attitudes towards in-service gifted training programmes

The questionnaire (see section 5.5.3) and interview (see section 6.5.1) analysis using the $t$-test on both showed similar results in terms of the difference between RTs and GPTs in their attitudes and levels of their attitudes regarding in-service gifted training programmes. The $t$-test analysis revealed statistically significant differences between RTs and GPTs in their attitudes regarding in-service gifted training programmes, with an ambivalent attitude level for GPTs and a very negative attitude level for RTs.

During the TSA of interviewees’ responses, a correlation between teachers’ attitudes regarding in-service gifted training programmes and their knowledge regarding the gifted and gifted education was observed. To check the significance of this correlation, Pearson’s $r$ was calculated. Pearson’s $r$ was used for the questionnaire, and it showed a
significant relationship between attitude towards in-service gifted training programmes and knowledge regarding the gifted and gifted education for both RTs, with a weak correlation, and GPTs, with a moderate correlation (see section 5.6.2). The interview analysis results using Pearson’s $r$ to find the significance of the correlation between these variables is summarised in table 6.8.

Table 6.8 Correlation coefficients between teacher attitude and knowledge by Pearson $r$

<table>
<thead>
<tr>
<th></th>
<th>Attitudes towards in-service training</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RT</td>
<td>GPT</td>
</tr>
<tr>
<td>Attitudes towards</td>
<td>$r$</td>
<td>$r$</td>
</tr>
<tr>
<td>in-service training</td>
<td>$0.447^*$</td>
<td>$0.419^*$</td>
</tr>
<tr>
<td>sig</td>
<td>0.024</td>
<td>0.033</td>
</tr>
<tr>
<td>n</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RT</td>
<td>GPT</td>
</tr>
<tr>
<td>r</td>
<td>$0.447^*$</td>
<td>$0.419^*$</td>
</tr>
<tr>
<td>sig</td>
<td>0.024</td>
<td>0.033</td>
</tr>
<tr>
<td>n</td>
<td>20</td>
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</tr>
</tbody>
</table>

*p<0.5

Table 6.8 shows a significant relationship between attitudes towards in-service gifted training programmes and knowledge regarding the gifted and gifted education for both groups: RTs, $r=0.447$, $p<0.05$, and GPTs, $r=0.419$, $p<0.05$. There was a significant positive relationship for RTs in a moderate correlation ($r=0.447$, between 0.00 and 0.30) and for GPTs in a moderate correlation ($r=0.419$, between 0.30 and 0.70). This indicated that RTs and GPTs who reported a high grade in terms of the attitude towards gifted training programmes variable (e.g. very positive attitude) are also likely (more so for GPTs) to have high grades in knowledge regarding the gifted and gifted education (e.g. high knowledge level). In the same way, RTs and GPTs who had low grades in knowledge regarding the gifted and gifted education (e.g. low knowledge level) tended (more so for GPTs) to have the same grade level in the attitude towards in-service training programmes variable.
It is apparent that there are similar results of the questionnaire and interview analysis regarding the correlation between attitude towards in-service gifted training programmes and knowledge regarding the gifted and gifted education, but with a slight difference in terms of the level of correlation between these variables for RTs since the questionnaire analysis showed a weak-level correlation whereas the interview analysis showed a moderate-level correlation for this group. It is assumed that the reason for the increase in this correlation for RTs from a weak to a moderate correlation was that the interview sample included more RTs who had received gifted training courses (50%) than the questionnaire sample (11.14%).

6.6 Summary of the Chapter

This chapter has provided qualitative analysis results of semi-structured interview data from RTs \(n=20\) and GPTs \(n=20\). The purposes of the semi-structured interview were to: (I) explore an in-depth understanding of RTs’ and GPTs’ attitudes towards different aspects of gifted education; and (II) check the validity of outcome results from the questionnaire to enhance triangulation. Data analysis began with descriptive statistics of RTs’ and GPTs’ biographical characteristics, including their districts and schools, highest qualification degree, receipt of gifted training courses or not and amount and number of training courses with regards to gifted education received.

Also, the researcher wished to check the validity of outcome results from the questionnaire to enhance the triangulation dimension of the results. The statistical results using an independent \(t\)-test and mean showed the triangulation of validity since the qualitative analysis results were similar to the quantitative analysis results in terms of teachers’ attitudes towards gifted pupils and their education, their knowledge regarding the gifted and gifted education and their attitude towards in-service gifted training programmes. Both groups of teachers hold a slightly positive attitude towards gifted pupils and their education, different and higher but insignificant for GPTs than for RTs. Furthermore, the \(t\)-test analysis revealed statistically significant differences between RTs and GPTs in overall knowledge, with a higher mean score for GPTs. In terms of their attitude towards in-service training programmes, the \(t\)-test showed that the mean score for GPTs (ambivalent attitude) was significantly higher than for RTs (very negative attitude).
In addition, using Pearson’s $r$, the statistical results showed the triangulation of validity between the qualitative and quantitative analysis results since there were similarities between their results in terms of the correlation between teacher attitudes towards gifted pupils and their education and teacher specialisation, teacher attitudes towards gifted pupils and their education and teacher knowledge regarding the gifted and gifted education and some biographical characteristics.

To explore an in-depth understanding of RTs’ and GPTs’ attitudes towards gifted pupils and their education, their knowledge regarding the gifted and gifted education and their attitudes towards in-service gifted training programmes, a TSA in six phases with regards to the semi-structured interview data was employed. The results of the TSA revealed more information to aid in understanding and the reasons for positive or negative teacher attitudes and high or low knowledge. The results also showed the voice of teachers regarding what they need to improve gifted education and gifted training programmes in Saudi Arabia, as well as the biggest obstacles for gifted education in Saudi Arabia.
CHAPTER SEVEN:
DISCUSSION

7.1 Introduction
The previous two chapters presented the quantitative and qualitative findings from the research. The quantitative chapter provided the results of statistical analysis of questionnaire data whereas the qualitative chapter provided the results of thematic saliency analysis (TSA) and statistical analysis of the semi-structured interview data to ensure triangulation and complementarity of methods. This chapter discusses the quantitative and qualitative findings in the light of existing literature. The discussion of the findings is divided into six sections that correspond to the quantitative and qualitative analysis chapters and main study questions. Each section begins with a presentation of quantitative and qualitative statistical analysis results to demonstrate the triangulation aspects of the findings. This is followed by an explanation of the TSA results of the semi-structured interview data to achieve meaningful integration of quantitative and qualitative statistical findings. The discussion also briefly refers to key studies from the literature and the findings’ implications for action where the research was conducted. The chapter concludes with a summary of the discussion.

7.2 Teachers’ attitudes towards the gifted and gifted education
The aim of this section is to discuss the findings regarding the following research questions (RQs):
RQ1. What are the attitudes of RTs and GPTs towards gifted pupils and their education in Saudi Arabia?
RQ2. Are there significant differences between RTs and GPTs in their attitudes towards gifted pupils and their education in Saudi Arabia?

The questionnaire and semi-structured interview were designed to identify and compare primary regular teachers’ (RTs’) and gifted programme teachers’ (GPTs’) attitudes
towards gifted pupils and their education. Initially, a principal components analysis (PCA) was undertaken to identify which attitude factors exist within the questionnaire data of the Teachers’ Attitudes towards the Gifted and Gifted Education Scale (TAGES). The results showed that seven factors were related to the attitudes of teachers regarding gifted pupils and their education: attitude towards enrichment programmes, attitude towards policy and the implications of Saudi gifted programmes, ideology towards special services, acceptance, needs and support, social value and ability grouping. To measure and compare RTs’ and GPTs’ attitudes towards each factor, and consequently define their general attitudes, participants were asked to rate their level of agreement with each item on the questionnaire and each factor of the semi-structured interview from strongly disagree to strongly agree using a Likert scale. To determine whether responses reflect a negative or positive attitude, the Gagné (1991) and Curtis (2005) recommendation was applied that, in the absence of norms, only general guidelines can be articulated. For individual scores, means below 2.00 indicate a very negative attitude; means between 2.00 and 2.75 indicate a slightly negative attitude; means above 4.00 indicate a very positive attitude; means above 2.75 through 3.25 reflect an attitude of ambivalence; and means above 3.25 through 4.00 indicate a slightly positive attitude.

The statistical analysis of the questionnaire data collected from RTs (n=700) and GPTs (n=233) and the semi-structured interview data collected from RTs (n=20) and GPTs (n=20) yielded several significant results. First, similar analysis of both methods, in terms of teachers’ attitudes towards the ‘needs and support factor’ and ‘social value factor’, revealed that both groups of teachers held very positive attitudes towards the gifted, with GPTs having a higher mean score. Second, similar analysis results of both methods, in terms of teachers’ attitudes towards the Kingdom of Saudi Arabia (KSA) ‘gifted programme policy and implications factor’, showed that both groups of teachers held very negative attitudes, with a higher mean score for GPTs towards this factor. Third, in terms of the ‘enrichment programme and ability grouping factors’, the results of statistical analysis for the semi-structured interview data showed that GPTs held ‘very’ positive attitudes and RTs held ‘slightly’ positive attitudes towards the enrichment programme, whereas both groups held ‘slightly’ positive attitudes towards ability grouping, with a higher mean for GPTs. This result differed slightly from the questionnaire analysis result in terms of the enrichment programme. The questionnaire
analysis showed that both groups of teachers held ‘slightly’ positive attitudes towards the ‘enrichment programme factor’. Fourth, in terms of ‘ideology towards special services and the acceptance factors’, the statistical analysis results for the semi-structured interview data showed that both groups held slightly positive attitudes towards these factors, with a higher mean for GPTs. This result differed slightly from the questionnaire analysis in terms of ‘ideology towards special education factor’. The questionnaire analysis showed that GPTs held attitudes of ‘ambivalence’ whereas RTs held ‘slightly’ negative attitudes. Although slight differences existed between the questionnaire and semi-structured interview in the statistical analysis for some factors, the average scores of the overall attitude scale of both methods indicated that the two groups differed in terms of mean, with a significantly higher mean for GPTs, and held slightly ‘positive’ attitudes towards gifted pupils and their education. However, it is apparent that to some extent the triangulation of attitude analysis results, obtained from the questionnaire and semi-structured interview as mixed methods of data collection, provides evidence of validity.

The present findings seem to be consistent with those of other research discussed in the literature review chapter (Moore, 2009; Mulraney, 1986; Braund, 1993; Semmel et al., 1991; Downing et al., 1997; Lummis, 1999; Lassig, 2003), which found that teachers generally held positive attitudes towards gifted students and gifted education. Furthermore, the different attitudes between RTs and GPTs towards gifted pupils and their education are consistent with the quantitative study by Donerlson (2008), which found that 40 RTs and 30 GPTs from urban elementary school districts differed significantly in their attitudes towards gifted pupils and their education, with more ‘favourable’ attitudes among GPTs. Furthermore, this finding contradicts Mills and Berry’s (1979) comparative study, which suggested that persons in closest day-to-day contact (RTs more than GPTs) with gifted individuals held the most ‘favourable’ attitudes.

To explore the philosophies and beliefs behind teachers’ attitudes and to understand the differences in attitude between the two groups, TSA of the semi-structured interview data was employed to analyse the responses of primary teachers. The interview guide (see Appendix A) was based on the literature review as well as the outcome results from the questionnaire analysis. Subsequently, a set of categories with sub-categories
(see previous chapter) was developed to investigate the responses to the interview questions. RTs’ and GPTs’ attitudes towards gifted pupils was the first category (sub-categories: ideology towards special services, acceptance, needs and support, social value) whereas their attitudes towards gifted pupils’ education was the second category (sub-categories: enrichment programme, ability grouping, policy and related implications).

I. Teachers’ attitudes towards gifted pupils: The TSA showed that more than three-quarters of both groups of RTs and GPTs questioned in the semi-structured interview generally held positive attitudes towards gifted pupils (sub-categories: ideology towards special services, acceptance, needs and support, social value). The data revealed four major themes in teacher responses through the TSA. These themes were used to categorise teachers’ responses. The four themes were: gifted pupil needs special attention (thirteen interviewees); importance of gifted pupil (eleven interviewees); duty of teacher (seven interviewees); development excellence (five interviewees). In contrast, less than one-quarter of RTs and GPTs in the semi-structured interview held a negative attitude towards the needs and support for special services to gifted pupil sub-categories. Two major themes emerged from the TSA of their responses: Public school is geared to average pupils (three interviewees) is the first theme. These three interviewees were RTs who had not attended gifted training courses. In conjunction with previous research (e.g. Smith & Chan, 1998; Nicely et al., 1980) and statistical analysis results for questionnaire and semi-structured interview data that showed a significant correlation between teacher attitude and teacher knowledge regarding the gifted and gifted education from one side and the effect of gifted training programmes in enhancing teacher knowledge from the other side, it seems that a possible explanation for the negative attitudes of these RTs was their lack of knowledge about the gifted and gifted education. Other possible explanations for their negative attitudes towards gifted pupils involve issues they reported regarding policy, policy implications, gifted provision, support and services. For example, ten interviewees felt they needed more support: “More time for teachers needs to be incorporated into this gifted programme” (RT-AS2); “including new model strategy …. in the Mawhiba programme” (RT-JZ2); “specialised courses for all staff in school” (RT-AB1); “communication among regular teacher, gifted teacher and parent of gifted pupil” (RT-R2).
The second theme was that the gifted pupil can academically achieve by himself (one interviewee). Unfortunately, many researchers (e.g. Bushnak, 2007; Tomlinson, 1999) have found similar results, suggesting that many people, including teachers and administrators, in our society still believe that gifted students can succeed without special programmes and assistance simply because they are “gifted”. For example, Tomlinson (1999) found that some teachers believed that gifted students can succeed well on their own and do not need modifications to the curriculum. One implication of the above result is that administrators should offer and encourage teachers to join gifted training courses to change their negative attitudes and misconceptions about gifted pupils. Indeed, prior studies have noted the importance of changing teachers’ negative attitudes towards gifted pupils through gifted training courses. Whitton (1997), for example, found strong positive shifts in teacher attitudes towards gifted pupils from negative to positive.

II. Teachers’ attitudes towards gifted education: Two major themes emerged through TSA of RT and GPT responses to the question regarding their attitudes towards the gifted pupils’ education category (sub-categories: enrichment programme, ability grouping, policy and related implications). Their attitude towards the gifted education programme was the first theme, whereas attitudes towards the gifted education policy and related implications was the second. The statistical analysis of the questionnaire and interview data showed positive attitudes among RTs and GPTs towards gifted education programmes in the KSA. In the same vein, the results of TSA of interviewees’ responses revealed that nearly half held positive attitudes towards gifted education programmes in the KSA. Those interviewees believe pull-out enrichment, ability grouping and acceleration as international strategies for gifted programmes are important in meeting gifted pupils’ needs; they further believe that these strategies should be applied to all primary schools, since only 800 primary schools in the KSA have implemented gifted education programmes. More than half of the interviewees showed positive attitudes towards gifted education programmes in the KSA, and less than half the RTs and GPTs showed negative attitudes towards gifted education programmes overall or towards some aspects of gifted programmes. The respondents who did show a negative attitude revealed that the KSA gifted programme does not include acceleration as a major strategy in addition to enrichment and ability grouping to meet gifted pupils’ needs or includes only
enrichment activities and ability grouping in the resources room, which has had a negative effect on gifted pupils in different aspects and practical academic achievement. Subsequently, four interviewees felt that the school-within-a-school approach could provide both special gifted programming and opportunities for gifted pupils to interact with regular pupils in ways that could be mutually and socially enriching.

The statistical analysis of the questionnaire and interview data showed very negative attitudes among RTs and GPTs towards gifted education policy and related implications. The results of TSA of RTs’ and GPTs’ responses in the semi-structured interview revealed that more than three-quarters held generally negative attitudes towards gifted education policy and related implications because of:

**Gap between policy and implications:** Half the interviewees pointed out that they believe a gap exists between policy and related implications of the KSA gifted programme in terms of:

a. Activities of gifted programme provision (Mawhiba): The provision of the KSA gifted policy used acceleration (compacting curriculum) as the main strategy outside of enrichment and ability grouping to meet gifted pupils’ needs, although some interviewees pointed out that the compacting curriculum activity did not apply in their schools and the enrichment activities and ability grouping only existed in the resources room. This result indicated that gifted pupils might be at risk; they may underachieve because of not having an acceleration provision and not implementing enrichment activities inside the regular curriculum and regular classroom. Attfield (2009) described in his report about developing gifted education in the United Kingdom that “some academics warn that enrichment programmes alone ‘are, even at best, potentially dangerous if not accompanied or followed by acceleration of placement in subject matter and/or grade’” (pp. 21-22). Indeed, the combination of these educational provisions is important because one provision will not cover all gifted pupils’ academic and emotional needs (Delcourt, Cornell & Goldberg 2007). According to many researchers (e.g. Henderson, 2007; VanTassel-Baska, 2005), every school should offer a range of basic differentiated
provisions related to the regular curriculum, including acceleration, ability grouping and enrichment, for gifted students to meet their unique learning styles, learning rates, interests, abilities and needs. For example, in the United Kingdom, primary schools offer a regular, varied and ongoing programme of enrichment, acceleration and grouping ability activities for gifted and talented pupils, including competitions, visits, productions, field trips, visiting experts, interest groups for art, drama, dance, sports training, book clubs, math investigations, chess, philosophy group, MFL or Latin classes after school and enrichment days – the timetable is temporary, special activities, grouping by ability in each subject (setting), mixed ability groups, grades skipping and early entrance (DCSF, 2009; Mönks & Pflüger, 2005).

b. The selection of gifted pupils: According to the KSA gifted policy, pupils must meet three of five criteria to be designated as gifted. However, three interviewees reported the selection of gifted pupils based on only two criteria. Three interviewees even said that tests were used to select gifted pupils at their school, but the tests are not suitable because of pupils’ limited reading, the long time required to complete the tests and the differences between the tests’ and the pupils’ cultures. This shorting of criteria in terms of number and quality can lead to an identification bias and failure to identify gifted pupils. Consequently, multiple assessments are important and should be incorporated into the identification process (Harrison, 2003; DECD, 2011). Multiple assessments can address the complexity involved in identifying gifted students and improve the reliability of such identification (Ross-Sisco, 2008). For example, in the United Kingdom, each school used multiple assessments to identify gifted and talented pupils based on (1) quantitative data including available test data and results of in-class/teacher assessment; (2) qualitative information, including staff assessment and nomination, pupil, peer and parent/carer nomination and examples of pupils’ work; and (3) rate of progress, including value-added data and reference to prior attainment/achievement (DCSF, 2009, p. 8).
c. Selection of GPTs: The Ministry of Education has established standards for selecting GPTs. The standards consist of several qualifying conditions, from general to specific, based on completion of three stages. Five RT and two GPT interviewees reported that the selection of GPTs does not meet the established standards. The most important element of any gifted education programme, and the most influential element with regards to learning and development of gifted students, is the teacher (Clark, 2008; Braggett, 1994). Failure to consider teachers’ personal and professional qualifications can put gifted pupils at risk of not receiving an appropriate education that accommodates their special needs. Clendening and Davies (1983) reported that it is the “teacher who breathes life into unit or course plans; who imbues words with meaning; who shapes thoughts into insight; who infuses the spirit of challenge and adventure into the day to day business of learning itself. It is the teacher who seizes the teachable moment, sparks interest, changes pace and emphasis to accommodate individual, group, and class reactions, and above all, brings that special excitement to learning that reflects the true artistry of creative teaching” (p. 27).

d. Improving RT knowledge and skills: According to KSA gifted policy, RTs must receive training courses in different aspects of giftedness and gifted education to acquire in-depth knowledge and professional skills to teach gifted pupils, although most RTs (69%) reported in the questionnaire that they have not received any in-service training courses. Research has suggested that many factors can determine the success of teachers in meeting gifted students’ needs, and teacher knowledge of gifted students and their education is the most important factor that contributes to teacher success (Silverman, 2000). Al-Ghamdi (2007) asserted that the lack of attention regarding teacher professional training in the KSA is one of the administrative obstacles facing gifted education. The lack of such skills will hinder the use of adequate and effective methods for identifying the gifted and providing a proper education for the gifted. This in turn will put the gifted at risk of not receiving an
appropriate education that accommodates their special needs in regular classrooms with heterogeneous pupils.

**Deficiencies in policy quality and depth of application:** More than half of the interviewees believed that the gifted education policy and related implications need more development in terms of:

a. Planning and management: Six interviewees felt that effective planning and management are two elements missing from gifted education in the KSA. It seems that administrators created a principles policy without accounting for a strategy to integrate these principles; this can lead teachers to use methods that are effective in reaching policy goals but ineffective in teaching gifted pupils. Thus, teachers involved in gifted education should be aware of the requirements, aims, desired outcomes and strategies of the policy.

b. Collaboration between the Ministry of Education and King Abdulaziz and his Companions Foundation for Giftedness and Creativity (KACGC): Four interviewees felt that the lack of communication between the Ministry of Education (General Administration and Gifted Care Centres) and KACGC resulted in clashes in policy and programme application. To avoid this problem, the KSA government should unify the efforts of the Ministry of Education and KACGC in gifted education and prevent the overlapping of their roles.

c. Methods for defining gifted pupils: Four interviewees felt that the policy and implications of criteria for selecting gifted pupils need to be changed since these criteria are designed for Western cultures. This would seem to be difficult because of the scarcity of gifted education in the KSA (started in 2001); however, in the short term, multiple assessments should be incorporated into the identification process (Harrison, 2003; DECD, 2011). Multiple assessments can address the complexity involved in identifying gifted students and improve the reliability of such identification (Ross-Sisco, 2008). These multiple assessments also need some systematic principles for use during the identification process for
gifted pupils. The United Kingdom, for example, in its primary schools applies multiple assessments to identify gifted and talented pupils in addition to some key principles for best identification: (1) It is a continuous process. Some pupils will be easy to identify at a very early age, while others will emerge later. Teachers should be continually ‘talent spotting’; (2) It should be based on a portfolio approach, utilising a range of qualitative, quantitative and value-added measures; and (3) identification should be systemised within the school so that it becomes part of school life, rather than a battery of specific tests at a particular time of year (DCSF, 2009, p. 8).

d. Extended policy and implications: Three interviewees felt that the policy and implications of the gifted programme need to be implemented from an early stage in primary school. Identification of gifted pupils should take place as early as possible because early identification will allow early intervention to enhance gifted students’ potential and minimise the chances of overlooking a gifted student who is identified later (DECD, 2011; Hodge & Kemp, 2006). According to Silverman (2007), giftedness can be identified at any age, although it can be observed at three years of age. The most appropriate time to test children for giftedness is between five and eight years old; after age nine, children may reach the limits of the test, and socialising effects can lead some gifted pupils to hide their ability. Thus, in the United Kingdom, for example, gifted and talented children under age five can be registered in primary school and provided with appropriate challenges to meet their individual abilities and interests (DCSF, 2009).

e. Need support: Ten interviewees said they need more support: “more financial support is needed” (GPT-AL1); “more time for teachers needs to be incorporated into this gifted programme” (RT-AS2); “improving the existing school structure and curriculums through the differentiation” (GPT-MC1); “offering care centres for the gifted in each city” (GPT-MD1); “including new model strategy …. in the Mawhiba programme” (RT-JZ2); “specialised courses for all staff in school” (RT-AB1); “communication among regular teacher, gifted teacher and parent of
It is wishful thinking to suppose that hardworking teachers, without clear policy and strategies to accommodate the policy, without sufficient content knowledge, without special knowledge of gifted children, without time to plan programmes and with limited assistance and funding from administrators and high numbers of pupils in the classroom, will be able to alter the educational situation for gifted children to any meaningful extent.

Overall, the results of quantitative and qualitative analysis showed that both groups of primary teachers in the KSA held ‘slightly’ positive attitudes towards gifted pupils and their education, with higher positive attitudes among GPTs than RTs, and that problems are not perceived to be with gifted education (enrichment programme, ability grouping, acceleration) itself but with gifted education policy in terms of implications and quality. Reis (1989) mentioned that the relationship between policy principles and actual practice is often poor, which can put gifted pupils at risk. Indeed, based on the above results and discussion, it is apparent that gifted pupils in the KSA might be at risk of not having their needs met because of a deficiency in KSA gifted education policy in school practice. These issues in KSA gifted education policy might have emerged due to the adoption of Western countries’ gifted education policies without consideration of the philosophies of the school and community, the characteristics and interests of the pupils, the teaching styles and strengths of the teachers, the lack of teachers’ personal and professional qualifications, parental concerns, the physical setting of the school, the current education system, different definitions of giftedness, insufficient identification methods, scarce resources and inadequate evaluation processes for putting policy into practice. These findings seem to be consistent with previous research findings. For example, Alqefari (2010) mentioned in his study to explore the effectiveness and weaknesses of gifted programmes in the KSA that the educational provision and policy for gifted pupils seem to be patchy and inadequate (e.g. applied gifted acceleration in only 5% of primary schools). Bushnak (2007) mentioned that the Ministry of Education and KACGC are still having trouble establishing certain standards and regulations for the organisation and development of gifted education to meet gifted and talented students’ needs. According to Muammar’s (2006) report, one of the challenges the KSA faces in the field of gifted education is the complexity of
the definition of gifted itself: "Especially now with the new conceptualization of giftedness as a multifaceted concept of multiple abilities...types of giftedness and services need to be prioritized on the basis of defensible criteria and rationale; hence a vision needs to be developed by the policy makers in Saudi Arabia to provide a road map of development for the education of the gifted" (p. 308). The Ministry of Education and KACGC must work together to devise a solid gifted policy document and guidelines for implementing it into practice that include purposes, definitions, identification methods, programme models and options, professional involvement and development, community and parent involvement, resources and curriculum and evaluation processes.

7.3 Teachers’ knowledge and training needs regarding the gifted and gifted education

The aim of this section is to discuss the findings regarding the following RQs:

RQ3. What is the level of RT and GPT knowledge regarding the gifted and gifted education in Saudi Arabia?

RQ4. Are there significant differences between RTs and GPTs in their knowledge level regarding the gifted and gifted education in Saudi Arabia?

RQ5. What are the needs of RTs and GPTs in terms of improving their knowledge regarding the gifted and gifted education in Saudi Arabia?

The questionnaire and semi-structured interview were designed to identify and compare primary RTs’ and GPTs’ overall knowledge levels, training needs regarding the gifted and perspective on gifted education in general. The primary RTs (n=700) and GPTs (n=233) were asked to rate perceived knowledge and training needs regarding the gifted and gifted education using the Teachers’ Knowledge and Training Needs Regarding the Gifted and Gifted Education Scale (TKTGES). This scale consists of 14 statement items (see Appendix A). These items are considered the most important about which primary teachers should have in-depth knowledge based on the National Association for Gifted Children and the Council for Exceptional Children (NAGC-CEC) standard knowledge and policy of gifted education of Saudi Arabia. These 14
items, or topics, were rated as having high or low teacher knowledge during the semi-structured interview with the RTs (n=20) and GPTs (n=20). To define teachers’ overall knowledge levels regarding the gifted and gifted education, both groups, using mixed methods, were asked to rate their level of knowledge of these items on a Likert scale.

The range of responses extended from lowest to highest to determine both groups’ knowledge and training needs regarding the gifted and gifted education. To illustrate discrepancies between perceived knowledge levels, need for in-service training courses and staff development for both groups, Weiss and Gallagher’s (1986) study was used; “[i]f the perceived ratings were higher than perceived knowledge level for a particular item (Topic), that item was identified (as low knowledge and) as a needed area for inservice training” and vice versa (p. 114).

The triangulation of knowledge analysis results, obtained from the questionnaire and semi-structured interview as mixed methods of data collection, provides evidence of validity (Dörnyei, 2007). The questionnaire and interview analysis yielded the same result in terms of teachers’ knowledge regarding the gifted and gifted education; there were significant differences in knowledge level between RTs and GPTs for all 14 knowledge items and overall knowledge, with significantly higher mean scores for GPTs than RTs. Furthermore, both instruments’ analysis yielded the same result in terms of the difference between RTs and GPTs regarding training needs and training type, but they showed a different result in terms of ranking from high to low the training needs for both teacher groups. This is likely because some GPTs and RTs did not report all 14 knowledge items (or reported only a few) when asked about their high or low knowledge level regarding the items. Thus, the RTs’ and GPTs’ ranking for training course needs was used since a high number of participants (n=933) is considered important in generalising the results.

The results showed that the RT group had lower means of perceived knowledge than training needs on 13 of the 14 items (topics) for both methods’ results. These 13 topics in order from highest to lowest training needs were: (1) theoretical models of giftedness; (2) application of a variety of instructional models/educational strategies appropriate for use with gifted pupils; (3) procedures and instruments for selecting gifted pupils; (4) ability to modify, adapt and design appropriate curricula units of
study for use with the gifted; (5) planning for the individual and group of gifted pupils; (6) collaborating with other teachers, staff and parents in supporting gifted pupils; (7) evaluating and assessing the individual gifted pupil and group progress; (8) classroom organisation for individualising and grouping activities; (9) language and communication strategies in developing gifted students; (10) classroom behaviour management techniques for gifted pupils; (11) making use of school and community resources to help gifted pupils; (12) characteristics and identification of gifted pupils; and (13) counselling for unique psychological and social-emotional needs of the gifted pupil. In contrast, the GPT group reported higher means of perceived knowledge than training needs in all 14 items (topics), although 3 topics were most frequently mentioned as topics for training received (knowledge below M=3): theoretical models of giftedness, ability to modify, adapt and design appropriate curricula units of study for use with the gifted and application of a variety of instructional models/educational strategies appropriate for use with gifted pupils. The smallest training need was on the use of information communication technology (ICT).

To understand the reasons behind the different levels of knowledge between RTs and GPTs and the higher means for the second group in all 14 knowledge items, overall knowledge, and different training needs, a TSA of interviewee responses was conducted. The responses showed different sources (training courses, internet, reading) of teacher knowledge regarding the gifted and gifted education, although all GPTs referred to training courses received as the main source of their knowledge regarding the gifted and gifted education; all of the GPTs (100%) had received in-service gifted training courses, whereas only 20% of the RTs referred to training courses received as a source of knowledge regarding the gifted and gifted education. Thirty-one per cent had received gifted training courses. The present findings seem to be consistent with previous findings (e.g. Copenhaver & McIntyre, 1992; Cheung & Phillipson, 2008; Hansen & Feldhusen, 1994; Ferrara, 2006; Reis & Westberg, 1994), suggesting that teacher knowledge of the gifted and gifted education is often shaped by the training courses received. For example, Hansen and Feldhusen (1994) conducted a study of 82 teachers of gifted students using both student questionnaires and observation of classroom teachers to assess teaching skills and classroom climate. The results indicated that trained teachers have more teaching skills and establish more positive classroom climates than untrained teachers. Thus, the effect of teachers’ gifted training
courses is an improvement in their knowledge of gifted students and in their education to meet gifted students’ needs. Despite the importance of teacher training courses for teacher knowledge regarding the gifted and gifted education, a low percentage of RTs (4%) and GPTs (5%) referred to their study at university as a source of their knowledge. This indicated a weakness in higher education in terms of including gifted education in the curriculum and policy and in teaching teachers about giftedness and gifted education.

Based on the strong link between teachers’ knowledge of gifted students’ needs and the training they have received regarding the gifted, it becomes clear that GPTs tend to be more knowledgeable about the needs of the gifted than RTs. Meyers (1984) stated that “[e]nrichment teachers knew more than regular teachers about what to do with the gifted for additional regular class enrichment and knew why certain modifications had to be made in their teaching” (p. 33). Comparing regular and gifted teachers’ knowledge about the gifted and gifted education, Pfeiffer (2003) found differences in educational practices for gifted students in heterogeneous classrooms because RTs lacked experience, training and knowledge of gifted students’ needs. Likewise, Siegle and Powell (2004), in their study to determine teacher accuracy in identifying gifted students, found that RTs rated students as gifted or non-gifted less accurately than GPTs. In the same vein, Westberg and Daoust (2004) and Tomlinson (1995) found that gifted students receive little differentiation by RTs in the instructional curriculum in heterogeneous classrooms. Tomlinson (1995) suggested that this result may be due to RTs being responsible for too much work, being less knowledgeable about differentiation or teaching in a school that does not apply a differentiation model.

The research results showed that RTs had low knowledge and high training needs in most aspects (13 of 14 topics) and low overall knowledge ($M=2.29$) regarding the gifted and gifted education due to the low number and amount of training courses received. However, RTs should now understand gifted students’ needs because of the recent trend in educational systems towards heterogeneous classrooms (enrichment programme, acceleration, ability grouping) in which gifted and regular students receive special instruction together using the same curriculum structure and class environment (Ehlers & Montgomery, 1999; Chipego, 2004). Jones (1983) stated that “in most programs, gifted children spend between 80 and 90 percent of their time with a regular
classroom teacher” (p. 26). Thus, it is apparent that some gifted students are disadvantaged and at risk in KSA primary schools since the results showed that RTs lacked knowledge about the needs of the gifted and their education. In this context, Renzulli (2004) argued that gifted students can quickly outdistance their teachers in subject matter competency; thus, teachers should develop classroom management skills. Likewise, VanTassel-Baska and Stambaugh (2005) reported that gifted students will be neglected if teachers are unaware of their needs. Curtis (2005) suggested that teachers without knowledge of gifted students and gifted education may have to depend on their existing attitudes. Smith and Chan (1996) conducted a questionnaire survey with teachers of six secondary schools and found that teachers have only moderate knowledge of the characteristics of gifted students and the issues that affect them. Likewise, Inan et al. (2009) used a questionnaire with 75 teachers to determine teacher knowledge of the characteristics of the gifted. The results indicated that teachers were confused and used a non-academic method to identify gifted children. Reis and Westberg (1994) observed third and fourth grade primary teachers and found no differentiated experiences in 84% of the instructional activities received by gifted students. Whitton (1997) examined the practices of 606 primary school teachers and found that they lacked knowledge regarding gifted students and made only minor modifications to accommodate them. Similarly, McKinnon's (1998) study of early childhood teachers found little awareness of the characteristics and needs of gifted students; these teachers were unable to differentiate the curriculum for gifted students. McKinnon suggested that most teachers lack knowledge because they have not participated in training programmes about gifted students’ needs.

Overall, it is apparent that to ensure that gifted pupils have every opportunity to succeed in life, to become reliable actors in their society, the Ministry of Education and KACGC in the KSA have adopted inclusive education (pull-out enrichment programme) for gifted pupils in primary school. This adoption was based on the American policy of No Child Left Behind (NCLB), which aimed to create the best educational opportunities for all United States children, including those with special needs such as gifted pupils. This policy required that both GPTs and RTs have high knowledge regarding the gifted and gifted education, receive appropriate gifted training programmes and meet other requirements (State Department of Education, internet reference, n.d.). The quantitative and qualitative analysis above revealed deficiencies
among RTs in terms of pre-service (4%) and in-service (11.14%) gifted training courses received and low overall knowledge ($M=2.29$). Therefore, adding the constraints of bureaucracy would only exacerbate the situation, and gifted pupils would be put at further risk. Thus, NCLB and generally inclusive education may be appropriate to implement in the KSA gifted education system only if both RTs and GPTs demonstrate high knowledge and receive appropriate pre-service and in-service gifted training programmes. Until RTs and GPTs achieve high knowledge, and in the short term, it seems the Ministry of Education may apply an exclusive education for all gifted pupils, although such an education is more appropriate for secondary and high school students. This assertion was supported by four interviewees who felt that the school-within-a-school approach can provide both special gifted programmes and opportunities for gifted pupils to interact with regular pupils in ways that can be mutually and socially enriching. For example, one interviewee mentioned that a “special class for gifted pupils is better to meet what they need than the current programme… I think the Ministry of Education needs to apply this programme” (RT-JZ1).

7.4 Teachers’ attitudes towards in-service gifted training programmes

The aim of this section is to discuss the findings regarding the following RQs:

RQ6. What are the attitudes of RTs and GPTs regarding in-service gifted training programmes in Saudi Arabia?

RQ7. Are there significant differences between RTs and GPTs in their attitudes regarding in-service gifted training programmes in Saudi Arabia?

The questionnaire and semi-structured interview were designed to identify and compare primary RTs’ and GPTs’ attitudes regarding in-service gifted training programmes. The questionnaire and interview analysis, using the $t$-test on both, yielded similar results in terms of the differences between RTs and GPTs in their attitudes and levels of attitudes regarding in-service gifted training programmes. To determine whether primary RTs and GPTs held negative or positive attitudes regarding gifted training programmes, the smaller Gagné (1991) and Curtis (2005) recommendation was used; in the absence of norms, only general guidelines can be articulated. For individual scores, means below
2.00 indicate a very negative attitude; means between 2.00 and 2.75 indicate a slightly negative attitude; means above 4.00 through 5.00 indicate a very positive attitude; means above 2.75 through 3.25 reflect an attitude of ambivalence; and means above 3.25 through 4.00 indicate a slightly positive attitude. The t-test analysis revealed statistically significant differences between RTs and GPTs in attitudes regarding in-service gifted training programmes, with an ambivalent attitude level for GPTs and a very negative attitude level for RTs.

As mentioned (see section 7.2.2), the quantitative analysis results showed that all GPTs have received gifted training courses while most RTs (88.86%) have not. Based on this, and to explore the reasons behind RTs and their very negative attitudes and GPTs and their ambivalent attitudes towards in-service gifted training programmes, as well as the reasons behind most RTs not receiving gifted training courses, purposive sampling was applied with TSA to the teachers’ responses. Subsequently, three groups of interviewees were identified. The first group contained 10 RT interviewees who had received a gifted training course. The second had 10 RT interviewees who had not received a gifted training course. The third included 20 GPT interviewees since all of them had received gifted training programmes. However, the TSA of their responses revealed three themes associated with their different reasons:

1-Number of gifted training courses received: The quantitative analysis results showed that all GPTs have received gifted training courses while most RTs (88.86%) have not. The TSA showed that nearly all of the RTs and three of the GPTs reported very negative attitudes towards in-service gifted training programmes due to not receiving or receiving low numbers of gifted training courses. Prior studies of teachers have noted the same problem with no or a low number of training courses received. Alqefari (2010), for example, found that more than 73% of staff in KSA primary schools had not taken any type of gifted training course. Likewise, Archambault et al. (1993) found that more than 60% of their sample of third and fourth grade teachers had not received gifted training courses. In the same vein, Al-Alola (2004) explained the issues of gifted education by suggesting that teachers need to be expert in gifted education but have received much less training than supposed. In their study of a sample of regular teachers, Clinkenbeard and Kollhoff (2001) found that most teachers have a limited amount of preparation, with only one course in special education, to teach gifted students. Those interviewees reported three drawbacks that hinder them in obtaining
the necessary gifted training courses: (a) high number of weekly class hours for RTs (24 hours); (b) Ministry of Education only offering gifted training courses to GPTs; (c) gifted care centres in some cities not offering many types or numbers of gifted training courses for GPTs. In contrast, 10 GPTs provided above average ratings of in-service gifted training courses because they had received a high number of such training courses.

2-Quality of gifted training courses: Eight GPTs provided average and below average ratings of gifted training programmes, five GPTs provided slightly positive ratings of gifted training programmes, three GPTs provided high positive ratings of gifted training programmes; five RTs who had received gifted training courses and four RTs who had not reported the quality of gifted training courses received and offered by the Ministry of Education as low due to the following reasons:

a) Gifted training courses tend to be theoretical rather than practical. Ten interviewees reported they received information during training courses but did not have an opportunity to practice what they learned.

b) Gifted training courses are not up to either gifted international standards (e.g. NAGC-CEC) or the KSA policy of gifted education. Six interviewees reported that gifted training courses tend to focus on general aspects of gifted education; they overlook the depth of gifted education and special areas required according to international standards and the gifted education policy of the KSA.

c) Professional trainers should be recruited to train teachers. Five interviewees claimed that many trainers in gifted training courses are from developing countries or do not have sufficient professional knowledge and skills to train them.

d) Available training courses are of generally low quality. Four RTs who had not received gifted training courses and one RT who had said they thought that most training courses, including gifted education training courses, in the KSA were of low quality.

Overall, it is apparent that statistically significant differences exist between RTs and GPTs in their attitudes regarding in-service gifted training programmes, with an ambivalent attitude level for GPTs and a very negative attitude level for RTs. The number of training courses received seemed to be the main reason for attitude
differences since all GPTs had received gifted training courses while most RTs (88.86%) had not. Furthermore, the main reasons for the very negative attitude of RTs and the ambivalent attitude of GPTs were the number of gifted training courses and the quality of gifted training courses. These results indicated the gaps between KSA gifted education policy and the implications of that policy. The results also indicated the generally low quality of training since most of the RTs had received no or only a few gifted training courses and some of the GPTs had received only a few gifted training courses. It was also apparent that teachers are aware of what their training programmes need and what has to change to improve their training programmes. Some interviewees reported their opinions about how gifted training should be improved:

1- Provide diversity in theory and practice of gifted training courses.
2- Make available more specialised courses in all aspects of giftedness and gifted education for all teachers.
3- Offer more diplomas, master’s degrees and scholarships to developed countries in the field of gifted education for all teachers, which can increase the number of local professional trainers in this area and improve gifted education overall.
4- Follow international standards such as NAGC-CEC while organising or establishing gifted training courses sponsored by the Ministry of Education.
5- Establish accreditation committees to ensure the quality of gifted training programmes available for teachers.

7.5 Relationship between teachers’ attitude and knowledge regarding the gifted and gifted education

The aim of this section is to discuss the findings regarding the following RQ: 
RQ8. What is the relationship between RTs’ and GPTs’ attitudes towards gifted pupils and their education and RTs’ and GPTs’ knowledge regarding the gifted and gifted education in Saudi Arabia?

The questionnaire and interview were designed to identify the correlation between teachers’ attitudes towards gifted pupils and their education and teachers’ knowledge regarding the gifted and gifted education. The questionnaire analysis results showed a
significant positive relationship between the TAGES (overall attitude) and TKTGES (overall knowledge) for RTs and GPTs, \( r = .221, p < 0.001 \), at the weak correlation level \((r = .221, \text{between}.00 \text{and}.30)\). This indicated that RTs and GPTs who had reported high grades in terms of TAGES (e.g. very positive attitudes) were also likely to have high grades in TKTGES (e.g. high knowledge level). In the same way, RTs and GPTs who had low grades in TKTGES (e.g. low knowledge level) tended to have the same grade level in TAGES (very negative attitude). The interview analysis results were the same as the questionnaire analysis results when using Pearson’s \( r \); there was a significant positive relationship between TAGES (overall attitude) and TKTGES (overall knowledge) for RTs and GPTs, \( r = .69, p < 0.001 \), at the moderate correlation level \((r = .69, \text{between}.30 \text{and}.70)\). This indicated that RTs and GPTs who had reported high grades in terms of overall attitude (e.g. very positive attitudes) are also likely to have high grades in overall knowledge (e.g. high knowledge level). In the same way, RTs and GPTs who had low grades in overall knowledge (e.g. low knowledge level) tended to have the same grade level in attitude (e.g. very negative attitude). It is apparent that there are similar results of the questionnaire and interview analysis regarding the correlation between attitude towards gifted pupils and their education and knowledge regarding the gifted and gifted education, but with a slight difference in terms of the level of correlation between the variables. It is assumed that the reason for the increase in this correlation for RTs from a weak to a moderate correlation was that the interview sample included more RTs who had received gifted training courses (50%) than the questionnaire sample (23%). The correlation between teachers’ attitudes and their knowledge indicated a positive effect of teacher knowledge on their attitudes but not the cause of positive or negative teacher attitudes (Muijs, 2008). Furthermore, the level of correlation between teachers’ attitudes and teachers’ knowledge in the weak and moderate categories means that other variables might have an effect on teachers’ attitudes.

The positive correlation between teachers’ attitudes and their knowledge seems to be consistent with other research which found that teachers with more knowledge about the gifted and gifted education held more favourable attitudes towards gifted pupils and their education (Tomlinson et al., 1996; Smith & Chan, 1998). In this context, Proctor (1967) attempted to determine the relationships among teachers’ knowledge of exceptional children (e.g. gifted), kind and amount of experience with exceptional children and attitudes towards regular classroom integration of exceptional children.
Findings indicated that personnel with extensive coursework pertaining to, and more knowledge of, exceptional children had significantly more favourable attitudes towards integration of exceptional children into the regular classroom than teachers with less coursework and knowledge. Likewise, Nicely et al. (1980) studied the relationships among understanding programme purposes, function of the programme to enrich or remedy and age of respondent as variables that could affect teacher attitude. The results revealed that the more teachers know about and understand the gifted programme, the more positive their attitudes will be towards gifted education. Another study by Bransky (1987) investigated administrators’ and teachers’ attitudes towards gifted students and their education in relation to their specific knowledge of full-time, self-contained gifted programmes. The results showed that administrators and GPTs held more positive attitudes than RTs. The findings support the notion that teachers with high knowledge about giftedness tend to have positive attitudes towards the gifted. Similarly, Copenhaver and McIntryer (1992) found that teachers who have more knowledge about gifted students have a more positive attitude towards them, and these teachers often participate in courses in gifted education. Furthermore, a recent study by Donerlson (2008) investigated the attitudes and beliefs of RTs and GPTs towards gifted students and their education. The results indicated significant differences in the attitudes and beliefs of RTs and GPTs regarding gifted students and gifted education. The author suggested that the differences between the two groups of teachers could be explained by RTs’ lack of experience with and knowledge of gifted students’ needs.

Teacher knowledge of the gifted and gifted education, based upon previous research, is often shaped by training courses received. This is supported by existing research (e.g. Copenhaver & McIntyre, 1992; Cheung & Phillipson, 2008; Hansen & Feldhusen, 1994; Ferrara, 2006; Reis & Westberg, 1994). Based on the link between teachers’ knowledge of the gifted and gifted education and teachers’ attitudes towards gifted pupils and their education, it suggests that teachers tend to hold positive attitudes if they have received appropriate gifted training programmes that should be offered by the Ministry of Education. According to Bolarn (2002), gifted training programmes need to include “education; training; learning and support activities aimed to promote teachers’ knowledge; skills; and values changes in teaching to more effective education of gifted students; and a balance between individual, school and national needs” (pp. 103-104).
7.6 Biographical characteristic factors predicting teachers’ attitudes and knowledge regarding the gifted and gifted education

The aim of this section is to discuss the findings regarding the following RQs:

RQ9. What biographical characteristic factors of RTs and GPTs predict their attitudes towards gifted pupils and their education in Saudi Arabia?

RQ10. What biographical characteristic factors of RTs and GPTs predict their knowledge regarding the gifted and gifted education in Saudi Arabia?

A quantitative analysis using regression was conducted to predict the TAGES total score and the TKTGES total score, which reflect the general attitude and knowledge of both groups of teachers (RTs and GPTs) towards the gifted and gifted education based on biographical characteristic predictor factors, and to determine which predictor factors have a significant relationship in influencing/explaining the TAGES and TKTGES total score. These biographical characteristic predictor factors were age, years of teaching experience, highest qualification degree, having a family member enrolled in a gifted programme, perceptions of self as gifted, having received gifted training courses, number of training courses received, number of hours of training courses received and specialisation (RT or GPT). In terms of qualitative analysis, these two main questions were excluded from the collected interview data because some independent variables required interviewees to answer questions considered sensitive in the KSA culture; during the pilot study conducted to test the interview approach, some interviewees avoided answering or refused to answer two biographical characteristic questions related to having a family member enrolled in a gifted programme and perceiving oneself as gifted. Even though the interview did not address these questions, the results of the questionnaire and the interview were compared, and in each section the relationship between other biographical characteristic variables and independent variables was examined to determine the level of triangulation to ensure validly.

The quantitative analysis for questionnaire data showed that two predictor factors (specialisation of teacher and perception of self as gifted) demonstrated a significant positive correlation and significant effects on the TAGES total score ($p<0.01$). The interview analysis using correlation coefficients supported the correlation between teachers’ specialisation and their attitude towards gifted pupils and their education,
with perception of self as gifted excluded from the analysis because of the cultural sensitivity mentioned earlier. The quantitative analysis showed that the stronger predictor was the specialisation of teacher ($\beta=.188$). In contrast to previous research, however, no known study has attempted to examine specialty as a predictive variable for teacher attitude towards gifted education although many studies’ (e.g. Mills & Berry, 1979; Bransky, 1987; Pfeiffer, 2003; Donerlson, 2008) findings further support the idea of the difference between RTs’ and GPTs’ attitudes based on teacher specialty.

The second predictor variable of teachers’ attitude towards gifted pupils and their education was perception of self as gifted ($\beta=.154$), with a positive significant relationship and influences. Whether teachers’ perception of themselves as gifted affects their attitudes towards gifted students and gifted programming has been examined by several researchers, although their results have been mixed. Begin and Gagné (1994a) found that respondents who viewed themselves as gifted have more positive attitudes towards gifted students than other groups. Zietlow (1998) compared gifted and regular education teachers’ perceptions and practices associated with high-level thinking and the needs of gifted students. Results of the investigation indicated that teachers’ interest in working with gifted students, as well as their perceptions of their own intelligence, did have significant effects on attitudes towards gifted students. In contrast, Chipego (2004), in a study of 392 elementary classroom teachers’ attitudes towards gifted education, found no relationship between teachers’ attitudes and their self-perception of being gifted. Similarly, McCoach and Siegle (2007), in their investigation of the attitudes of RTs and GPTs found that teachers’ self-perceptions of being gifted were unrelated to their attitudes towards gifted education. Thus, it appears the present results support Begin and Gagné (1994a) and Zietlow (1998), who found that teachers’ self-perceptions of being gifted is considered a significant predictor and contributes to the significant positive relationship of teacher attitude towards gifted students and their education.

The quantitative analysis showed that these two variables (specialisation of teacher and perception of self as gifted) as predictor variables together can account for, or explain, only 7% of the variation in teachers’ attitudes towards the gifted and gifted education total score. The present finding seems less than expected since Begin and Gagné (1994b) found that two biographical variables (socioeconomic status and contact with
giftedness) were statistically significant and explained about 22% of the variance in teachers’ and parents’ attitudes towards gifted students and gifted education. Therefore, it is apparent that other variables must also have an influence and explain the other 93% of the variation in teachers’ attitudes towards the gifted and gifted education total score. These other predictor variables need to be defined and investigated in future studies to achieve a better understanding of the determinants’ direction and intensity of their attitudes towards the gifted and gifted education.

On the other hand, five predictor variables (specialisation of teacher (RT or GPT), received gifted training courses or not, number of training courses received, have family member enrolled in gifted programme and highest qualification degree earned) demonstrated significant correlations and effects on the TKTGES total score. However, this result has not previously been described. The reason is that teacher knowledge is a relatively new area in educational research that has attracted attention for only the last 20 years or so (Lam & Law, 2008; McGurk, 2006). This dearth of research is even more pronounced when teacher knowledge and predicted knowledge about gifted students and gifted education is reviewed. According to Dvorak (2007), a surprising gap in the literature revealed that there is little research and only vague standards to describe teachers’ knowledge related to gifted education; this is due to the many operational conceptions of teacher knowledge, which produce several challenges in addressing this topic in research (Munby et al., 2001).

The strongest predictor factor, received gifted training courses or not, was ($\beta=.243$), with a positive significant relationship ($b=.410$, $p<0.01$). The second strongest predictor factor was the specialisation of teacher ($\beta=.231$), with a positive significant relationship ($b=.424$, $p<0.01$). The third strongest was number of training courses received ($\beta=.118$), with a positive significant relationship ($b=.060$, $p<0.01$). The fourth strongest was having a gifted family member enrolled in a gifted programme ($\beta=.073$), with a positive significant relationship ($b=.117$, $p<0.05$). The final predictor factor was the highest qualification degree earned ($\beta=.063$), with a positive significant relationship ($b=.091$, $p<0.05$). The effects of teachers’ specialty, received gifted training courses or not and number of training courses received on teachers’ knowledge were discussed in previous sections. A possible explanation of the effect of having a gifted family member enrolled in a gifted programme on teachers’ knowledge is an increase in
knowledge of the gifted and gifted education that results from the close personal experience. Begin and Gagné (1994a) found that those teachers who have a friend or family member who is gifted tend to have a slightly more positive attitude towards gifted students and their education as a result of their close contact experience with giftedness. The possible interference of the effect of the highest qualification degree earned on teachers’ knowledge can be seen in Forum’s (1980) study. Forum investigated teachers’ knowledge and attitudes towards intellectually gifted students and found that teachers who were older and had additional degrees had greater knowledge of gifted students and greater interest in in-service gifted education.

The quantitative analysis showed that these five variables as predictor variables together can account for, or explain, only 27.1% of the variation in the TKTGES total score. Therefore, it is apparent that other variables must also have an influence and explain the other 72.9% of the variation in teachers’ knowledge regarding the gifted and gifted education total score. These other predictor variables need to be defined and investigated in future studies to achieve a better understanding of the determinants’ direction and intensity of knowledge regarding the gifted and gifted education.

7.7 Summary of the Chapter

This chapter discusses the quantitative and qualitative findings in the light of existing literature. The discussion of the findings is divided into six sections that correspond to the quantitative and qualitative analysis chapters and main study questions. Each section begins with a presentation of quantitative and qualitative statistical analysis results to demonstrate the triangulation aspects of the findings. This is followed by an explanation of the TSA results and analysis of the semi-structured interview data to achieve meaningful integration of quantitative and qualitative statistical findings. These quantitative findings are as follows: Both groups of primary teachers in the KSA held overall slightly positive attitudes towards gifted pupils and their education, with higher positive attitudes among GPTs than RTs; significant differences exist between RTs and GPTs in overall knowledge and training needs regarding the gifted and gifted education, with higher knowledge in all gifted knowledge topics for GPTs and high training needs for RTs in most (13 of 14) gifted knowledge topics; significant differences exist between RTs and GPTs in their attitudes regarding in-service gifted
training programmes, with an ambivalent attitude level for GPTs and a very negative attitude level for RTs; significant positive relationships exist between teacher attitudes (TAGES) and teacher knowledge (TKTGES) regarding the gifted and gifted education in the weak to moderate levels of correlation; two biographical characteristic factors demonstrated significant positive correlations and effects on the TAGES total score; and five biographical characteristic factors demonstrated significant positive correlations and effects on the TKTGES total score. The discussion of qualitative results provides validity evidence for the quantitative results and illustrates the reasons for positive or negative attitudes and high or low knowledge of teachers, as well as high or low need for in-service gifted training courses.
CHAPTER EIGHT:
SUMMARY AND CONCLUSIONS

8.1 Introduction

The aim of the current study was to explore the attitudes, knowledge and training needs of regular teachers (RTs) and gifted programme teachers (GPTs) towards gifted primary pupils and towards gifted education in general by seeking to establish the strength of the correlation between teachers’ attitudes and knowledge. Moreover, the study aimed to identify associated and predictive variables regarding specific attitudes and knowledge. A combination of quantitative and qualitative research strategies was used to increase the reliability and validity of the results. The key findings are discussed in the next section, followed by discussion of contributions to knowledge, recommendations regarding the implications of the findings and suggestions for future research.

8.2 The key findings

1- Both groups of primary teachers in the Kingdom of Saudi Arabia (KSA) held overall ‘slightly’ positive attitudes towards gifted pupils and their education, with higher positive attitudes among GPTs than RTs. Both RTs and GPTs held positive attitudes towards gifted pupils in terms of social value, acceptance, needs and support, but offering special services to the gifted received more support from GPTs. Furthermore, both groups held positive attitudes towards gifted education, with more support from GPTs, but negative attitudes towards the Saudi gifted policy and related implications, with RTs having more negative attitudes, due to the gap between policy and implications, deficiencies in policy quality and deficiencies in depth of application. These issues facing Saudi gifted policy and related implications indicated that gifted pupils can be at risk of not having their needs met. It seems the KSA gifted policy was adopted from Western countries’
gifted education policies without consideration of the philosophies of the school and community, characteristics and interests of the pupils, teaching styles and strengths of the teachers, lack of teachers’ personal and professional qualifications, parental concerns, the physical setting of the school, the current education system, different definitions of giftedness and varying identification methods, resources and evaluation processes related to implementing policy into practice (key findings regarding Research Question 1 (RQ1) and RQ2).

2- There were significant differences between RTs and GPTs in overall knowledge and training needs regarding the gifted and gifted education, with higher knowledge in all 14 gifted knowledge items for GPTs and high training needs for RTs in 13 of 14 gifted knowledge items. The main reason for these finding was the lack of pre-service and in-service gifted training courses received by RTs versus GPTs, who all received in-service gifted training courses. This finding indicated that gifted pupils are at risk of not having their needs met in regular classrooms since most RTs showed low knowledge and indicated more training needs regarding the gifted and gifted education. It seems that the KSA, via the Ministry of Education and King Abdulaziz and his Companions Foundation for Giftedness and Creativity (KACGC), has adopted inclusive education (pull-out enrichment programme) based on the American policy, No Child Left Behind (NCLB) (State Department of Education, internet reference, n.d.), aimed to create the best educational opportunities for all pupils with special needs, including gifted pupils, without taking into consideration that inclusive education requires both GPTs and RTs to have high knowledge regarding the gifted and gifted education and to have received appropriate gifted training programmes to meet gifted pupils’ needs (key findings regarding RQ3, RQ4 and RQ5).

3- There were significant differences between RTs and GPTs in their attitudes regarding in-service gifted training programmes, with an ambivalent attitude level for GPTs and a very negative attitude level for RTs. Nearly all of the RTs and three GPTs reported very negative attitudes towards in-service gifted training programmes due to not receiving or receiving low numbers of gifted training courses, whereas other teachers showed negative or ambivalent attitudes due to the low quality of gifted training courses received and offered by the Ministry of
Education. These findings again indicated that there are gaps between the KSA gifted education policy and implications of this policy since most of the RTs and some of the GPTs had not received or had received only a low number of gifted training courses. Furthermore, positive correlations between teacher attitudes towards in-service gifted training programmes and teacher knowledge exist because the results showed that the number of training courses received can lead some teachers to hold positive attitudes towards gifted training courses (key findings regarding RQ6 and RQ7).

4- There were significant positive relationships between teacher attitudes and teacher knowledge regarding the gifted and gifted education in the weak to moderate levels of correlation. This indicated that RTs and GPTs who had reported high grades in terms of Teachers’ Attitudes towards the Gifted and Gifted Education Scale (TAGES) (e.g. very positive attitudes) were also likely to have high grades in Teachers’ Knowledge and Training Needs about the Gifted and Gifted Education Scale (TKTGES) (e.g. high knowledge level). In the same way, RTs and GPTs who had low grades in TKTGES (e.g. low knowledge level) tended to have the same grade level in TAGES (very negative attitude). The correlation between teacher attitudes and teacher knowledge indicates the positive effect of teacher knowledge on their attitudes but not the cause of teachers’ positive or negative attitudes. Furthermore, the level of correlation (weak to moderate) between teacher attitudes and teacher knowledge means that other variables might affect teachers’ attitudes (key findings regarding RQ8).

5- Two biographical characteristic factors demonstrated a significant positive correlation and effects on the TAGES total score. The stronger predictor was the specialisation of teacher. This finding supported the idea of differences between RTs’ and GPTs’ attitudes on the basis of their specialty. Based on the effect of gifted training programmes received and knowledge of giftedness on teacher attitudes, it appears that non-specialised teachers (RTs) have less favourable attitudes towards gifted students and gifted education than specialised teachers (GPTs). The second predictor variable was perception of self as gifted, with a positive significant relationship and influences. In contrast to previous research, however, it appears the present results support Begin and Gagné (1994a) and
Zietlow (1998), who found that teachers’ self-perception of being gifted is considered a significant predictor and leads to a significant positive relationship of teacher attitude towards gifted students and their education. The quantitative analysis showed that these two variables (specialisation of teacher and perception of self as gifted) as predictor variables together can account for, or explain, only 7% of the variation in teachers’ attitudes towards the gifted and gifted education total score. The present finding seems less than expected since Begin and Gagné’s (1994b) study found that two biographical variables (socioeconomic status and contact with giftedness) were statistically significant and explained about 22% of the variance in teachers’ and parents’ attitudes towards gifted students and gifted education. Therefore, it is apparent that other variables must also have an influence and explain the other 93% of the variation in teachers’ attitudes towards the gifted and gifted education total score (key findings regarding RQ9).

6- Five biographical characteristic factors demonstrated significant positive correlations and effects on the TKTGES total score. The strongest predictor factor was received gifted training courses or not, followed by specialisation of teacher, number of training courses received and having a gifted family member enrolled in a gifted programme; the final factor was the highest qualification degree earned. These five variables as predictor variables together can account for, or explain, only 27.1% of the variation in the TKTGES total score. Therefore, it is apparent that other variables must also have an influence and explain the other 72.9% of the variation in teachers’ knowledge regarding the gifted and gifted education total score (key findings regarding RQ10)

8.3 Contributions to knowledge

Based on the discussion of the key findings of the study, several suggestions are provided. These contributions are intended to enrich the literature regarding teachers’ attitudes and knowledge of the gifted and gifted education.

1- The study findings showed that both groups of primary teachers in the Kingdom of Saudi Arabia (KSA) held overall ‘slightly’ positive attitudes towards gifted
pupils and their education, with higher positive attitudes among gifted programme teachers than regular teachers. The present findings seem to be consistent with most previous research (e.g. Moore, 2009; Mulraney, 1986; Braund, 1993; Semmel et al., 1991; Downing et al., 1997; Lummis, 1999; Lassig, 2003), which found that teachers generally hold positive attitudes towards gifted students and gifted education, but there is a difference in the attitudes of gifted programme teachers and regular teachers.

2- Although researchers have examined different teacher biographical characteristics to predict their attitudes towards the gifted and gifted education, none of the previous research has attempted to predict teachers’ perceived knowledge regarding the gifted and gifted education. The findings suggest that the biographical characteristics of teachers can predict their perceived knowledge with more accuracy in terms of explanation and number of predictors than their attitude.

3- Through the study of primary teachers’ knowledge regarding the gifted and gifted education and how to predict their knowledge, this study helps to fill a gap in the teacher knowledge literature because research with regards to these aspects of education research is scant. McGurk (2006) reported that teacher knowledge and how it develops is “…a relatively new line of inquiry in educational research, with most of the work in this area published in the last twenty years” (p. 11).

4- Reis (1989) mentioned that the relationship between policy principles and actual practice is often poor, which can put gifted pupils at risk. The findings support this notion since both groups of teachers held positive attitudes towards gifted education, with more support from gifted programme teachers. However, they held negative attitudes towards the Saudi gifted policy and related implications, with regular teachers having more negative attitudes. Problems are not perceived to be in gifted education (enrichment programme, ability grouping, acceleration) itself, but with gifted education policy in terms of implications and quality.
5- Most previous research (e.g. Copenhaver & McIntyre, 1992; Cheung & Phillipson, 2008; Hansen & Feldhusen, 1994; Ferrara, 2006; Reis & Westberg, 1994) has suggested that teacher knowledge of the gifted and gifted education is often shaped by the training courses received. The study findings support this suggestion since the findings revealed significant differences between the groups of teachers in overall knowledge and training needs regarding the gifted and gifted education, with higher knowledge on all 14 gifted knowledge items for gifted programme teachers and high training needs for regular teachers on 13 of 14 gifted knowledge items. The main reason for these findings was the lack of pre-service and in-service gifted training courses received by regular teachers versus gifted programme teachers, who all received in-service gifted training courses.

8.4 Recommendations

Based on the discussion and key findings of the study, several suggestions are provided. These recommendations are intended to improve educational standard practices and policies for the gifted.

1- As a first step, the Ministry of Education and KACGC need to work together with all those who are involved in educating gifted students to determine a solid gifted policy that considers the latest international developments in theory, procedures to follow in assessing a gifted student’s needs, how discriminatory practices can be redressed and guidance for schools on policy implementation. The policy should spell out the role of governments, communities, parents, teachers and collaborators and, further, include a statement of aims, definitions, identification methods for gifted students and gifted programme teachers, programme models and options, professional involvement, development and evaluation. The government of the United Kingdom, for example, according to Attfield (2009), recommends developing an effective policy for gifted and talented students that contains policy rationale and aims, definitions, identification, provision, organisational issues, transfer and transition, resources, monitoring and evaluation. In the second step, administrators should
ensure that all those who are involved in gifted education are aware of the requirements of the policy. Documentation, information and sufficient resources should be made readily available. To ensure policy efficacy and effectiveness, the final step required from administrators is to evaluate the success of the policy and implications based on standardised measures. Programme evaluation should follow several patterns and include evaluation of the acquisition of specific knowledge and skills related to gifted student attitudes, gifted student behaviours, gifted student products, curriculum materials and attitudes and perceptions of peers, teachers, principals and parents, and their knowledge.

2- Administrators must be certain that every teacher involved in gifted education has accurate knowledge about the gifted and gifted education, as well as the skills needed to meet the special educational needs of gifted students, sensitivity to the vulnerability of gifted students to emotional, social and motivational problems, the ability to differentiate instruction and positive attitudes about the ability of schools to effectively provide for the needs of gifted students through collaborative use of all resources. This is required to establish regular in-service gifted training programmes based on international standards such as NCATE and adapted to fit the KSA educational system and its needs. According to Bolarn (2002), gifted training programmes need to include “education; training; learning and support activities aimed to promote teachers’ knowledge; skills; and values changes in teaching to more effective education of gifted students; and a balance between individual, school and national needs” (pp. 103-104). These in-service gifted training programmes need to be provided to school personnel (e.g. gifted programme teachers, regular teachers, school counsellors) and time for training of RTs should be guaranteed; these programmes should be funded by the Ministry of Education and provide diversity in theory and practice of gifted training courses. In addition, higher education should offer more diplomas, master’s degrees and scholarships to developed countries in the field of gifted education for all teachers, which can increase the number of local professional trainers and improve gifted education overall. It would be an advantage for all pre-service teachers to receive pre-service training programmes in special education and inclusive practices since this is the best time to address teachers’ concerns and possibly modify their
negative attitudes about gifted students and their education. To evaluate the strengths and weaknesses of pre-service and in-service gifted training programmes, administrators should develop an evaluation system for implementation during and after the programme.

3- The three most commonly used strategic models include enrichment, ability grouping and acceleration. The findings showed that the pull-out enrichment programme in Saudi primary schools is not expected to meet the needs of gifted pupils unless it includes an acceleration model to offer more inclusion and a wider array of services. The reason is that an acceleration model for the gifted is likely to focus on learning specific bodies of content or be product-oriented to appropriately challenging curriculum via, for example, curriculum compacting, self-paced instruction and advanced placement. In contrast, an enrichment model in creative thinking through different strategies supplements, rather than supplants, basic curriculum such as independent projects and problem-solving strategies. Thus, it is recommended that administrators in the KSA identify and apply a balance of these programme options based on gifted students’ needs to achieve gifted student and inclusive educational success.

4- Recent trends in education have shifted from separate programmes for children identified as needing differentiated programmes to inclusive classrooms where students with diverse abilities receive specialised instruction together in the regular classroom. While the KSA policy of inclusion means that the composition of classes is inclusive of a wide range of needs and abilities, including gifted students, it is debatable whether gifted students’ needs can be met when the findings showed that regular education teachers have not received the formal training required to work with special needs students. RTs have low special education knowledge and low skills to cater appropriately to a range of children with special needs; there is a high number of students in regular classrooms and curriculum materials but not enough time to meet each student’s needs, and RTs lack the time to receive in-service gifted training programmes. Therefore, it is recommended that administrators in the KSA resolve these obstacles associated with inclusive education so that exclusive education (special school within school) can be applied for gifted pupils as a permanent
solution to meet their needs. The school-within-a-school approach can provide both special gifted programming based on high knowledge and skills of gifted programme teachers and also opportunities for gifted pupils to interact with regular pupils in ways that can be mutually and socially enriching.

5- It is recommended that gifted pupils in the KSA be identified as early as possible because early identification will allow early intervention to enhance gifted students’ potential as well as minimise the chances of overlooking a gifted student who is identified later (DECD, 2011; Hodge & Kemp, 2006). According to Silverman (2007), giftedness can be identified at any age, although it can be observed at three years of age. The most appropriate time to test children for giftedness is between five and eight years old; after age nine, children may reach the limits of the test, and socialising effects can lead some gifted students to hide their ability.

8.5 Recommendations for future research

Many areas emerged during this study that are worthy of further investigation. Future research in the field of education should be directed to the areas listed below:

a. The role of administrators and teachers in using differentiated instruction, identification procedures, and the effectiveness of various elements of the provision of gifted education should be investigated.

b. This study should be replicated with primary, secondary and high school male and female gifted and regular education teachers to determine if the findings are similar or different and to allow for a comparison across teacher gender, level, and specialisation.

c. Research is needed to study the efficacy and attitudes of in-service teachers regarding pre-service gifted education development in higher education, which can positively affect teacher attitudes and practices in inclusive education.
d. Research into other significant predictors of the attitudes and the knowledge of people involved in gifted education (e.g. teachers, parents, students, administrators) towards the gifted and gifted education remains to be explained because there is significant variance among variables (e.g. political and cultural values).

e. Future research should pay close attention to gifted students’ and their peers’ perspectives concerning gifted programme education, methods of identification and teacher characteristics.

f. Future research should be conducted on parents of gifted students to determine their attitude and knowledge regarding the gifted and gifted education so as to enhance services to gifted students inside and outside school.
BIBLIOGRAPHY


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APPENDIX A

This Appendix contains English and Arabic copies of the instruments employed to collect quantitative and qualitative data. They are, in order of presentation, the Teacher Questionnaire and the Semi-Structured Interview instrument.
**Instructions:** The following scale relates to attitudes towards gifted pupils and their education. We would like to know the extent of your agreement or disagreement with each of the following statements. There are no correct or incorrect answers. Please rate how strongly you agree or disagree with the following statements. In answering each question, tick the appropriate answer by putting (√) in the column of your choice. Please answer as spontaneously as possible.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither agree nor disagree</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Our schools should offer special education services for the gifted.</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
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</tr>
<tr>
<td>2. I would very much like to be considered as a gifted person.</td>
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<td>[ ]</td>
<td>[ ]</td>
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<tr>
<td>3. Pupils with learning difficulties have the most need of special education services.</td>
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<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>4. Special programs for gifted pupils have the drawback of creating elitism.</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
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<tr>
<td>5. Gifted pupils are a valuable resource for our society.</td>
<td>[ ]</td>
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<td>[ ]</td>
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</tr>
<tr>
<td>6. We have a greater moral responsibility to give special help to pupils with learning difficulties than to gifted pupils.</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>7. The leaders of tomorrow’s society will come mostly from the gifted of today.</td>
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<td>[ ]</td>
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<tr>
<td>8. A pupil who has been identified as gifted has more difficulty in making friends.</td>
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<td>[ ]</td>
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<td>[ ]</td>
</tr>
<tr>
<td>9. Gifted pupils do not need special education service.</td>
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<td>[ ]</td>
</tr>
<tr>
<td>10. When the gifted are put in special classes for some hours, the other pupils feel devalued.</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>11. By offering special educational services to the gifted, we prepare the future members of the profession.</td>
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<td>[ ]</td>
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<td>[ ]</td>
</tr>
<tr>
<td>12. I’m satisfied about selection criteria and process of gifted pupils in our primary schools.</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
13. An enriched gifted program can help gifted children to completely develop their abilities.

14. Average pupils are the major resource of our society, so they should be the focus of our attention.

15. I’m satisfied about gifted services in our primary schools.

16. The enrichment programme for gifted students makes them more motivated to learn.

17. By separating pupils into gifted and other groups, we increase the labelling of pupils as strong-weak, good-less good, etc.

18. All special programs for the gifted should be abolished.

19. Often, gifted pupils are rejected because people are envious of them.

20. Enriched school programs respond to the needs of gifted students.

21. I’m satisfied about selection criteria and process of gifted programme teachers in our primary schools.

22. Some teachers feel their authority is threatened by gifted pupils.

23. It is unfair to deprive gifted students of the enrichment which they need.

24. Whatever the school program, the gifted will succeed in any case.

25. Gifted pupil is often unsociable.

26. The best way to meet the needs of the gifted is to put them in special classes for some hours.

27. Ability grouping provides an effective method to provide instruction to pupils of different ability or skill levels.

28. The gifted need special attention in order to fully develop their talents.

29. Our schools are already adequate in meeting the needs of the gifted.

30. In order to progress, a society must develop the talents of gifted individuals to a maximum.

31. I’m satisfied about gifted programme activities in our primary schools for gifted pupils.
(Questionnaire section two) Teachers’ Knowledge and Training Needs about the Gifted and Gifted Education Scale (TKTGES).

**Instructions:** The following statements concern your knowledge of gifted pupils and gifted education. We would like to know the extent of your knowledge in this field. There are no correct or incorrect answers.

**Please rate your knowledge of giftedness using a scale** of 1 to 5, with 1 being the lowest and 5 being the highest by circling (O) the appropriate response.

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 Lowest</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 highest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Characteristics and identification of gifted pupils.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Procedures and instruments for selecting gifted pupils.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Theoretical models of giftedness (e.g. Bloom, Guilford, Renzulli models, William’s strategies).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Application of a variety of instructional models/educational strategies appropriate for use with the gifted pupils (e.g. acceleration, enrichment, ability grouping)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Ability to modify, adapt, design appropriate curricula units of study for use with the gifted.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Classroom organization for individualizing and grouping activities.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Classroom behaviour management techniques for gifted pupils.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Planning for the individual and group of gifted pupils.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Evaluating and assessing the individual gifted pupil and group progress.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Making use of school and community resources to help gifted pupils.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. Collaborating with other teachers, staff, and parents in supporting gifted pupils.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. Counselling for unique psychological, social-emotional needs of the gifted pupil.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. Language and communication strategies in developing gifted students and differentiating the curriculum.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. The use of information communication technology (ICT) to help gifted pupils in classrooms.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
15(a)- If you are a gifted programme teacher, how well do you think you have been prepared by the Ministry of Education to teach gifted pupils in your school?

Not at all                Very little                  Well                Extremely Well                  Excellently

15(b)- If you are a regular teacher, how well do you think you have been prepared by the Ministry of Education to teach gifted pupils in your school?

Not at all                Very little                  Well                Extremely Well                  Excellently

(Questionnaire section three) Teacher Biographical Information

1. How many years have you been teaching?

- 5 and below
- 6-10
- 11-15
- 16-20
- above 21

2. Do you have a family member who is gifted or enrolled in a gifted programme?

No  [ ]       Yes  [ ]

3. Do you think you are gifted?

No  [ ]       Yes  [ ]

4. Have you ever taken any courses in gifted education?

No  [ ]       Yes  [ ]

If yes, how many courses ……………..and hours……………………

5. Please indicate your age:

- 30 and below
- 31-40
- 41-50
- 51-60
- above 60
6. Please indicate the highest degree that you possess.

☑ Institutes of Diploma teacher. ☐ College diploma medium.

☐ B.A from teacher college. ☐ B.A. from educational school.

☐ B.A from university.

Another degree, please explain .........................

(If possible), would you be willing to volunteer for an interview?

No ☐ Yes ☐

If yes, could you please write district ......................... school ........................
your e-mail .............................. or telephone
number....................... so that I can contact you.

Thank you very much!
Please return the questionnaire to the researcher.
Guide for Semi-Structured Interview Session

Name of Moderator: Khalid Al-Makhalid

Date: 00/00/0000   Attendees (anonymous)

Introduction:

Welcome participants, describing the reasons and the purpose of the project and the interview.

Specialisation: RT □  GPT □

Number of in-service training courses received: …………… Highest qualification degree: ……………
School district: ………………………………………………………………………
School name: ………………………………………………………………………

Warm-up question: " …………………………………………………………………

Topic: Primary teachers’ knowledge and attitudes with regards to gifted pupils and their education in Saudi Arabia

I. Teachers’ Attitudes Towards Gifted Pupils and Their Education

*Teachers’ attitudes towards gifted pupils category:

• How do you feel about gifted pupils? Why do you think that way?

  ➢ Sub-categories if needed:

  1-Needs and support.  2- Ideology towards special services.
  3- Social value.  4- Acceptance.

• How do you feel about the sub-category of gifted pupils? On a scale of 1-10, how do you rate it (1 being the worst and 10 being the best)? Why?
*Teachers’ attitudes towards gifted pupil education category:

- How do you feel about gifted pupil education? Why do you think that way?
  - Sub-categories if needed:
    1. Enrichment programme.
    2. Ability grouping.
    3. Policy and related implications.

- How do you feel about the sub-category for gifted pupil education? On a scale of 1-10, how do you rate it (1 being the worst and 10 being the best)? Why?

II. Teachers’ Knowledge and Training Needs Regarding the Gifted and Gifted Education Category:

- In what aspects or topics of the gifted and gifted education do you feel that you have high and low knowledge or understanding? Why? How?
  - Fourteen knowledge aspects or topics regarding the gifted and gifted education.

- How would you rate your general knowledge or understanding of the gifted and gifted education (1 being the lowest and 10 being the highest)? Why?

III. Teachers’ Attitudes Towards In-service Gifted Training Programmes Category:

- If you are involved or not involved in gifted courses training programmes, how would you rate in-service gifted programmes (1 being very negative and 10 being very positive)? Why?

Closure:

*Is there any information you want to add related to the previous points?
استبيان اتجاهات معلمي المرحلة الابتدائية ومدى معرفتهم بالطلاب الموهوبين وبرامج الموهوبين

المحور الأول: اتجاهات المعلمين نحو الطلاب الموهوبين وبرامج الموهوبين

التعليمات: عززي المعلم العبارات التقريرية التالية تعبر عن اتجاهات المعلمين نحو الطلاب الموهوبين والبرامج المقدمة لهم. بعد قراءتك للعبارة أرجو من وجهة نظرك الشخصية وضع علامة (√) في الفراغ المناسب والذي يوضح مقدار درجة اتفاقك أو عدم اتفاقك مع كل عبارة.

<p>|
| العبارات |</p>
<table>
<thead>
<tr>
<th>موافق جداً</th>
<th>موافقًا</th>
<th>لا أتفق كليًا</th>
<th>لا أتفق</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- ينبغي أن توفر مدارسنا خدمات تعليمية خاصة بالطلاب الموهوبين.</td>
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<tr>
<td>2- أفضل الطرق لتلبية حاجات الطلاب الموهوبين هو وضعهم في فصول خاصة لبعض الوقت.</td>
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<td></td>
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<tr>
<td>3- الطلاب ذوي صعوبات التعلم هم الأكثر حاجة إلى خدمات تربوية وتعليم خاص.</td>
<td></td>
<td></td>
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<tr>
<td>4- من عيوب البرنامج الخاص بالطلاب الموهوبين هو إيجاده لمهام التخليبة (الطلاب المميزين) بين الطلاب.</td>
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<tr>
<td>5- وضع الطلاب الموهوبين في فصول خاصة مستقلة جزء من اليوم الدراسي يشعر الطلاب الآخرين بالدونية.</td>
<td></td>
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</tr>
<tr>
<td>6- البرنامج الإلزامي قادر على تنمية قدرات الطلاب الموهوبين لأعلى قدر ممكن.</td>
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<tr>
<td>7- البرنامج الإلزامي يحفز الطلاب الموهوبين للتعليم.</td>
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<tr>
<td>8- لدينا مسؤوليات أخلاقية كبرى تحتم علينا مساعدة الطلاب ذوي صعوبات التعلم أكثر من الطلاب الموهوبين.</td>
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<tr>
<td>9- الطلاب الموهوبين مصدر إثارة لمجتمعنا.</td>
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<tr>
<td>10- البرنامج الإلزامي يلبي حاجات الطلاب الموهوبين.</td>
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<tr>
<td>الأعبـارات</td>
<td>موافق</td>
<td>جداً موافق</td>
<td>لا موافق</td>
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<tr>
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<tr>
<td>11 - لا يحتاج الطلاب الموهوبين إلى اهتمام خاص لتنمية كمالي مواهبهم.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>12 - ياً، كان نوع البرنامج المقدم للطلاب الموهوبين فلهم سوف يحققون النجاح.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>13 - أحب كثيراً أن يعتبرنا الآخرين شخصاً موهوباً.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>14 - ليس من العدل عدم توفير البرنامج الإيرانى للثقلية حافات الطلاب الموهوبين.</td>
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<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>15 - يعني الطالب الذي صنف موهوباً من صعوبة تكوين صداقات مع أقرانه الطلاب.</td>
<td>( )</td>
<td>( )</td>
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</tr>
<tr>
<td>16 - الطلاب الموهوبين هم بطبعهم غير اجتماعيين.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>17 - تصنيف الطلاب إلى موهوبين وعاديين يساعد في تعزز مفاهيم مثل قوي وضعيف؛ جيد ومقبول، الخ.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>18 - بعض المعلمين يشعرون بقتل قياداتهم أو سلطتهم التعليمية أمام الطلاب الموهوبين.</td>
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</tr>
<tr>
<td>19 - تجميع القرارات بعد طريقة جيدة لتنمية قدرات وثقلية حافات طلاب يمتلكون قدرات عالية ومهارات متنوعة ومتميزة فيما بينهم.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>20 - لكي يقدم المجتمع ينبغي أن يساهم في تنمية قدرات الطلاب الموهوبين لا على مستوى.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>21 - يتقديمنا خدمات تعليمية خاصة بالطلاب الموهوبين تعمل على إعداد أفراد على قدر عال من المهنية مستقبلاً.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>22 - الأطفال متوسطي القرارات العقلية أو العاديين يمتلكون الغالبية العظمى في المجتمع لذلك ينبغي أن يتمركز عليهم اهتماما.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>23 - يحتاج الطالب الموهوب لاهتمام خاص لكي تصبح الموهبة إبداعاً.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>24 - مدارسنا مهيئة للثقلية حافات الطلاب الموهوبين المتونعة.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>25 - غالباً ما يكون الطلاب الموهوبين مرفوضون من قبل أقرانهم العاديين بسبب الغيرة.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>26 - معظم قيادات مجتمع الغد سوف يكونون من الطلاب الموهوبين في الوقت الحالي.</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
</tbody>
</table>
المحور الثاني: مدى معرفة المعلمين بالطلاب الموهوبين وبرامج الموهوبين.

التعليمات: العبارات التالية تتعلق ب مدى معرفتك الشخصية بالطلاب الموهوبين والبرامج المخصصة لهم. بعد قراءتك للعبارة أرجو توضيح مدى تفاعلك مع كل عبارة بوضع دائرة (O) حول الرقم المناسب علماً بأنه ليس هناك إجابات صحيحة أو خاطئة. قبل البدء بالإجابة أرجو ملاحظة أن المقياس التالي هو خماسي متدرج حيث يمثل الرقم 1 أقل درجة من المعرفة إلى رقم 5 أعلاه درجة من المعرفة.

<table>
<thead>
<tr>
<th>ما مدى معرفتك بكل من:</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>السمات والخصائص الشخصية للطالب الموهوبين.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>المعايير والإجراءات المتبقية لاختيار الطلاب الموهوبين.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>الأطر والنموذج النظري الخاص بالموهوب. (مثال: نموذج بلوم، هيغروف، رزنلي، وروبر.)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>تطبيق النماذج والاستراتيجيات التربوية والتعليمية المتعددة المصممة للطلاب الموهوبين. (مثال: التسريع وضغط المنهاج، النموذج الإترائي، تجميع القدرات.)</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>القدرات على تصميم وتعديل وحدات منهجية (فصل، باب) سواء من الكتب المدرسي أو من خارجية مناسبة للتطبيق الموهوبين.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>تنظيم الأنشطة الصفية واللاصفية للطلاب الموهوبين كفاراد أو كمجموعة من الطلاب الموهوبين أو كمجموعة الطلاب الموهوبين والعاديون.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>أساليب إدارة الصف للطالب الموهوبين.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
15. (فقط معلم الطلاب الموهوبين) كونك معلم خاص بالطلاب الموهوبين بالمرحلة الابتدائية، هل تعتقد أن المسئولين عن برامج الموهوبين قد وفرؤك لك الإعداد والتدريب اللازم لكي تدرس وتتعامل مع الطلاب الموهوبين؟

لا □ نعم إلى حد ما □ نعم بشكل جيد جداً □ نعم بشكل ممتاز.

15. (فقط معلم التعليم عام) كونك معلم عام بالمرحلة الابتدائية، هل تعتقد أن المسئولين عن برامج الموهوبين قد وفرؤك لك الإعداد والتدريب اللازم لكي تقوم بالتدريس والتعامل مع الطلاب الموهوبين كأفاد أو مجموعة؟

لا □ نعم إلى حد ما □ نعم بشكل جيد جداً □ نعم بشكل ممتاز.

المحور الثالث: معلومات خاصة بالمعلم.

1. سنوات الخبرة في التدريس:
   □ 5 وأقل □ 6-10 □ 11-15 □ 16-20 □ 21 وأكثر

2. هل تعتقد أن شخص موهوب؟ □ نعم □ لا

3. ما هو أعلى مؤهل أكاديمي تحصلت عليه؟
   □ دبلوم معاد معتمد □ بكالوريوس كلية إعداد معلمين.
   □ بكالوريوس كلية متوسطة □ بكالوريوس كلية تربية.
   □ بكالوريوس جامعي.

غير ذلك رجاءً وضح:
4 - إذا أمكن ما هو عمرك الحالي؟
☐ 31-40 ☐ 40-50 ☐ 50-60 ☐ أكثر من 60

5 - هل يوجد من عائلتك أفراد ملحقين ببرنامج الموهوبة؟
☐ نعم ☐ لا

6 - هل أخذت مسابقاً أي برنامج تدريبي خاص بالمهمة أو تعليم الموهوبين مقدم من وزارة التربية والتعليم؟
☐ نعم ☐ لا

* معلم الفاضل إسهاماً منك في تطوير التربية والتعليم الخاصة بالطلاب الموهوبين، نحتاج مشاركتك في المقابلة الشخصية لمدة زمنية قصيرة. علماً بأن اسمك أو أي بيانات شخصية سوف تحط بالسرية التامة ولن تذكر بالرسالة العلمية وفقاً للتعميد الموقع من قبل الباحث بالورقة الأولى مقدراً حسن تجاوبك؟

اسم: ..........................................................................................................................

إدارة التعليم التابع لها .................................................................

المدرسة........................................................................................................

رقم الجوال ........................................................................................................

البريد الإلكتروني ........................................................................................

مقدراً حسن تجاوبكم وتعاونكم

الباحث / خالد المخالد

K_mkhaled@hotmail.com
دليل جلسة المقابلة الشخصية

المقدمة
الترحيب بالمتحصل ثم توضيح ما هي المهمة وهدف منه مع توضيح الغاية التي يسعى لها المقابل من جلسة المقابلة الشخصية.

التخصص: □ معلم مرحلة ابتدائية □ معلم رعاية موهوبين

عدد الدورات التدريبية المت Accessibility hera خلال عمّلّه كعمّل: هو درجة علمية: 

المدرسة: ............................. إدارة التعليم: .................................

سؤال مفيد قبل بداية المقابلة: ..........................................................

الموضوع: اتجاهات معلمي المرحلة الابتدائية ومدى معرفتهم بالطلاب الموهوبين وبرامج الموهوبين

- اتجاهات معلمي المرحلة الابتدائية نحو الطلاب الموهوبين والبرامج المقدمة لهم.

أ) اتجاهات معلمي المرحلة الابتدائية نحو الطلاب الموهوبين:

* ما هو رأيك بالطالب الموهوب؟ صد شعورك نحو الطالب الموهوب؟ لماذا؟

يحتوي التصنيف على العوامل التالية: 1- الحاجة والدعم 2- التوجه نحو توفير خدمات خاصة
3- القيمة الاجتماعية 4- القبول

320
هل يمكن أن توضح وجهة نظرك نحو عوامل التصنيف السابق؟ قم كل عام على حدة من 1 (سلبي) إلى 10 (إيجابي)؟ ولماذا؟

(إيجابي)، ولماذا؟

(إيجابي)، ولماذا؟

(إيجابي)، ولماذا؟

(إيجابي)، ولماذا؟

(إيجابي)، ولماذا؟

(إيجابي)، ولماذا؟

إغلاق المقابلة

عزيزي المعلم هل لديك أي معلومات تود إضافتها للنقاط السابقة؟
APPENDIX B

This Appendix contains copies of the Participant Information Sheet and the Consent Form, in both English and Arabic, which were given to the participants to inform them about the study and to ask them to participate.
Participant Information Sheet

You are being invited to take part in a research study as part of a student project. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Thank you for reading this.

Who will conduct the research?
Khalid Al Makhalid
Full-time postgraduate student,
School of Education
The University of Manchester
Manchester
M19 2LZ.

Title of the Research
Primary Teachers’ Attitudes and Knowledge with Regards to Gifted Pupils and Their Education in Saudi Arabia.

What is the aim of the research?
To investigate primary regular teachers’ (RTs’) and gifted programme teachers’ (G’Ts’) attitudes and knowledge regarding gifted pupils and gifted education in Saudi Arabia.

Why have I been chosen?
All regular teachers (RTs) and gifted programme teachers (GPTs) in all regular public education primary schools in the Kingdom Saudi Arabia are invited to participate in this study.

What would I be asked to do if I took part?
You will be asked to fill out a questionnaire. This will take less than forty minutes. Subsequent to filling out the questionnaire, you might be asked to participate in a semi-structured interview lasting less than one hour.

What happens to the data collected?
The collected data will be statically analyzed to understand the participants' attitudes and knowledge regarding gifted pupils and their education.
How is confidentiality maintained?
After collecting the data, you will be assigned codes that can be identified only by the researcher. No other individuals or organisations will have access to the data. No real names will be used to represent individuals when separating the findings of the study. The audio-tapes will be kept securely and will be destroyed at the end of the research project. However, if you ask for your audio-tape to be destroyed for any reason, this will be done without question.

What happens if I do not want to take part or if I change my mind?
It is up to you to decide whether or not to take part. If you do decide to take part, you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time without giving a reason and without detriment to yourself.

Will I be paid for participating in the research?
The participants who are involved in the research will be volunteers. No payment will be involved.

What is the duration of the research?
1300 to 1500 x less than 40 minutes questionnaires and 40 to 60 x than one hour interviews.

Where will the research be conducted?
Public education primary schools in the Kingdom Saudi Arabia.

Will the outcomes of the research be published?
The outcomes of this study will be used in writing a PhD dissertation.

Contact for further information: Khalid Al Makhalid
Email: Khalid.Almakhalid @postgrad.manchester.ac.uk

What if something goes wrong?
In Saudi Arabia, please contact:
Umm Al-Qura University
Email: coledumk@uqu.edu.sa

If a participant wants to make a formal complaint about the conduct of the research, he or she should contact the Head of the Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL.
Title of Project: Primary Teachers’ Attitudes and Knowledge with Regards to Gifted Pupils and Their Education in the Kingdom of Saudi Arabia

Name of Researcher: Khalid Al Makhalid
School: School of Education, The University of Manchester...

Participant (volunteer)

Please read this and if you are happy to proceed, sign below.

The researcher has given me my own copy of the information sheet which I have read and understood. The information sheet explains the nature of the research and what I would be asked to do as a participant. I understand that the research is for a student project and that the confidentiality of the information I provide will be safeguarded unless subject to any legal requirements. He has discussed the contents of the information sheet with me and given me the opportunity to ask questions about it.

I agree to take part as a participant in this research and I understand that I am free to withdraw at any time without giving any reason, and without detriment to myself.

Family Name BLOCK LETTERS: …………………………………………………………………………………………………………”

Other Name(s) BLOCK LETTERS: …………………………………………………………………………………………………………”

Signed: ………………………………………………………………………………………………………………………………”

Date: ………………………………………………………………………………………………………………………………”

Researcher

I, the researcher, confirm that I have discussed with the participant the contents of the information sheet.

Signed: ……………………………………………………………………………………………………………………………………”

Date: ……………………………………………………………………………………………………………………………………”

Contact for further information: Khalid Al Makhalid
email: Khalid.Almakhalid @postgrad.manchester.ac.uk or K_mkhaled@hotmail.com
T: 072850815  or 0504758287
أخي العزيز الفاضل،
 السلام عليكم ورحمة الله وبركاته...

بين يديك إستغفر الله عز وجل إلى استطلاع اتجاهات معلم المرحلة الإبتدائية (معلمي الصف الرابع، الخاص والمساعد المختصون وغير المختصين في الموهوبين) ومدى معرفتهم بالطلاب الموهوبين وبرامج الموهوبين المقدمة لهم في المرحلة الإبتدائية في المملكة العربية السعودية، ونبدأ من ما تملؤون به من خبرات مهنية وأكاديمية خاصة لانتماكم لمجال التربوي والتعليمي فإن إجابتك بلا شك ستهم في إظهار نتائج سكون - إيان الله - خير معين للقائمين على شؤون رعاية الموهوبين نحو تطوير البرامج المقدمة للطلاب الموهوبين و كذلك نحو تطوير البرامج التدريبية اللازمة لرفع مستوى كفاءة معلم المرحلة الإبتدائية.

ذا أمل التكرر منكم يمنح هذه الأداة النذكر السير من وفتكم التهم للإجابة على عباراتي، علماً بأنني أعهد بأن أجابتكم يستخدم لأغراض البحث العلمي فقط كما أود أن أطمئنك إلى أن إجابتك ستتعامل بسماة وإن يكن هناك طريق لمعرفة من قام بالإجابة على الاستبيان بأي وسيلة كانت.

إذا كان هناك أي سؤال أو استفسار فإنه يسعدني الإجابة عليه عن طريق البريد الإلكتروني أو أرقام الهواتف المدونة في أصل الصفحة.

ختاماً لك مني جزيل الشكر ووافر التقدير.

المشرف الأكاديمي بكلية التربية في جامعة مانشستر

Peter Farrell, BA, Med, PhD, C.Psychol, FBPsS
Professor of Special Needs and Educational Psychology

أخوك، خالد المخالد
K_mkhaled@hotmail.com
0530609286
موضوع الدراسة: اتجاهات معلمي المرحلة الابتدائية ومدى معرفتهم بالطلاب الموهوبين والبرامج المقدمة لهم

تهدف المقابلة الشخصية الحالية والتي هي جزء من رسالة الدكتور بجامعة مانشستر إلى إستطاعة اتجاهات معلمي المرحلة الابتدائية (معلمي الصف الرابع، الخامس والسادس المتخصصين وغير المتخصصين في الموهوبين) ومدى معرفتهم بالطلاب الموهوبين وبرامج الموهوبين المقدمة لهم في المرحلة الابتدائية في المملكة العربية السعودية بهدف تطوير البرامج المقدمة للطلاب الموهوبين وكذلك بهدف تطوير البرامج التدريبية اللازمة لرفع مستوى كفاءة معلمي المرحلة الابتدائية.

علماً بأن الباحث يتعهد بأن إجابتك ستستخدم لأغراض البحث العلمي فقط. كما أود أن أطمئنك إلى أن إجابتك ستتعامل بسرية تامة وسوف لن يكتب اسمك ولن يكون هناك طريق لمعرفة من قام بالإجابة على الاستبيان بأي وسيلة كانت.

ختاماً لك مني جزيل الشكر ونافر التقدير

خالد المخالد
K_mkhaled@hotmail.com
0530609286
APPENDIX C

This Appendix contains copies of the access letter for the field trip in both English and Arabic from the research supervisor at the University of Manchester, the authorities of Umm Al-Qura University and the Ministry of Education.
Saudi Cultural Attaché
Royal Embassy of Saudi Arabia
Cultural Bureau
29 Belgrave Square
London
SW1X 8QB

11th March 2010

Dear Sir

Re: Khalid Al-Makhalid

Khalid Al-Makhalid is currently studying for a Ph.D at the University of Manchester having commenced his studies in September 2008. His study is entitled ‘Primary Teachers’ Attitudes and Knowledge toward Gifted Pupils and their Education in Saudi Arabia.’ As part of his research, Khalid is required to return to Saudi Arabia in order to conduct fieldwork which will involve interviews and managing the distribution and collection of questionnaires. The field work will start from 21st September 2010 and last until 10th January 2011. As his Ph.D supervisor, I write to request that he be granted permission to return to Saudi Arabia to undertake his research.

Yours faithfully

[Signature]

Peter Farrell, BA, MEd, PhD, C.Psychol, FBPsS
Professor of Special Needs and Educational Psychology
To Whom It May Concern:

Mr. Khalid Al-makhalid is a Faculty member at Umm Al-Qura university in Saudi Arabia. Mr. Al-makhalid is currently investigating primary regular teachers' (RT) and gifted programme teachers' (GPT) attitudes and knowledge regarding gifted pupils and gifted education in Saudi Arabia as a part of PhD at the University of Manchester, Education school. He is applying a questionnaire survey and interview instruments to collect the data of his project. The participants in this questionnaire survey and interview instruments are consisted of all regular teachers (RT) and gifted programme teachers (GPT) in all regular public education primary schools in the Makah District of Saudi Arabia.

The Education school at Umm Al-Qura university after reviewing the research’s instruments and the process of data has agreed to give the ethical approval for Mr. Al-Makahlid to conduct his project.
خطاب الموافقة على تطبيق الاستبانة

إلى من يهمه الأمر... 

سلام عليكم ورحمة الله وبركاته...

وبد

تفيذ معادكم بأن عضو هيئة التدريس بجامعة أم القرى- بالكلية الجامعة بمحافظة
القناة/ خالد عبيد عبد المانان، و المثبت لإكتمال درجة الدكتوراه بجامعة مانشستر
بالملكة المتحدة قد تم مراجعة محتوى الاستبانة الخاصة بدراسته والتي يعنوان، اتجاهات
معمّى المرحلة الإبتدائية و مدى معرفتهم بخصائص الطلاب الموهوبين والبرامج المقدمة لهم
و قد أعطي الموافقة لتطبيقها.

وبзван وبقبول قائد النحية والتقدم!!

رئيس قسم التربية وعلم النفس
أ.د./ موسى الشناوي

عميد الكلية الجامعة محظة القناة
د. إبراهيم عبد المظهر

التوقيع: ________________________________

الشئون: ________________________________

التاريخ: 06/06/2022

رقم: 00/00/00

الوقت: ________________________________
سعادة مدير الإدارة العامة للموهوبين الأستاذ/ نبيل بن محمد البديع
السلام عليكم ورحمة الله وبركاته ...

وبدا

نفدي سعادتكم بأن عضو هيئة التدريس بجامعة أم القرى، بالكلية الجامعية بمحافظة
القناة / خالد عبد محمد الخالد، وبحث لإكمال درجة الدكتوراه بجامعة مانشستر بالمملكة
المتحدة يرغب القيام بتطبيق دراسته والتي يعانون- اتجاهات معلمي الموهبة في المرحلة
الابتدائية ومدى معرفتهم بخصص الطلاب الموهوبين والبرامج المقدمة لهم، علمًا بأن
الاستبانة قد تم مراجعتها والموافقة على محترمها.

أمل من سعادتكم التكرم بتسهيل مهمة الباحث، التي يمكن من تطبيق دراسته على عينة
الدراسة المكونة من معلمي الموهبة. شاكرا لكم كريم تعاونكم وحسن استجابتكم.

وفقًا بقبول فائق النجدة والتقدير!!!

عميد الكلية الحاصل بالقناة
/ إبراهيم عبد رؤف

المشروعات: / 8

التاريخ: 1/11/11

الرقم: 3886
سعادة مدير إداره الموهوبين بمنطقة الرياض الدكتور / عبدالرحمن بن سليمان الشلش

سلام الله عليكم ورحمة الله وبركاته .. 

أبدع معاًكم بأن عضو هيئة التدريس بجامعة أم القرى- بالكلية الجامعية بمحافظة القنفذة / خالد عبده محمد المحافظ، وساهم لإكمال درجة الدكتوراه بجامعة مانشستر بالمملكة المتحدة يرغب القيام بتطبيق دراسته والتي يعنوان: اتجاهات معمم الموهبة في المرحلة الإبداعية ودوى معرفتهم بخصائص الطلاب الموهوبين والبرامج المقدمة لهم، علمًا بأن الاستبانة قد تم مراجعتها والموافقة على محتواها.

أمل من سعادتكم التكرم بتسهيل مهمة الباحث، كما يمكن من تطبيق دراسته على عينة الدراسة المكونة من معمم الموهبة. شاكراً لكم كريم تعاونكم وحسن استجابكم.

ونفضلوا بقبول فائق التحية والتقدير.

الاسم: عبد الله بن محمد المحافظ

date: 11/6/1434

الرقم: 333
سلام الله

سعداء مدير التربية والتعليم بمنطقة الرياض

السلام عليكم ورحمة الله وبركاته...

وإيذ سعادتكم بأن عضو هيئة التدريس بجامعة أم القرى - بالكلية الجامعة بمحافظة
التفاوت/ خالد عيد محمد المنفلت، ويبتاع لإنجاز درجة الدكتوراه بجامعة مانشستر
بالملكة المتحدة يرغب القيام بتطبيق دراسته والتي يعذرون، اتجاهات علمي المرحلة
الإيديولوجية ومدى معرفتهم بخصائص الطلاب الموهوبين والبرامج المقدمة لهم.

أمل من سعادتكم التكرم بتسهيل مهمة الباحث، الذي يتمكن من تطبيق دراسته على
عناية الدراسة. شاكراً لكم كريم تعاونكم وحسن استضافةكم.

وفضلوا بقبول فائق التحية والتقدير...

عميد الكلية الجامعة بالتفاوت
الدكتور/ إبراهيم بن علي عسوري

الرمز: ___________________
الرقم: ___________________
سعادة مدير التربية والتعليم بمحافظة جدة
سلام عليكم ورحمة الله وبركاته.. وبعد

نفدي سعادتكم بأن حضر هيئة التدريس بجامعة أم القرى - بالكلية الجامعية بمحافظة القنفذة - خالد عبد محمد المخالد - و المبتعد لإكمال درجة الدكتوراه بجامعة الامام محمد بن سعود بالسعودية المتحلة يرغب القيام بتطبيق دراسته والتي يعنوان - اتجاهات معمل المرحلة الإعدادية - ومدى معرفتهم بخصائص الطلاب الموهوبين والبرامج المقدمة لهم.

أمل من سعادتكم التكرم بتسهيل مهمة الباحث لكي يتمكن من تطبيق دراسته على عينة الدراسة. شكرا لكم كرم تعاويكم وحسن استقبالكم.

وتعفوا بقول فائق التحية والتقدير غير لمدير الإدارة.

التوقيع: [توقيع]

المستقبل: [توقيع]

التاريخ: [تاريخ]
السماح: خالد عبد الله المختار
عنوان البحث: اتجاهات معنوي المرحلة الإبداعية ومدى تأثيرها على مهارات الطلاب الموهوبين بالموضوع
المؤسسة: جامعة أم القرى
مجموعة البحث: معدل الصف الرابع والخامس والمثاليين في رعاية الموهوبين وغير الموهوبين
أداء البحث: استناد

سعادة / مدير مركز رعاية الموهوبين

السلام عليكم ورحمة الله وبركاته، وبعد:
بناءً على خطاب عماد الكلية الجامعية بالقلم رقم ٨٧٢٠٠/١٦/١٠/١٤٣١، وموافقة وحدة البحوث والدراسات التربوية، أمر مساعدة البحث على تنفيذ أداة بحثه. هناك ما يمنع نظراً، أي أن البحث يحمل المسؤولية المتعلقة ببحثه.

وفقًا للبحوث،

مدير عام التربية والتعليم (بني) بمحافظة جدة

[التوقيع]

محمد عبد الله محمدPELLTY

[التوقيع]

336
الملوية العربية السعودية
وزارة التربية والتعليم
إدارة التربية والتعليم بمحافظة الطائف (وفت)
وحدة التخطيط والتطوير
قسم البحوث والشروحات التربوية

إن الله يحب إذا علم أحدكم عملًا أين بنقته... حديث نبريف

من: مدير وحدة التخطيط والتطوير
إلى: سعادة مدير إدارة الموهوبين
بشان: تطبيق دراسة علمية (دكتوراه).

وفقه الله

<table>
<thead>
<tr>
<th>اسم الباحث</th>
<th>موضوع البحث</th>
</tr>
</thead>
<tbody>
<tr>
<td>خالد عبده محمد المخالد</td>
<td>اتجاهات معلمي المرحلة الابتدائية ومدى معرفتهم بخصائص الطلاب الموهوبين والبرامج المقدمة لهم</td>
</tr>
<tr>
<td></td>
<td>معلمو الموهبة ومعلمو الصف الرابع والخامس والسادس غير المتخصصين لمواضحة ذات الدارس</td>
</tr>
<tr>
<td></td>
<td>استبانة: مقابلة</td>
</tr>
</tbody>
</table>

السلام عليكم ورحمة الله وبركاته وعبدو:

قيناء على ما تقدم به الباحث الموضوع اسمه أعلاه تطبيق الدراسة الخاصة بالبحث، ونظرًا للاستعمال مستويات إجراءات الدراسة، لذا من الأهمية تطبيقاتها وفقًا ما هو موضح أعلاه وتسليمها للباحث، شاكرين تعاونكم لما يحقق أهداف البحث العلمي.

ولكم تحياتي وتقديري

أحمد بن عبدالله الزهراني

الطائف - هاتف: 722450 - فاكس: 73694427 - تلف: 750122
http://www.tuifedu.gov.sa
موقع إدارة التربية والتعليم بمحافظة الطائف على الإنترنت
سلام الله نفيد سعادتكم بأن عضو هيئة التدريس في جامعة أم القرى بالكلية الجامعية بمحافظة
الدقهلية / خالد عبد محمد المعادل، و المتبع لإقامة درجة الدكتوراه في جامعة مانشستر
بال王国 المتحدة يرغب القيام بتطبيق دراسته والتي يعنوان: اتجاهات معمى المرحلة
الابتدائية ومدى معرفتهم بخصائص الطلاب الموهوبين والبرامج المقدمة لهم.

أمل من سعادتكم التكرم بتسهيل مهمة الباحث، لكي يتمكن من تطبيق دراسته على
عناية الدراسة. شاركنا لكم كريم تعازيكم وحسن استجابكم.

وتعتبرنا بقبول فائق التحية والتقدير

واعتمد الكلية الجامعية بالدقهلية

الدكتور/ إبراهيم علي عسيري

التاريخ: ١٣٢٣ / ١٨ / ٢٠١٠

المشغول: 

رقم: ٣١٢٨
الرقم: ١٨٠٩
التاريخ: ١٠/١٠/١٣٢٤
المشغولات: أ/ محمد محمود

الوضوء/موافقة على إجراء دراسة

تعميم لبعض المدارس الابتدائية الحكومية

وفقه الله

المدير

السلام عليكم ورحمة الله وبركاته.

فكرة، على خطاب عميد الكليات الجامعية ذي الرقم ١٠٥٩/١٠/٣١/١٣٢٤، بشأن طالب الدراسات العليا خالد عبد محمد الأخالد، والذي يُعد رشداً للحصول على درجة الدكتورة بجامعة مانشوستر بالمملكة المتحدة بعنوان: "المجاهدات العلمية للمرحلة الابتدائية وملاءم تشكيلهم بخصائص الطلاب الموهوبين والبرامج المقدمة لاهمية".

وحيث إن الدراسة تتطلب تميزًا الاستثنائي للمرفقات من قبل:
- معلم موهبة للصفوف الرابع والخامس والسادس الابتدائي.
- خمسة معلمين آخرين للصفوف المذكورة أعلاه.

وتناقشنا بأهمية الدراسة، إذا لم ينجز من تسهيل مهمة الباحث وتحقيقه من تنفيذ أهدافه

خاتمة للبحث العلمي:

وتقبلوا تحياتي،

مدير عام

التعليم والتعليم (bben) منطقة نصرة للحكومة

بكر بن إبراهيم بصدر

حوزة مع النخبة لإدارة الموهوبين التعاون مع الباحث

339
ولا هو إلا

سعادة للحق الثقافي المملكة المتحدة

السلام عليكم ورحمة الله وبركاته ... وبعد

نفادكم أن المحاضر بقسم التربية وعلم النفس بكلية الجامعية بالفنيدقة
 جامعة أم القرى والمعتمد لإكمال درجة الدكتوراه بجامعة مانشستر في المملكة
 المتحدة/ خالد عبد محمد الخالد قد بدأ مباضرته للدورة العلمية بتاريخ
 12/10/2010 الموافق 1432/9/2009 وقد كانت نهاية رحلته العلمية بتاريخ
 22/11/2011 الموافق 1433/2/2012.

وقبلوا خالص تحياتي وتقديرى ...”

عميد الكلية الجامعية بالفنيدقة

د. إبراهيم بن علي عصيري

ص/ لكنيما.