TEACHER PERCEPTIONS OF THE EDUCATION OF STUDENTS WHO ARE GIFTED AND TALENTED BY TEACHER PERSONALITY PREFERENCE: A Q-METHODOLOGICAL STUDY

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PREFACE

This study was conducted to provide insight into the teaching practices by regular education and gifted education teachers of students who are identified as gifted and talented. Students with diverse learning needs and abilities are often underserved or overlooked as classroom teachers strive to 'teach to the middle' abilities of all students. Additionally, teacher personality preferences may be to their teaching practices, and thus to the education of all students. Three different beliefs and perceptions emerged from this study.

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CHAPTER 1

INTRODUCTION

Teachers are faced with a variety of challenges in today's classrooms. General social expectations for excellence (National Excellence Report, 1993) and state and local school district expectations can restrict the choices an educator makes regarding the development and implementation of the curriculum. Teachers must adapt the curriculum and learning environment to provide a classroom climate that meets the academic, social, and emotional needs of the students who have a wide range of readiness skills, learning styles, and curricular needs. Each teacher has a background of experiences that influence how each learner is perceived (Bishop, 1976; Busse & Dahme, 1986; Crocker 1986; Wiles, 1971) and delivers a curriculum that is believed to be beneficial to the learner's needs (Alves & Gottlieb, 1986; Czeschlik & Rost, 1989; Dorhout, 1983).

There is great complexity in the diversity of students in classrooms today. Classrooms are filled with students of diverse backgrounds, interests and experiences (Delany-Barmann & Minner, 1995; Tomlinson & Kalbfleisch, 1998). The exceptional learning needs of students are often determined by school psychologists or other educational specialists to correspond to various educational diagnoses, such as learning disabled, emotionally disturbed, gifted

and talented, or any combination of these and other educational descriptors. Special programs are often provided as alternatives to the general education classroom environment for these students (Bull & Otey, 1984). There are two major ways to view the diagnosis of student needs and programming. Some teachers (1) are concerned about the overall welfare of the child as the teacher strives to determine appropriate curriculum, and (2) question whether specialized treatment is necessary for the child with diverse learning needs (Robinson, 1985).

The need for quality education for diverse learners is apparent in today's schools (Davis & Rimm, 1989; Tomlinson & Kiernan, 1997). Students arrive at school with varying degrees of information input, process skills, and modes of product expression (Bull & Otey, 1984; Tomlinson & Kalbfleisch, 1998). Recent trends in education have shifted from specialized programs for children identified as needing such programs to inclusive classrooms where students with diverse abilities receive instruction together in the general education classroom. This means that students who are learning at a different pace, breadth, and depth are being taught using the same curriculum structure and class environment. General education teachers find 'teaching to the middle' a method of instruction that is easy on the teacher (Tomlinson, 1995a). One wonders, however, how many children are actually in 'the middle'? What happens to the student who requires additional time and explanation on an assigned task when the teacher is ready to move on to another topic? Likewise, where does the student who

catches on to a concept quickly and does not require drill and practice, fit into this one-size-fits-all classroom (Bull & Otey, 1984; Tomlinson & Kiernan, 1997)?

Statement of the Problem

Gifted and talented education services are mandated for all Oklahoma public school districts (Oklahoma Session Law 70 O.S.). Gifted and talented education is defined by the state of Oklahoma as educational services provided to students "who score in the top three percent (3%) on a nationally standardized test of intellectual ability," as well as those students who demonstrate high abilities through multiple criteria methods of identification, such as auditions, achievement test scores, portfolios, classroom performance, leadership, and others. Provisions for referral, identification, and gifted and talented programming options for preschool, elementary and secondary students are required. The Oklahoma State Statutes require public school districts to develop and implement district Gifted Education Plans which outline how the individual district will administer the details of the Education of Gifted Children Act. Teachers of gifted and talented students are not required to hold special certification, and as such, often do not possess knowledge about curriculum development and delivery methods which are suitable for students with high abilities. Therefore, students who are gifted and talented are in classrooms where educators are only moderately aware of how to differentiate curriculum for

them. The State of Oklahoma has approximately 90,000 of 650,000 students identified and served in gifted and talented programs, yet less than 1% of Oklahoma certified teachers have additional training in gifted and talented education (Oklahoma State Department of Education, Gifted and Talented Education Office, 1999).

Educators in today's public schools are being asked to develop and implement a different curriculum structure than most were trained to deliver by college and university teacher education program personnel. University coursework in methods and materials generally do not include concepts of differentiation of the curriculum. With the movement toward inclusion in the general education classroom, teachers are looking for ways to reach more diverse learners and continue to cover the core curriculum in the prescribed amount of time. Added to this already heavy burden is the enormous reliance on standardized achievement and criterion referenced tests. Some states attach monetary rewards to teacher's salaries based on their students' test scores (Council of State Directors of Programs for the Gifted, 1996)

Teachers who accept the challenge of educating all learners in their regular education classroom are looking at a new model, differing from the old notion that special education and gifted education services are provided for students outside of the regular classroom. Curriculum differentiation includes accommodating learning differences in children by identifying students' strengths and using appropriate strategies to address a variety of abilities, preferences,

and styles (Reis, Kaplan, Tomlinson, Westberg, Callahan, & Cooper, 1998). Differentiating instruction for diverse learners is an educational process that enables teachers to develop and implement curriculum that is appropriate for all students (Tomlinson, 1995a; Tomlinson & Kiernan, 1997). Students are successful in differentiated classrooms because the teacher is taking each student from the students' own level of readiness (Tomlinson, 1997a; Tomlinson, 1997b; Tomlinson, 1999) and moving the student forward with skills, knowledge, and educational relevance, rather than teaching all students in the same way.

The impact of curriculum modification methods on students who are gifted and talented is far-reaching. Students may be learning more advanced concepts, developing more dynamic products, and understanding connections between what is being taught and how the information fits into the real world (Tomlinson, 1997a; Tomlinson, 1997b). How the teacher perceives his or her classroom of diverse learners influences the methods of instruction employed in that classroom (Dorhout, 1983; Ellis, Rountree, & Larkin, 1993; Lawrence, 1993). Additionally, the educator's teaching experience may influence his or her perception of how students who are gifted and talented should be instructed.

The problem of how to educate students who are gifted and talented is paramount. Based on some teachers' experiences and knowledge, they are educating students who are gifted and talented in the regular classroom, having these students complete all assignments and projects as other students are doing. Some teachers feel that students who are gifted and talented should

receive their education in special classes or schools (Bull & Otey, 1984). Modifying the curriculum for diverse learners is a task which teachers are faced with as they seek to find the most appropriate education for all students.

Teachers' Background and Experience

Personality preference refers to the manner and style of learning, understanding, and teaching. Teacher's personality preferences influence the teacher's perceptions of the education of students in the classroom. Teachers are attracted to various grade levels, subjects, management styles and instructional types according to the teachers' personality (Lawrence, 1993). How a teacher acts and reacts in the classroom is affected by his or her personality preferences, which may have been formally measured or informally observed (Lawrence, 1993). Formal assessment tools refer to competencies identified by professional organizations or reflected by professional literature (Ellis, Rountree, & Larkin, 1993). Informal measures include those competencies that teachers possess about the daily operation of instruction of students (Ellis, Rountree, & Larkin, 1993).

Personal attitudes about how students should be taught prevail for teachers and administrators. These attitudes influence what curricula are believed to be relevant and the nature of the physical location where students should receive their education (Tomlinson & Kalbfleisch, 1998; Winebrenner,

1997). The teacher's beliefs and perceptions are evident in the types of questions asked of students in the teacher's classroom (Alves & Gottlieb, 1986; Sisk, 1993; Tomlinson, 1995b), the types of feedback given to students by the teacher (Good, 1982; Semmel & Gao, 1992), the grade level and subjects preferred by the teacher (Lawrence, 1993), and the reinforcements provided for students by the teacher (Schwartz, 1994; Smey-Richman, 1989). One study found that regular classroom teachers, when compared with administrators and special education teachers, were the least positive regarding the benefits of education of children with diverse abilities (Larrivee, 1982). Additionally, preservice and novice teachers often understand, but do not have the experience or skills to assess or address the diversity in the levels of achievement and aptitude for today's learners (Carter, 1971; Coleman & Gallagher, 1992; Dettmer, 1994; Tomlinson, Callahan, Moon, Tomchin, Landrum, Imbeau, Hunsacker, & Eiss, 1995). The effect of teacher beliefs and perceptions influences the teachers' academic expectations of students with varying academic abilities (Alves & Gottlieb, 1986; Banks & Stave, 1994; Delany-Barmann & Minner, 1995; Dettmer, 1994; Dorhout, 1983; Ellis, Rountree, & Larkin, 1993; Fernandez, Gay, Lucky, & Gavilan, 1998).

Purpose of the Study

The purpose of this study is to describe the ways that teachers perceive the education of students who are gifted and talented. The perceptions were determined based on how teachers believe they adapt curriculum to meet the needs of students who are gifted and talented and how they think such students should be taught. Results of the study were interpreted using the personality preferences of the teachers who were subjects. Teacher perceptions were studied using a Q-sort, with sample questions extracted from literature relevant to the issue of the education of students who are identified as gifted and talented. Q methodology is a research method that can measure subjective opinions about behaviors and compare the relative strengths of those behaviors within an individual (Brown, 1980; Montgomery, 1983). Respondents completed the Q-sorts under two different conditions of instruction: (1) actual perceptions, behaviors that participants perceive as their current instructional practices of the education of students who are gifted and talented; and (2) ideal perceptions, behaviors that participants desire for themselves, related to the education of students who are gifted and talented.

Teacher personality preferences were identified using the Myers Briggs Type Indicator (MBTI). This instrument addresses a critical element which may be used to describe the reason why specific personality preferences are found in various teaching styles and with various teaching methods (Lawrence, 1993).

The results of this research may offer educational practitioners insights related to student's school successes when placed under the educational care of teachers with identified personality types. Results of this study may further assist decision makers in career development, higher education, and school administration regarding placement of professionals in educational professions.

Theoretical Framework

Two theories from the literature on curriculum differentiation for gifted and talented students were used to direct this study. The idea of areas of differentiation in terms of what (content), how (process), demonstration of student understanding (product), and where (learning environment) was one frame driving this research (Maker, 1982; Maker, 1995; Maker & Nielson, 1996). The concept of degrees or levels (Tomlinson, 1996) of instructional modifications (no modifications, micro modifications, and macro modifications) was used to structure the opinions teachers have about curriculum modification for students who are gifted and talented.

Principles of Differentiation

Appropriate curriculum development for students identified as gifted and talented ensures that there are qualitative differences from the general

education curriculum in content, process, product, and learning environment (Bull & Otey, 1984; Maker, 1982; Maker, 1995; Maker & Nielson, 1996). This means that students who are gifted and talented are provided with expanded educational opportunities, rather than 'more of the same' (MOTS) projects and assignments. The development of curriculum should be differentiated for learners who are gifted and talented, meaning that instruction is integrated and adapted to the varying levels of student readiness and ability. High levels of cognitive and affective concepts and processes are employed in the differentiated classroom. Student product development is based on the individual student's educational needs and goals. The differentiated learning environment is flexible, allowing students to work individually, in small homogeneous or heterogeneous groups, or in a whole class setting (Maker, 1982; Tomlinson, 1995b). Although general educators may argue for equal educational experiences for all learners, equity of opportunity is not a common program for all, but programs that allow students to acquire and refine skills individually (Bull & Otey, 1984; Eisner, 1997).

Qualitative educational differences are common in the Schoolwide Enrichment Model (Reis, Gentry, & Maxfield, 1998; Renzulli, 1977; Renzulli, 1988). Embedded in this educational model are the following precepts: curricular experiences for high ability students that are beyond the general education curriculum, student's interests and learning styles should help

determine the direction of the content areas, and students may pursue in detail personal topics of interest.

Differentiation of instruction for students who are gifted and talented focuses on the elaboration of the presentation of learning opportunities, the diversity of methods of presentation, and the variety of student products and student assessments (Kaplan, 1974; Tomlinson & Kiernan, 1997). Students who are gifted and talented need rich, diverse educational experiences (Bull & Otey, 1984; Coleman & Gallagher, 1995) and exposure to a variety of stimulating and nourishing activities (Young & Tyre, 1992). Students are exposed to content learning opportunities outside the limits of the textbook and the typical age/grade expectations. Elaboration of the general education curriculum is encouraged by teachers who allow additional work time, materials, and resources. Students develop critical thinking skills through the integration of content subject matter (Coleman & Gallagher, 1995). Assessing student products requires individual grading rubrics, which are developed based on individual student abilities, rather than one set of criteria for the entire learner population (Tomlinson, 1995a). Additionally, differentiated instruction responds to the needs of differences of emotional and social characteristics of learners who are gifted and talented (Coleman & Gallagher, 1995; Sisk, 1987).

Curriculum content modification. Differentiation of content is defined as modifying what is being taught to the student (Banks & Stave, 1994; Maker,

1982; Tomlinson & Kiernan, 1997). Appropriate content for students who are gifted and talented is more complex, more abstract, and more varied than that of the general education learner. Included in content modifications is the study of creativity and creative productivity. Complex content includes the manipulation of more concepts, abstract concept relationships, and the integration of concepts across disciplines or fields of study (Gallagher, 1966; Coleman & Gallagher, 1995). Abstractness takes the learner from the data level (focusing on facts and isolated information) through concept development (focusing on ideas and classes of knowledge) to the generalization level (focusing on the students' ability to impose conceptual knowledge on a wider field of understanding). Varied content incorporates the idea of enriched content as the learner is involved in a systematic sampling of different types of content (Ward, 1961).

Curriculum process modification. Process modification is described as the way educators teach (Maker, 1982; Maker, 1995; Maker & Nielson, 1996), or how the students make sense of what they are learning (Tomlinson, 1995a; Tomlinson & Kiernan, 1997). The teacher who is making appropriate process modifications employs higher level thinking strategies, open endedness, variable pacing, and student discovery (Kulick & Kulick, 1984; VanTassel-Baska, 1986b). Emphasizing the use of a body of knowledge rather than the acquisition of that knowledge enables the learner to develop higher levels of thinking skills (Crocker, 1986). Encouraging divergent thinking more than convergent thinking

defines curriculum open endedness (Hertzog, 1998; Maker, 1982), as students look for many, varied, and unusual solutions, not just the one correct answer. Flexible pacing allows students who demonstrate mastery of a concept or set of concepts to move on to the next level regardless of the overall pace of the classroom (Reis, Gentry, & Maxfield, 1998; Renzulli, Smith, & Reis, 1982). Developing skills of inductive and deductive reasoning permits students who are gifted and talented to value discovery learning as they look for the answers that are as important as solving the problem (Rosselli, 1983; Tomlinson, 1995b). For students who are gifted and talented, the process of discovering the answer through inquiry, analytical thinking, experimentation, and inductive and deductive reasoning is useful in the transferal of information to other problems, assignments, and issues.

Curriculum product modification. Student products allow the learner to demonstrate his or her understanding of content and processes. Modifications in products for students who are gifted and talented include having real problems and audiences (Maker, 1982; Maker, 1995; Maker & Nielson, 1996), using authentic assessments (Butler, 1997; Renzulli, 1977) and transforming and synthesizing information in a meaningful way (Maker, 1982; Maker, 1995; Maker & Nielson, 1996; Reis & Schack, 1993). Real problems and real audiences encourage students to work with a specific purpose in mind instead of completing tasks for a classroom grade (Kettle, Renzulli, & Rizza, 1998; Reis & Schack, 1993; Renzulli, 1977). Assessment of student products in a

differentiated classroom includes the use of pre-established criteria by which the evaluation is made by the student, his or her peers, the teacher, or members of the real audience. Product transformation and synthesis occurs as students demonstrate the interconnectedness of information rather than a summary of the facts (Kettle, Renzulli, & Rizza, 1998; Maker, 1982; Maker, 1995).

Curriculum learning environment modification The learning environment in a differentiated classroom is not chaotic (Tomlinson, 1995a) but rather interactive (Sisk, 1993). Educational settings where differentiated learning environments are found emphasize student centeredness, independence, and mobility (Schiever, 1993). The focus of a student-centered classroom is on the learners with the teacher assuming the role of facilitator where he or she once was the sole dispenser of knowledge (Tomlinson, 1995a; Tomlinson & Kiernan, 1997). Student independence includes freedom of student choice and teacher tolerance for student diversity (Hertzog, 1998). Mobility of students is important in a differentiated classroom as students are free to move among and between work stations and learning areas to complete tasks (Gallagher, Coleman, & Nelson, 1993; George & Rubin, 1992; Reis, Gentry, & Maxfield, 1998). Classroom management and mutual student-teacher respect contribute to a successfully differentiated learning environment (Johnsen & Ryser, 1996; Mann, 1997).

Levels of Modification

Creating a differentiated classroom is not a yes or no proposition (Tomlinson, 1996), but a continuum along which educators move as they develop skills in curriculum modification. Only a few teachers are entirely reluctant to address individual needs of students because of their classroom management styles and/or disbelief in diversity of student learning styles and educational needs (Tomlinson, 1996, Tomlinson, 1999), whereas, more teachers are moving toward developing instructional strategies that enhance student learning diversity. Teachers will make modifications to the curriculum only as they become more comfortable with the concept of differentiation. Some teachers will find product modifications easier to manage, while content and process modifications remain static. Other teachers are flexible with the learning environment, allowing students to work in flexibly assigned groups. Finally, there are teachers who see student diversity as an asset, and are, therefore, much more diverse in their teaching styles, classroom arrangement, and grading policies (Tomlinson, 1999). Thus, curriculum modification may be viewed as using a variety of instructional approaches to modify content, process, product, and learning environment in response to the readiness and interest levels of academically diverse learners (Tomlinson, 1996). Levels of modification include no modification (all students receiving instruction in a consistent manner), micro-modification (teacher provides choices for students), and macro-modification

(students determine choices for assignments and products) (Bull & Otey, 1984; Tomlinson, 1996).

Significance of the Study

Research concerning teacher perceptions of the gifted and talented has been minimal. This research study examined the importance of teacher perception as it related to the education of students identified as gifted and talented. Information garnered was significant to educational administrators and leaders as they make decisions regarding teaching assignments and student placements (Coleman, 1991).

The answer to the teacher training and curriculum development questions is not as simple as suggesting that the teacher's attitudes, beliefs, and perceptions are changed (Busse & Dahme, 1986). Teacher beliefs influence the satisfaction of the teacher's job, and the success of the students in the teacher's classroom (Carter, 1971). Are specific personality preferences an important part of the perception and belief system of the teacher with regard to students of varying learning abilities? A teacher is expected to be prepared to work with students who come to school with a range of education experiences, limitations, and exceptionalities (Corbitt, 1989; Czeschlik & Rost, 1989). The teacher's personality preferences influence how that teacher will structure the learning

environment (Dorhout, 1983; Eccles, 1983; Lawrence, 1993). A teacher who has not been trained to work with students outside the average achievement and intellectual ranges feel that including all children in a regular classroom makes teaching more complex, and therefore, less enjoyable (Crocker, 1986; Fritz & Miller, 1995). Teaching in mixed-ability classrooms where differentiation is in place takes away the ease of each student being on the same page at the same time (George & Rubin, 1992; Tomlinson, 1995b; Tomlinson & Kiernan, 1997). The teacher's personal perceptions of the students and their abilities will amend the educational experience for both student and teacher (Good, 1982; Larrivee, 1982; Mayfield, 1979; Robinson, 1985).

As college and university students make decisions about their careers, their choices are based on perceptions of others who hold similar jobs, their beliefs about performing the job, and the impact they believe they will have on the future of education (Rubenzer & Twaite, 1979; Seeley, 1980). Employment options are weighed by incorporating prior knowledge about careers and current opportunities in the field. Personal perceptions coupled with the individual personality type brought to a profession will set the framework for the outcomes achieved in the job, with co-workers, and with clients. Education professionals often choose teaching as a profession because of their teachers who were influential, motivational, or personal friends (Starko & Schack, 1989). New teachers enter their classroom bearing beliefs, methods, and materials learned from post-secondary educational institutions and experiences, and models from

previous school days (Tomlinson, Tomchin, & Callahan, 1994; Vaughn, Schumm, Jallad, Slusher, & Samuell, 1994). Student behavior and academic achievement are impacted by the educational environment and educators' conduct based on the teachers' belief system.

Rationale for the Study

Results of this study may provide insight for school administrators into the appropriate placement of teachers in classrooms with students who have diverse learning abilities. Moreover, education professionals may become aware of their personal perceptions and beliefs regarding the education of students who are gifted and talented and may begin to make decisions about curricular modifications necessary to meet the needs of these students. Additionally, professional development needs may be addressed as teachers learn more about the diverse learning abilities of students who are gifted and talented.

As a professional educator and trainer, the need for teacher preference data regarding the education of students who are gifted and talented will enable stronger teacher training programs to be discussed between and among public schools and higher education.

Research Questions

Research questions investigated in this study were:

1. What beliefs do teachers hold about ways to differentiate curriculum for students who are gifted and talented?

2. How do teachers describe their actual and ideal teaching practices and educational beliefs for students who are gifted and talented?

3. In what ways are teacher perceptions of the education of students who are gifted and talented linked to the teachers' personality preferences?

4. What patterns might exist among teachers who have differing years of teaching experience (novice and veteran)?

Definition of Terms

Attitudes, beliefs, and perceptions -- assumptions, judgments, opinions, and values which may influence behavior

Concourse -- theoretical domain of potential Q-sort items obtained from relevant literature, interviews, or other empirical sources

Condition of instruction -- description of the situation given to the respondents to guide the Q-sort

Content -- what is being taught; curriculum

Curriculum differentiation -- the concept of accommodating learning differences within a classroom and using appropriate strategies to address a variety of abilities, preferences, and styles

Factor analysis -- statistical means by which subjects are grouped or group themselves through the process of Q-sorting

Factor array -- A composite Q-sort representing a specific point of view statistically solved for each factor

Form board -- board or sheet of paper designed by the researcher upon which Q-sort items are placed by the respondent after the condition of instruction is introduced

Generalizations of attitudes -- preferences held by persons defining a given factor

Gifted and talented -- students identified as having above average abilities in academic subjects, leadership, creativity, visual and performing arts or intelligence; identification of students' abilities may be determined through, but are not limited to, standardized test scores, auditions, portfolios, observed behaviors, peer referrals, teacher referrals, grades, expressed interest

Item score -- rank assigned to an item based on its position on the form board following a Q-sort exercise

Learning environment -- where teaching and learning are taking place; physical arrangement or location

Myers Briggs Type Indicator (MBTI) -- A personality preference instrument used to describe an individual's characteristics of the ways he/she perceive and relate to the world

Non-significant loading -- statistically insignificant loading on all factors; items in the Q-sort do not expose the respondent's perspective

Novice teacher -- certified teacher with seven years or less teaching experience as defined by the researcher

Process -- the way information is taught

Product -- student work which demonstrates the student's understanding of content and processes

P-set or P-sample -- the set of persons participating in the study; when multiple sorts are included, the P-set would involve all sorts by the individuals in the study

PQ Method -- personal computer Q analysis; software program developed by Steven Brown that is designed to perform Q factor analysis

Q factor --a particular perspective found to be in common by respondents who have sorted items in a similar way in a Q-sort

Q factor analysis -- creating an interpretation and validation of the factors that demonstrate common perspectives among the sample population participating in the study

Q item -- a statement of opinion included in a Q sample and arranged in a particular order after the condition of instruction is given in a Q sort exercise; items generally taken from the concourse

Q methodology -- a research method designed to demonstrate personal perspectives rather than deductive reasoning, diagnosis, and prediction

Q sample -- collection of Q items making up the concourse and used in the Q-sort

Q-sort -- the arrangement of the Q items in order of significance according to the conditions of instruction presented to the participants in the study

Ready-made Q sample -- item samples derived from sources other than the communication of respondents

Significant loading -- factor loading which can not be explained by random assignment

Subjectivity -- the study of a person's communication of his or her opinion and viewpoint

Veteran teacher -- certified teacher with eight years or more teaching experience as defined by the researcher

CHAPTER 2

REVIEW OF RELATED LITERATURE

With the current educational trend of educating all children in general education classrooms, students with diverse abilities are no longer participating solely in special programs that address their abilities. Teachers have in their classrooms students with learning disabilities, emotional handicaps, physical limitations, and gifts and talents. The most important variable in determining a student's school success or failure is likely to be the manner in which a teacher responds to the child's readiness and ability levels (Alves & Gottlieb, 1986; Bishop, 1976; Coleman & Gallagher, 1995; Crocker, 1986; Gold, 1965; Johnson, 1993; Reis, 1987; Reis, Kaplan, Tomlinson, Westberg, Callahan, & Cooper, 1998). An investigation of teacher perceptions of students who are given educational labels is necessary to begin unraveling the dilemma of how and where these students should be taught within the current educational structure. The purpose of this study was to describe the ways that teachers perceive the education of students who are gifted and talented.

This chapter reviews literature related to perceptions and beliefs of education professionals about the curriculum for students who are gifted and talented. The initial discussion includes an explanation of the nature of curricular modifications in the classroom (e.g., content, process, product, and

learning environment modifications). Following is a discussion regarding teacher attitudes toward diverse learners in the regular classroom, and the impact of teacher perceptions on the education of these students. Additional sections in this chapter focus on the effect of teacher personality preference on the student's learning process. Attention was given to teacher personalities described by the Myers Briggs Type Indicator. The final section of this chapter details how teacher perceptions by personality type that influence the education of students who are gifted and talented.

Curriculum Content Modifications

Content in curriculum usually is related to the subject matter being taught in the classroom (Banks & Stave, 1994; Maker, 1982; Tarver & Curry, 1992; Tomlinson, 1996). All students are to be taught content, which generally ranges from simple to complex (Tarver & Curry, 1992; Tomlinson, 1995a; Tomlinson, 1995b; Tomlinson, 1997a; Tomlinson, 1999). Educators struggle to develop suitable curricular content for students with varying ability levels, and content which matches the local school district and/or state mandated subject objectives (Bull & Otey, 1984; Shanley, 1993). Yet the impetus for inclusion of all learners into the regular classroom forces teachers to design curriculum appropriate to the readiness levels of all students (Fritz & Miller, 1995; Tomlinson, 1995a; Tomlinson, 1996). Students in need of remediation are frequently assigned drill

and practice homework, while students who are gifted and talented are given 'more of the same' (MOTS) tasks, (Bloom, 1956; Colangelo & Davis, 1991; Coleman & Gallagher, 1995; Tomlinson, 1996), often because of the great work the students who are gifted and talented complete (Correll, 1978; Tomlinson, Tomchin, & Callahan, 1994).

Planners of appropriate curriculum designed for students who are gifted and talented should consider the student's specific content interests and allow the student to pursue areas of interest to unlimited levels of inquiry (Kaplan, 1974; Kaplan, 1986; Maker, 1982; Maker, 1995; Renzulli, 1977). Interest inventories and needs assessments can aid in the development of content modifications necessary to address the academic needs of students who are gifted and talented. Greater emphasis should be placed on more complex, abstract, and sophisticated concepts, rather than repetition of simple and concrete information (Coleman & Gallagher, 1995; Dixon, Mains, & Reeves, 1996; Kulik & Kulik, 1984; Maker, 1982; Maker, 1995; McCluskey & Walker, 1986; Renzulli, 1968; Renzulli, 1986; Sherman, 1997; Shore, Cornell, Robinson, & Ward, 1991; Tomlinson, 1995a; Tomlinson, 1995b;). In fact, the presentation of curriculum to students who are gifted and talented is often intended for older students (Sherman, 1997; Stevenson & Newman, 1986; Terman, 1925; Winner, 1996; Witty, 1958) beyond and across the traditional content and cross-disciplinary (Armstrong, 1998; Coleman & Gallagher, 1995; Kaplan, 1986; National Excellence Report, 1993; Reis, Kaplan, Tomlinson, Westberg,

Callahan, & Cooper, 1998; Renzulli, Smith, & Reis, 1982; Roeper, 1995; Shanley, 1993; Tomlinson & Kalbfleisch, 1998; VanTassel-Baska, 1985). Students who are gifted and talented need to be exposed to experiences, materials, and information outside of the regular curriculum bounds (Kaplan, 1974; Maker & Nielson, 1996; Reznulli, 1988; Sisk, 1993; VanTassel-Baska, 1986a; VanTassel-Baska & Olszewski-Kubilius, 1989; Winebrenner, 1997; Winebrenner & Berger, 1994; Winner, 1996). Curriculum should be moving from a focus on things and facts to the development of generalizations with interrelated concepts (Banks & Stave, 1994; Coleman & Gallagher, 1995; Gallagher, 1966; Gallagher, et al, 1966). Generalizations enable teachers to organize content around key concepts and to select appropriate content for students who are gifted and talented (Hertzog, 1998; Maddux, Samples-Lachman, & Cummings, 1985; Reid, Renzulli, Gubbins, & Imbeau, 1992; Shanley, 1993). Students learning experiences chosen by the teacher should be designed to promote civic, social and personal adequacy as well as the advancement of facts and knowledge (Renzulli, 1977; Taba, Durkin, Fraenkel, & McNaughton, 1971; Ward, 1961).

Content modifications in the classroom range from no modification, through some modification (hereafter known as micro-modification), to total modification (hereafter known as macro-modification) (Tomlinson, 1995a; Tomlinson, 1995b; Tomlinson, 1996). Examples of no modifications taking place in the classroom include the idea that all students receive instruction in a

consistent, group oriented manner (Bull & Otey, 1984; Ellis, Rountree, & Larkin, 1993; Gallagher, Coleman, & Nelson, 1995; Maker & Nielson, 1996; Tomlinson, 1996), teaching to the middle abilities of students (Fritz & Miller, 1995; Shipley, 1995; Tomlinson, 1996), and sending students who are gifted and talented out to a pull-out enrichment program for gifted and talented education services (Bull & Otey, 1984; Carter, 1971; Eccles, 1983; Fritz & Miller, 1995; Sapon-Shevin, 1994; Schwartz, 1994; Sherman, 1997; Shipley, 1995; Tomlinson, 1996; Winebrenner, 1997; Winner, 1996). Additionally, no modifications are in place when the content most appropriate to grade levels is determined by the district or program objectives (Johnson, 1993; Shanley, 1993; Tomlinson, 1996). Micro-modification of content includes students selecting their own work groups (Gallagher, Coleman, & Nelson, 1993; Peters, Neisworth, & Yawkey, 1985; Sherman, 1997; Tomlinson, 1996; Whitlock & DuCette, 1989; Winebrenner, 1992; Winebrenner & Berger, 1994), high ability students being assigned more items than other students (Coleman & Gallagher, 1995; Tomlinson, 1996; Tomlinson, Tomchin, & Callahan, 1994; VanTassel-Baska, 1985), and students engaging in accelerated assignments (Gallagher, Coleman, & Nelson, 1995; Kulik & Kulik, 1984; Renzulli, Smith, & Reis, 1982; Shipley, 1995; Shore, Cornell, Robinson, & Ward, 1991; Tomlinson, 1995a; Tomlinson, 1996; VanTassel-Baska, 1986b). Further, micro-modification finds the teacher developing generalizations of two (2) or more concepts (Renzulli, 1977; Shanley, 1993; Winebrenner, 1992). Macro-modifications of content in the classroom include

planning lessons and activities based on the spontaneous interests and questions of students (Coleman, 1991; Coleman & Gallagher, 1995; Gallagher, Shaffer, Phillips, Addy, Rainer, & Nelson, 1966; Peters, Neisworth, & Yawkey, 1985; Tomlinson, 1995b), having students set individual academic goals on which their assessments are based (Adderholdt-Elliott, 1987; Berger, 1996; Tomlinson, 1996), and having students work together cooperatively with other students of varying ability levels (Davis & Rimm, 1989; Fritz & Miller, 1995; Gallagher, Coleman, & Nelson, 1993; Schwartz, 1994; Winner, 1996). Qualitatively different curriculum for students who are gifted and talented further defines a macro-modified classroom (Maker, 1982; Shanley, 1993). The notion of a spiral curriculum one where an idea is introduced again and again, and expanded upon each time it is revisited, allows students to gain depth of knowledge in content (Maker, 1982; Maker, 1995; VanTassel-Baska, 1998; Ware & Lee, 1988).

Curriculum Process Modifications

Process modifications are defined as the 'way' in which students are taught (Rosselli, 1983; Tomlinson, 1995a; Tomlinson, 1996), or methods used to produce a product (Hertzog, 1998; Tomlinson, 1995b; Winebrenner, 1992). Included in process development is the teaching of critical and creative thinking skills (Bloom, 1956; Kaplan, 1986; Mayfield, 1979; Shore, Cornell, Robinson, &

Ward, 1991; Tarver & Curry, 1992; VanTassel-Baska, 1985; VanTassel-Baska, 1998), research, decision making, and problem solving (Bloom, 1956; Shore, Cornell, Robinson, & Ward, 1991; VanTassel-Baska, 1985). Although process is important, it is not the end of instruction (Renzulli, 1977). Application of the process is relevant to understanding and using learned concepts. Teachers often dominate the learning process, seeing themselves as the dispensers of knowledge, rather than promoting self-initiated and self-directed learning of students (Bishop, 1976; Rosselli, 1983; Shore, Cornell, Robinson, & Ward, 1991; Whitlock & DuCette, 1989). Process modifications also include assessments of student work and abilities, and the notion that evaluation should be based on the individual student's work rather than grading every student with the same criteria (Butler, 1997; Renzulli, 1968; Rubenzer & Twaite, 1979; Tomlinson, 1996; Whitlock & DuCette, 1989). The importance of discovery and inquiry learning is emphasized in the process of acquiring information (Maker, 1982; Maker, 1995; Mayfield, 1979; Peters, Neisworth, & Yawkey, 1985).

No process modifications in the classroom are indicated as consistent grading expectations for all students (Butler, 1997; Rubenzer & Twaite, 1979; Tomlinson, 1996), an emphasis on learning facts (Kaplan, 1986; Shore, Cornell, Robinson, & Ward, 1991), and a teacher-centered classroom (Bishop, 1976; Maker & Nielson, 1996; Rosselli, 1983; Shore, Cornell, Robinson, & Ward, 1991; Whitlock & DuCette, 1989). The school and teacher make all decisions about the required content and method(s) of instruction and assessment (Bishop,

1976; Maker, 1982; Maker, 1995; Rosselii, 1983; Whitlock & DuCette, 1989). In a classroom with micro-modifications, the grading expectations are varied (Butler, 1997; Rubenzer & Twaite, 1979; Tomlinson, 1996; Whitlock & DuCette,1989), lessons are altered to match students' requests or interests (Reis, Gentry, & Maxfield, 1998; Tomlinson, Tomchin, & Callahan, 1994), and all students are given opportunities to develop and practice creative problem solving, critical thinking, and research skills (Bloom, 1956; Kaplan, 1986; Mayfield, 1979; Reis, Gentry, & Maxfield, 1998; Shore, Cornell, Robinson, & Ward, 1991; VanTassel-Baska, 1985). Pupils have a part in creating or suggesting elective courses, selecting from learning options in required courses, and creating options for methods, materials, and media (Maker, 1982; Maker, 1995; Maker & Nielson, 1996). The student(s) create alternative times and/or methods of assessment, although the teacher still makes the decisions about what will be measured (Maker, 1982; Maker 1995; Rosselli, 1983; Tomlinson, 1996). Classroom teachers employing macro-modifications have variable pacing for students based on the students' effort and ability (Kulik & Kulik, 1984; Renzulli, 1988; Sherman, 1997; Tomlinson, 1996; VanTassel-Baska, 1986b), are encouraging students to experiment, explore, and solve problems on their own (Maker & Nielson, 1996; Mayfield, 1979; Peters, Neisworth, & Yawkey, 1985; Reis, Gentry, & Maxfield, 1998; Stanley, 1995; VanTassel-Baska, 1986a), and adapting grading expectations to reflect the individual student's growth and progress (Butler, 1997; Maker, 1982; Maker, 1995; Renzulli, 1968; Rubenzer &

Twaite, 1979; Tomlinson, 1996; Tomlinson, 1999). Further, students play an active role in the selection of the subject matter and instructional method(s) (Banks & Stave, 1994; Maker, 1982; Maker, 1995). Teachers and students work cooperatively to examine what learning resources are available, and how, what and when to evaluate (James, 1995; Kaplan, 1986; Maker, 1982; Maker, 1995; Tomlinson, Tomchin, & Callahan, 1994). Students are encouraged to produce new information, find evidences of their own reasoning, and evaluate their own processes (Maker, 1982; Maker, 1995; Shore, Cornell, Robinson, & Ward, 1991; Tarver & Curry, 1992).

Curriculum Product Modifications

Products are the students' methods of demonstrating what they have learned (Tarver & Curry, 1992; Tomlinson, 1995a; Tomlinson, 1996), or a response to the learned concept (Hertzog, 1998; Tomlinson, 1995b). Products are not always written work, but may be visual, verbal or kinesthetic. Students should be encouraged to create new knowledge rather than reinterprete old information as they develop their products for assessment (Maker, 1995; Reis & Schack, 1993; Tomlinson, 1996; VanTassel-Baska, 1998; Witty, 1958). For convenience, many teachers assign identical products to their students, as this allows for ease in grading tests, projects, or daily work (Reis, 1987; Renzulli, Smith, & Reis, 1982; Tomlinson, 1995b). For students with varying ability levels,

designing and completing products to demonstrate what they have learned should be as individual as the pace and method at which the student acquired the information. Product development should include the selection of the mode of communication (Tomlinson, 1996; VanTassel-Baska, 1998), diversity in the form(s) of representation (Tomlinson, 1996), enhancement of student performance (Kaplan, 1986; Tomlinson, 1996; VanTassel-Baska, 1998; Witty, 1958), and enrichment of teaching and learning (Kettle, Renzulli, & Rizza, 1998; Tomlinson, 1995a; Tomlinson, 1995b; Tomlinson, 1996; Tomlinson, Tomchin, & Callahan, 1994).

Classrooms with no modifications in product development ask all students to complete all assignments (Kaplan, 1986; Rubenzer & Twaite, 1979; Tomlinson, 1996), and require students to practice concepts repeatedly without application of the concept (Terman, 1925; Tomlinson, Tomchin, & Callahan, 1994; VanTassel-Baska, 1985). Micro-modification of products allow students who finish assignments early to read, do puzzles, work on other assignments, or work on the computer (Hertzog, 1998; Tomlinson, 1996; Whitlock & DuCette, 1989), and allow students to provide answers only rather than showing their work when they understand math concepts (Kulik & Kulik, 1984; Sherman, 1997; Tomlinson, 1996). Teachers may direct students to complete an independent study project based on the concepts that the whole class is studying (Reis & Schack, 1993; Renzulli, 1977; Renzulli, 1988; Tomlinson, 1996; VanTassel-Baska, 1998). Macro-modifications of products allow students to compact out of

instruction which they have already mastered (Renzulli, 1986; Renzulli, 1988; Renzulli, Smith, & Reis, 1982; Tomlinson, 1996; VanTassel-Baska, 1985; Winebrenner, 1992; Winebrenner & Berger, 1994), and encourage students to make choices about their products on in-depth assignments (Butler, 1997; Kettle, Renzulli & Rizza, 1998; Sherman, 1997; Tomlinson, 1996; VanTassel-Baska, 1998). Interest based products developed with multiple resources allow the student who is gifted and talented to have ownership of the body of knowledge (Banks & Stave, 1994; Reis & Schack, 1993). The teacher's role in product differentiating is (1) methodological assistance, providing information about how to access and evaluate existing knowledge, make use of data gathering tools, and expand investigative techniques, and (2) managerial assistance, helping students stay on track to move toward each intermediate goal, and identifying authentic audiences (Reis & Schack, 1993; Tomlinson, 1995a; Tomlinson, 1996).

Curriculum Learning Environment Modifications

The learning environment relates to the physical location, grouping or mobility within and among the educational setting (Tomlinson, 1996). As the interests of students and concepts being taught change, so should the learning environment (Coleman & Gallagher, 1992; Johnsen & Ryser, 1996; Roeper, 1995; Tomlinson, 1996; Winner, 1996). The learning environment should

provide freedom by the teacher to develop learning strategies, and freedom by the students to learn (Gallagher, Coleman, & Nelson, 1993; Roeper, 1995; Seeley, 1980; Sisk, 1993; Tomlinson, 1996). An effective learning environment includes three (3) aspects: (1) psychological, emotional, and physical safety for students as the teacher models acceptance of individual differences and contributions (Czeschlik & Rost, 1989; Dorhout, 1983; Larrivee, 1982; Robinson, 1985; Tomlinson, 1996), (2) varying of and excitement about ideas and learning through effective classroom time management, as well as positive body language and facial expressions (Carter, 1971; Fritz & Miller, 1995; Mann, 1997), and (3) stimulating and challenging education experiences that move away from textbooks to hands-on learning, and clear explanations of what the students are responsible for in the learning process (Bishop, 1976; Dorhout, 1983; Fernandez, Gay, Lucky, & Gavilan, 1998; Good, 1982; Maddux, Samples-Lachman, & Cummings, 1985; Rubenzer & Twaite, 1979; Schiever, 1993; Sisk, 1993).

Classrooms with no modifications to the learning environment are often found organized in the traditional manner with great amounts of structure (Maker & Nielson, 1996; Roeper, 1995; Tomlinson, 1996), students grouped heterogeneously (Bull & Otey, 1984; Fernandez, Gay, Lucky, & Gavilan, 1998; George & Rubin, 1992; Sherman, 1997), and students working at assigned tables or desks (Mann, 1997; Terman, 1925; Tomlinson, 1996). Micro-modifications in the learning environment include task-centered student

movement (Coleman & Gallagher, 1992; Mann, 1997; Tomlinson, 1996; Winner, 1996), and teacher created ability groups (Fritz & Miller, 1995; Gold, 1965; Sherman, 1997; Taylor, Richards, Goldstein, & Schilit, 1997; Tomlinson, 1996; Vaughn, Schumm, Jallad, Slusher, & Samuell, 1994). Learning environments with macro-modifications have flexible learning groups in constant use (Bull & Otey, 1984; Gallagher, Coleman, & Nelson, 1993; Reis, Gentry, & Maxfield, 1998; Sherman, 1997; Tomlinson, 1996), multiple opportunities in the learning structure for cooperative and collaborative group work (Gallagher, Coleman, & Nelson, 1993; Peters, Neisworth, & Yawkey, 1985; Renzulli, 1968; Sherman, 1997; Tomlinson & Kalbfleisch, 1998), and a student-centered, independent, accepting classroom where there is interaction among and between learners and teachers (Bull & Otey, 1984; Coleman & Gallagher, 1995; Gallagher, Coleman, & Nelson, 1993; Maker, 1982; Mann, 1997; Sisk, 1993).

Teacher Perceptions Related to Teacher Behavior

Perceptions and personal preferences affect our daily lives through the choices that we make. Our preferences are influenced by inherited or inherent qualities within us, and/or environmental experiences (Delany-Barmann & Minner, 1995; Dettmer, 1994; Dorhout, 1983; Good, 1982). Therefore, perceptions of teachers regarding the education of school children is often based on how the teacher was taught when he or she was the student. The

teacher's prior beliefs and experiences with diverse learners may create roadblocks to the actual classroom teaching practices (Banks & Stave, 1994; Crocker, 1986; Czeschlik & Rost, 1989; Ellis, Rountree, & Larkin, 1993; Good, 1982; Larrivee, 1982; Semmel & Gao, 1992). If negative experiences with diverse student abilities are a part of the teacher's repertoire, the teacher's perception of those learners will be greatly influenced (Dorhout, 1983; Larrivee, 1982; Smey-Richman, 1989; Taylor, Richards, Goldstein, & Schilit, 1997).

The teacher's job is to take a large group of students with divergent learning styles and abilities and make them learn a pre-determined curriculum (Crocker, 1986; Dixon, Mains, & Reeves, 1996; George & Rubin, 1992). For ease in content presentation, product development, and student assessment, a teacher may choose to 'teach to the middle' abilities of his or her students (Ellis, Rountree, & Larkin, 1993; Fritz & Miller, 1995; George & Rubin, 1992). However, understanding the varied readiness levels of the students in a particular classroom, 'teaching to the middle' is inadequate and inappropriate (Semmel & Gao, 1992; Shipley, 1995; Vaughn, Schumm, Jallad, Slusher, & Samuell, 1994). What teachers believe has been shown to affect the procedures they adopt in their classroom (Alves & Gottlieb, 1986; Corbitt, 1989; Czeschlik & Rost, 1989; Good, 1982; Larrivee, 1982).

There is a significant effect of teacher beliefs about student abilities, student perceived competence, future course-taking, and achievement behavior (Bishop, 1976; Dorhout, 1983; Eccles, 1993; Jacobs, 1991; Larrivee, 1982; Reis,

1987; Stevenson & Newman, 1986; Stocking, Oppler, Porter, & Goldstein, 1992; Ware & Lee, 1988). When teachers choose to remain in their zone of comfort in teaching, there will continue to be students whose learning experiences are inhibited (Gallagher, Coleman, & Nelson, 1995; Good, 1982; Taylor, Richards, Goldstein, & Schilit, 1997). The teacher's belief system about the education of diverse learners is directly related to the teacher's behaviors and responses to change (Corbitt, 1989; Vaughn, Schumm, Jallad, Slusher, & Samuell, 1994), with regard to curriculum development and classroom management (Hertzog, 1998). As teachers gain more information and experience about diverse learners in the classroom, those teachers will begin to consider their own personal perceptions, behaviors, and beliefs as they plan their curriculum and daily classroom activities (Bishop, 1976; Busse & Dahme, 1986; Carter, 1971; Corbitt, 1989; Dorhout, 1983; Larrivee, 1982). The teacher's prior beliefs, experiences, and standard procedures may support the new information garnered from diverse learners, and promote a sense that this new information will fit with the teacher's previously established conceptual framework (Corbitt, 1989; Ellis, Rountree, & Larkin, 1993; Good, 1982). However, new propositions will continue to be measured by the teacher against his or her yardstick of prior beliefs (Larrivee, 1982). It stands to reason, then, that teachers must have the appropriate base, philosophy, knowledge and skills to work effectively with diverse learners (Coleman & Gallagher, 1995; Delany-Barmann & Minner, 1995; Dorhout, 1983; Fritz & Miller, 1995).

Teacher Perceptions of Students who are Gifted and Talented

Students who are gifted and talented are identified as those students having above average abilities in academic subjects, leadership, creativity, visual and performing arts, or intelligence (Oklahoma Session Law 70 O.S.; Singer, Houtz, & Rosenfield, 1992). Students are identified in a multitude of ways, including, but not limited to, nationally standardized tests of intellectual ability, nationally standardized tests of achievement, behavioral checklists, portfolios, auditions, observed classroom behavior, teacher/peer/parent/self assessment, and inherent natural ability (Oklahoma Session Law, 1999; Renzulli, 1988; Tomlinson, 1995a).

Teachers who are charged with the education of students who are gifted and talented often enter this assignment with limited knowledge or experience with this population of diverse learners (Busse & Dahme, 1986; Carter, 1971; Coleman, 1991; Dettmer, 1994; Ellis, Rountree, & Larkin, 1993). School administrators frequently think that only the experienced teacher should be assigned to the gifted education classroom (Busse & Dahme, 1996; Seeley, 1980; Tomlinson, Callahan, Moon, Tomchin, Landrum, Imbeau, Hunsacker, & Eiss, 1995; Tomlinson, Tomchin, & Callahan, 1994). However, many of those experienced teachers are not interested in changing their curriculum and teaching methods to accommodate the diversity the gifted learners (Corbitt, 1989; Fritz & Miller, 1995). The nature of the learning characteristics of students

who are gifted and talented respects the teacher who is flexible (Robinson, 1985; Whitlock & DuCette, 1989) and open minded about learning opportunities (Delany-Barmann & Minner, 1995; Dettmer, 1994; Maddux, Samples-Lachman, & Cummings, 1985; Seeley, 1980). Additionally, a teacher assigned to the gifted and talented classroom should have a broad content area background (Good, 1982; Hertzog, 1998; Seeley, 1980), high personal self esteem (Starko & Schack, 1989), and a thirst for knowledge (Starko & Schack, 1989).

A teacher with limited experience with students who are gifted and talented may see the curiosity of the learner as 'off task' (Armstrong, 1998; Bishop, 1976; Dorhout, 1983; Jacobs, 1991; Maddux, Samples-Lachman, & Cummings, 1985). When students chose non-traditional avenues to solve problems or complete tasks (Fernandez, Gay, Lucky, & Gavilan, 1998; Sisk, 1993; Stocking, Oppler, Porter, & Goldstein, 1992), the inexperienced teacher often becomes frustrated (Coleman, 1991; Dettmer, 1994; Jacobs, 1991; Whitlock & DuCette, 1989), especially when a classroom full of diverse learners is problem-solving in a variety of ways (Maddux, Samples-Lachman, & Cummings, 1985; Tomlinson, et al, 1995). However, the teacher who allows students to be discovery-learners finds that students who are gifted and talented will arrive at similar answers through dissimilar methods (Good, 1982; Dorhout, 1983; George & Rubin, 1992; Maddux, Samples-Lachman, & Cummings, 1985), but will retain the information as useful and relevant (Coleman & Gallagher, 1995; Delany-Barmann & Minner, 1995; Ford & Harris, 1995; Rubenzer &

Twaite, 1979; Tomlinson, et al, 1995; Tomlinson, Tomchin, & Callahan, 1994).

The teacher, administrator, and counselor with limited knowledge of the complexity of students who are gifted and talented frequently perceive that these students will succeed without special services (Ford & Harris, 1995; Good, 1982). There is a common belief that the students are smart enough to get it on their own (Dorhout, 1983; Tomlinson, 1995b). Students who are gifted and talented often learn more quickly and in more divergent ways (Bull & Otey, 1984; Maddux, Samples-Lachman, & Cummings, 1985), but still need to be taught in ways that address the student's readiness level (Good, 1982; Hertzog, 1998; Tomlinson, 1996).

As the teacher gains more information about the academic, social and emotional characteristics of students who are gifted and talented (Tomlinson, et al, 1995; Tomlinson, Tomchin, & Callahan, 1994), teacher's perceptions and belief systems may evolve to include more diverse teaching methods, learning environments, and student product development (Delany-Barmann & Minner, 1995; Dettmer, 1994; Fritz & Miller, 1995; Gallagher, 1992; Gallagher, Coleman, & Nelson, 1995; Rubenzer & Twaite, 1979).

Myers-Briggs Type Indicator

No perfect model of human personality has been developed (Keirsey &

Bates, 1984). Models developed in current research and literature seem to approximately and reasonably model human personality to an accuracy that makes them useful and predictive, although some researchers question what reasonable accuracy means to practitioners. Personality preference assessment serves two (2) purposes for individuals: (1) to help individuals understand themselves better, and (2) to help individuals understand others so to be better able to relate to others in all types of relationships (i.e., business, personal, family) (Briggs Myers, 1993; Keirsey & Bates, 1984; Lawrence, 1993). Personality preference typing assumes that an individual's whole personality can be divided into four (4) orthogonal (independent) areas or scales: energizing, attending, deciding and living. Within each scale there are preferences for one of two opposites that define the scale, making a total of sixteen (16) different combinations of personality preferences, each of which defines one particular and unique personality type.

The personality preference theory and instrument used in this study, Myers Briggs Type Indicator, was first developed in the 1920's as an assessment of Jung's theory of personality type (Briggs Myers, 1993; Jung, 1971; Keirsey & Bates, 1984). More recently the theory was resurrected and developed into a practical instrument by Katharine Cook Briggs and her daughter Isabel Briggs Myers (Briggs Myers, 1993; Keirsey & Bates, 1984; Kroeger & Thuesen, 1988; Lawrence, 1993). Borrowing from the original personality preference system developed in ancient Greece by Hippocrates, four

(4) temperaments were defined, expanded, and summarized into the current theory of sixteen (16) personality types (Briggs Myers, 1993; Keirsey & Bates, 1984; Kroeger & Thuesen, 1988; Myers-Briggs, 1980; Provost & Anchors, 1991).

In each of the four (4) scales (energizing, attending, deciding and living), each person has a preference for one of the two opposite choices (Keirsey & Bates, 1984). This does not mean, however, that an individual prefers one choice exclusively over the opposite choice. Most people have some tendencies for both choices, although their stronger preference is what defines their personality preference (Briggs Myers, 1993; Lawrence, 1993; Thorne & Gough, 1991). The energizing scale defines individuals as either extraverted (E) or introverted (I). Extraverts have a preference for drawing energy from the outside world of people, activities or things, while introverts prefer to draw energy from their own internal world of ideas, emotions, or impressions. The attending scale defines to what an individual pays attention: sensing (S) or intuition (N). Sensing people have a preference for taking in information through the five (5) senses and noticing what is actual, while intuitives prefer to take in information through a sixth sense and noticing what might be plausible. The deciding scales describes how a person makes decision: thinking (T) or feeling (F) . Thinkers prefer organizing and structuring information to decide in a logical, objective method, while feelers have a preference for organizing and structuring information to decided in a personal, value-oriented way. The final scale, living, describes the lifestyle a person adopts: judging (J) or perceiving (P). Judgers

have a preference for living a planned and organized life, while perceivers prefer living a spontaneous and flexible life (Briggs Myers, 1993; Keirsey & Bates, 1984; Lawrence, 1993; Thorne & Gough, 1991). Table 1 describes common vocabulary associated with each of the four (4) scales.

Table 1

Preferred Vocabulary for Each of the Four (4) Scales

Preference	Preferred Vocabulary
Extraversion (E)	sociability, breadth, external, extensive interaction, expenditure of energy, interest in external events, multiplicity of relationships
Introversion (I)	territoriality, depth, internal, intensive, concentration, conservation of energy, interest in internal reaction, limited relationships
Sensing (S)	experience, past, realistic, perspiration, actual, down-to-earth, utility, fact, practicality, sensible
Intuition (N)	hunches, future, speculative, inspiration, possible, head-in-the-clouds, fantasy, fiction, ingenuity, imaginative

Preference	Preferred Vocabulary
Thinking (T)	objective, principles, policy, laws, criterion, firmness, impersonal, justice, categories, standards, critique, analysis, allocation
Feeling (F)	subjective, values, social values, extenuating circumstances, intimacy, persuasion, personal, humane, harmony, good or bad, appreciate, sympathy, devotion
Judging (J)	settled, decided, fixed, plan ahead, run one's life, closure, decision making, planned, completed, decisive, wrap-it-up, urgency, deadlines, get-the-show-on-the-road
Perceiving (P)	pending, gather more data, flexible, adapt as you go, let life happen, open options, treasure hunting, open ended, emergent, tentative, something-will-turn-up, there's-plenty-of-time, what deadline?, let's-wait-and-see

The two preferences for each of the four (4) scales gives sixteen (16) different combinations (2X2X2X2). The order of designating the letters is done as: energizing, attending, deciding, living. The four (4) temperaments originally conceived by Hippocrates have continued to be a focus for researchers and practitioners with regard to personality preference. Although individuals who use the Myers Briggs Type Indicator and the Keirsey Temperament Sorter are categorized into one of the sixteen (16) personality preferences (Lawrence, 1993), the four (4) temperaments are often used to help develop a clearer

understanding of individuals (Briggs Myers, 1993; Jung, 1971; Keirsey & Bates, 1984; Myers-Briggs, 1980; Provost & Anchors, 1991; Thorne & Gough, 1991). The temperaments, Sensing-Perceiving (SP), Sensing-Judging (SJ), Intuitive-Feeling (NF), and Intuitive-Thinking (NT), were used as descriptors for this research.

Sensing-Perceivers (SP) tend to probe around their immediate surroundings in order to detect and exploit any favorable options that may be within reach. Having the freedom to act on the spur of the moment, whenever or wherever an opportunity arises, is important to an SP. Opportunities are not to be missed or overlooked as SP's search for what is exciting, pleasurable, or useful. Practicality and effectiveness are the keys to getting what an SP desires. In management or administrative positions, SP's are known to be the troubleshooters, negotiators, and crisis counselors (Briggs Myers, 1993; Keirsey & Bates, 1984; Thorne & Gough, 1991). In the teaching profession, four percent (4%) of SP's become teachers, and tend to stay in the education career a short amount of time (Keirsey & Bates, 1984). Teachers who are SP's are often found in the fine arts and sports classrooms (Hammer, 1993; Keirsey & Bates, 1984).

Sensing-Judgers (SJ) observe their close surroundings with a keen eye, but for a different reason than the SP's. Sensing-Judgers are interested in scheduling their own and others' activities so that needs are met and conduct is kept within bounds. Everything should be in its proper place, everyone should be doing what they are assigned, every action should be closely supervised, and

all products should be thoroughly inspected for an SJ. All procedures should be proper and acceptable. In management and administrative positions, SJ's are the traditionalists, stabilizers, and consolidators (Briggs Myers, 1993; Keirsey & Bates, 1984; Thorne & Gough, 1991). In the teaching profession, fifty-six percent (56%) of teachers are SJ's, and tend to stay in the education field for their career (Keirsey & Bates, 1984). Teachers who are SJ's are commonly found in classrooms where business, social sciences, geography, history, and political science curricular are the focus (Hammer, 1993; Keirsey & Bates, 1984).

Individuals described as Intuitive-Feelers (NF) are friendly and tend to look for meaning and wholeness to life. Conflict in those around an NF is painful, and must be dealt with in a very personal manner. They care deeply about keeping morale high in their membership groups, and about nurturing the positive self-image of those closest to the NF. It is vitally important to an NF that everyone in his or her circle (family, friends, colleagues) is feeling good about themself and getting along with one another. In management and administrative positions, NF's are the catalysts, spokespersons, and energizers (Briggs Myers, 1993; Keirsey & Bates, 1984; Thorne & Gough, 1991). In the teaching profession, thirty-two percent (32%) of teachers are NF's, and tend to stay in the education field for at least half of their career (Keirsey & Bates, 1984). Teachers who are NF's are usually found teaching humanities, foreign language, speech and drama, theology, and social science (Hammer, 1993; Keirsey & Bates, 1984).

Intuitive-Thinkers (NT) are tough-minded in determining what type of resources are needed to solve a given problem. They are persistent and rational in their actions. Everything in an NT's world should make sense and be easily explainable. In management and administrative positions, NT's are the visionaries, architects of systems, and builders (Briggs Myers, 1993; Keirsey & Bates, 1984; Thorne & Gough, 1991). In the teaching profession, eight percent (8%) of teachers are NT's, and tend to stay in the education field for approximately one-third (1/3) to one-half (1/2) of their career (Keirsey & Bates, 1984). Teachers who are NT's are generally found teaching classes in communication, mathematics, science, technology, philosophy, and linguistics (Hammer, 1993; Keirsey & Bates, 1984).

All sixteen (16) types are represented in all professions and avocations. Each type has characteristic strengths and limitations (Keirsey & Bates, 1984; Lawrence, 1993). Any personality preference type can become a good teacher (Lawrence, 1993). As students also come in all sixteen (16) types, it is important to recognize that students need the support of being with a teacher who is similar to their type as understanding comes more easily between similar types. Conversely, at times, students need the challenge of being with a teacher of a different type. Finding the proper balance between support and challenge for students and teachers is an important factor for school success both for the teacher and for the student (Lawrence, 1993). Among teachers, extraverts outnumber introverts by a ratio of two-to-one (2:1); sensing types outnumber

intuitive types by a ratio of two-to-one (2:1); sixty-six percent (66%) of female teachers are feelers, while sixty percent (60%) of male teachers are thinkers (Lawrence, 1993).

Q-Methodology

Q methodology was designed and developed by British physicist-psychologist William Stephenson and is most frequently associated with quantitative analysis due to its involvement with factor analysis (Brown, 1980). Aside from the statistical procedures used in Q methodology, this research tool provides a way to reveal the subjectivity involved in any situation (Brown, 1980; McKeown & Thomas, 1988). Q methodology is an efficient method of studying personal opinions, viewpoints, beliefs, and attitudes (Stephens, 1985). Q-technique is useful when the researcher is interested in obtaining information about 'types' of individuals with regard to certain variables (Carr, 1989; McKeown & Thomas, 1988). In Q methodology, the relationships among people are more important than relationships among variables (Carr, 1989). Subjects are involved in a quantitative approach to examining human subjectivity which employs factor analysis to determine similar belief clusters. The clusterings of the participants is based on variables such as attitudes, preferences, or thinking behavior (Brown, 1980; Carr, 1989; McKeown & Thomas, 1988). Respondents are asked to self-define the statements in the Q sort, making judgments about the likelihood that they would adopt the beliefs described in each of the Q sort

items. Typically, subjective opinions are unprovable, however, with the use of Q-technique, the subjectivity can be observed and studied with reliability (Brown, 1980; McKeown & Thomas, 1988). Q-technique involves a sorting procedure and the correlation of responses of the individuals to the Q-sorts. The concern is with the sampling stimuli, not the participants (Brown, 1980; Carr, 1989; McKeown & Thomas, 1988). Q-methodology is designed to test theories on small sets of individuals carefully chosen for their 'known' or presumed possession of some significant characteristic or set of characteristics (Brown, 1980; Carr, 1989; McKeown & Thomas, 1988).

Q-methodology allows an intense study of subjective perspectives of a particular group for the purpose of understanding human behavior (McKeown & Thomas, 1988). Sample size is varied depending upon the purpose of the Q-method study. Some Q-sorts employ but one participant who is asked to sort items from various perspectives. Participants in a Q study may be chosen specifically for the study or randomly selected from a designated population.

CHAPTER 3

METHOD

The purpose of this study was to describe the ways that teachers perceive the education of students who are gifted and talented. Included in this chapter is a rationale for selecting the Q-method for this research, a description of the individuals who participated in the study, instruments used for the study including the techniques for developing the Q-sort, the procedures, and the data analysis necessary for interpreting the results.

Rationale for Research Method

With the increase in numbers of students with diverse abilities receiving the majority of their education in regular classrooms, the necessity for understanding how teachers perceive and conduct curriculum is important to the education of all students. Standardized instruments for measuring attitudes, beliefs, and perceptions are difficult to interpret when the object of the perceptions is disparate from one study to the next. Q-methodology examines the subjective beliefs and perceptions, therefore is important to use when the inquiry is the beliefs of teachers concerning students who are gifted and talented. This method includes quantitative correlations, factor analysis, and z-

score calculations to provide a standard structure to the act of each subject's sorting. Additionally, the method uses naturalistic inquiry, as well as more in-depth questioning to allow respondents to self-define implied knowledge (Brown, 1980; McKeown & Thomas, 1988). This research, however, employed naturalistic inquiry in the factor interpretation portion of the data analysis as the research instrument was developed from theory.

Subjects

Subjects in this study were educators of gifted children in regular education classrooms and in specialized program options for students who are gifted and talented. Participants were invited to participate in this study with the letter of invitation (Appendix A). Information regarding the purpose of this study was presented to teachers during local in-service workshops, statewide conferences, and district technical assistance visits conducted by the researcher or a representative of the Gifted and Talented Education Section of the Oklahoma State Department of Education.

The people who participated in the study, considered a P-set (McKeown & Thomas, 1988) in a Q-methodological study, were diverse in experience and location. Novice and veteran teachers were sought in order to respond to the research question regarding length of service in education. Elementary and

secondary teachers were invited to participate. Male and female teachers from urban, suburban, and rural school districts were solicited for this study.

The proposal for this research study was submitted to the Institutional Review Board for approval in meeting the regulatory requirements for research involving human subjects (Appendix B). Informed consent of each subject was obtained (Appendix C). Safeguards protecting the privacy of each participant included an identification number being assigned to each subject as a means of maintaining confidentiality in the collection and reporting of data.

Instrumentation

There were three (3) instruments used to collect data for this study. The demographic data was collected with the Brief Interview Protocol (Appendix D). The Myers Briggs Type Indicator was used to determine teacher personality preference. A Q-sort was developed to assess the beliefs of teachers toward the education of students who are gifted and talented. Following is a description of each instrument used.

Demographic – Brief Interview Protocol

Demographic data was collected from each member of the P-set. This data included gender, ethnicity, age, current position, years of teaching experience, type of educational certification, education level, training in gifted

education, grade level taught, and descriptions of the method of sorting of the Q-sample. A copy of the Brief Interview Protocol, the general post-sort interview questions to ascertain responses and reactions to the Q-set, is included in Appendix D.

Myers Briggs Type Indicator

The Myers-Briggs Type Indicator (MBTI) was used to assess the personality preferences of the participants. Results of the MBTI were used to link four (4) personality preferences with the participant's Q-sort results to make inferences about the types of teachers with differing perceptions of the education of students who are gifted and talented. Understanding personality preferences is important in the education field as teaching professionals make decisions about approaches to classroom instruction (Lawrence, 1993).

The MBTI is a self-report questionnaire designed to make psychological types understandable and useful. Results of the survey lead to greater self knowledge and help to identify personal strengths, gifts, motivations, and areas for growth (Briggs Myers, 1993). The theory driving the MBTI, from Carl Jung, suggests that predictable differences in individuals is caused by preferences in the way people use their minds (Briggs Myers, 1993; Jung, 1971). People have preferences toward certain types, and manifest those preferences in the external environment as well as internally in thought and reflection. The Myers Briggs Type Indicator is a matrix of sixteen (16) possible personality preferences based

on four (4) scales: (1) energizing: where a person prefers to focus their attention (extraversion or introversion); (2) attending: how a person prefers to take in information (sensing or intuition); (3) deciding: how a person prefers to make decisions (thinking or feeling); and (4) living: what way a person prefers to position themselves in the external world (judging or perceiving) (Briggs Myers, 1993). The way that the four preferences interact results in a complex relationship (Krebs Hirsh, & Kummerow, 1993) which reflects an individual's personality preferences.

For this study, the four (4) temperaments where used to define the subjects and their preferences. The temperaments originally conceptualized by Hippocrates then expanded by Myers and Briggs include (1) Sensing-Perceiving (SP), (2) Sensing-Judging (SJ), (3) Intuitive-Feeling (NF), and (4) Intuitive-Thinking (NT).

Concourse Development

A concourse, the set of opinion statements representing the main effect of the study (Brown, 1980), was extracted from the literature by the researcher for this study. Over 260 strategies and recommended practices for the education of the gifted and talented were obtained through relevant literature. Two theories from the literature on curriculum differentiation for gifted and talented students were used to structure the statements that were chosen for the Q-sort for this

study. The idea of areas of differentiation in terms of what is taught (content), how teaching is done (process), concrete demonstration of student understanding (product), and in what context learning takes place (learning environment) is one theory based on the work of C. June Maker (Maker, 1982; Maker, 1995; Maker & Nielson, 1996).

The second theory used to structure the statements derived from the literature was the concept of degrees or levels of instructional modifications (no modifications, micro-modifications, and macro-modifications) developed by Carol Ann Tomlinson (1996). Concepts of degrees or levels of instructional modifications refer to the amount of flexibility within the teaching environment. Statements from the literature were placed in the structure by type and level (see Table 2) and subsequently were reviewed and refined by two (2) university faculty members, four (4) public school administrators, and three (3) teachers in regular and gifted education, who were experienced in educational trends relating to the education of students who are gifted and talented. Each member of the panel of experts was instructed to review the statements according to its representation of the literature in the field of gifted and talented education. In addition to broad representation and variation, review criteria (included in Appendix E) used by the panel of experts included the elimination of duplication and redundancy among and between statements using teacher-friendly language rather than theoretical or statistical vocabulary. After the review by the panel of experts, forty-eight (48) statements were retained as items on the Q-

sort. Appendix F lists the items included in the sort for this study. These items reflect current literature related to the education of students who are gifted and talented. Table 2 illustrates the distribution of the Q-sample by type and level for this study.

Table 2

Distribution of Statements by Type and Level

Type of Differentiation	Number of Statements by Level		
	No	Micro	Macro
Curriculum Content	5	5	5
Curriculum Process	5	5	5
Curriculum Product	3	3	3
Curriculum Learning Environment	3	3	3

Two (2) conditions of instruction were used for all participants to sort the items. The questions used to direct the sorting for each participant were chosen to best represent the research question and were: (1) What do you believe best describes your current teaching practices? and (2) What do you believe best describes your ideal way of teaching?

Procedure

Educators in Oklahoma who expressed interest in the study during local and state professional development sessions met with the researcher. After the researcher provided an overview of the study, educators were invited to participate in this study. Each educator signed an informed consent form that detailed his or her participation in the research study before participating.

Respondents were asked to rank-order all of the items in the Q-sort along a continuum according to two (2) specific conditions of instruction. The condition of instruction is the question by which all participants are to sort the statements. Sorts were conducted with a standardized script read by the researcher (see Appendix G). Each subject was asked to sort the statements according to which items were most like (+5) or most unlike (-5) their perceptions of their actual classroom practices with regard to the education of students who are gifted and talented. Respondents were then asked to sort which items were most like (+5) or most unlike (-5) their ideal classroom practices with regard to the education of students who are gifted and talented.

The respondents were first asked to divide the Q-set statements into three (3) sets: those which are most like the respondent's perceptions of his or her current classroom practices and beliefs, those which are most unlike the respondent's perceptions of his or her current classroom practices and beliefs, and those about which the respondent is ambivalent, confused, or has no

reaction. The respondent then ranked each Q-set along the defined continuum. Data was reported on the Matrix Form #1: Actual included in Appendix H. The respondents were then asked to divide the same Q-set statements into three (3) sets: those which are most like (+5) the respondent's perceptions of ideal curricular practices and beliefs for students who are gifted and talented, those which are most unlike (-5) the respondent's perceptions of ideal curricular practices and beliefs for students who are gifted and talented, and those about which the respondent is ambivalent, confused, or has no reaction. The respondent then ranked each set along a defined continuum. Data were reported on the Matrix Form #2: Ideal included in Appendix H.

Upon completion of the sorting, respondents were asked to complete the Brief Interview Protocol that includes questions about the participant's description of his or her sorting process as well as demographic information about the participant. Included in the post sort questionnaire was information about the participant's level of education, years of teaching experience, age, gender, subject and grade level taught, and his or her beliefs about the education of students who are gifted and talented in his or her district.

After sorting the statements twice and responding to the post-sort questions, participants completed the Myers Briggs Type Indicator as a means of identifying personality preferences among the respondents. The surveys were scored by a professional trained to administer and interpret results of the MBTI. Interpretation of individual results were offered to each participant.

Data Analysis

Q sort data was coded and entered in PQ Method, software developed by Peter Schmlock for the personal computer adapting the Q method program for the mainframe designed by Atkinson (1997). The first step is to enter and edit the text of the Q-sort statements. This creates a data file called STATES. The second step, QENTER, involves entering the data directly from the sorts that have been collected. Following this step, the researcher chooses between QCENT, for a Centroid Factor Analysis, or QPCA, for a Principle Component Analysis. Principle Component Analysis was used for this study. Additionally, QPCA first computes the correlation matrix then the unrotated factor matrix. The rotation method is selected next with the option of manually rotating the data, QROTATE, or performing a varimax rotation, QVARIMAX, on the factors. After using QPCA, the researcher performed QVARIMAX to maximize the orthogonality of the factors. Finally, the rotated factor matrix is entered into the analysis component, QANALYZE, which yields z-scores for each statement for each theoretical array. The z-scores differentiate the factors based on the original Q-sort statements. These and other data are used to interpret the theoretical arrays.

Summary

Diversity among learners in today's classrooms is a growing concern for administrators, practitioners, and teachers. The purpose of this study was to determine teacher preferences regarding the education of students who are gifted and talented. Using data from the participants regarding their years of teaching experience, personality preference, geographic area, and types and degrees of curricular modifications, the study enabled the researcher to describe ways in which students who are gifted and talented are viewed and taught by teachers of elementary and secondary education. The Myers Briggs Type Indicator was used as the method of determining teacher personality preference. Q Methodology was used as the method of determining the respondents' actual and ideal beliefs about the education of students who are gifted and talented.

CHAPTER 4

RESULTS

The purpose of this study was to describe the ways that teachers perceive the education of students who are gifted and talented. Included in this chapter is a description of the subjects in this study, and the results of the data analysis, including the interpretation of each of the factors.

Subjects

Twenty (20) subjects participated in this study each completing two (2) Q-sorts, yielding forty (40) sorts. All subjects were college educated teachers from Oklahoma with eight (8) participants teaching in urban areas, five (5) participants teaching in rural areas, and six (6) participants teaching suburban areas. Subjects ranged in age from 26 to 55.

- 20% were under age 30
- 25% were age 31-40
- 35% were age 41-50
- 20% were age 51-60

Twenty percent (20%) of the subjects were male, and eighty percent (80%) were female, closely mirroring the ratio of teachers statewide across Oklahoma (Oklahoma State Department of Education, 1998). Teaching experience in public school classrooms ranged from zero (0) to twenty-seven (27) years (mean

= 12.25 years; standard deviation = 7.276). Note that one subject had completed his student teaching but was not currently employed as an elementary or secondary teacher, but as a teacher of teachers, thus his years of experience defined for this study equaled zero (0). Fifty-five percent (55%) or eleven (11) educators were from regular education classrooms, and forty-five percent (45%) or nine (9) educators reported that they spent all instructional time in gifted and talented education classrooms. Eight (8) teachers or forty percent (40%) were elementary school educators, nine (9) or forty-five percent (45%) were secondary school educators, two (2) teachers or ten percent (10%) taught both elementary and secondary age students, and one (1) teacher or five percent (5%) was a teacher of teachers. Thirty percent (30%) or six (6) novice teachers and seventy percent (70%) or fourteen (14) veteran teachers participated in this study.

Analysis of Data

Q-sort data from all participants were entered in the computer using PQ Method (Atkinson, 1997) software. Q-sorts were correlated, factor analyzed using a principle components analysis, and a varimax rotation was performed. Trial rotations for this study included two (2), three (3), and four (4) factor solutions. A three (3) factor solution was selected to be interpreted for this study for both theoretical and statistical reasons. First, although only four (4) Q-sorts obtained a significant loading on a third factor, it was determined that the unique perspective was important to retain. The importance lies in both the membership

(the four (4) sorts were both secondary teachers in this study), and the consistency provided in the interpretation regarding another level of involvement in curriculum adaptation. The reason will be more apparent as the factors are interpreted, but these four (4) sorts, represented by two (2) secondary teachers appear to describe a highly academic context and traditional notion of gifted and talented education, worth retaining the factor. Additionally, this factor was retained because its correlation to the other factors was low. Significance was determined if (1) more than half of the common variance was explained, and (2) sorts loaded at a significance level at $p>.05$. In Q methodology the presence of several independent factors is evidence of different points of view within the sample. A positive significant load on the factor indicates the subject's shared subjectivity with others on that factor, while a negative significant load is the sign of rejection of that factor's perspective (McKeown & Thomas, 1988). The three (3) factor solution accounted for sixty-six percent (66%) of the variance in this study. Table 3 illustrates the correlation matrix between each of the three (3) factors for this study. Evidence of the need to retain factor one (1) is apparent as shown in the low correlation between that factor and the other two (2) factors.

Table 3

Correlations Between Factors

Factor No.	Factor 1	Factor 2	Factor 3
1	1.0000		
2	.0626	1.0000	
3	.0768	.6851	1.0000

Table 4 is the factor matrix that includes the loading of both of two (2) sorts from each individual. The factor is marked with an X indicating significance. Note Teacher 4 with sorts, numbered 7 and 8, holds a negative significance load on factor 3, and Teacher 13 with sorts, numbered 25 and 26, holds a negative significance load on factor 2. These subjects reject that which the other teachers on those factors hold to be true; in fact those subjects have beliefs in opposition of their respective factor solutions.

Table 4

Factor Matrix with *X* Indicating Defining Factor

Q Sort	Subject ID	Novice or Veteran	Temperament	Factor 1	Factor 2	Factor 3
1	1 Actual	Veteran	NF	-.5055	.5860*X*	.2432
2	1 Ideal			-.4455	.6263*X*	.1815
3	2 Actual	Veteran	NT	.2420	.6821*X*	.3745
4	2 Ideal			.2860	.7097*X*	.3683
5	3 Actual	Veteran	NF	.3851	.6620*X*	-.3566
6	3 Ideal			.0043	.7677*X*	.2596
7	4 Actual	Veteran	NF	.2279	-.4585	-.7162*X*
8	4 Ideal			.2279	-.4585	-.7162*X*
9	5 Actual	Veteran	SJ	.1450	.4382*X*	.0685
10	5 Ideal			.0556	.6326*X*	.2787
11	6 Actual	Veteran	SJ	.1454	.2785	.7600*X*
12	6 Ideal			.0204	.4145	.7096*X*
13	7 Actual	Veteran	SJ	-.0823	-.2564	.4015*X*
14	7 Ideal			.0887	.4558	.5926*X*
15	8 Actual	Novice	NF	.0110	.7649*X*	.2834
16	8 Ideal			-.1811	.7593*X*	.3707
17	9 Actual	Veteran	NT	.8429*X*	-.0969	-.0384
18	9 Ideal			.7900*X*	.1151	.1859
19	10 Actual	Veteran	SP	.1502	.6801*X*	.2448
20	10 Ideal			.2895	.7584*X*	.0581
21	11 Actual	Veteran	NF	-.0242	.7912*X*	.3042
22	11 Ideal			.0076	.7873*X*	.3348

Q Sort	Subject ID	Novice or Veteran	Temperament	Factor 1	Factor 2	Factor 3
23	12 Actual	Novice	SJ	.1174	.7394*X*	.34433
24	12 Ideal			.1704	.7577*X*	.4597
25	13 Actual	Veteran	SJ	.1523	-.6255*X*	-.3587
26	13 Ideal			-.0475	-.5995*X*	.1200
27	14 Actual	Veteran	NT	.3346	.2946	.7724*X*
28	14 Ideal			.2975	.3008	.7574*X*
29	15 Actual	Novice	NT	.3889	.3207	.3269
30	15 Ideal			.3696	.4615	.4147
31	16 Actual	Novice	NF	-.1976	.6800*X*	.4296
32	16 Ideal			-.1767	.6882*X*	.4779
33	17 Actual	Veteran	NT	.4447	.7353*X*	-.0496
34	17 Ideal			-.0461	.7577*X*	.3355
35	18 Actual	Veteran	SJ	.4360	.6130*X*	.0835
36	18 Ideal			-.0285	.6572*X*	.4276
37	19 Actual	Novice	NT	.6242*X*	-.2857	-.4207
38	19 Ideal			.6697*X*	.2288	.2209
39	20 Actual	Novice	SJ	-.0400	.6987*X*	.3393
40	20 Ideal			.0617	.7758*X*	.1423

Research Question 1

The first question for this study was "What beliefs do teachers hold about ways to differentiate curriculum for students who are gifted and talented?" Theoretical arrays were developed and z-scores were calculated to represent three (3) beliefs. Other data useful for interpretation included the correlation matrix, distinguishing items, and the demographics of the teachers who held those beliefs. See Appendix I for the statements with array positions and z-scores.

Factor #1 –Justice in Method Teachers

Four (4) sorts (Subject 9 Actual and Ideal, and Subject 19 Actual and Ideal) from two (2) teachers achieved a significant load on Justice in Method Teachers. The two (2) subjects loading on this factor are secondary level teachers in suburban and urban school districts. The subjects each have Bachelor's degrees in their field of study. The female subject is a veteran teacher, having taught eight (8) years or more, with training in Advanced Placement curriculum. The male subject is a novice teacher, having taught seven (7) years or less, who teaches an Honors curriculum. Both are NT on the Myers Briggs Type Indicator, indicating that these subjects are conceptual, precise, and abstract. Table 5 shows the demographics of the teachers who loaded on this factor.

Table 5

Demographics of Subjects for Justice in Method Teachers (n=2)

No.	Gender	Age	Current Position	Grades Taught	Degrees Held	Veteran or Novice	Location	MBTI
9	Female	36-40	Calculus /Algebra	9-12	BA/BS	Veteran	Suburban	NT
19	Male	41-45	Social Studies	8	BA	Novice	Suburban	NT

The first factor was named Justice in Method Teachers. The two (2) teachers who loaded on this factor preferred equal treatment of all students as

indicated in their sorts where consistency in grading procedures and classroom management were found to be most like these teachers.

Justice in Method appear to be in the teaching style of these two (2) teachers as indicated in statements defining this factor. These teachers value drill and practice and educational structure.

- Statements 13: The more students practice the more they will learn (Array position +5; z-score 2.008).
- Statement 14: Students need educational structure (Array position +3; z-score 1.273).

Although students are given opportunities to work cooperatively, modifications for student differences in learning style, work habits, and evaluation needs are not employed.

- Statement 36: Students work together cooperatively with other students of varying ability levels (Array position +4; z-score 1.516)
- Statement 14: Students need educational structure (Array position +3; z-score 1.273)
- Statement 7: The academic pace of the classroom is consistent for all students (Array position +1; z-score .675).
- Statement 12: Grading criteria is consistent for all students (Array position +3; z-score 1.019)
- Statement 8: Grading expectations are consistent for all students (Array position +2; z-score .734).

Further defining these teachers' beliefs are statements which are most unlike this type, including providing varied grading expectations, criteria, and practices. This means that grading is consistent for all students regardless of the individual student's abilities.

- Statement 45: Grading practices should be adapted to the ability level of individual students (Array position –5; z-score –1.819).
- Statement 22: Grading expectations for students are varied (Array position –4; z-score –1.516).
- Statement 38: Grading expectations are adapted to reflect the individual student's growth and progress (Array position –4; z-score –1.516).
- Statement 21: Different learning objectives and evaluation standards are set for different students (Array position –4; z-score –1.473).

These two (2) teachers also do not believe in varying and modifying curriculum for students, indicating the teachers need for all students to be on the same assignments, thus creating a 'one-size-fits-all' curriculum (Tomlinson, 1996).

- Statement 28: Students who understand the concepts being taught in math are not required to show their work on math assignments (Array position –3; z-score –1.301).
- Statement 37: Student learning differences are varied, and modifications to accommodate for those differences should be made in the classroom (Array position –3; z-score –1.177).

- Statement 39: Variable pacing for students is used based on the students' effort and ability (Array position –3; z-score –1.093).

Students who are gifted and talented may find the structure of the classroom for Justice in Method Teachers to be restrictive with regard to diversity of student learning. The male respondent issued this statement regarding his local district's philosophy of the education of students who are gifted and talented: "They receive less structure, more freedom, more exposure to the arts and humanities, less accountability rather than more accountability." He indicated that "gifted education is a catch phrase rather than a philosophy or practice" as his district was more interested in "racial/ethnic diversity" than "true giftedness or talent." The female teacher indicated that her district serves students who are gifted and talented "in the cheapest, easiest way possible that will satisfy federal [sic] requirements and keep the parents and students quiet." Both of these teachers show little tolerance for student diversity in learning content, process, product and learning environment. Figure 1 shows the factor array position of statements that define these teachers' beliefs.

Figure 1

Array Position of Statements Describing Justice in Method Teachers

					35 AC					
					25 IP					
				43 AD	17 IC	44 AD				
			46 AL	27 ID	11 ND	31 IL	48 AL			
		39 AP	40 AP	23 IP	6 NP	30 IL	47 AL	29 ID		
	38 AP	37 AC	34 AC	19 IC	5 NC	15 NL	42 AP	26 IP	41 AP	
45 AD	22 IP	28 ID	33 AC	16 NL	4 NC	7 NP	9 NP	14 NL	36 AC	32 IL
20 IC	21 IC	2 NC	24 IP	10 NP	3 NC	1 NC	8 NP	12 ND	18 IC	13 ND
-5	-4	-3	-2	-1	0	1	2	3	4	5
Most Unlike										Most Like

NC = no content modifications
NP = no process modifications
ND = no product modifications
NL = no learning environment modifications
IC = micro content modifications
IP = micro process modifications
ID = micro product modifications
IL = micro learning environment modifications
AC = macro content modifications
AP = macro process modifications
AD = macro product modifications
AL = macro learning environment modifications

Factor #2 –Process in Method Teachers

Twenty-six (26) sorts (Both Actual and Ideals sorts from Teachers 1, 2, 3, 5, 8, 10, 11, 12, 13, 16, 17, 18, and 20) from thirteen (13) teachers loaded on

Process in Method Teachers. There were twelve (12) female teachers, and one (1) male teacher. Seven (7) subjects were elementary level teachers; four (4) were secondary level teachers; and two (2) subjects were both elementary and secondary level teachers. Eight (8) subjects were teachers of the gifted and talented, two (2) were teachers of special education students, and three (3) were regular education teachers. Two (2) teachers were from urban areas, five (5) teachers were from suburban areas, and six (6) were from rural school districts. Eight (8) of these teachers earned both Bachelor's and Master's degrees, while the remaining five (5) have Bachelor's degrees. Of the thirteen (13) subjects, four (4) were novice teachers and nine (9) were veteran teachers. On the MBTI, one (1) teacher was self described as an SP, five (5) were SJ, five (5) were NF, and two (2) were NT. One (1) teacher (Subject 13) had a negative loading on this factor, indicating her beliefs to be opposite of the other teachers holding these beliefs. Table 6 illustrates the demographics of the teachers for Process in Method.

Table 6

Demographics of Subjects for Process in Method Teachers (n=13)

No.	Gender	Age	Current Position	Grades Taught	Degrees Held	Veteran or Novice	Location	MBTI
1	Female	51-55	Gifted & Talented	1-5	BS/MED	Veteran	Rural	NF
2	Female	41-45	Gifted & Talented	1-5	BS/MED	Veteran	Rural	NT
3	Female	51-55	Gifted & Talented	2-5	BS	Veteran	Rural	NF
5	Female	46-50	Special Ed	1-12	BS/MS	Veteran	Urban	SJ
8	Female	46-50	Gifted & Talented	7-9	BA/MS	Novice	Urban	NF
10	Female	31-35	Gifted & Talented	1-6	BS	Veteran	Suburban	SP
11	Female	26-30	Gifted & Talented	6-8	BS/MA	Veteran	Suburban	NF
12	Female	26-30	Gifted & Talented	1-5	BS	Novice	Suburban	SJ
13	Female	36-40	Gifted & Talented	1-5	BS/MS	Veteran	Suburban	SJ

No.	Gender	Age	Current Position	Grades Taught	Degrees Held	Veteran or Novice	Location	MBTI
16	Male	31-35	Social Studies	9-12	BS	Novice	Rural	NF
17	Female	36-40	Science	9-12	BS/MS	Veteran	Rural	NT
18	Female	51-55	Elem.	4-5	BS/MS	Veteran	Rural	SJ
20	Female	26-30	Special Ed.	1-8	BS	Novice	Suburban	SJ

The second factor was named Process in Method Teachers. Thirteen (13) teachers believed that adapting the classroom instructional methods and the learning environment were key to differentiating curriculum for diverse learners.

Process in Method Teachers believe that they are teaching students who are gifted and talented with macro-modifications. These teachers adapt student work based on the student's ability, and allow for student mobility within the classroom

- Statement 43: Students are compacted out of content which they already know (Array position +4; z-score 1.323).
- Statement 32: Students are not expected to always be sitting quietly at their desks/tables (Array position +4; z-score 1.169).

Additionally, these teachers value variability in student learning and modify accordingly.

- Statement 35: Planned lessons and activities are modified based on the spontaneous interests and questions of students (Array position +3; z-score 1.156).
- Statement 37: Student learning differences are varied, and modifications should be made in the classroom (Array position +3; z-score 1.020).
- Statement 39: Variable pacing for students is used based on the students' effort and ability (Array position +1; z-score .758).

This means that curriculum content and delivery methods for students who are gifted and talented will be different for different students depending upon the student needs, interests, and abilities.

These teachers do not believe that more is better for students or that all students learn in the same way.

- Statement 30: Students will succeed because of a formal and rule-governed classroom environment (Array position –4; z-score –1.585).
- Statement 11: All students complete all assignments (Array position –4; z-score –1.535).
- Statement 23: Enrichment means more work for students with high abilities (Array position –3; z-score –1.473).

A novice teacher in an urban district said that the gifted and talented education programs in her district are "given very little monetarily but they are expected to excel academically." A veteran teacher in a rural district indicated that she is "aware of no service to these students except participation in

Academic Bowls." Two (2) of the teachers believed that their suburban districts "qualify all and many, many more" and challenge all students through "chess club, the arts, and cluster groups."

The teacher who rejected the beliefs of her fellow Process in Method Teachers has training in gifted and talented education and believes that students who are gifted and talented should be receiving differentiated instruction only in "regular classrooms." Interestingly, this veteran teacher currently has a position in a suburban district as a resource (pull-out) teacher of elementary gifted and talented students. Her opposition to the beliefs of Process in Method Teachers indicates her disbelief in the program in which she teaches.

Students in Process in Method Teachers' classrooms will experience an abundance of curricula modifications with or without regard to the educational needs of all of the modifications.

Figure 2 shows the array position of statements that define Process in Method Teachers.

Figure 2

Array Position of Statements Describing Process in Method Teachers

					45 AD					
					38 AP					
				34 AC	36 AC	46 AL				
			25 IP	15 NL	31 IL	39 AP	48 AL			
		23 IP	13 ND	9 NP	22 IP	33 AC	47 AL	44 AD		
	30 IL	16 NL	12 ND	6 NP	18 IC	28 ID	40 AP	42 AP	43 AD	
10 NP	20 IC	7 NP	8 NP	3 NC	17 IC	24 IP	27 ID	37 AC	41 AP	29 ID
5 NC	11 ND	4 NC	1 NC	2 NC	14 NL	19 IC	21 IC	35 AC	32 IL	26 IP
-5	-4	-3	-2	-1	0	1	2	3	4	5
Most Unlike										Most Like

NC = no content modifications
NP = no process modifications
ND = no product modifications
NL = no learning environment modifications
IC = micro content modifications
IP = micro process modifications
ID = micro product modifications
IL = micro learning environment modifications
AC = macro content modifications
AP = macro process modifications
AD = macro product modifications
AL = macro learning environment modifications

Factor #3 –Student in Method Teachers

Eight (8) sorts (Actual and Ideal sorts from Teachers 4, 6, 7, and 14) from four (4) teachers loaded on this factor. Three (3) were female and one (1) was male. There were three (3) secondary teachers and one (1) elementary teacher. All four (4) subjects taught in urban school districts. Two (2) of the subjects have Bachelor's and Master's degrees, and two (2) have Bachelor's degrees. All four (4) subjects were veteran teachers. The Myers Briggs Type Indicator self-report personality preference for these subjects revealed one (1) subject as NF, two (2) subjects as SJ, and one (1) subject as NT.

Both sorts for Subject 4 (sorts 7 and 8) achieved a negative load on Students in Method Teachers. She is a gifted and talented education district coordinator with no training in the education of students who are gifted and talented. She has recently been charged with the district leadership position for gifted and talented education, although she stated that the urban district "places little value" on the educational needs of students who are gifted and talented. This teacher, with extensive training in special education, has been asked to "revitalize" the gifted and talented program without any assistance from others in the district or funds for improvements.

Table 7 illustrates the demographics of Student in Method Teachers.

Table 7

Demographics of Subjects for Factor 3 (n=4)

ID	Gender	Age	Current Position	Grades Taught	Degrees Held	Veteran or Novice	Location	MBTI
4	Female	46-50	Special Ed	1-5	BS/MED	Veteran	Urban	NF
6	Female	46-50	English	11-12	BS/MS	Veteran	Urban	SJ
7	Male	46-50	English	7	BS	Veteran	Urban	SJ
14	Female	56-60	Tech Ed	6-8	BS	Veteran	Urban	NT

The third factor was named Student in Method Teachers. Four (4) teachers revealed that student readiness differences were the focal point for differentiating instruction in their classrooms.

Students in Methods Teachers show a strong sense of engaging the students in activities and projects appropriate to the students' readiness levels.

- Variable pacing for students is used based on the students' effort and ability (Array position +5; z-score 1.715).
- Statement 37: Student learning differences are varied, and modifications to accommodate for those differences should be made in the classroom (Array position +5; z-score 1.607).

Additionally, these teachers value a flexible learning environment for students. The teacher also see a need for individualized grading procedures as students have individualized learning needs and abilities.

- Statement 31: It is possible to serve a wide range of academic needs in the classroom (Array position +4; z-score 1.568).
- Statement 38: Grading expectations are adapted to reflect the individual student's growth and progress (Array position +3; z-score 1.116).

This flexibility and attention to individual student readiness levels enables students to progress at their own pace, depth, and breadth through the curriculum. Students who are gifted and talented will be enthusiastic about the differentiated content, process, product, and learning environment employed in Student in Method Teachers' classrooms.

Further defining these teachers' beliefs are statements which are most unlike this type, including consistency in academic pace, grading procedures, and instructional delivery methods.

- Statement 7: The academic pace of the classroom is consistent for all students (Array position –4; z-score –1.666).
- Statement 8: Grading expectations are consistent for all students (Array position –4; z-score –1.585).
- Statement 12: Grading criteria is consistent for all students (Array position –3; z-score –1.352).
- Statement 3: Students receive instruction in a consistent, group oriented manner (Array position –3; z-score –1.305).

Interview data from Student in Method Teachers confirmed their reported beliefs. One teacher mentioned that she uses "leveling" within her middle school

classroom. Students who are gifted and talented, particularly those with extreme diversity in learning styles, will flourish within these teachers' educational settings.

The one (1) teacher whose sort had a negative loading on this belief structure sees a need for consistency in pace, grading procedures, and instructional delivery methods. She has limited experience with highly able learners, and extensive experience with special education learners. The fact that she loads in a negative fashion on this belief system is puzzling, as one would think that her special education training would carry into her beliefs about students who are gifted and talented.

Figure 3 shows the factor array position of statements which define the Student in Method Teachers.

Figure 3

Array Position of Statements Describing Students in Method Teachers

					48 AL					
					44 AD					
				43 AD	23 IP	45 AD				
			33 AC	28 ID	22 IP	36 AC	46 AL			
		27 ID	30 IL	24 IP	17 IC	35 AC	32 IL	47 AL		
	8 NP	20 IC	25 IP	19 IC	14 NL	34 AC	29 ID	42 AP	41 AP	
10 NP	7 NP	12 ND	11 ND	16 NL	13 ND	18 IC	21 IC	40 AP	31 IL	39 AP
5 NC	2 NC	3 NC	4 NC	9 NP	6 NP	15 NL	1 NC	38 AP	26 IP	37 AC
-5	-4	-3	-2	-1	0	1	2	3	4	5
Most Unlike										Most Like

NC = no content modifications
NP = no process modifications
ND = no product modifications
NL = no learning environment modifications
IC = micro content modifications
IP = micro process modifications
ID = micro product modifications
IL = micro learning environment modifications
AC = macro content modifications
AP = macro process modifications
AD = macro product modifications
AL = macro learning environment modifications

The Other Subject

One (1) subject's sorts (Subject 15 Actual and Ideal) did not load on any factor. This male subject has both a Bachelor's and Master's degree. He

completed his teaching degree and student teaching in an urban area, but chose to work in a teacher training capacity rather than teach children. His own children are home schooled. This subject is an NT as described on the Myers Briggs Type Indicator. He is personally interested in "challenging himself, as well as challenging teachers to develop inquiry and discovery learning skills." He possesses an "insatiable quest" for personal competence, particularly related to his job as a education technology trainer. Students who are gifted and talented, and personally confident would enjoy this subject's classroom. Less self-assured students might be intimidated by this participant's extensive vocabulary and rapid pace. This data presented here lends further support to the interpretation of Justice in Method, Process in Method, and Student in Method Teachers because this person demonstrated little priority for classroom issues.

Concensus Statements

Consensus statements are those Q-set statements in which all subjects in the study sort similarly. These items are important when analyzing data as they do not distinguish between any of the factors. Consensus items in this study and their relative placement in each of the factor arrays are listed in the following table.

Table 8

Consensus Statements: Those That Do Not Distinguish Between ANY Pairs of Factors

No.	Statement	Factor 1 Position z-score	Factor 2 Position z-score	Factor 3 Position z-score
17	Students may pick their own work groups.	0 .08	0 .23	0 -.16
26	Gifted students are given opportunities to develop and practice creative problem solving, critical thinking, and research skills	3 .33	5 1.47	4 1.41
29	Gifted students are encouraged to ask questions which may extend the focus of the planned discussion.	3 .91	5 1.35	2 .86
41	Students are given situations that encourage them to experiment, explore, and solve problems on their own.	4 1.40	4 1.31	4 1.41
42	Opportunities for students to actively practice critical thinking and creative problem skills are built into all lessons.	2 .77	3 1.11	3 1.40
47	Opportunities for cooperative and group work are provided for all students.	2 .74	2 .92	2 1.08

Research Question 2

The second research question investigated by the researcher was "How do teachers describe their real and ideal teaching practices and educational beliefs for students who are gifted and talented?" In this study, each subject described his or her actual and ideal teaching practices and educational beliefs for students who are gifted and talented as similar. Each of the subjects' actual and ideal Q-sorts loaded on the same factor which is highly unusual. Thus, this study revealed that the twenty (20) participants each felt that their current teaching practices and educational beliefs about students who are gifted and talented was closely matched to their own ideal teaching practices and beliefs for this group of students. Although three (3) types of teachers' beliefs emerged from this study, each subject felt that he or she was educating students who are gifted and talented in the most appropriate methods as shown by the fact that the respondents' actual and ideal results loaded on the same factors. Even though there might be five (5) perspectives, each teacher believes that what he or she is doing for students who are gifted and talented is the ideal environment for those learners.

Research Question 3

The third research question investigated in this study was "In what ways are teacher perceptions of the education of students who are gifted and talented

linked to the teachers' personality preferences?" Of the twenty (20) subjects in this study, five percent (5%) or one (1) self described herself as a Sensing-Perceiver (SP) on the Myers Briggs Type Indicator (MBTI). This is similar to the general population of teachers who are represented by four percent (4%) as SP. This teacher prides herself on being free-spirited. She enjoys spontaneity, and therefore, finds the education of students who are gifted and talented as a challenge both for herself and for her students. In line with the general population of SP teachers, she has been in the profession for a short amount of time, having been in private business prior to entering the teaching field. Her position as a district coordinator for gifted and talented education couples her business background with education.

Thirty-five percent (35%) or seven (7) teachers in this study were self described as Sensing-Judgers (SJ) on the MBTI. The general population of teachers who are SJ is fifty-six percent (56%). Five (5) of the teachers were female, and one (1) was male. Parallel to the general population of SJ teachers, the six (6) SJ educators in this have been teaching for most of their adult career. Their SJ personality preference type is generally less flexible, and therefore, not as appealing to students who have diverse learning abilities. These teachers perceive the education of students who are gifted and talented as more assignments and more items on assignments not differentiation of assignments for diverse learners. Teachers in the study who were SJ include three (3) elementary teachers, two (2) secondary teachers, and two (2) teachers of both elementary and secondary. Two (2) teachers were special education teachers,

two (2) were elementary gifted and talented education teachers, two (2) were secondary English teachers, and one (1) was an elementary teacher of all subjects.

In this study, thirty percent (30%) or six (6) respondents were self described as Intuitive-Feelers (NF) on the MBTI. The general population of teachers is represented by thirty-two percent (32%) as NF. The five (5) female and one (1) male subject with NF personality preferences are interested in celebrating their students achievements, making students feel important, and keeping student self-esteem high. These teachers perceive that differentiation of instruction allows for student satisfaction, therefore, students who are gifted and talented are more likely to see differentiated educational strategies employed in an NF's classroom. Closely matching the general population of NF teachers, the NF educators in this study have been teachers approximately one-half (1/2) of their career. Three (3) of the teachers had careers outside of the education field prior to earning teaching certificates and joining the profession. Three (3) of these teachers were elementary gifted and talented education teachers, one (1) was a secondary gifted and talented teacher, one (1) was a secondary English teacher, and one (1) was a secondary social studies teacher.

Thirty percent (30%) or six (6) participants in this study were self described as Intuitive-Thinkers (NT) on the MBTI. In the general population of teachers, NT's represent eight percent (8%). These teachers are interested in developing mental maps for their students, and therefore, challenging students to look at multiple solutions to a single problem. Students who are gifted and

talented are mentally stimulated in an NT's classroom. Unlike the general population of NT teachers which tend to stay in education for one-third (1/3) of their career, four (4) of the NT educators in this study have been in the profession for their entire adult career. One (1) teacher in this study had a career outside of education for many years prior to obtaining a teaching certificate. One (1) teacher completed his requirements and earned a degree in education but has chosen to be a teacher of teachers rather than a teacher of elementary or secondary students. He is currently an instructional technology trainer which closely matches the career goals of the NT teacher. Also closely paralleling the career choices for NT teachers was the one (1) secondary math teacher, the one (1) secondary technology teacher, and the one (1) secondary science teacher in this study. The remaining NT teacher in this study was an elementary gifted and talented education teacher.

Similarities of personality preferences and beliefs held about the education of students who are gifted and talented are mixed. Justice in Method Teachers are remarkably similar. Yet Process in Method Teachers vary with one and one-half percent (1.5%) as NT, seven and one-half percent (7.5%) as SP, thirty-eight percent (38%) as NF, and thirty-eight percent (38%) as SJ. Student in Method Teachers varied with fifty percent (50%) as SJ, twenty-five percent (25% as NF, and twenty-five percent (25%) as NT.

Results of this study revealed teachers with varying personality preferences with varying beliefs and practices about the education of students

who are gifted and talented. As no one teaching method is best for all students, no one personality preference is ideal for all students.

Research Question 4

The last research question investigated in this study was "What pattern might exist among teachers who have differing years of teaching experience (novice and veteran)?" Fourteen (14) participants in this study were veteran teachers each having taught eight (8) or more years. Of these teachers, nine (9) were Process in Method Teachers who felt that differentiating instruction was more a function of classroom management and content delivery. Of the remaining veteran teachers, four (4) subjects were Student in Method Teachers who felt that student readiness variances helped frame the curricular differentiation in the teacher's classroom. The one (1) Justice in Method Teacher who was the veteran teacher revealed that she was more interested in equity among students and their assignments than she was in adapting curriculum for diverse learners.

Novice teachers (n=6), those having taught seven (7) or less years, in this study revealed similar beliefs and perceptions as their veteran counterparts. Four (4) novice teachers, Process in Method Teachers, indicated a need for educational structure with some (micro) modifications in content and learning environment. One (1) novice teacher revealed much the same as his veteran counterpart in Justice in Method Teachers with a focus on a 'one-size-fits-all'

(Tomlinson, 1996) curriculum for students in his classroom. One (1) novice teacher did not load on any of the three (3) significant factors.

In this study, there appeared to be no general patterns in the beliefs and perceptions of the education of students who are gifted and talented among novice and veteran teachers.

Summary

Included in this chapter was a description of the twenty (20) teachers who each completed two (20) Q-sorts which resulted in forty (40) sorts. Additionally, there was a discussion of the analysis of data using PQ Method, including Q-sort correlations, factor analysis using principle components analysis, and varimax rotation. Findings in each of the four (4) research questions resulted in explanations of the teacher's beliefs and perceptions relative to the education of students who are gifted and talented with regard to the teacher's actual and ideal teaching practices. Also discussed in the findings were the nature of teacher personality preferences and teacher's length of service with regard to the education of students who are gifted and talented.

CHAPTER 5

SUMMARY, CONCLUSION AND IMPLICATIONS

The purpose of this study was to describe the ways that teachers perceive the education of students who are gifted and talented. Perceptions were determined based on how teachers believed they adapt curriculum to meet the needs of students who are gifted and talented, and how they think such students should be taught. Curriculum modifications in content, process, product and learning environment (Maker, 1982; Maker, 1995) were examined within the context of three (3) levels of differentiation: no modifications, micro-modifications, and macro-modifications (Tomlinson, 1996). Participants were asked to rank their agreement with a series of forty-eight (48) statements taken from relevant literature related to broad and various ways that curricula are modified for students who are gifted and talented. Using Q-Methodology, three (3) separate beliefs emerged from the factor analysis and interpretation: Justice in Method Teachers, Process in Method Teachers, and Student in Method Teachers. Using the four (4) temperaments – SP, SJ, NF, and NT (Keirsey & Bates, 1984) -- in the Myers Briggs Type Indicator as a method of determining personality preference, the subjects were found to possess differing preferences for diversity, flexibility, and information gathering. This chapter presents a summary of the findings, conclusions developed from the study results, and implications for practice and research.

Summary of Findings

Findings indicate that three (3) beliefs differentiated curriculum for students who are gifted and talented emerged: differentiating according to justice (equity) for students (Justice in Method Teachers), differentiating according to process of instruction (Process in Method Teachers), and differentiating according to student differences (Student in Method Teachers). Subjects in this study show that teachers, although differing among each other, have the same beliefs in their actual and ideal methods and practices for teaching students who are gifted and talented. Personality preferences of teachers appeared to have a minor link to the beliefs of the education of students who are gifted and talented. Novice and veteran teachers revealed similar patterns of beliefs and perceptions for the education of students who are gifted and talented.

Results of this study showed that two (2) Justice in Method Teachers preferred equal treatment of all students as indicated in their sorts where consistency in grading procedures and classroom management were found to be most like these subjects. Thirteen (13) Process in Method Teachers believed that adapting classroom instructional methods and the learning environment were key to differentiating curriculum for diverse learners. These teachers preferred to focus on modifications in instructional delivery methods for students who are gifted and talented. Four (4) Student in Method Teachers revealed that student readiness differences were the focal point for differentiating instruction in

their classrooms. These teachers appeared to be most interested in providing modifications for students on an individual student basis rather than making broad modifications for classroom groups.

The second research question investigated by the researcher was "How do teachers describe their actual and ideal teaching practices and educational beliefs for students who are gifted and talented." In this study, each subject described his or her actual and ideal teaching practices and educational beliefs for students who are gifted and talented as similar. Each of the subjects' actual and ideal Q-sorts loaded on the same factor. Thus, this study revealed that the twenty (20) participants each felt that their current teaching practices and educational beliefs about students who are gifted and talented was closely matched to their own ideal teaching practices and beliefs for this group of students. Although three (3) types of teachers' beliefs emerged from this study, each subject felt that he or she was educating students who are gifted and talented in the most appropriate methods.

The third research question investigated in this study was "In what ways are teacher perceptions of the education of students who are gifted and talented linked to the teachers' personality preferences?" Of the twenty (20) subjects in this study, one (1) self described herself as a Sensing-Perceiver (SP) on the Myers Briggs Type Indicator (MBTI). This teacher prides herself on being free-spirited. She enjoys spontaneity, and therefore, finds the education of students who are gifted and talented as a challenge both for herself and for her students.

Seven (7) respondents in this study were self described as Sensing-Judgers (SJ) on the MBTI. All were female teachers who described themselves as practical and organized. Their SJ personality preference type is generally less flexible, and therefore, not as appealing to students who have diverse learning abilities. These teachers perceive the education of students who are gifted and talented as more assignments and more items on assignments, not differentiation of assignments for diverse learners.

In this study, six (6) respondents were self-described as Intuitive-Feelers (NF) on the MBTI. The five (%) female and one (1) male subject with NF personality preferences are interested in celebrating their students achievements, making students feel important, and keeping student self-esteem high. These teachers perceive that differentiation of instruction allows for student satisfaction, therefore, students who are gifted and talented are most likely to see differentiated educational strategies employed in the NF's classroom.

Six (6) participants in this study were self described as Intuitive-Thinkers (NT) on the MBTI. These teachers are interested in developing mental maps for their students, challenging students to look at multiple solutions to a single problem. Students who are gifted and talented are mentally stimulated in an NT's classroom.

The representation of temperaments in this study mirrored the general population of teachers who are SP.

- General population: four percent (4%)
- In this study: five percent (5%)

- Justice in Method Teachers: zero (0) of two (2) teachers
- Process in Method Teachers: one (1) of thirteen (13) teachers, or one and one-half percent (1.5%)
- Student in Method Teachers: zero (0) of four (4) teachers

The representation of the NF temperament closely matched that of the general population.

- General population: thirty-two percent (32%)
- In this study: thirty percent (30%)
- Justice in Method Teachers: zero (0) of two (2) teachers
- Process in Method Teachers: five (5) of thirteen (13) teachers, or thirty-eight percent (38%)
- Student in Method Teachers: one (1) of four (4) teachers, or twenty-five percent (25%)

Teachers who were self described in this study as SJ did not follow the representation of those temperaments in the general teaching population.

- General population: fifty-six percent (56%)
- In this study: thirty-five percent (35%)
- Justice in Method Teachers: zero (0) of two (2) teachers
- Process in Method Teachers: five (5) of thirteen (13) teachers, or thirty-eight percent (38%)
- Student in Method Teachers: two (2) of four (4) teachers, or fifty percent (50%)

Likewise, teachers who were self described in this study as NT did not follow the representation of those temperaments in the general population.

- General population: eight percent (8%)
- In this study: thirty percent (30%)
- Justice in Method Teachers: two (2) of two (2) teachers, or one hundred percent (100%)
- Process in Method Teachers: two (2) of thirteen (13) teachers, or seven and one-half percent (7.5%)

The last research question investigated in this study was "What pattern might exist among teachers who have differing years of teaching experience (novice and veteran)?" Fourteen (14) participants in this study were veteran teachers, each having taught eight (8) or more years. Of these teachers, nine (9) felt that differentiating instruction was more a function of classroom management and content delivery (Process in Method Teachers). Of the remaining veteran teachers, four (4) subjects felt that student readiness variances helped frame the curricular differentiation in the teacher's classroom (Student in Method Teachers). One (1) of the veteran teachers revealed that she was more interested in equity among students and their assignments than she was in adapting curriculum for diverse learners (Justice in Method Teachers).

Novice teachers, those having taught seven (7) or less years (n=6) revealed similar beliefs and perceptions as their veteran counterparts. Four (4) novice teachers indicated a need for educational structure with some (micro) modifications in content and learning environment (Process in Method Teachers).

One (1) novice teacher revealed much the same as his veteran counterpart with a focus one a 'one-size-fits-all' (Tomlinson, 1996) curriculum for students in his classroom (Justice in Method Teachers). One (1) novice teacher did not load on any of the three (3) factors.

Conclusion

Findings emerged that indicate three beliefs about ways to differentiate curriculum for students who are gifted and talented: differentiating according to justice (equity) for students (Justice in Method Teachers), differentiating according to process of instruction (Process in Method Teachers), and differentiating according to student differences (Student in Method Teachers). Teachers in this study revealed similar patterns of beliefs in their actual and ideal methods and practices for teaching students who are gifted and talented. This finding is not likely to be found in the general population because professional development is based on the notion that teachers establish goals for learning new skills and abilities in instructional practices. Teachers' actual and ideal beliefs about the education of students who are gifted and talented could be troublesome with regard to needs for professional development opportunities. If teachers believe they are educating able learners in the most appropriate manner, the teachers will be less likely to participate in further training regarding curricular modifications for diverse learners. The implications for school administration, higher education, and professional development personnel are discussed later in this chapter.

Personality preference of teachers appeared to have a link to the perceptions and beliefs of the education of students who are gifted and talented. One (1) teacher, an SP, is challenged by diverse learners, and therefore, much more likely to employ principles and levels of differentiation. This teacher has a strong belief in challenging diverse learners. Seven (7) teachers, each an SJ, find that teaching all students in a consistent manner is more appealing, thus discounting the beliefs that students who are gifted and talented need to have differentiated instruction. These teachers are less likely to value student learning diversity. Six (6) teachers, each an NF, find that student self esteem and classroom harmony are important, therefore, believing that differentiation is important to students with varying abilities. These teachers are more concerned with student happiness and harmony. The remaining six (6) teachers, each an NT, thrive on mental stimulation and would be likely to find challenging activities for students who are gifted and talented. The NT teachers appear to be most likely to take into consideration the whole child, academically, intellectually, socially, and emotionally, when developing appropriate curriculum content, process, product, and learning environment.

Novice and veteran teachers revealed similar patterns of beliefs and perceptions for the education of students who are gifted and talented. Novice teachers (n=6) did not reveal different beliefs in the differentiation of content, process, product, and learning environment from the veteran teachers (n=14) in this study.

Implications for Theory

Regular education and gifted education teachers who participated in this study demonstrated diverse beliefs regarding the education of students who are gifted and talented. While two (2) of the participants preferred to have equity in the assignment and grading criteria (no modifications and micro modifications) (Tomlinson, 1996), thirteen (13) subjects were interested in developing curricula and assessment methods which related to the readiness and ability levels of individual students (macro-modifications) (Tomlinson, 1996). Additionally, four (4) participants described their actual and ideal teaching practices regarding students who are gifted and talented as challenging and enriching for students regardless of the students' ability levels.

Learning environment modifications (Maker, 1982; Maker 1995) appeared to be more likely to be micro-modified (Tomlinson, 1996) by the nineteen (19) subjects in this study. As classroom management strategies and adherence to orderly classrooms often foretell a teacher's success (Tomlinson, 1995a; Tomlinson 1996), micro-modifying the learning environment would allow a teacher to remain in favor with administrators (Tomlinson, 1999) yet still provide some flexibility for diverse learners. Although Vygotsky's theory whereby teachers would design a learning environment that permits children to solve problems actively (Berk & Winsler, 1995) is not widely evident in this study's subjects, that theory would focus on creating optimal learning environments which relate to the practices of school district philosophy as well as values held by the community (Berk & Winsler, 1995).

Four (4) subjects were more interested in curricular modifications in content and process. Modifying the content is commonly achieved by teachers using a variety of instructional delivery methods (Maker & Nielson, 1996). Process modifications enable the teacher to use a variety of resource materials and textbooks to present the content (Maker, 1982). Product and content modifications (Maker, 1982; Maker 1995) were more likely to be employed by thirteen (13) participants in this study. Product modifications (Maker 1982; Maker 1995) allow students to demonstrate understanding of content and process through more than paper-and-pencil work (Tomlinson, 1995b; Tomlinson & Kalbfleisch, 1998).

Personality preferences among the subjects of this study varied. Over half of the participants were found to be intuitive dominant, thus interested in challenging projects (Briggs Myers, 1993; Kiersey & Bates, 1984). These subjects would be most likely to be more flexible when students with diverse learning abilities are placed in their classrooms. In this study the elementary gifted and talented education teachers and coordinators (n=4), secondary English (n=1), social studies (n=1), science (n=1), math (n=1), gifted and talented (n=1), and technology (n=1) were self described as intuitive dominant. Additionally, a teacher of teachers (n=1) in this study was intuitive.

Implications for Practice

Results of this study may be useful to educational administrators as they make decisions about hiring educators and making teaching assignments. Matching teacher perceptions and beliefs about the education of students who are gifted and talented with student learning diversity abilities could create more success not only with the teacher but also with the students.

Implications for professional development are diverse. The teachers in this study each reported that their actual teaching practices were also the ideal teaching practices for students who are gifted and talented. Professional development opportunities for these teachers might include model or demonstration lessons with regard to differentiating content, process, product, and learning environment. Included in the differentiation study would be Vygotsky's strategy of reciprocal teaching, whereby a teacher forms a learning group with two (2) to four (4) students in which they take turns leading discussions which focus on comprehension of previously learned information and acquisition of new knowledge (Berk & Winsler, 1995). Teachers would be introduced to the technique of scaffolding student learning, a support system that fosters growth and success is presented to students by the teacher (Berk & Winsler, 1995). Additional professional development opportunities might include hands-on, curricular-specific sessions involving vertical teams of teachers designing differentiated lessons to address the needs of diverse learners, including students who are gifted and talented.

Implications for higher education are indicated in the findings of this study as teacher training and preservice programs look at the perceptions of the education of students who are gifted and talented held by the participants in this study. With current collegiate teacher training programs offering almost no information regarding high ability learners, the results of this study would indicate a need for instruction to prospective teachers about the educational needs of those students whose readiness levels are above grade or age level. The recent trend (State of the States, 1996) for students with diverse learning abilities to be educated in the regular classroom would indicate a need for regular education teachers to be trained in differentiation strategies which would better serve these learners. Further, implications for increased student success would be a logical result of teacher professional development which focused on the development and practice of differentiated learning strategies.

Implications for Further Research

Results of this study indicate a trend with the participants believing that their actual and ideal teaching practices for students who are gifted and talented are closely matched. Statements extracted from the literature for a future Q-sort could be better refined to reflect more disparate beliefs, thus potentially yielding results which would be more descriptive of actual and ideal teaching practices. Additionally, another condition of instruction could be introduced that would reflect the observed teaching practices of these subjects by a fellow teacher or administrator. The information garnered by the outside observer might serve as

confirmation of the subject's current teaching practices and beliefs. Including information from an outside observer who teaches in another district or works in a university setting might yield information that would be beneficial to educational administrators, professional development specialists, and higher education.

Further research on teacher beliefs and perceptions might include a different instrument for measuring preference. The use of a learning styles inventory rather than a personality preference instrument could provide information about how teacher participants learn, and how they teach their students based on their personal learning style.

An investigation of one school district's teachers' beliefs and perceptions about the education of students who are gifted and talented would be interesting for additional research. This information would be useful to the district personnel as well as to prospective employees of that district.

Investigating beliefs and perceptions of teacher with graduate training or extensive inservice training in gifted and talented education would be thought-provoking in a comparison study with teachers who have limited or no training.

A study of a school district with primarily only veteran or novice teachers might reveal more information about the research question relating to years of service. Introducing a novice teacher to a previously veteran teacher site or a veteran teacher to a previously novice teacher site could result in more descriptive results as to the nature of length of tenure in the professions

The results of this study are but a step in the direction of enabling students to function in classrooms where the content, process, product, and learning

environment (Maker, 1982; Maker 1995) are modified at various levels – no modifications, micro-modifications, and macro-modifications (Tomlinson, 1996) - to match the individual students' needs and abilities. Just as each individual approaches a situation in a diverse manner, student learning differences should be considered to maximize student learning. Further research is needed to develop more effective teaching assignment standards, professional development workshops, and higher education teacher training programs which would benefit students who are gifted and talented.

As a state director of gifted and talented education, the results of this study are important to the researcher as they direct the emphasis needed in professional development. Informing teachers of the types and levels of curriculum modifications becomes more focused as evidence is shown that some adaptations are more frequently used while others are rarely employed in the classroom. Realizing that most teachers in this Oklahoma state are not formally trained in the educational practices and methods of curriculum modification for gifted and talented learners means that professional development presentations need to be designed to explain the need for classroom modifications in content, process, product, and learning environment. Developing teacher-friendly inservice training sessions involves the use of introducing and using the nomenclature of the field, providing examples of modifications in lesson planning and classroom management, and modeling best practices for modifications in the regular classroom, pull-out program, or special school. It is this researcher's

hope that celebrating diversity among all children will enable each child to growth and develop to his or her highest potential.

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APPENDIX A

LETTER OF INVITATION TO PARTICIPANTS

September 15, 1998

(Participant First/Last Name)
(Participant Address)
(Participant City, State, Zip)

Dear (Participant Name),

As a graduate student at Oklahoma State University I have developed a research study to describe the ways teachers believe that students who are gifted and talented are taught. The study is designed to make inferences about how regular education and gifted education teachers perceive the education of students who are thought to be gifted and talented.

This study will be monitored by my dissertation director, Dr. Diane Montgomery. Permission for this research has also been granted by the Institutional Review Board at Oklahoma State University.

Your participation in this study may require up to two (2) hours of your time. Confidentiality of results will be strictly enforced. You will be asked to complete the Myers-Briggs Type Indicator which will be scored by Dr. Montgomery, and a Q-sort with statements about gifted and talented education which will be analyzed using a computer program. A brief interview protocol with some additional questions will be used at the end of the sort. Upon request, I will provide you with the results of your personal surveys.

Results of this study will be used to complete my doctoral dissertation at Oklahoma State University. At no time will your name or identifying information be printed in the dissertation. Group information will be used to describe results of the study. In fact, your name will be removed from all of the materials that you submit.

I look forward to working with you in this research study. I will contact you to arrange a convenient schedule for completing the two surveys used in this study. If you have questions, please do not hesitate to call me, at home 405-794-3679, or at work, 405-521-4287. You may also contact Dr. Montgomery at 405-744-9441.

Thank you for your assistance in this important study.

Sincerely,

Kristy K Ehlers
Graduate Student
Oklahoma State University

APPENDIX B

INSTITUTIONAL REVIEW BOARD APPROVAL

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD

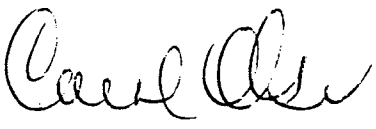
DATE: 09-02-98 **IRB #: ED-99-015**

Proposal Title: TEACHER PERCEPTIONS OF THE EDUCATION OF STUDENTS WHO ARE GIFTED AND TALENTED BY TEACHER PERSONALITY TYPE: A Q-METHODOLOGICAL STUDY

Principal Investigator(s): Diane Montgomery, Kristy K. Ehlers

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

Signature:  Date: October 9, 1998

Carol Olson, Director of University Research Compliance
cc: Kristy K. Ehlers

Approvals are valid for one calendar year, after which time a request for continuation must be submitted. Any modification to the research project approved by the IRB must be submitted for approval. Approved projects are subject to monitoring by the IRB. Expedited and exempt projects may be reviewed by the full Institutional Review Board.

APPENDIX C

PARTICIPANT AGREEMENT

I, _____, hereby authorize Kristy K Ehlers or an associate or assistant of her choosing to perform the following treatment or procedure. This treatment or procedure is being used in an investigation entitled "Teacher Perceptions of the Education of Students Who Are Gifted and Talented: A Q-Methodological Study."

This study will investigate the subjects' perceptions of classroom practices relative to students who are gifted and talented. The study will also utilize an instrument used to assess the personality preferences of the subjects. Participation in this study may take up to two (2) hours, and will involve (1) the subject rank-ordering forty-eight (48) opinion statements two (2) times according to personal agreement or disagreement to the statements; (2) the completion of a personality preference instrument; and (3) a brief interview protocol to further address the topic of this study. All records of participation and results of this study are considered confidential. Identification of each participant will be by an assigned number during the study. Prior to any publication of the findings, confidentiality and anonymity will be preserved by removing your name from all materials which you have submitted.

I understand that participation in this study is voluntary, and that I am free to withdraw my consent and participation in this study at any time without penalty after notifying the project director.

I may contact Kristy Ehlers at 405-794-3679 or 405-521-4287, or Dr. Diane Montogomery at 405-744-9441. I may also contact Gay Clarkson, Executive Secretary of the Institutional Review Board, Oklahoma State University, 305 Whitehurst Hall, Stillwater, OK 74078, at 405-744-5700.

I have read and fully understand the consent form. I sign freely and voluntarily. A copy of this signed form has been given to me.

Date signed: _____

Time signed: _____ a.m. p.m.

Signature: _____

Witness:_____

APPENDIX D

BRIEF INTERVIEW PROTOCOL

1. Briefly describe the way you sorted the items under the first condition (Real)?

2. Briefly describe the way you sorted the items under the second condition (Ideal)?

3. In which of these ranges of age do you belong (please circle appropriate range):

21-25	31-35	41-45	51-55	61-65
26-30	36-40	46-50	56-60	66-70

4. What do you currently teach (grade level and subject(s))?

5. Gender: ____ Male ____ Female

6. What degree(s) do you hold?

7. In what area(s) do you hold certification?

8. How long have you been teaching?

9. How many years in your current position?

10. In what ethnic category would you place yourself (optional)?

____ Caucasian	____ African American
____ Hispanic American	____ Asian American
____ Native American	____ Other

11. What do you believe to be the philosophy of your current school district regarding the education of students who are gifted and talented?

APPENDIX E

Q-SET REVIEW CRITERIA

The concourse development was:

(1) based on current literature related to the education of students who are gifted and talented;

(2) written in "teacher-ese" which utilizes "gifted students" rather than "students who are gifted and talented;"

(3) developed as a 3X4 construct, with 3 levels of modifications (no, micro, and macro), and 4 levels of curriculum development (content, process, product, and learning environment);

(4) applicable to gifted and talented education practices, including general beliefs about teaching;

(5) non-redundant among and between levels;

(6) descriptive of a range of practices and beliefs;

(7) written with these conditions of instruction to inform development:
"What do you believe best describes your teaching?"
"What best describes your ideal way of teaching?";

(8) developed with consistency of number of items per level:
content - 5 items
process - 5 items
product - 3 items
learning environment - 3 items; and

(9) inclusive of alternative items which the reviewers could suggest as possible items to replace items originally selected by the researcher.

APPENDIX F

Q-SET

NC 1. Gifted students are expected to be able to challenge themselves and learn at their own pace (Busse & Dahme, 1986; Singer, Houtz, & Rosenfield, 1992; Terman, 1925; Winner, 1996).

NC 2. Gifted students get the bulk of their differentiated education in a pull-out program (Carter, 1971; Eccles, 1983; Fritz & Miller, 1995; Sapon-Shevin, 1994; Schwartz, 1994; Sherman, 1997; Shipley, 1997; Tomlinson, 1996; Winebrenner, 1997; Winner, 1996).

NC 3. Students receive instruction in a consistent, group oriented manner (Ellis, Rountree, & Larkin, 1993; Gallagher, Coleman, & Nelson, 1996; Maker & Nielson, 1996; Taba, Durkin, Fraenkel, & McNaughton, 1971; Tomlinson, 1996).

NC 4. Gifted education services are a privilege to those students who qualify to receive them (Adderholdt-Elliott, 1987; Dettmer, 1994; Kaplan, 1986; Schwartz, 1994; Sapon-Shevin, 1993; Starko & Schack, 1989; Winner, 1996).

NC 5. Lecturing is the best teaching method (Peters, Neisworth, & Yawkey, 1985; Whitlock & DuCette, 1989).

NP 6. Students work as a whole on materials, exercises, and projects (Kaplan, 1986; Tomlinson, 1996).

NP 7. The academic pace of the classroom is consistent for all students (Rosselli, 1993; Tomlinson, 1996).

NP 8. Grading expectations are consistent for all students (Butler, 1997; Renzulli, 1968; Rubenzer & Twaited, 1979; Tomlinson, 1996; Whitlock & DuCette, 1989).

NP 9. Students should learn facts (Kaplan, 1986; Shore, Cornell, Robinson, & Ward, 1991)

NP 10. The classroom is teacher-centered (Bishop, 1976; Maker & Nielson, 1996; Rosselli, 1983; Shore, Cornell, Robinson, & Ward, 1991; Whitlock & DuCette, 1989)

ND 11. All students complete all assignments (Kaplan, 1986; Rubenzer & Twaited, 1979; Tomlinson, 1996).

ND 12. Grading criteria is consistent for all students (Rubenzer & Twaited, 1979;
Tomlinson, 1996)

ND 13. The more students practice the more they will learn (Terman, 1925; Tomlinson, Tomchin, & Callahan, 1994; VanTassel-Baska, 1985).

NL 14. Students need educational structure (Johnsen & Ryser, 1996; Maker & Nielson, 1995; Roeper, 1995; Sisk, 1993; Tomlinson, 1996).

NL 15. Students are not grouped by their abilities (Fernandez, Gay, Lucky, & Gavilan, 1998; George & Rubin, 1992; Sherman, 1997).

NL 16. Students work at their assigned desks or tables (Mann, 1997; Terman, 1925; Tomlinson, 1996;).

IC 17. Students may pick their own work groups (Gallagher, Coleman, & Nelson, 1993; Peters, Neisworth, & Yawkey, 1985; Sherman, 1997; Tomlinson, 1996; Whitlock & DuCetter, 1989; Winebrenner, 1992).

IC 18. Peer teaching by gifted students is encouraged (Reid, Renzulli, Gubbins, & Imbeau, 1992; Shore, Cornell, Robinson, & Ward, 1991).

IC 19. Gifted students are given more challenging/enriched assignments than other students (Kaplan, 1986; Tomlinson, 1995a; Tomlinson, 1996; VanTassel-Baska, 1986b).

IC 20. Gifted students are given more assignments/items to do than other students (Bloom, 1956; Colangelo & Davis, 1991; Coleman & Gallagher, 1995; Tomlinson, 1996; Tomlinson, Tomchin, & Callahanm 1994; VanTassel-Baska, 1985).

IC 21. Different learning objectives and evaluation standards are set for different students based on the student's ability (Kaplan, 1986; Renzulli, 1986; Renzulli, 1988; Tomlinson, Tomchin, & Callahan, 1994).

IP 22. Grading expectations for students are varied (Butler, 1997; Renzulli, 1968; Rubenzer & Twaited, 1979; Tomlinson, 1996; Whitlock & DuCette, 1989).

IP 23. Enrichment activities mean more work for students with high abilities (Colangelo & Davis, 1991; Shore, Cornell, Robinson, & Ward, 1991).

IP 24. Lessons are altered to match students' requests or interests (Reis, Gentry, & Maxfield, 1998; Tomlinson, Tomchin, & Callahan, 1994).

IP 25. Help to gifted students is provided only when they ask (Peters, Neisworth, & Yawkey, 1985; Singer, Houtz, & Rosenfield, 1992; Renzulli, 1988).

IP 26. Gifted students are given opportunities to develop and practice creative problem solving, critical thinking, and research skills (Bloom, 1956; Kaplan, 1986; Mayfield, 1979; Reis, Gentry, & Maxfield, 1998; Shore, Cornell, Robinson, & Ward, 1991; VanTassel-Baska, 1985).

ID 27. If students finish their work early, they may read, do puzzles, work on other assignments, or work on the computer (Hertzog, 1998; Tomlinson, 1996; Whitlock & DuCette, 1989).

ID 28. Students who understand the concepts being taught in math are not required to show their work on math assignments (Kulick & Kulick, 1984; Gallagher, 1992; Renzulli, 1988; Sherman, 1997; Tomlinson, 1996).

ID 29. Gifted students are encouraged to ask questions which may extend the focus of the planned discussion (Bloom, 1956; Kaplan, 1986; Tomlinson, 1996; VanTassel-Baska, 1989; Witty, 1958;).

IL 30. Students will succeed because of a formal and rule-governed classroom environment (Coleman & Gallagher, 1992; Winner, 1996).

IL 31. It is possible to serve a wide range of academic needs in the classroom (Gold, 1965; Semmel & Gao, 1992; Taylor, Richards, Goldstein, & Schilit, 1997; Tomlinson, 1996; Vaughn, Schumm, Jallad, Slusher, & Samuell, 1994; Whitlock & DuCette, 1989).

IL 32. Students are not expected to always be sitting quietly at their desks/tables (Terman, 1925; Tomlinson, 1996).

AC 33. Learning activities are centered around the interest and abilities of gifted and talented students (Correll, 1978; Kaplan, 1986; Renzulli, 1986; Renzulli, 1988; VanTassel-Baska, 1989; Winner, 1996; Witty, 1958).

AC 34. Students have set individual academic goals by which their assessments are based (Adderholdt-Elliott, 1987; Berger, 1996; Tomlinson, 1996).

AC 35. Planned lessons and activities are modified based on the spontaneous interests and questions of students (Coleman, 1991; Coleman & Gallagher, 1995; Gallagher, Shaffer, Phillips, Addy, Rainer, & Nelson, 1966; Peters, Neisworth, & Yawkey, 1985; Tomlinson, 1995b).

AC 36. Students work together cooperatively with other students of varying ability levels (Davis & Rimm, 1989; Fritz & Miller, 1995; Gallagher, Coleman, & Nelson, 1993; Schwartz, 1994; Winner, 1996)

AC 37. Student learning differences are varied, and modifications to accommodate for those differences should be made in the classroom (Kaplan, 1986; Renzulli, 1988; Tomlinson, Tomchin, & Callahan, 1994; VanTassel-Baska, 1986b).

AP 38. Grading expectations are adapted to reflect the individual student's growth and progress (Butler, 1997; Maker, 1982; Maker, 1995; Renzulli, 1968; Rubenzer & Twaited, 1979; Tomlinson, 1996; Tomlinson, 1998).

AP 39. Variable pacing for students is used based on the students' effort and ability (Kulick & Kulick, 1984; Renzulli, 1988; Sherman, 1997; Tomlinson, 1996; VanTassel-Baska, 1986b;).

AP 40. Students experience success even if it means modifications to curriculum delivery methods are necessary (James, 1995; Kaplan, 1986; Maker, 1982; Maker, 1995; Tomlinson, Tomchin, & Callahan, 1994).

AP 41. Students are given situations that encourage them to experiment, explore, and solve problems on their own (Mayfield, 1979; Maker & Nielson, 1996; Peters, Neisworth, & Yawkey, 1985; Reis, Gentry, & Maxfield, 1998; Stanley, 1995; VanTassel-Baska, 1986a).

AP 42. Opportunities for students to actively practice critical thinking and creative problem solving skills are built in to all lessons (Bloom, 1956; Shore, Cornell, Robinson, & Ward, 1991; Tarver & Curry, 1992; VanTassel-Baska, 1985; VanTassel-Baska, 1986a;).

AD 43. Students are compacted out of content which they already know (Kulick & Kulick, 1984; Renzulli, 1986; Renzulli, 1988; Renzulli, Smith, & Reis, 1982; Tomlinson, 1996; VanTassel-Baska, 1986b; Winebrenner, 1992; Winebrenner & Berger, 1994).

AD 44. Students can make their own choices about the products they complete for in-depth projects (Butler, 1997; Kettle, Renzulli, & Rizza, 1998; Sherman, 1997; Tomlinson, 1996; VanTassel-Baska, 1998).

AD 45. Grading practices should be adapted to the ability level of individual students (Tomlinson, 1996).

AL 46. Flexible learning groups are consistently used (Gallagher, Coleman, & Nelson, 1993; Reis, Gentry, & Maxfield, 1998; Sherman, 1997; Tomlinson, 1996).

AL 47. Opportunities for cooperative and group work are provided for all students (Gallagher, Coleman, & Nelson, 1993; Peters, Neisworth, & Yawkey, 1985; Renzulli, 1968; Sherman, 1997; Tomlinson & Kalbfleisch, 1998).

AL 48. Students can form groups to work together on projects and/or assignments (Coleman & Gallagher, 1995; Gallagher, Coleman, & Nelson, 1993; Maker, 1982; Mann, 1992; Sisk, 1993)

Legend:
NC - no modifications in content
NP - no modifications in process
ND - no modifications in product
NL - no modifications in learning environment
IC - micro modifications in content
IP - micro modifications in process

ID - micro modifications in product
IL - micro modifications in learning environment
AC - macro modifications in content
AP - macro modifications in process
AD - macro modifications in product
AL - macro modifications in learning environment

APPENDIX G

CONDITIONS OF INSTRUCTION NARRATIVE

ACTUAL

"This research study is designed to investigate your views concerning educational practices for students who are gifted and talented. You will first be given a set of statements and asked to rank order them from those which are most like your perceptions of your current teaching practices and beliefs, to those which are least like your perceptions of your current teaching practices and beliefs. Strict confidentiality is afforded to all participants in this study. This type of research requires confirmation of findings and interpretation of results from participants found to define a particular viewpoint. Anonymity will be granted to all participants at the conclusion of this research study. In any publication of results of this study, confidentiality and anonymity will be preserved.

"Please read through all of the forty-eight (48) items to become familiar with their contents. Sort the statements into three (3) sets. One set will contain statements with which you find to be most like your perceptions of your current teaching practices and beliefs. Another set of statements will contain those with which you find to be most unlike your perceptions of your current teaching practices and beliefs. The final set will contain statements with which you are ambivalent, uncertain, or have no reaction. As you progress through the sorting process, please remember the condition of instruction: What do you believe best

describes your teaching?

"A distribution matrix is provided to facilitate the sorting of statements. After you have completed the initial sorting into three (3) sets, select the set which is most like your perceptions of your teaching practices and beliefs. Identify the two (2) items which is the most like your perceptions and place those statements in the far right column of Matrix Form #1: Real. Looking at the set of statements which are most unlike your perceptions, select the two (2) statements which are the most unlike your perceptions and place those statements in the far left column of the same matrix form. Continue this process until all statements are assigned a position on the Matrix Form #1: Real. Vertical placement is of no consequence. Once all statements have been place on the matrix, please review your responses for accuracy. Record the statement's identifying number of the Matrix Form #1: Real"

IDEAL

"Please sort the statements again into three (3) sets. One set will contain statements with which you find to be most like your perceptions of your ideal teaching practices and beliefs. Another set of statements will contain those with which you find to be most unlike your perceptions of your ideal teaching practices and beliefs. The final set will contain statements with which you are ambivalent, uncertain, or have no reaction. As you proceed through the sorting process, please remember the condition of instruction: What best describes your

ideal way of teaching?

"A distribution matrix is provided to facilitate the sorting of statements. After you have completed the initial sorting into three (3) sets, select the set which is most like your perceptions of your ideal teaching practices and beliefs. Identify the two (2) items which are most like your perceptions and place those statements in the far right column of Matrix Form #2: Ideal. Looking at the set of statements which are most unlike your perceptions, select the two (2) statements which are most unlike your perceptions and place those statements in the far left column of the same matrix form. Continue this process until all statements are assigned a position on the Matrix Form #2: Ideal. Vertical placement is of no consequence. Once all statements have been place on the matrix, please review your responses for accuracy. Record the statement's identifying number on Matrix Form #2: Ideal."

BRIEF INTERVIEW PROTOCOL

"Complete the accompanying Brief Interview Protocol. Thank you for agreeing to participate in this study."

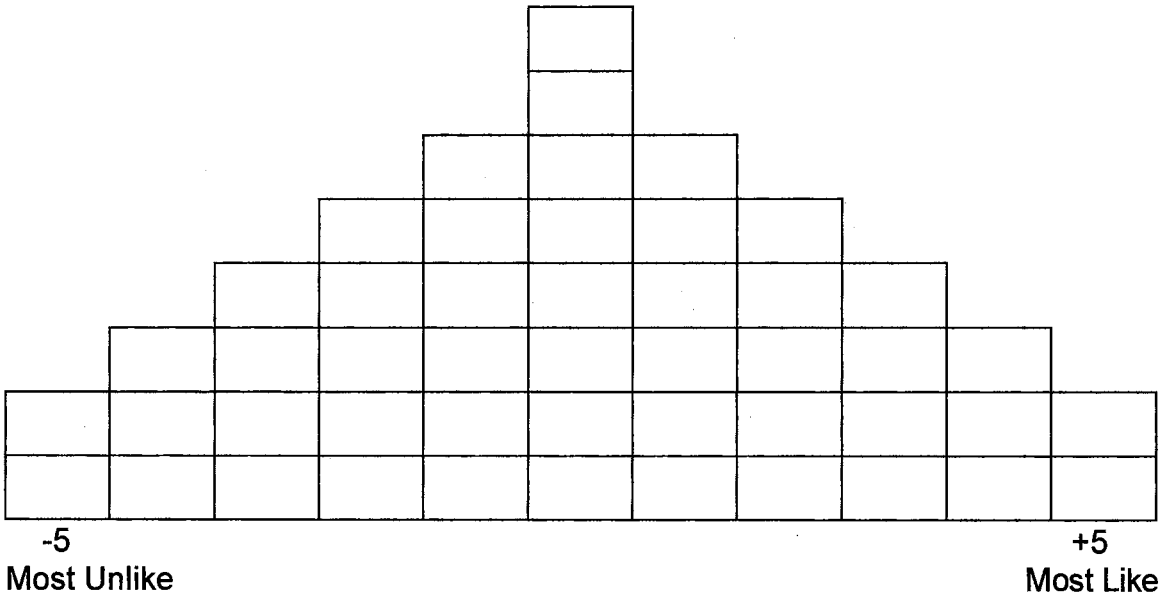
APPENDIX H

Q-SORT FORM BOARD MATRIX

Place the number of the item statement in the Q-sort distribution below.
Numbers may be used only once on each matrix form.

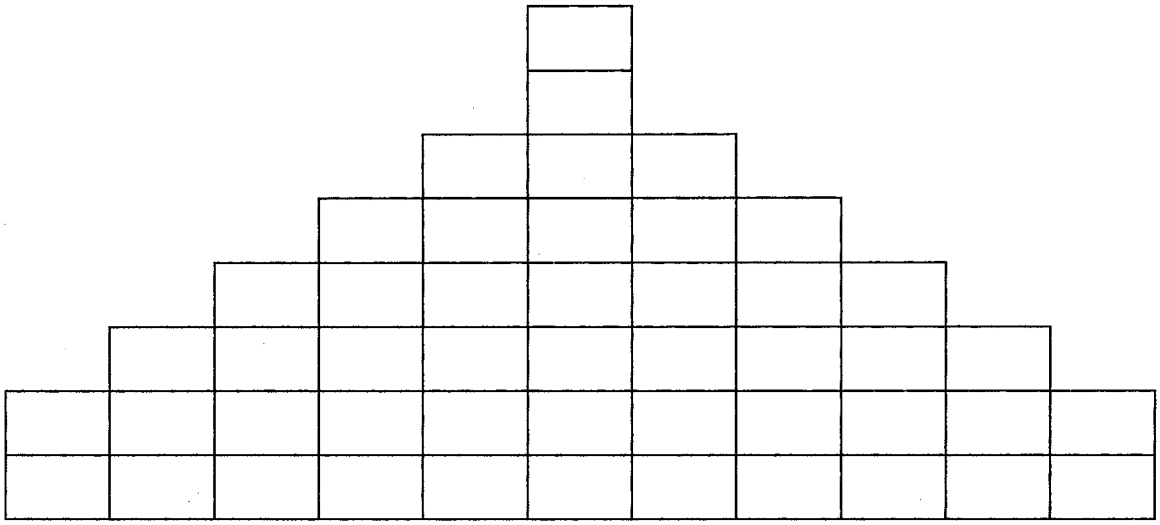
MATRIX FORM #1: ACTUAL

Condition of Instruction: What do you believe best describes your teaching? Sort the statements according to which items are most like (+5) or most unlike (-5) your perceptions of your current classroom practices.



MATRIX FORM #2: IDEAL

Condition of Instruction: What do you believe best describes your teaching? Sort the statements according to which items are most like (+5) or most unlike (-5) your perceptions of your current classroom practices.



APPENDIX i

RANK STATEMENTS WITH ARRAY POSITIONS AND z-SCORES

No.	Statement	Factor 1		Factor 2		Factor 3	
		Array Position	z-score	Array Position	z-score	Array Position	z-score
1	Gifted students are expected to be able to challenge themselves and learn at their own pace.	1	.406	-2	-.897	2	.695
2	Gifted students get the bulk of their differentiated education in a pull-out program.	-3	-1.412	-1	-.509	-4	-1.431
3	Students receive instruction in a consistent, group oriented manner.	0	.369	-1	-.588	-3	-1.305
4	Gifted education services are a privilege to those students who qualify to receive them.	0	-.230	-3	-1.303	-2	-.490

No.	Statement	Factor 1		Factor 2		Factor 3	
		Array Position	z-score	Array Position	z-score	Array Position	z-score
5	Lecturing is the best teaching method.	0	-.188	-5	-1.856	-5	-2.097
6	Students work as a whole on materials, exercises, and projects.	0	.163	-1	-.664	0	-.189
7	The academic pace of the classroom is consistent for all students.	1	.675	-3	-1.233	-4	-1.666
8	Grading expectations are consistent for all students.	2	.734	-2	-.673	-4	-1.585
9	Students should learn facts.	2	.763	-1	-.469	-1	-.449
10	The classroom is teacher-centered.	-1	-.406	-5	-1.803	-5	-1.885
11	All students complete all assignments.	0	.074	-4	-1.535	-2	-.963
12	Grading criteria is consistent for all students.	3	1.019	-2	-.783	-3	-1.352

No.	Statement	Factor 1		Factor 2		Factor 3	
		Array Position	z-score	Array Position	z-score	Array Position	z-score
13	The more students practice the more they will learn.	5	2.008	-2	.-985	0	-.022
14	Students need educational structure.	3	1.273	0	.025	0	.197
15	Students are not grouped by their abilities.	1	.621	-1	-.366	1	.408
16	Students work at their assigned desks or tables.	-1	-.478	-3	-1.099	-1	-.231
17	Students may pick their own work groups.	0	.077	0	.229	0	-.164
18	Peer teaching by gifted students is encouraged.	4	1.288	0	.212	1	.566
19	Gifted students are given more challenging/enriched assignments than other students.	-1	-.369	1	.572	-1	-.353

No.	Statement	Factor 1		Factor 2		Factor 3	
		Array Position	z-score	Array Position	z-score	Array Position	z-score
20	Gifted students are given more assignments/items to do than other students.	-5	-1.802	-4	-1.784	-3	-1.124
21	Different learning objectives and evaluation standards are set for different students based on the student's ability.	-4	-1.473	2	.774	2	.897
22	Grading expectations for students are varied.	-4	-1.700	0	.243	0	.215
23	Enrichment activities mean more work for students with high abilities.	-1	-.373	-3	-1.473	0	-.157
24	Lessons are altered to match students' requests – or interests.	-2	-.609	1	.662	-1	-.302

No.	Statement	Factor 1		Factor 2		Factor 3	
		Array Position	z-score	Array Position	z-score	Array Position	z-score
25	Help to gifted students is provided only when they ask.	0	-.077	-2	-1.070	-2	-.789
26	Gifted students are given opportunities to develop and practice creative problem solving, critical thinking, and research skills.	3	.882	5	1.474	4	1.410
27	If students finish their work early, they may read, do puzzles, work on other assignments or work on the computer.	-1	-.363	2	.806	-3	-1.250

No.	Statement	Factor 1		Factor 2		Factor 3	
		Array Position	z-score	Array Position	z-score	Array Position	z-score
28	Students who understand the concepts being taught in math are not required to show their work on math assignments.	-3	-1.301	1	.614	-1	-.327
29	Gifted students are encouraged to ask questions which may extend the focus of the planned discussion.	3	.911	5	1.346	2	.856
30	Students will succeed because of formal and rule-governed classroom environment.	1	.545	-4	-1.585	-2	-.896
31	It is possible to serve a wide range of academic needs in the classroom.	1	.694	0	.481	4	1.568

No.	Statement	Factor 1		Factor 2		Factor 3	
		Array Position	z-score	Array Position	z-score	Array Position	z-score
32	Students are not expected to always be sitting quietly at their desks/tables.	5	1.875	4	1.169	2	.757
33	Learning activities are centered around the interest and abilities of gifted and talented students.	-2	-.759	1	.716	-2	-.481
34	Students have set individual academic goals by which their assessments are based.	-2	-1.011	-1	-.123	1	.362
35	Planned lessons and activities are modified based on the spontaneous interests and questions of students.	0	-.177	3	1.156	1	.343

No.	Statement	Factor 1		Factor 2		Factor 3	
		Array Posi-tion	z-score	Array Posi-tion	z-score	Array Posi-tion	z-score
36	Students work together cooperatively with other students of varying ability levels.	4	1.516	0	.397	1	.511
37	Student learning differences are varied, and modifications to accommodate for those differences should be made in the classroom.	-3	-1.177	3	1.020	5	1.607
38	Grading expectations are adapted to reflect the individual student's growth and progress.	-4	-1.516	0	.124	3	1.116
39	Variable pacing for students is used based on the students' effort and ability.	-3	-1.093	1	.758	5	1.715

No.	Statement	Factor 1		Factor 2		Factor 3	
		Array Position	z-score	Array Position	z-score	Array Position	z-score
40	Students experience success even if it means modifications to curriculum delivery methods are necessary.	-2	-.676	2	.964	3	1.059
41	Students are given situations that encourage them to experiment, explore, and solve problems on their own.	4	1.402	4	1.307	4	1.412
42	Opportunities for students to actively practice critical thinking and creative problem solving skills are built in to all lessons.	2	.770	3	1.106	3	1.401

VITA

Kristy K Ehlers

Candidate for the Degree of

Doctor of Philosophy

Thesis: TEACHER PERCEPTIONS OF THE EDUCATION OF STUDENTS WHO ARE GIFTED AND TALENTED BY TEACHER PERSONALITY PREFERENCE: A Q-METHODOLOGICAL STUDY

Major Field: Applied Behavioral Studies

Biographical:

Education: Graduated from Tuttle High School, Tuttle, Oklahoma in May 1978; received Bachelor of Science degree in Elementary Education from Central State University, Edmond, Oklahoma in May 1982; received Master of Science degree in Special Education/Emotional Disturbance from the University of Central Oklahoma, Edmond, Oklahoma in December 1992. Completed the requirements for the Doctor of Philosophy degree with a major in Applied Behavioral Studies, Special Education/Gifted and Talented Education at Oklahoma State University in July 2000.

Experience: Employed as a retail manager and sales trainer; employed as a human resource generalist and training specialist for a corporate restaurant chain; employed as an elementary teacher of gifted and talented education; employed as the district coordinator for Gifted and Talented Education and Fine Arts Education; employed by the Oklahoma State Department of Education as the State Director for Gifted and Talented Education, 1996 to present.

Professional Memberships: International Society for the Scientific Study of Subjectivity; National Association for Gifted Children; National Association for State Associations for the Gifted; Council of State Directors for Programs of the Gifted; Association for Supervision and Curriculum Development; Oklahoma Association of Supervision and Curriculum Development; Council of Exceptional Children; Council of Exceptional Children Talented and Gifted Division; Oklahoma Association for Gifted, Creative, and Talented, Inc.