Teacher perceptions on mathematically gifted: A survey of mathematics teachers in Motheo and Xhariep districts' primary schools of Free State Province

by

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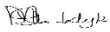
DECLARATION

I declare that “Teacher perceptions on mathematically giftedness: A survey of mathematics teachers at Motheo and Xhariep districts’ primary schools” is my own original work and all the sources used in this study have been acknowledged. I am a sole author of this work and I have not submitted it in its entirety or partly for any other qualification. Therefore, reproduction and publication by Central University will not contravene any third party’s rights.



MG van Wyk 25 October 2018

DEDICATION

This work is a dedication to:

My late parents, Mr. and Mrs. Kiewit John and Kediemetse Evelyn de Kock,

My late grandparents Mr. and Mrs. Ernest Malejwane and Agnes Motshidisi Nyokong who instilled discipline in me towards education during my youth,

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ABSTRACT

In South Africa, schools are defined as full-service schools (FSS) that are inclusive and welcoming of learners to develop their full potential irrespective of their background, culture, abilities or disabilities, their gender or race (Department of Basic Education, 2014). However, gifted learners are found in mainstream classrooms where teachers must deal with a wide diversity of learners. Empirical evidence shows that teachers are trained on inclusive education, but the interpretation of inclusive education is that of meeting the needs of learners who are falling behind. This interpretation excludes gifted learners confirming (Oswald & de Villiers, 2013) assertions that teachers are not trained on gifted education. Yet the outstanding creativity of a small percentage of the population (gifted learners) has been described as mankind's ultimate human capital asset. This study adopted Gagné's Differentiating Model of Giftedness and Talent (DMGT) which sensitizes researchers about the developmental process of the student's potential that could be affected negatively or positively by environmental and intrapersonal catalysts. Consequently, if the developmental process is affected negatively, it becomes poor and result in hindering the gifted student to become talented. Such student's inherent gifts will go to waste but if nurtured and developed, such potential (gifts) will reveal his or her talent (Gagné, 2007). Based on this concern, this study aimed at investigating perceptions of foundation phase teachers from the Motheo and Xhariep districts' primary schools of the Free State toward mathematically gifted learners. This study was guided by Gagné's fifth commandment about the education of gifted students that suggests the need for earliest intervention in developing talent into gifts – as early as kindergarten or first grade (Gagné, 2007). This study investigated foundation phase teachers' preparedness in terms of catering for the needs of mathematically gifted learners in their regular classrooms. It also investigated principals' perceptions toward gifted education through inclusive education that is currently practiced in mainstream classrooms. The study followed a mixed method approach. Purposive sampling was used to select the 118 mathematics teachers who took part in the study. Data was collected by means of a three-point Likert scale questionnaire and the face-to-face structured interview schedule for teachers and principals respectively, from all twenty selected primary schools. All the data, collected in this study, collected from questionnaires and interviews, were organised

within the context of the research questions using thematic analyses drawn from to provide coherence on the findings of this study (Cohen, Manion & Morrison, 2011).

Regarding teacher preparedness, the results show that 94 teachers were trained to teach Numeracy, 91 teachers were trained to teach Literacy and 83 teachers were trained to teach Life Skills. The results also show that 64% of teachers perceived themselves as being competent enough to teach the gifted learners in their regular classrooms. However, 88% of teachers expressed the need for higher education institutions to include content on gifted education in their courses.

The results further, show that 35% of principals encourage teachers to differentiate teaching methods or strategies and resources in their lesson planning, to facilitate effective inclusive education. However, differentiation was with reference to struggling learners not for gifted learners. These results are similar to what Mhlolo (2015) found in terms of the implementation of an inclusive education policy in South Africa being a main concern which is affected by a number of factors such as lack of training.

Keywords: Perceptions, inclusive education, gifted and talented

ABBREVIATIONS

AMESA	Association for Mathematics Education of South Africa
ANC	African National Congress
CAEP	Council for the Accreditation of Educator Preparation
CAPS	Curriculum and Assessment Policy Statement
ELSEN	Education for Learners with Special Education Needs
FSS	full-service schools
HOD	Head of Department
IQ	Intelligence Quotient
LFs	Learning Facilitators
NACE	National Association for Able Children in Education
NAGC	National Association for Gifted Children
NAGC-CEC	National Association for Gifted Children and Council for Exceptional Children
NPC	National Planning Commission's
SBST	School Based Supporting Team
STEM	Science, Technology, Engineering and Mathematics
PLC	Professional Learning Communities
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organisation

ACRONYMS

PA = PRINCIPAL A

PB = PRINCIPAL B

PF = PRINCIPAL F

PG = PRINCIPAL G

PG = PRINCIPAL M

PO = PRINCIPAL O

PP = PRINCIPAL P

PS = PRINCIPAL S

PT = PRINCIPAL T

PV = PRINCIPAL V

PX = PRINCIPAL X

SC = SCHOOL C

SD = SCHOOL D

SK = SCHOOL K

SL = SCHOOL L

SM = SCHOOL M

SQ = SCHOOL Q

SR-PR = SCHOOL R PRINCIPAL R

SS = SCHOOL S

SV = SCHOOL V

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CHAPTER 1

THE INTRODUCTION

1.1. Background to the research problem

Britt (2010) states that a country's economic success is directly influenced by innovation and science, technology, engineering and mathematics (STEM) education of its gifted students. In South Africa, gifted learners are found in mainstream classrooms where teachers have to deal with a wide diversity of learners. Empirical studies show that, in such classes, growing teacher-pupil ratios have escalated difficulties faced by gifted learners and their teachers. For example, teachers interviewed by Oswald and De Villiers (2013) declared that they could not stimulate the gifted child as a result of overcrowded classes. In addition to that, Mhlolo (2017) argued that the gifted learners are still not receiving adequate support in mainstream classes due to lack of teachers' training particularly in catering for such exceptional learners' needs. Yet the initial conceptualisation of inclusive education aimed assisting countries in strengthening the focus on inclusion in their strategies and plans for education and as well as to introduce the broadened concept of inclusive education. In addition to such objectives, the guidelines also wanted to focus on highlighting the areas that needed particular attention and to promote inclusive education and strengthen policy development (UNESCO, 2009). In South Africa, Department of Science and Technology (2008) task team found out that talented maths students went to waste and the youth missed the opportunity in developing themselves through maths and science education. For example, a task team set by the Department of Science and Technology (2008) argued that the ultimate health of the mathematical sciences depended upon strengthening the foundation phase of mathematics in schools. Similarly, Gagné (2007) suggests that gifted students must be identified early and his fifth commandment on the education of gifted students states that: "Thou shalt intervene…earliestly".

It was against these observations that this study aimed at investigating and analysing the perceptions of teachers about teaching and learning of mathematically gifted learners in Motheo and Xhariep districts' primary schools of Free State

province. This is important because the teacher is the most critical agent for change as he or she manipulates all the other resources. It is important to investigate teacher perceptions because it is their way of interpreting objects (learners) and events (teaching and learning) that matter (Eggen & Kauchak, 2014).

Perceptions are important as they are determined by attitudes, emotions and expectations (Démuth, 2013). Based on this concern, this study revolved around teachers' preparedness in terms of their attitudes and strategies in identifying gifted learners. Similarly, teachers' ability to use grouping strategies in order to cater for these exceptional learners' needs was also looked into. Teachers' awareness of latest developments in gifted education was also explored. In addition to the aforementioned needs, the researcher investigated the possible barriers that might hamper the gifted education in regular classrooms.

1.2. The statement of the research problem

In an inclusive classroom learners with different needs and abilities are grouped together, the weak, average and gifted to be supported and nurtured in such a way that their various needs are met. However, teachers interviewed by Oswald and de Villiers (2013) confirmed that they were equipped with training specifically for learners who struggle rather than gifted learners. This suggests that the gifted learners may not develop to their full potential in such classrooms.

1.3 The purpose of the study

Given that teachers were never trained on how to deal with gifted students; this study sought to explore teacher perceptions about the teaching and learning of mathematically gifted learners in regular classrooms. The participants in the study came from Xhariep and Motheo (Thaba Nchu) districts of the Free State Province.

1.4 Research Questions

The study asked the question:

What are foundation phase teacher perceptions about teaching and learning of mathematically gifted learners in regular classrooms? The following sub-questions emerged from the above main question:

1.4.1 What are teacher perceptions in terms of their preparedness to meet the needs of mathematically gifted learners?

1.4.2 To what extent are teachers aware of the latest developments in gifted education?

1.4.3 What are the barriers teachers perceive as hampering gifted education?

1.5 The significance of the study

In carrying out this study, it was hoped that teachers would have a better understanding of different strategies that can be used to teach gifted learners. Teachers would also have positive attitudes toward gifted learners. By identifying the barriers to the learning of gifted learners and attempting to address these, it was hoped that an environment that is conducive for the learning of gifted learners would be created so that gifted learners learn to their full potential. This would not only improve the results of the school but also had the potential to change the poverty cycle of families. When a gifted learner is identified and nurtured, such a learner would be a role model to his or her family. The Gifted learners in STEM make an important contribution to the economic development of a country. This means it would increase the number of people needed in different fields such as scientists, technicians, engineers and mathematicians (Tanenbaum, 2016). Theoretically, this study would add a different and better understanding or conceptualisation of inclusive education which includes gifted learners. The current conceptualisation of the concept of inclusive education is narrow. It is narrow in the sense that in its current implementation it is viewed as the education that is needed for learners with learning challenges and thus excludes gifted learners. Yet in its original conceptualisation it should be education for all, the weak, average and the gifted. So, this kind of study would assist people to reconceptualise inclusive education.

In South Africa, irrespective of schools being full-service schools which offer inclusive education that should cater for all learners' needs, the gifted learners are not included in the equation. Previous research has shown that teachers are faced with different difficulties in implementing inclusive education effectively (Mohokare & Mhlolo, 2017). This study would also be one way of responding to previous research where teachers declared that they had only been specifically trained to handle

learners who struggle through inclusive education (Oswald & de Villiers, 2013). This study also responds to the concerns raised by the Department of Basic Education Task Team for Mathematics, Science & Technology (MSTE) and its focus being on underperforming schools rather than on gifted learners and learners with MST potential (Department of Basic Education, 2013). Given that the ultimate health of the mathematical sciences depended upon strengthening the foundation of mathematics in schools (Department of Science and Technology, 2008), the researcher's interest and curiosity got aroused in these highly exceptional learners' education in mainstream classrooms. One of his five commandments that deal with developing the talent into gifts, Gagné's (2011) emphasized that the intervention of these gifted learners should begin at the earliest age as kindergarten or first grade. It was upon this commandment "Thou shalt intervene…earliestly" (Gagné, 2007), that the researcher focused on the foundation phase teachers. This became the researcher's intention of exploring teacher perceptions that might or might not influence their individual sensory experience and specifications, and personal history as stated by Démuth (2013) in regard to catering for the gifted learners' needs in their mainstream classrooms. In order to achieve that, the researcher investigated teachers' attitudes and strategies in identifying these gifted learners and their ability to use grouping strategies in the mainstream classrooms through inclusive education.

Despite all the measures, models and methodology used to identify the gifted learners in different domains such as mathematics, Heller (2004) pointed out that the preparedness of parents, teachers, school counsellors and psychologists to deal with the tasks of identifying and nurturing the gifted without fear or prejudice, remained a main concern. So, the researcher also looked into factors such as teachers' preparedness, awareness of the latest development in gifted education and the barriers teachers might perceive in hampering such education for the gifted learners. This study might be valuable to foundation phase teachers, mathematics teachers and the gifted learners in the sense that the department of education, curriculum developers and Central University of Technology might want to look into all aspects pertaining to teaching and learning of gifted learners at both school and tertiary levels. Given the brief background of the challenges South Africa is facing regarding

mathematics, science and technology education this research project might respond to this urgent call by contributing to this gap in knowledge as well as to national efforts towards building a knowledge-based economy.

This study firstly reviewed the extant literature relevant to teachers' preparedness and their awareness of latest developments in gifted education. This is followed by discussion on teachers' attitudes and strategies to recognise mathematical gifted learners and their ability to use grouping strategies to cater for these learners in regular classrooms. The possible barriers that teachers might perceive to hamper gifted education were added to the abovementioned discussion. This is followed by the description of the research methodology and the procedures used to collect data for this study. Thereafter, the discussion and summary of the findings on this study followed. The study then concluded with a discussion of theoretical and managerial implications and directions for further research.

1.6 Definition of key terms

The following definitions served as a mere introduction of terms used in different chapters of this study:

Giftedness is the term that is used to define learners who are intellectually different from their peers in different domains and or set of sensorimotor skills (NAGC, 2010).

Motheo and Xhariep are Education districts of the Province of the Free State (Department of Basic Education, 2012).

Eggen and Kauchak (2014) define **perception** as the process people use to find meaning in stimuli.

Primary school is an institution in which children or learners receive their first formal education. It begins with the grades 0 to R for school beginners, the grades 1 to 3 described as foundation phase, the grades 4 to 6 being the intermediate phase, and up to including grade 7 known as the first grade of the senior phase (Department of Basic Education, 2012).

Inclusive education, also known as special education, refers to instruction designed to meet the unique needs of the disabled and as well as the gifted and the talented (Eggen & Kauchak, 2014).

1.7 Assumptions

It was assumed that all respondents selected in this study would answer all survey questions honestly and to the best of their abilities and their gender would not significantly affect their perception.

1.8 Delimitation of the study

Due to the large number of potential teachers in the study, the population involved in the current study focused only on the purposeful sample located within Thaba Nchu region and selected towns in Xhariep district.

1.9 Limitations of the study

The research was conducted within a two month period which limited the researcher in the number of districts that could have been considered for participation. There was potential for a biased sample of teachers in the survey administration process. The researcher did not have direct access to the sampled teachers but relied on their heads of department to distribute the questionnaires to them. As a result, the researcher and the heads of department held a brief discussion about inclusive education currently present in mainstream classrooms with the intention of encouraging and motivating teachers to participate fully in attempt to respond to both teachers' and gifted learners' needs through this study's findings.

Due to time limitations, the results of the purposeful sample in this study might not be generalizable beyond the specific population from which the sample was being drawn.

1.10 Conclusion

This chapter aimed at presenting a general background of the research about Primary school teacher perceptions about teaching and learning of mathematically gifted learners in Motheo and Xhariep districts of Free State province**.** The rationale

behind this aim was for orientation purpose towards the readers of this study. The following chapter focused on the review of literature on mathematically gifted learners and teacher perceptions toward gifted education.

CHAPTER 2

REVIEW OF RELATED LITERATURE

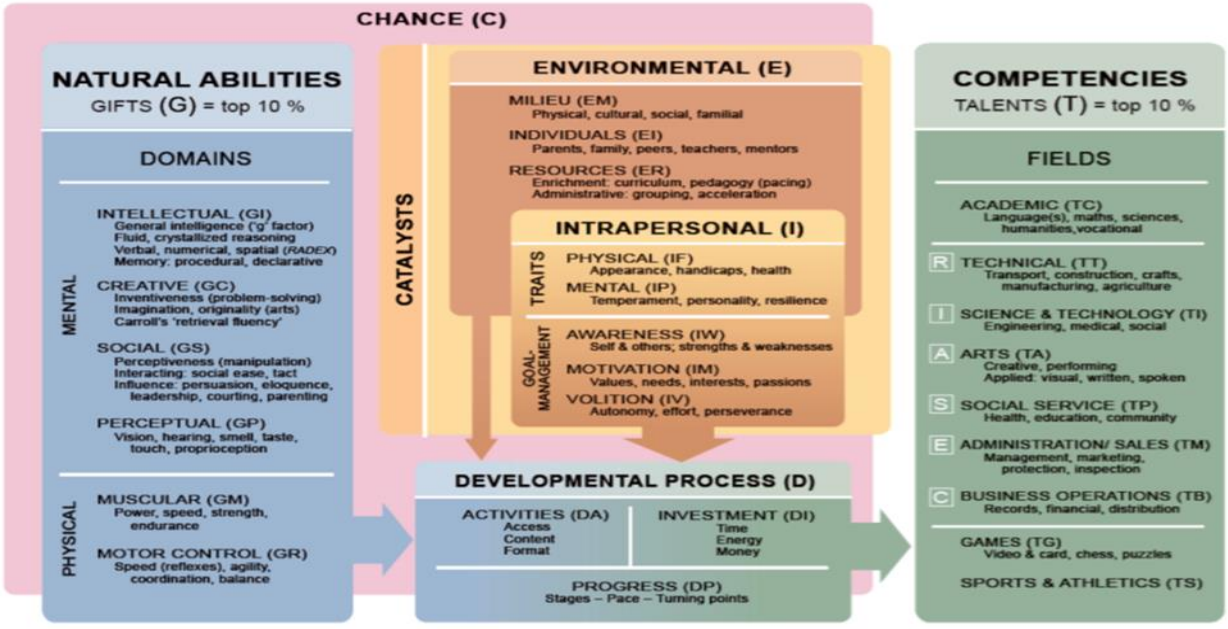
2.1 Introduction

This chapter deals with literature review which related to the purpose of this research. The researcher wished to find out whether the results of the present study would relate to similar or previous studies and also wished to identify some gaps in attempting to answer such core questions.

Firstly, an outline has been provided on the theoretical framework followed by its relevance to this study. Then follows an outline of the nature of the problem and definition of the gifted learners in mathematics. This is followed by a discussion on teacher perceptions toward mathematically gifted in regular classrooms. Teachers' preparedness and their awareness of latest developments in gifted education have been outlined as well. Lastly, the researcher has outlined the possible barriers that teachers perceive to hamper gifted education.

2.2 Theoretical Framework

Figure 2.1 Gagné's Differentiating Model of Giftedness and Talent (DMGT)



In Figure 2.1 above, Gagné demonstrates that students' natural abilities which are gifts, emerge from mental and physical domains. Mental domain consists of intellectual-GI, creative-GC, social-GS and perceptual-GP whereas the physical one constitutes muscular-GM and motor control-GR. Competencies known as Talents are found in the following fields: academic (TC), technical (TT), science and technology (TI), arts (TA), social service(TP), administration/sales (TM), business operations (TB), Games(TG) and sports and athletics (TS).

Gifts need to be nurtured and developed systematically into talents through the developmental process. The developmental process of the student's potential can be affected negatively or positively by environmental and intrapersonal catalysts. Therefore, if the developmental process is affected negatively, it becomes poor and may hinder the gifted students in becoming more talented. Such student's inherent gifts will go to waste but if nurtured and systematically developed, such potential (gifts) will manifest his or her talent. Environmental catalysts among others, include physical setting as the school where teaching and learning take place using resources such as internet or Maths labs. The individuals as intrapersonal catalysts are including learners with potential that needs to be sharpened into talents through developmental process by the teacher using the necessary resources. The teacher who matters most as a catalyst manipulates resources such as enriching curriculum and pedagogy and administratively grouping learners including the gifted learners through acceleration. Intrapersonal traits exist within the physical and mental environments of a learner. This implies that all learners in inclusive classrooms differ in handicap and personality. Similarly, the goal-management environment is about the awareness of strength and weaknesses; needs and autonomies of all learners in regular classrooms. So, teachers as catalysts who manipulate all the resources in teaching and learning, have to differentiate activities to cater for all learners' needs in regular classrooms. However, if teachers are not trained to nurture gifts into talents, gifted learners' needs won't be met in regular classrooms. This implies that the focus will always be on learners with learning difficulties as it is currently, in regular classrooms (Mhlolo, 2017; Oswald & de Villiers, 2013).

The mode of identifying gifted learners has for long been IQ tests. Gagne criticised the use of IQ tests for they are not relevant and ideal instrument for learners who are not first English speakers. For instance, if non-first English speakers fail the IQ test, it does not mean that the learner is not gifted, but failed the test due to unfamiliar language. In this case, the IQ test measured the performance instead not the potential. For example, in talent search for national soccer team, the perceived talented soccer players will be camped in pursue to select the most talented team. All these players will be sharpened to make it for the team after having gone through training or developmental process. However, Gagne would not use the term “talent” search because the talent cannot develop on its own. Therefore, Gagne developed his Metric-Based System of levels to identify gifted learners and these are shown in figure 2.2 below:

Figure 2.2 The DMGT's Metric Based System of levels within the Gifted/Talented Population (Gagné 2007:97)

The DMGT's Metric-Based System of Levels Within the Gifted/Talented Population

Level	Label	Ratio in General Population	IQ Equivalents
5	Extremely	1:100,000	165
4	Exceptionally	1:10,000	155
3	Highly	1:1,000	145
2	Moderately	1:100	135
1	Mildly	1:10	120

He, then, used the results from the IQ test and compared them using prevalence ratios that are relevant to gifted education. Gagné (2010) argued that 1:10 or the top 3 achievers in a regular class of 30 already distance themselves very significantly in terms of ease and speed of learning. This implies that such top 3 students are referred to as mildly gifted students or the ‘garden variety’. The ‘garden variety’ is a common English expression in the USA that means the ‘most common group’. Similarly, Renzulli (2012) used the terms ‘high achieving’ or ‘schoolhouse giftedness’ to refer to students who are good lesson learners in the traditional school environment. So, in this study the term ‘gifted’ had been used in accordance with Gagné (2015) and Renzulli’s (2012) recommendations, to refer to 1:10 students who attend everyday regular class and who demonstrate relatively high mathematical

ability. The focus on these 'mildly gifted students' follows Gagné's (2015) recommendation that the vast majority (90%) of the gifted individuals belong to this lowest level while the highly gifted/talented (1:100 000) individuals are a rarity. Gagné implied that from the group of 100 000 that is formed by grouping the 3 mildly gifted students from every class or an environment, one is likely to find only one student who is precociously gifted as demonstrated in Figure 2.2 above.

Furthermore, the level of this rarity is such that even full-time teachers of the gifted might, in the course of their 35-year professional career, encounter just a few if any of these extremely gifted students. His concern was that when we present extreme examples of behaviour to parents or teachers, we risk conveying a distorted image of gifted individuals because stakeholders would be tempted to judge that such a rare population does not justify large investments of time and money to meet their educational needs. Gagné (2015) therefore recommended that gifted and talented program coordinators should think first and foremost about services for their 'garden-variety' or 'mildly gifted' students. In education systems that are guided by the inclusive philosophy, the 'garden-variety' of gifted students spends the majority of their time in regular classrooms. Hence it can be argued that every teacher should be regarded as a teacher for the gifted.

2.2.1. Relevance of the DMGT Model in this study

The major concern of Gagne was that the gifts and talents have been discussed interchangeably as if there is no educational process that is taking place. So, he developed the DMGT model to differentiate between gifts and talents. The relevance of this model is seen where Gagné separates gifts from talents by systematically developmental process. Gagné (2015) then defined gifts as potential and talents as sharpened skills. This means that if gifts are not nurtured, the talents won't emerge. The current environment is not ideal for gifted learners to learn to their full potential in regular classrooms (Mhlolo, 2017). The developmental process in Gagne's model involves environmental and intrapersonal catalysts. The intrapersonal catalysts are physical and mental variables which refers to personal effort of managing oneself and things. For instance, the contribution of the individuals, that is, both the teacher and gifted learners determine the success in teaching and learning. The success is

the result of many variables which interact, and these could be the learner's appearance, health, temperament, resilience, awareness, motivation and effort the teacher puts toward the teaching and learning of gifted learners. The environmental catalyst is made up of the milieu such as physical meaning the school itself, cultural and social variables. The other variables include individuals and resources. The individuals being parents, family, peers, teachers, mentors influence the success directly or indirectly. This framework fits well in this study because the focus is on the teacher and the principal as individuals who manipulate other resources in teaching and learning environment. Gagne's model suggests the strategies that teachers can use in teaching gifted learners. Such strategies include differentiation and grouping enrichment of all subject matters in regular curriculum (Gagné, 2007). Gagne says that if the developmental process is negatively affected, it becomes poor and result in hindering the gifted students to become talented. So if teachers are not trained in gifted education, gifts won't be translated into talents. Hence, for this study the researcher is trying to understand teacher perceptions toward gifted learners because they are part of environment or developmental process as catalysts. So, if teachers' attitudes, perceptions and strategies are negative, gifts won't be translated into gifts through the developmental process.

One of the main concerns dealing with gifted learners, is that of identifying them from a group of learners. The mode of identifying gifted learners has for long been IQ tests. Gagné (2007) and Renzulli (2012) and many other researchers criticised the use of IQ tests for they are not relevant and ideal instruments for learners who are, for example, not first English speakers. In our regular classrooms, English is the medium of instruction and definitely a foreign language to most African learners. So, Gagné maintains that the use of IQ test on non-English speakers measures the performance not the potential. This is seen through the results that determine underperforming South African public schools where Annual National Assessment is undertaken. The English is a language barrier because the assessment is similar across the country. So, this results in favouring city schools than township schools. Mhlolo (2018) confirms this where he states that the concept of giftedness is trivialized if it is understood only in terms of a single test score. According to Card and Giuliano's (2014), low-income students, black students, and English language

learners have barriers that make it harder for them to get into gifted classes especially when the IQ test is used as the single determinant. Another aspect that affects the significance of test scores is that some people are “test-anxious” and may do poorly on almost any standardized test. These contributions have continued to spark the ‘elitist’ controversy in gifted education to date. In this study I argue that for gifted learners to be able to receive appropriate education and support especially in African countries, it is important to use identification tools that are sensitive to each of these ‘‘elitist’’ myths or falsities. So, Gagne then developed the DMGT’s Metric-Based System of 5 Levels based on the prevalence ratio. These ratios were carefully extracted from studies that have used IQ tests with the aim of ensuring validity. So in this study the term ‘gifted’ has been used in accordance with Gagné (2015) and Renzulli’s (2012) recommendations, to refer to 1:10 students who attend everyday regular class and who demonstrate relatively high mathematical ability. This indicates that the ‘‘garden-variety’’ of gifted students spends the majority of their time in regular classrooms hence it can be argued that every teacher should be regarded as a teacher for the gifted. Given this background, mathematics teachers were relevantly chosen to contribute toward the completion of this study.

2.3. Definition and Concept of Giftedness

There are many definitions of giftedness, for example, Columbus Group (in Neville, Piechowski & Tolan, 2012) define giftedness as: “…advanced cognitive abilities and heightened intensity combined to create inner experiences and awareness that are qualitatively different from the norm …”. According to (CCEA, 2006), the term “**gifted** and **talented** students” refer to children and youth of high performance capability in areas such as intellectual, creative, artistic, or leadership capacity, or in specific academic fields, and who require services or activities not ordinarily provided by the school in order to fully develop such capabilities”. However, this made Gagné unhappy that the terms “gifted” and “talented” are used interchangeably whereas there is a clear and relevant distinction between the two (Gagné, 2007). His argument is that there is no way that the two terms can be similar in contextual meaning because it would mean that both gifts and talents are inborn whereas talents are not. This interchangeable use of gifts and talents dissatisfied Gagné (2015) because he argued that the usage is misleading, inappropriate and damaging

all angles of trying to nurture talent because the talent cannot develop on its own. Therefore, this usage of gifts and talents as synonyms means that there is no need for systematically developmental process that translates gifts into talents. Then, Gagné developed the DMGT model to demonstrate the separation of gifts that got translated into talents after having gone through the developmental process. Gagné's argument is seen in arts, for example, a music idol selected as a winner after having gone through the systematically training or developmental process. This training takes place where the contestants practise the chosen songs that are sharpened by artists who are already in the industry. Given this, Gagné saw it necessary to separate the gifts and talents by developmental process because they are different hence, they cannot be used interchangeably. In this developmental process there are for instance, infra-structure; parents and teachers; resources named catalysts that nurture individuals' potential into systematically developed competence. So, according to Gagné (2015), "**Giftedness** refers to a student's outstanding natural abilities or aptitudes (called gifts), located in one or more domains: intellectual, creative, social, perceptual or physical, placing that student in the top 10% of age peers…..**Talent** is the outstanding mastery of systematically developed competencies (knowledge and skills) in one or more fields of human activity that places a student in the top 10% of age peers in that field." Gagné (2015) therefore emphasizes his argument that the two terms cannot be interchangeably used for defining giftedness because gifts must be developed into talents as he demonstrated in his DMGT model above, that is, Figure 2.1. This means that giftedness is about the input whereas talent is the output of human activity.

2.4. Teacher perceptions towards the gifted

This section demanded the teacher's insight, knowledge and understanding of how to identify and meet the needs of the gifted learners in his or her regular classroom. Eggen and Kauchak (2014) define perception as: "… the process people use to find meaning in stimuli…". Démuth (2013) further indicates that the pressures of the environment cause creation and formation of receptors in a way that they become sensitive to relevant stimulus from the environment and adaption to such environment. According to Démuth (2013), Perceptions are determined by attitudes,

emotions and expectations. Bandura (1994:2) defines perceived self-efficacy as: "… people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives …" The previous research further indicates that self-efficacy determines how people feel, think, motivate themselves and behave through cognitive, motivational, affective and selection processes (Bandura,1994:2).

Zimmerman (2000) states that the properties of self-efficacy are the level of difficulty of a particular task, generality that pertains transferability across activities and the strength of self-efficacy being measured by the amount of one's certainty about performing a given task, are measured by task specific questionnaire that vary in difficulty and which captures degree of confidence. According to Pajares (1996), people engage in what they feel confident and competent about and avoid those which they are not. Efficacy beliefs also influence the patterns of thinking of individuals and their emotional reactions thereof. This implies that the low self-efficacy poses a belief that things are tougher than they really are, and this gives a narrow vision of how best to solve a problem. However, high self-efficacy helps to approach difficult tasks and activities with a feeling of serenity (Pajares, 1996). Based on the above information, it is required of mathematics teachers to develop and motivate their level of self-efficacy in order to create the learning environment that allows all the learners, particularly, the gifted learners to achieve to their full potential. It is also necessary to find out about the pressure and the level of difficulty teachers experience in dealing with gifted learners in their mainstream classrooms.

2.5. Teachers' preparedness in teaching gifted learners

The neglect of gifted education has usually been attributed to Galton (1869) who established an elitist philosophy that states that giftedness is not for black people and the poor. The view today is that children with outstanding talent perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience or environment. These outstanding talents are present in children from all cultural backgrounds, across all economic strata, and in all areas of human endeavor (O'Connell-Ross, 1993). It is therefore expected that every teacher should be aware of such children in his/her class.

Cognizant of this belief, it has been stated that the education system needed to be adapted to accommodate the learner, and the learner needed not to change in order to fit into the system (DoE, 2001). Seeing that the teacher has to deal with diverse needs of the gifted and all the learners in his or her inclusive teaching in a regular classroom, this suggested the need for teachers training at tertiary level and as well as in-service training so that the mathematically gifted would be developed to their full potential. It had been identified that teacher-education programmes, both pre-service and in-service, should be oriented and aligned to such inclusive education approaches (UNESCO, 2009).

However, Mhlolo (2014) in his survey of 15 Sub-Saharan African countries, had found none that offered teacher training specifically for teachers of gifted and talented students. Reid and Boettger (2015) stated that in UK, the National Association for Able Children in Education (NACE) had been established in 1983 in order to support, guide and train teachers to attain the best from gifted learners in regular classroom of which is not the case in South Africa as indicated earlier. Previous research in the United States indicated the inclusion of Teacher Preparation Standards in Gifted and Talented Education for colleges and universities. These institutions chose their graduate programs in preparing teachers of the gifted accredited, through the Council for the Accreditation of Educator Preparation (CAEP) (Singer, Sheffield, Freiman & Brandl, 2016).

South Africa schools that support gifted education have adequate materials and skilful professional teachers who can recognise and nurture these talents. Moreover, such schools are attended by mostly white middle- and upper-middle-class children (Borland, 2004). This, indeed, emphasizes the need for South African colleges and universities to include required relevant programmes in preparing teachers of the gifted. This also calls for educational policy amendments to truly implement the original objective of inclusive education which was supposed to accommodate all, seeing that gifted students are also placed in regular classrooms whereby their needs are met. Mhlolo (2017) reports that gifted learners are still not receiving adequate support in mainstream classes due to lack of teachers' training particularly in catering for such exceptional learners' needs.

2.5.1. Teachers' attitudes and strategies to identify gifted learners

In characterising the mathematically gifted, it demands the teacher's insight, knowledge and understanding of how to identify such gifted learners in his or her regular classroom. Similarly, Freeman (2011) indicates that teachers who are intuitive and inspiring can spot and nurture talent which is not on checklist used by teachers worldwide. However, Kokot (1999) claims that checklists are not meant to be totally reliable indicators of a child's ability simply because of the uniqueness. In her 2- sided common characteristics, Kokot (1999) states that the left hand side, characterises the gifted learner but are opposed by the right hand side characteristics which are negative. Kokot further states that, these negative characteristics are often seen as special abilities at educational and other settings that do not support gifted leaners' needs due to lack of understanding giftedness. Such positive characteristics include learning comes easily; abstract reasoning abilities; questioning- critical thinking skills and ability to work independently. However, Stepanek (1999) argues that these are common myths about gifted students: gifted children are smart, so they can get by on their own; gifted students excel in all school subjects; gifted students are a homogeneous group. According to Nieman and Monyai (2006), gifted learners are characterised as early users of advanced vocabulary with periods of intense concentration and have strong critical skills and self-criticism ability. The mathematically gifted are believed to have the ability to understand complex concepts, perceive relationships and to think abstractly (Nieman & Monyai, 2006).

Despite all the measures, model and methodology used to identify the gifted learners in different domains such as mathematics, Heller (2004) points out that the preparedness of parents, teachers, school counsellors and psychologists to deal with the tasks of identifying and nurturing the gifted without fear or prejudice, had been a main concern. Mhlolo (2014) states that Mathematics Olympiads have been used in 12 of the 15 Sub-Saharan African countries to recognise mathematical achievement but without supporting and nurturing it. This indicates that there is a need to support

and nurture the mathematically gifted learners once they are identified in and out of a school setup.

2.5.2 Grouping strategies for gifted learners

Rogers (1993) identifies a variety of grouping options found to be beneficial to gifted and talented learners such as full-time placement in special enriched or accelerated gifted programmes; cluster grouping within heterogeneous classrooms; grouping for acceleration of the curriculum. Previous research had shown a marked academic achievement gain across all subjects' areas and a moderate increase in students' attitude toward the subject they are full-timely grouped (Kulik & Kulik, 1982, 1984, 1990 in Rogers, 1993). On the other hand, cluster grouping within heterogeneous classrooms is one type of ability grouping in which top 5 to 8 identified gifted students at a grade level are placed with, a trained teacher specifically in gifted education (Walker and Seymour, 2002; Kuliks, 1990 in Rogers, 1993). Rogers (1993) affirmed that gifted accelerates indicated substantial achievement gains over their gifted counterparts who were not accelerated as they were compared in the Kuliks' 1990 meta-analysis. In American schools, substantial academic gains for elementary learners at all ability levels in mathematics were reported but, not within-class ability grouping in reading (Slavin, 1987a in Rogers, 1993). Although gifted learners need to be grouped by ability so that their school curriculum may be appropriately broadened and extended, Rogers (1993) argues that one size does not fit all, being in mixed-ability classroom conformations or in any sort of ability grouping.

Furthermore, Rogers (2002) reports that a mixed-ability class comprises the same material and learning tasks at the same time for all learners but does not assist gifted children in any way but Clark (2013) states that like-ability groups produce higher academic effects for gifted learners than mixed ability groups do. Several other studies indicate that gifted learners in an acceleration class move through the lower levels or sections of the standard curriculum faster than their age-matched peers and even their teachers. On the other hand, the enrichment of supplemented standard curriculum activities would provide learners with the opportunity to broaden and deepen their knowledge in mathematics. These strategies suggest that gifted

learners should be given a project, problem solving with real-world applicability and an advanced concepts activity to do on their own (Nieman & Monyai, 2006; Rotigel & Fello, 2004). According to Szymanski and Shaff (2013), teachers, as professionals, are expected to strive to help students to develop their potential, as well as to modify tasks to be a sufficient challenge for the gifted with the necessary support (Diezmann & Watters, 2000).

However, teachers from Texas, interviewed stated that a wide range in learning needs creates difficulty in modifying for all learners since there were minimal modifications made in their classrooms due to their lack of training (Walker & Seymour, 2002). Similarly, principals and teachers interviewed by Oswald and de Villiers (2013) were strongly of the opinion that training of teachers and principals in gifted education is vital and should be funded by the Department of Basic Education. The 9th commandment, “Though Shalt Group ... Fulltimely!” encourages teachers to group gifted learners full-timely as it is the only way to create appropriate conditions for an enriched curriculum (Gagné, 2007). Full-time grouping is a solution as it facilitates the enrichment of all subject matters in the regular curriculum (Gagné, 2007). It is also cost effective since there is no need for an additional staff.

2.6. Teachers’ Awareness of latest developments in gifted education

In South Africa, there are annual reports on developments of education since 2010 such as, the MST task team that reported the negligence of gifted learners and learners with MST potential but, the focus being on under-performing schools (Department of Basic Education, 2013). However, if teachers are not aware of these developments in education, including gifted education, this will constantly hamper the effective teaching and learning in regular classrooms. As a result, if teachers do not recognise the significance of reading such reports and react on them, the possibility is they will be archived somewhere in classrooms’ cabinets or libraries. So, this will leave learners, especially the gifted, unattended in terms of being supported by their teachers according their different learning needs because currently the focus is on learners with learning barriers or difficulties (Oswald & de Villiers, 2013; Mhlolo, 2015).

2.6.1 Recommendations of the NPC

Recently the National Planning Commission released a statement on vision 2030 entitled “Our future – make it work”. In its investigation regarding gifted learners, NPC’s diagnostic overview was that a few well-motivated and talented learners would be of more value to the national economy than many who were not at the cutting edge and were provided with substandard content work (Department of Basic Education. 2013).

The NPC recommends that talented students be provided with opportunities for excellence. In the pre-amble of the National Development Plan (Vision 2030), the NPC anticipated a South Africa where “we participate fully in efforts to liberate ourselves from the conditions that hinder the flowering of our talents”. The plan further stated that schools are where talent is identified, career choices made, and habits learnt (Vision 2030).

2.6.2 Recommendations of the MST Task team

The Department of Basic Education (DBE) set up a task force to investigate the implementation of mathematics, science and technology (MST) for talent development programmes in schools.

The task team found that, more often than not, provincial education departments seemed to focus on under-performing schools and neglected gifted learners and learners with MST potential (DBE, 2013). They recommend that MST talent development programmes should be incorporated into the revised national MST strategy. The task team also recommends that at least one dedicated Maths and Science Academy or a special Mathematics, Science and Technology school be established as a boarding school in each province. Additionally, such a school should accommodate learners and teachers from across the province and be managed nationally.

2.6.3 The new CAPS’ provision for teachers to attend to the needs of gifted learners

The document “Guidelines for Responding to Learner Diversity in the classroom through CAPS,2011” emerged from the principles stipulated on Education White Paper 6 that emphasized the necessity of education and training system to change

to accommodate the full range of learning needs, particularly on strategies for instructional and curriculum transformation (Department of Education, 2001). In responding to the diversity of learner needs in the classroom, delivery of curriculum differentiation is vital to ensure that all learners access learning as they have different potential to lean (Department of Basic Education, 2011).

The intention of the guidelines for Responding to Diversity through the National Curriculum Statements (NCS), was to provide teachers, principals, subject advisors, administrator, school governors and other personnel, parameters and strategies to respond to learner diversity in the classrooms through facilitation and support of curriculum differentiation. These guidelines were designed to be used for school based teacher development by the Institution Level Support Teams and District Based Support Teams. In South Africa, Rieser (2008) asserted that a significant impact on policy development was brought by international advisors with support from UNESCO who got used extensively in teacher education and public awareness on inclusive education. Given this, teachers must develop an awareness of both existence and an understanding of these highly exceptional learners' needs. However, Mhlolo (2015) asserted that implementation of an inclusive education policy in south Africa is still a main concern affected by a number of factors. On the other hand, Sullivan (2017) declared that answers to questions revolving around gifted education would provide valuable information to form future educational policy, teacher preparation or professional development and classroom practice.

Empirical evidence has shown that if government fails to support gifted leaners in the public schools, parents of gifted learners from affluent families will always make special provision for their children. So, according to Papadopoulos (2016), the enrollment of gifted children in conventional classrooms that do not follow any kind of gifted educational program in terms of content and the learning process, poses risk factors for the development of their talents and the experience of positive emotions. Furthermore, Mhlolo (2018) asserted that children with outstanding talent perform at remarkably high levels of accomplishment when compared to that of their peers, experience or environment.

2.7. Barriers that hamper gifted education

Department of Education (2011) indicated that all classrooms have learners with diverse learning needs, that due to failure to support and responded to, would lead to barriers to learning. Such barriers included poverty, difficulty in reading, writing, hearing, remembering and with health and emotional difficulties. Furthermore, the ever-increasing poverty levels in South Africa and challenges as the learners' poor socio-economic background, the lack of appropriate education support, the shortage of textbooks, overcrowded classrooms the absence of a healthy learning culture and language are some challenges that principals and teachers are faces with, (Oswald & de Villiers, 2013). Similarly, Nieman and Monyai (2006) identified the following factors which may lead to barriers to learning: socio-economic factors, language, medical factors, learning problems, behavioural problems, gifted learners and classroom factors. Given that this study was conducted at public schools in disadvantaged areas, the researcher provided the empirical literature below for this section. Schools that include gifted education in its teaching programme have adequate materials and skilful professional teachers who can recognise and nurture learners who are gifted. Such schools are attended by mostly white middle- and upper-middle-class children (Borland, 2004). If support is not provided to gifted students in public schools from the disadvantaged areas of South Africa then, Galton's philosophy would be perpetuated because at the moment quintile 5 school learners are the ones who appear to receive some support (Mhlolo, 2017).

2.8. Summary of the Review of Related Literature

An inclusive classroom is a classroom in which learners with different needs and abilities are grouped together so that they are supported and nurtured in such a way that their various needs are met. This chapter deals with the perception of teachers toward the mathematically gifted learners in an inclusive classroom on assumption that the other factors should be looked into for the sake of this study. Such factors include:

- the definition and concept of giftedness;
- teachers' awareness of latest developments in gifted education;
- teachers' attitudes and strategies to identify gifted learners;
- barriers that hamper gifted education;

- grouping strategies that could be used in order to develop these gifted learners to their full potential and
- teachers' preparedness that had been playing a vital role in supporting and nurturing such learners.

It had therefore been important to discuss the abovementioned factors as they could affect the teacher's perception negatively or positively in his or her inclusive classroom.

The views, findings and recommendations of previous research studies have been discussed with the intent of giving clarity, raising unattended issues such as the lack of sufficient support and nurturing of mathematically gifted learners in particular. This was due to the fact that South African education system had not offered in-service and teacher training specifically in gifted education. As a result, there had been educational gap that needed to be closed by all means in attempt to cater for the needs of mathematically gifted learners through inclusive education in the regular classroom.

In chapter 3, the research design and methodology of this study is discussed.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1. Introduction

A mixed method approach was used for this study. Mixed methods research is both a method and methodology for conducting research that involves collecting, analyzing, and integrating quantitative and qualitative research in a single study or a longitudinal program of inquiry. The rationale for using a mixed method is that it has been used, to gather trend data and individual perspectives from community members and provide a better understanding of a research problem or issue (Creswell, 2014). This study focuses on the analysis of teacher perceptions toward the mathematically gifted learners through inclusive education concept, in regular classrooms.

3.2. Research Design

This study used both qualitative and quantitative survey research design (McMillan & Schumacher, 2014). The investigator therefore, selected a sample of subjects and administered a questionnaire and conducted interviews to collect data. Surveys have been used frequently in educational research to describe which is used to learn about people's attitudes, beliefs, opinions, values, behaviour, desires and other types of information. Surveys are used frequently in business, politics, government, sociology, public health, psychology and education because they yield accurate information for large numbers of people with a small sample (McMillan & Schumacher, 2014).

The researcher used the quantitative research survey questionnaire of 3-point rating Likert scale to measure teacher perceptions particularly in identifying these mathematically giftedness in their regular classrooms. In addition to the above, this research study's questionnaire was designed and their findings thereof were expected to assist teachers in developing successful approaches and or strategies to teach these mathematically gifted learners. The researcher also hoped that the findings of this study would increase the need for teachers' training at higher

educational institutions and as well as in-service training specifically in gifted education.

The survey questionnaire was distributed in person to foundation phase HODs to elicit reflections on inclusive education in their regular classroom. A 3-point rating Likert scale was used in attempt to answer this study's survey questionnaire. This study also used the qualitative structured interviews for twenty principals from selected primary schools which Cohen, Manion & Morrison (2011) stated that are purposely used to gather data in surveys or experimental situations. Thereafter, the researcher did an initial analysis of the collected survey data of this study.

3.3 The Population and Sample

3.3.1 The Population

According to Bless, Higson-Smith and Kagee (2006), population consists of the focus set of objects or people which the researcher wants to determine some characteristics. Motheo district have a population of all primary schools in Thaba Nchu, Botshabelo and Bloemfontein. The population of this study was the twenty (20) selected primary schools of Motheo (Thaba Nchu) and from Xhariep districts in the Free State province.

3.3.2 The Sample

Due to the population size of Motheo district primary schools, time and anticipated financial constraints in attempting to cover all these schools, this study focused only on a purposively selected sample, that is, foundation phase mathematics teachers who taught mathematics in 3 grades of the phase being; grades 1, 2 and 3. This study's sample was drawn from a target population defined as the group of subjects upon which the findings of a given study would be generalised. Bless, Higson-Smith and Kagee (2006) stated that purposive sampling had been the researcher's judgment regarding the characteristics of a representative sample and thus was chosen on the basis of what the researcher considered to be typical units. All experienced (5-10 years and over) foundation phase mathematics teachers (males and females) from the twenty selected primary schools, were purposively sampled to participate in this study. The researcher did her selection to all available

mathematics' teachers per grade keeping in mind possibly, to balance the gender ratio and the departmental head (Hod) in charge based on his or her mathematical teaching experience. The researcher's sample size was composed of all mathematics teachers of foundation phase and their principals at twenty selected primary schools in Motheo and Xhariep districts of Free State province. The researcher reached all 20 schools and, 118 teachers and twenty principals contributed to this study.

3.3.3 The Sampling Procedure

Mathematics teachers including their head of department, provided that he or she taught mathematics or met the requirement of selection, were purposively selected for this study. The concerned sample was that of teachers who taught mathematics in grades1, 2 and 3 who had an experience of 5 to 10 years and over. The experience of mathematics teachers was categorised into **i.**1 to 5 years, **ii.** 6 to 10 years and **iii.** Over 10 years of teaching experience. The distribution of the teachers' responses is shown in chapter 4 through figures and tables.

3.4. The Research Instrument

The data of this survey study was gathered by administering a 3 point Likert Scale questionnaire in order to collect information on variables of interest, from a sample of respondents of a target population (McMillan & Schumacher, 2014). A Likert scale had been one of the most commonly used tools that measures people's attitudes and it was used to indicate a range of responses of the survey (Maree, 2007). The list contained some precise questions and their sub questions depending on the answer to the main questions. The open-ended questions were used for this study for they had let the teachers completely free to express their answers as detailed and complex, being short or long as they wished and felt was appropriate (Bless *et* al., 2006). Although the recording and scoring of open-ended questions might give rise to some difficulties, they were well suited to exploratory studies, case studies, or studies based on qualitative analysis of data (Bless *et* al., 2006). This study also used the structured interview for principals to elaborate on experiences that had helped or hindered their perceptions development towards the mathematically gifted learners in their schools through inclusive education. Cohen, Manion and Morrison

(2011) indicated the purpose of the interview being to gather data in surveys or experimental situations.

3.5. Data Collection Procedures

This study wanted to obtain the perceptions of both foundation phase teachers and their principals about mathematically learners' education in the regular classroom, thus data was collected through questionnaires and recorded interviews.

3.5.1 Questionnaires

The heads of department and their team members of foundation phase at selected primary schools were given the 3-point Likert Scale questionnaire with open-ended questions in (Appendix E) which they could answer freely about their experiences and views on inclusive education and its implementation towards the gifted learners in their regular classrooms. When questionnaires are carefully considered and applied, they should be natural and ready to use to elicit information (Maree, 2007).Therefore, this study's questionnaires targeted to elicit foundation phase teacher perceptions and experiences of teaching gifted learners using inclusive education.

3.5.2 Interviews

The researcher used the recorders to interview twenty principals of selected primary schools of this study. The interviews were face-to-face and were structured and their duration ranged from 20 to 40 minutes. A structured interview is a standardized open-ended interview that consists of the exact wording and sequence of questions determined in advance. All interviewees were asked the same basic questions in the same order to increase comparability of their responses (Cohen *et* al., 2011). The questions of the interview schedule (see Appendix F) were designed by the researcher and her supervisor. The purpose of the interview was to compare the principals' perceptions to those of their teachers about mathematically gifted learners' education.

3.6. Data Analysis Techniques

Descriptive statistics were used to analyse the survey data of teacher perceptions toward mathematically gifted learners in inclusive classrooms. Thematic analysis was used to analyse the structured interviews of school principals of both Motheo and Xhariep districts of the Free State province. It is the method of organising the analysis by research question, it draws together all the relevant data from various data streams such as interviews, observation, questionnaires, etc. for the exact issue or theme of concern to the researcher and preserves the coherence of the material (Cohen *et* al., 2011). The rationale for using this data analysis technique is that the researcher found out that new information had emerged from the collected data. This resulted in the organisation of this new information into themes by the researcher. Therefore, this study had 3 sub-questions that were used as themes.

- What are teacher perceptions in terms of their preparedness to meet the needs of mathematically gifted learners?
- To what extent are teachers aware of the latest developments in gifted education?
- What are the barriers teachers perceive as hampering gifted education?

3.7. Ethical issues

Maree (2007) asserted that Ethics are concerned with what is right or just, in the interest of project and its sponsors or workers and also others who are participants in research. It is important to indicate the ethical considerations as a researcher. An essential ethical aspect reassures the confidentiality of the results and findings of the study and the participants' identities. This could include letters of consent, permission to be interviewed, undertaking to destroy audiotapes and so on.

The researcher's supervisor and the researcher wrote letters (Appendix C) and (Appendix D) respectively, to the department of Education and the school principals (Appendix G) requesting the permission to conduct this study.

The researcher sent emails with attached permission letters for both Xhariep and Motheo districts (Appendix A) from the department of education and questions of structured interviews for the principals of selected primary schools. This was done

prior the researcher's visit so that the interviewees could accustomed themselves of such questions and took notice of her visit. The letters in question were also handed to the principals of each selected school on the day of the researcher's visit at selected primary school of Motheo and Xhariep districts in the Free State province.

Ethical clearance for this study was obtained from the department of education of the Free State (Appendix B). The researcher informed and explained the ethical issues to the foundation phase's HoD and the interviewees in addition to what stand on the questionnaires and Interview schedule. They were also informed of their rights to withdraw from participating at any given moment.

The teachers were also informed of confidentiality, privacy and anonymity in this study. Therefore, the researcher ensured that, by not using teachers' real names nor the school's but the pseudonyms. The responses of the teachers were also presented anonymously for identity's sake.

3.8. Validity and Reliability

Creswell (2014) asserted that quantitative research refers to whether meaningful and useful inferences from scores on particular instrument can be drawn while qualitative validity means the checking of accuracy from the findings by employing certain procedures such as triangulation and or member check. Furthermore, reliability is said to be concerned with the consistency of equivalent results, which are stable over repeated trials scores produced by an instrument (Creswell, 2014).

In this study both qualitative and quantitative data were collected at about the same time. Creswell (2012) defined triangulation as the process where evidence is corobated from different individual (eg. this study's teachers and principals), types of data, or methods of data collection (eg. Questionnaires and interviews) to validate the results. So, triangulation strategy was used as McMillan & Schumacher (2014) state that, the strengths of one method offset the weaknesses of the other in order to provide a more comprehensive set of data and the result that is both more complete and valid. Furthermore, the results from each method are said to converge and indicate the same results and yield the greater credibility in the findings (McMillan & Schumacher, 2014).

Given this, the researcher used a survey of 3-point Likert scale questionnaire and structured interview schedules at selected schools. This study used questionnaires for its advantages over interviews where Cohen *et* al., (2011) stated that questionnaires tend to be more reliable and encourage greater honesty because they are anonymous. For further validation, data was collected from the sample representing the schools as Bless *et* al., (2006) stated that the sample must be representative of the population in question so that the results of the study can be generalised. The researcher ensured validity in collecting data within the participants' usual surroundings (school premises) at the convenient time frames indicated earlier through emails and personally the day prior such process.

The researcher used open-ended interviews as Cohen *et* al., (2011) state that they enable respondents to demonstrate their unique way of looking at the world and their definition of the situation. Furthermore, as Silverman quoted (in Cohen *et* al., 2011), indicated that a structured interview is one way of ensuring reliability for its same format and sequence of words and questions for each respondent. Similarly, Lansing *et* al (in Cohen et al. 2011) highlighted that one way of validating interview measure is to use convergent validity where the interview measure is compared with another measure (that is the questionnaire in this study) proven validated already. So, the researcher triangulated data collection through questionnaires and interviews in ensuring validity and reliability of the findings of this study. The researcher also used the services of transcribers who used the VLC audio player to transcribe each of the interview schedules to ensure the accuracy of the research findings.

3.9. Summary

The researcher outlined the research methods used to obtain primary school teacher perceptions about mathematically gifted learners and the kind of challenges they face when teaching such learners in an inclusive classroom of the foundation phase. This study used the 3-point Likert scale questionnaires and structured interviews to collect data from the teachers of the selected districts.

In conclusion, the researcher outlined ethical issues in this study. The results' validity and reliability were also looked into. In the next chapter, the results from all the

participants (mathematics teachers and principals or management members) will be dealt with.

CHAPTER 4

PRESENTATION, ANALYSIS AND DISCUSSION OF DATA

4.1. Introduction

The purpose of this study was to investigate and analyse foundation phase (grades 1-3) teacher perceptions about teaching and learning of mathematically gifted learners in Motheo and Xhariep districts' primary schools. The results will be analysed in regard to the survey questionnaires that yield both quantitative and qualitative data analysis and the structured interviews that require qualitative analysis of mathematics teachers and the school principals, respectively. The survey questionnaire used in this study asked the respondents to answer the four demographic questions to give a clear insight of who the teachers of this study are in terms of gender, race, age and years of teaching experience. This bibliographic information will not be used in analysis of this study but archived for further papers the researcher will be writing in future. The teachers were also asked to rate questions 1 to 4 on a 3-point Likert scale of agree, neutral and disagree ratings.

The results include the structured interviews of the principals about their perception in supplementing those of teachers about teaching and learning of mathematically gifted learners in their classrooms. The investigation of this study is being guided by the question below. It may now be appropriate to recall the research question and sub-questions.

Main research question

What are foundation phase teacher perceptions about teaching and learning of mathematically gifted learners in regular classrooms?

Research sub questions

- What are teacher perceptions in terms of their preparedness to meet the needs of mathematically gifted learners?
- To what extent are teachers aware of the latest developments in gifted education?
- What are the barriers teachers perceive as hampering gifted education?

This chapter also discusses the individual statements relevant to literature so as to support the findings and the recommendations of this study.

4.2. Data Presentation and Analysis/Interpretation

Data collected for this study is presented and analysed or interpreted by using figures and tables. 118 foundation phase teachers from 20 primary schools in the Xhariep and Motheo districts participated. The researcher collected data from foundation phase teachers through questionnaires using the 3 point Likert Scale which is constructed by accumulating a number of responses to a given question or statement toward an object (Cohen *et* al., 2011). This scale allows the subjects (in this case, teachers) to express a degree or disagreement with a statement (McMillan & Schumacher, 2014). 20 school principals from these primary schools were also interviewed. The interviews were structured in nature. Both qualitative and quantitative data analyses were used in this the study. These analysed appeared to complement each other when interpreting the results and writing the findings of this study. In using mixed methods to collect data, the researcher wants to compare and validate the results and use qualitative analysis to help explain quantitative findings (Creswell, 2014). This section therefore answers the above sub questions as follows:

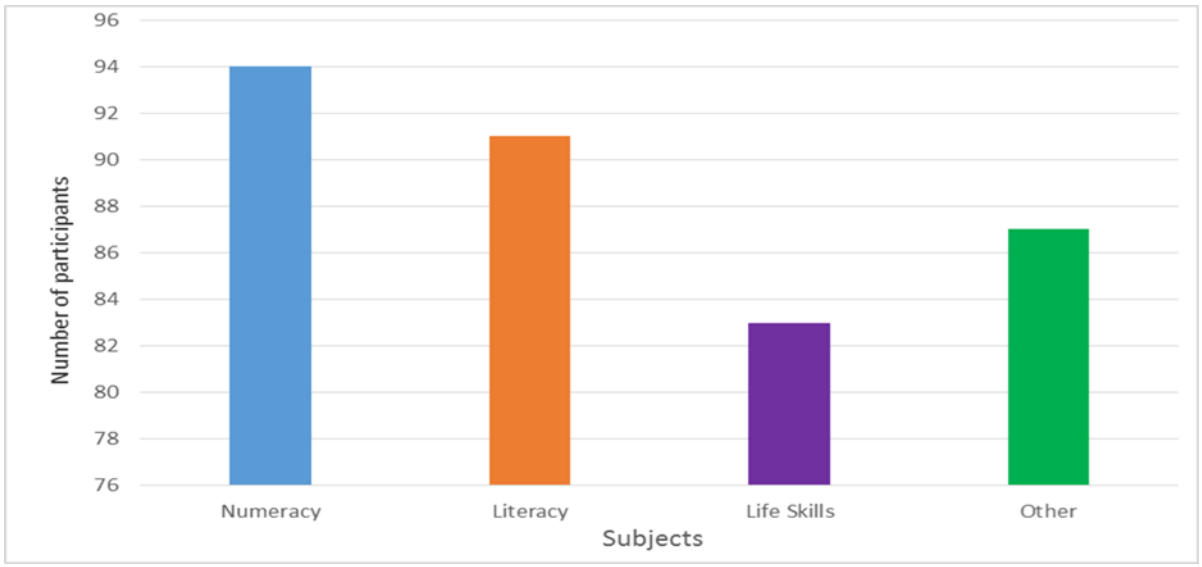
4.3 Teacher preparedness

The research sub question 1 asked was: “What are teacher perceptions in terms of their preparedness to meet the needs of mathematically gifted learners?” The responses of this sub question are presented through the statements and questions created for foundation phase teachers to provide data in regard to teacher preparation/preparedness. The responses to the above sub question 1 are presented from 4.3.1 to 4.3.14 below:

4.3.1 Responses according to subjects trained to teach in foundation phase

Figure 4.1 below indicates the subjects that teachers are trained for to teach in the foundation phase. This could imply that teachers are well trained for foundation phase subjects as per curriculum demand though they still have qualifications of other subjects as shown below.

Figure 4.1: Subjects trained to teach (n=118)



Subjects trained to teach

The teachers have responded differently as shown above in figure 4.1. Of all teachers, 94 are trained to teach Numeracy. Literacy have 91 trained teachers while 83 teachers are trained for Life Skills. The other 87 teachers indicated that they are trained to teach other subjects either not the ones for foundation phase or others to top up the foundation phase subjects according to the curriculum. Most of the respondents are trained to teach the subjects according to the foundation phase curriculum that are Numeracy, Literacy and Life Skills than any other subjects.

4.3.2 Responses according to other subjects trained to teach

Teachers' responses of "Other"

Here are the responses of 33 teachers:

Teacher 1002: Computer application and Technology and English

Teachers 1051, 1057, 1004, 1005, 1053, 1080, 1100 &1101: English First Additional language

Teacher 1024 & Teacher 1035: I was trained to teach in the intermediate phase

Teacher 1028: First additional language (English as a second language).

Teacher 1052: Am the educator of literacy and Setswana and I know that I master them

Teacher 1054 & Teacher 1062: All subjects, because I have trained

Teacher 1055: I have the primary teaching course (UDEP)

Teacher 1064: Special need but not completed one module LWP learners with learning problems

Teacher 1066: Psychology

Teacher 1067 & Teacher 1069: I was trained to teach all primary school subjects.

Teacher 1068 & Teacher 1091: I was trained to teach Science Subjects. Life Sciences. Agricultural Sciences and Natural Sciences.

Teacher 1075: English, Creative arts, Social Sciences, Natural Sciences

Teacher 1085: Because previously I was teaching intermediate phase because of S.P.T.D Certificate

Teacher 1088: I have B (Ed) (FET)

Teacher 1089: B ED Computer Science

Teacher 1096: Business Management, Economics & Accounting

Teacher 1097: Business Management, Economics

Teacher 1098: I was trained in the Senior Primary

Teacher 1102: Mathematics (Grade 4)

Teacher 1109: I specialised in BED (FET) Languages

Teacher 1113: Computer Application and Technology

Teacher 1116: Natural science, History, Geography

The data indicated that most of the foundation phase teachers meet the requirements of teaching the phase subjects; Numeracy with 94 respondents, Literacy with 91 and 83 for Life Skill. However, among 87 teachers who opted for other, 33 of them are qualified to teach in other phases but teach in the Foundation phase. These 33 teachers who qualify to teach other phases might not be able to teach foundation phase effectively. It is more likely for these teachers to use a “one size fit all” approach for all learners without considering their different gifts at that tender age. This wants us to recall Gagné’s (2007) fifth commandment that suggests early intervention as early as kindergarten and the first grades of foundation phase.

This would also affect the gifted learners negatively due to the fact that they would be continuously neglected in mainstream classes. Given this, it requires the school management to plan effectively in terms of subjects' allocation for individual teachers per phase.

4.3.3 Responses on training received to teach gifted learners

The question "did you receive training on how to teach gifted learners?" was asked in attempt to determine the need for teachers training towards gifted learners.

Table 4.1: Distribution of responses on teacher training to teach gifted learners (n=118)

Item	**Category of responses**			
Did you receive training on how to teach gifted learners	Agree	Neutral	Disagree	Total
Frequency	41	47	30	118
Percentage	35	40	25	100%

Table 4.1 above shows that 47 (40%) teachers out of 118 are neutral in being trained to teach gifted learners in their regular classrooms. 41 (35%) teachers agree to have been trained to teach gifted learners. 30 (25%) of them disagree to have been trained to teach the gifted learners. The meaning of neutral in this context affects the distribution of responses that leads to the conclusion of the requirement of teacher training in gifted education. Theoretically, this confirms what Gagné (2007) states that, if intrapersonal catalysts, (teachers), affect the developmental process negatively, it becomes poor and may hinder gifted students in becoming more talented. This suggests that the majority of teachers need teacher training toward teaching the gifted learners in their regular classrooms.

4.3.4 Responses on competence to teach gifted learners

The question “do you feel competent enough to teach gifted learners?” was asked in attempt to determine the competence of teachers toward teaching the gifted learners in their classrooms.

Table 4.2: Distribution of responses on the competence of teaching gifted learners (n=118)

Category of responses	Number of respondents	Percentage (%)
Agree	75	64
Neutral	37	31
Disagree	6	5
Total	118	100

According to Table 4.2, 64% of the teachers state that they are competent enough to teach the gifted learners in their regular classrooms. The other 31% of teachers are neutral in being competent to teach the gifted learners. Further 5% of them disagrees to be competent to teach the gifted learners. The results show that intrapersonal catalysts (both teachers and gifted students) are more likely to affect the developmental process negatively (Gagné, 2007). Firstly, 64% of teachers claim to be competent to teach gifted learners whereas, there is no implementation of gifted education in Sub-Saharan African countries, South Africa included (Mhlolo, 2014). Secondly, as a result, the gifted learners won’t be developed systematically in becoming more talented, if teachers are not competent enough to cater for their unique needs. Given that there is no gifted education in South Africa yet, this suggests that teachers in this study require some sought of training and or in-service training in order to be prepared to teach the gifted learners in their regular classrooms.

4.3.5 Responses on the inclusion of gifted education content at higher Institutions

Table 4.3 below indicates that the majority of the teachers (88%) agrees that higher Education Institutions should include content on gifted education in their courses. On

the other hand, 6% of the teachers are neutral on the inclusion of gifted education content at higher Education Institutions. The remaining 6% of them disagrees that the content of gifted education be included at higher Education Institutions. In his theoretical model, Gagné (2007) demonstrates that natural abilities (gifts) should be developed into competence (talents). Given this, if teachers are not trained in gifted education, this translation of gifts into talents won't be possible. This implies that there is a vital need for Gifted Education at higher institutions so that teachers can be well prepared to teach the gifted learners, as well as to translate the gifts into talents in their regular classrooms.

Table 4.3: Distribution of responses on the inclusion of gifted education content at higher education institutions (n=118)

Item	**Agree**	**Neutral**	**Disagree**	**Total**
Do you think Higher Education Institutions should include Content on gifted education in their courses	104	7	7	118
Percentage (%)	88	6	6	100

4.3.6 Teacher's attitudes and strategies for identifying gifted learners

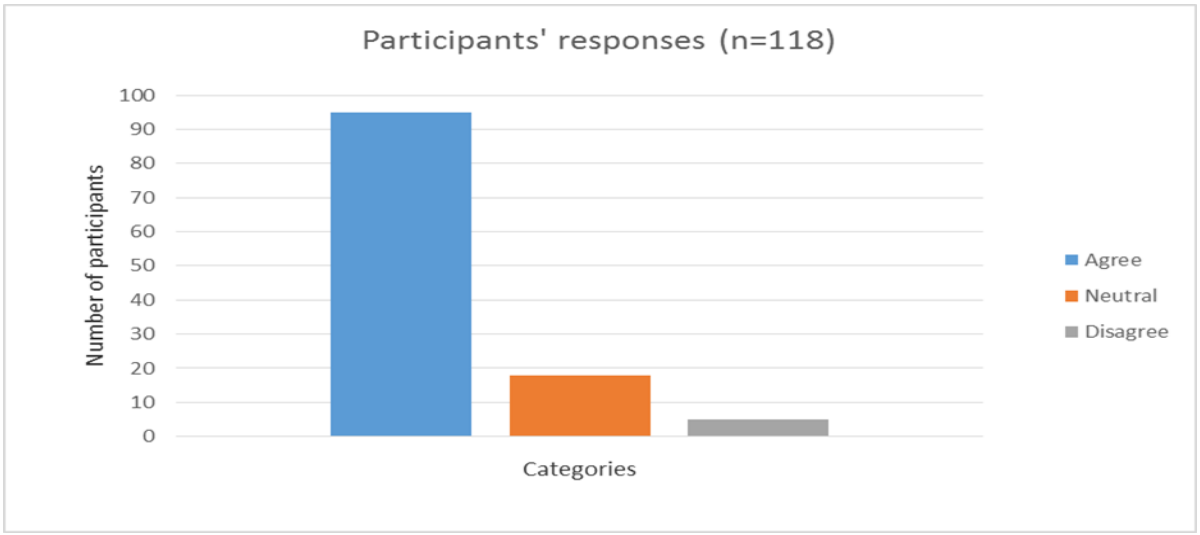
The question, **"**How are teacher perceptions about their attitudes and strategies for identification of gifted learners in regular classrooms?" generated the following questions and statements presented and analysed in order to find out about teachers' attitudes and strategies in identifying gifted learners in their regular classrooms.

4.3.7 Responses on having gifted learners in class

Figure 4.2 below shows that 95 teachers of 118 agree to have gifted learners in their class. This could be the results of the general misconceptions teachers have about gifted learners and are mentioned in 4.3.8.1 to 4.3.8.10 below. 18 teachers are

neutral to the statement and 5 of them disagree. This is an indication that the majority of teachers are able to identify gifted learners in their class according to their different characteristics.

Figure 4.2 Distribution of responses of having gifted learners in class



4.3.8 Explained responses on identifying a gifted learner from the rest who are not

This section responds to the question that might have emerged in regard to Figure 4.2 above. The possible question: How do they know they have gifted learners in their classrooms?

In responding to the above question, the following themes were generated in identifying a gifted learner from the rest who are not:

4.3.8.1 Theme 1: gifted learners are curious, attention seekers who irritate if not noticed, if they are rumouring or bored in class and with a large amount of information

The above theme, with regard to the identification of gifted learners were provided by the following four teachers:

> *Teacher 1001: A gifted child is always curious and need a lot of attention this irritates if not noticed.*

Teacher 1032 & Teacher 1050: When she/he is finished writing, he/she wants to go out or is disturbing others by moving around in class.

Teacher 1090: They ask many questions and very curious. They possess a large amount of information.

4.3.8.2 Theme 2: Gifted learners are being perceived to be asking questions more often that teachers are not ready for. They also complete task easily

These two teachers below identified them as in theme 2 above:

Teacher 1022: Gifted learners like playing in class, ask questions time and again that teachers are not ready for.

Teacher 1053: Complete task easily. Ask question all the time

4.3.8.3 Theme 3: gifted learners are fast and quick learners in completing given tasks than other learners in the classroom without teacher's assistance

The following twenty one teachers identified them as mentioned above:

Teachers 1005, 1019, 1026, 1035,1058,1082,1083,1084,1086,1094 & 1117: by writing everything correct and finish before time

Teacher 1009: He is the one who finish first and excelled to all his work

Teachers 1016, 1054, 1070 & 1096: They complete the class activities correctly fast and go on with other work

Teacher 1025: They are quick to finish their work and also in giving answers. Get bored if something is over emphasised

Teacher 1076: Got the questions always right, ask where he don't understand, finish all the work, very fast. Eager for more work, able to write on his own without the assistance of the teacher or other learner. Also active

Teacher 1081: They always finish their work at first and ask questions more often

Teacher 1112 & Teacher 1115: They complete their task before time and start to move around and make noise in the classroom.

4.3.8.4 Theme 4: They are said to understand the work faster or quickly than their peers and excel in all their work

Gifted learners are identified in the above manner by these eleven teachers:

Teacher 1002 & Teacher 1004: The learner understand faster than others

Teacher 1062, 1089, 1093, 1095 & 1096: They always answer the question before the other and before teachers explain

Teacher 1068 & Teacher 1091: Gifted learners are able to understand complex concepts, retention of variety information

Teacher 1085: They understand clear (meaningful) like challenges (problem solving and to explore, they are free and flexible

Teacher 1100: Understanding and quickly to do his/her classwork

4.3.8.5 Theme 5: gifted learners are learners who understand and complete tasks without teachers' assistance or other learners' help

The above description of gifted learners is provided by the following twenty five teachers:

Teacher 1008 & Teacher 1010, 1057: They don't struggle in any learning area and always in advance of others

Teacher 1024: The way he/she responds to questions she will give you answers which you do not expect and also be able to do tasks on his/her own without your assistance even if you did not teach him/her

Teachers 1013, 1036, 1039, 1040, 1044, 1045, 1048, 1059, 1069, 1073, 1097, 1098, 1105 & 1108: Gifted learners are able to do work on their own without the teacher. They are active and able to answer question quickly

Teacher 1055 & Teacher 1087: They are very active, do the work quickly without mistakes

Teacher 1064: They do work on their own. When you explain to the not gifted he is already done

Teacher 1060 & Teacher 1076: Got the questions always right, ask where he don't understand, finish all the work, very fast. Eager for more work, able to write on his own without the assistance of the teacher or other learner. Also active

Teacher 1103 & Teacher 1116: By answering questions and helping others to complete the given work

4.3.8.6 Theme 6: Gifted learners are learners who score more marks, high performers (including through diagnostic test) and always demand extra work. They are also known as attention seekers by these fifteen teachers:

Teachers 1006, 1014, 1030, 1031, 1037, 1038, 1043, 1046, 1049, 1061, 1077, 1102 & 1104: He/ she scores more marks and if I give extra work he/she excels and becomes bored when not given attention

Teacher 1021& Teacher 1080: Learners write basement assessment at the beginning of the year, the performance will tell, also the performance in the class.

4.3.8.7 Theme 7: gifted learners are regarded as learners with ready answers and they respond to questions positively, confidently and related to curriculum

The above theme in regard to gifted learners is provided by these eight teachers:

Teachers 1020, 1051, 1056, 1063, 1066 & 1101: He/she is always responding to the questions and positively

Teacher 1113 & Teacher 1114: Respond fast to everything related to curriculum

4.3.8.8 Theme 8: Gifted learners are characterised as learners who are active in class are said to be self-motivated, too, by the following six teachers:

Teacher 1023, 1029, 1052, 1065 & 1076: They are active in the class and always answer questions

Teacher 1099: They are active in class and self-motivated

4.3.8.9 Theme 9: Gifted learners are perceived to be independent and critical thinkers who are also good guessers by the following four teachers:

Teacher 1012: The teacher need to involve all learners to his or her lesson by using independent thinking, learners should be given [Sic] a chance to answer freely

Teacher 1028: Always eager to do the work. Ask questions go extra miles critical thinking

Teacher 1110: They taking a role of the leader in play. They have strong memory and concentration.

Teacher 1106: Good guesser

4.3.8.10 Theme 10: gifted learners are skilful in reading and writing including copying from the chalkboard and even retelling

The following three teachers have provided the above identification:

> *Teacher 1071 & Teacher 1072: They can read and write*
>
> *Teacher 1088: Sometimes by the skill of writing, copying from the chalkboard or reading even retelling.*

4.3.9 Responses per agreement of teachers' attitude and strategies in identifying gifted learners

Figure 4.3 Respondents' choices on agreed statements

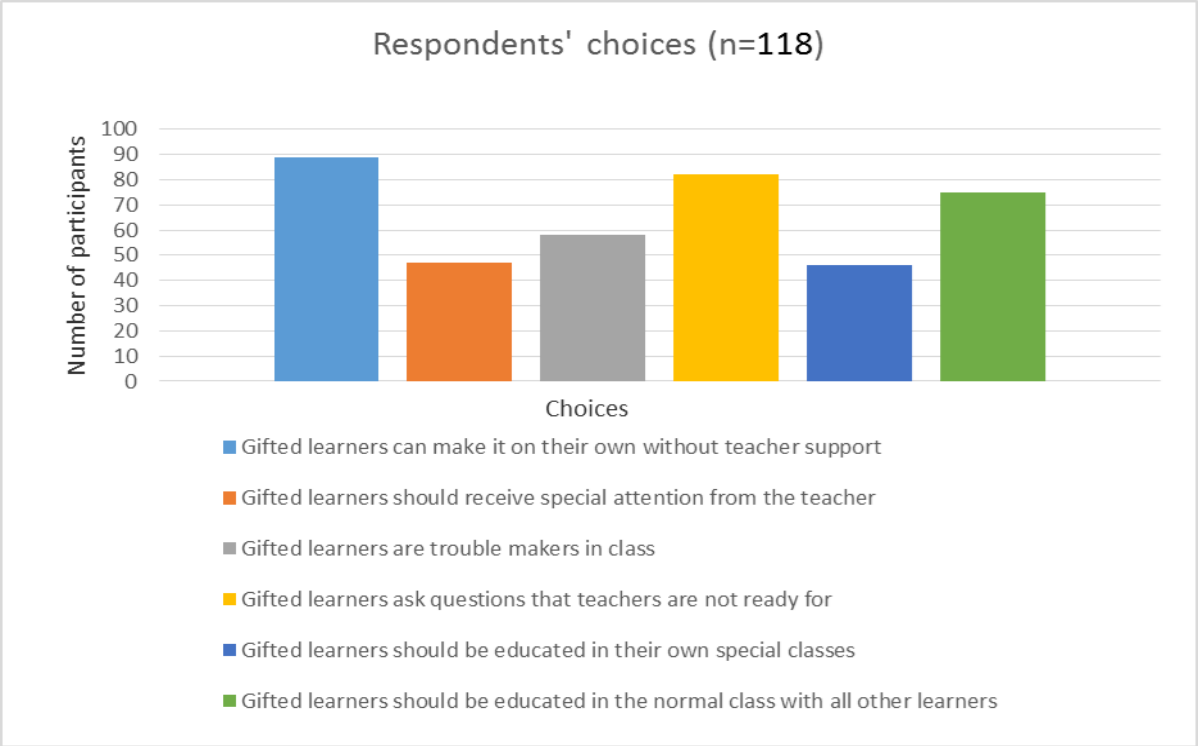


Figure 4.3 above shows the following results per number of teachers on the choice of identifying gifted learners in their regular classrooms.

There are 89 teachers who chose, "gifted learners can make it on their own without teacher support"

Then 47 teachers chose, “gifted learners should receive special attention from the teacher”

The other 58 teachers chose, “gifted learners are trouble makers in class”

On the other hand, 82 teachers chose, “gifted learners ask questions that teachers are not ready for”

The second last choice have 46 teachers, “gifted learners should be educated in their own special classes”

The last choice consists of 75 teachers, “gifted learners should be educated in the normal class with all other learners”

This section’s results show that teachers have negative attitudes towards gifted learners in their regular classrooms. This wants us to recall Gagné’s (2007) model that indicates individuals as intrapersonal catalysts, teachers and learners with potential. These learners’ potential needs to be sharpened into talents through developmental process by the teacher. Failure to identify these learners due to teacher’s negative attitude towards them, affects their developmental process negatively. Therefore, the potential of the learners won’t be translated into talents through developmental process.

4.3.10 Teachers’ grouping strategies

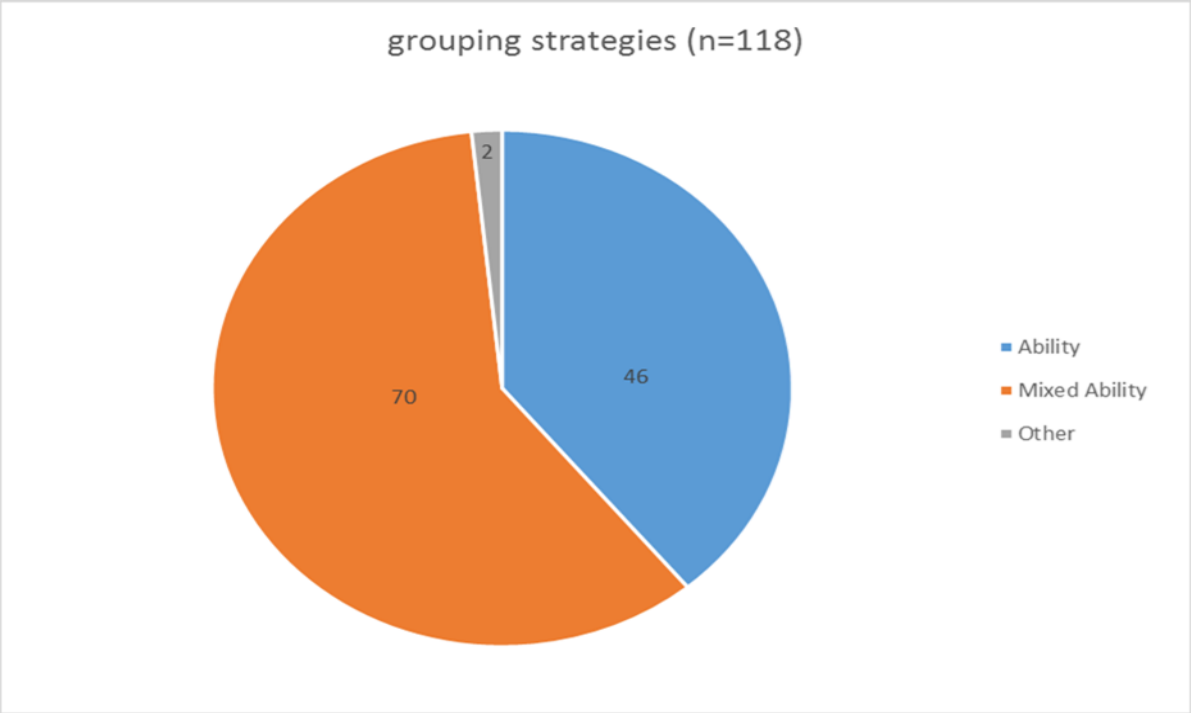
The question was: ‘What are teacher perceptions about grouping strategies to cater for gifted learners in regular classrooms?”

4.3.11 Responses on: How do you group your learners in your class?

Figure 4.4 below shows that 46 (39%) of 118 teachers group their learners according to their ability. The majority of 70 (59%) of the teachers group learners according to mixed ability as their grouping strategy. The majority (59%) uses the mixed ability grouping strategy. Gagné’s model suggests the strategies such as differentiation and grouping enrichment that teachers can use in teaching gifted learners (Gagné, 2007). Furthermore, his goal-management environment is about the awareness of strength and weaknesses; needs and autonomies of all learners in regular

classrooms. So, the results show that teachers are aware of these elements of goal-management environment hence, they are able to use grouping strategies in their regular classroom.

Figure 4.4: Responses on grouping strategies



The remaining 2 (2%) of teachers opted on choosing “other” for the following reasons in 4.3.12.

4.3.12 Responses of explanation of “other”

> *Teacher 1005: The gifted learners understand teaching lesson and do what is expected. They need more work than others.*
>
> *Teacher 1088: Gender preferably! This assist with their self-confidence – even if they are gifted, it calms them down better if they are with a different gender + they try to impress each other.*

4.3.13 The question, “What is your reason for your choice of grouping?” was answered as follows.

Given that South African teachers are not trained in gifted education (Oswald & de Villiers, 2013), they used both mixed and ability groupings for their different reasons as the researcher created themes according to their responses:

4.3.13.1 Theme 1: Mixed ability grouping allows the gifted to help and motivate the slow/struggling ones or others as well as learning from others and sharing ideas as stated by the following fifty four teachers:

> *Teachers 1007, 1013, 1020, 1021, 1022, 1023, 1024, 1025, 1027, 1029, 1032, 1036, 1040, 1044, 1047, 1049, 1050, 1052, 1054, 1055, 1056, 1062, 1069, 1077, 1099, 1102, 1107 & 1113: I do so because I want them to help each other. Less gifted learners tend to feel inferior if they are grouped together.*
>
> *Teacher 1015 & Teacher 1111: So that they can share different ideas and learn from one another.*
>
> *Teacher 1034 & Teacher 1103: Because learners have different abilities, skills so it help those who are not gifted to catch up.*
>
> *Teachers 1011, 1048, 1059, 1066, 1086, 1087, 1093, 1110, 1112, 1114, 1115 & 1116: They must help each other. Sometimes others doesn't understand the educator but will be able to understand his or her peer*
>
> *Teacher 1060: It helps me, when I am busy with the slower children the help the others who are in the middle*
>
> *Teachers 1043, 1064, 1065, 1095, 1098: They keep order to the panic one's as they finish work before time and the get chance to help those who struggle. They must not get bored.*
>
> *Teachers 1068, 1091, 1092 & 1105: To help each other and motivate one another and also to encourage the learners to cultivate a positive self-image and a belief that they can succeed.*

4.3.13.2 Theme 2: mixed ability grouping is used for slow learners for their better understanding and to improve their performance by gifted learners as team leaders as stated by these four teachers:

> *Teacher 1041: Learners sometimes do not understand teachers but when their class-mates talk to them they understand better.*
>
> *Teacher 1070: Other learners improves their performance of learning standard.*

Teacher 1071: To become a team leader of a group and improving their performance of their work.

Teacher 1072: Other learners are improving their performance of teaching and learning standard.

4.3.13.3 Theme 3: mixed ability grouping is used to identify their different abilities, accommodate and treat learners fairly equal as they all need support from their teachers by these four teachers:

Teacher 1108: To see their difference abilities

Teacher 1046: Every learner should feel welcomed in class and they should be treated fairly equally. They all need support from their teachers

Teacher 1075: To accommodate each individual learner's learning style, readiness, and interest, and also using a variety of different instructional methods

Teacher 1117: For all learners to know that they are equal in class, and for slow ones to be free

4.3.13.4 Theme 4: Ability grouping is for learners with the same abilities to challenge one another as indicated by these three teachers:

Teacher 1006: Learners with same abilities must sit together because they must challenge each other

Teacher 1030: Learners with same ability always challenge each other. Everyone contributes in his/her group.

Teacher 1031: Learners with abilities always challenge each other. Everyone contributes in his/her group

4.3.13.5 Theme 5: Ability grouping is used to overcome work load of teachers and enable them to attend to learners according to their abilities including those who need attention the most, the struggling or slow learners with learning barriers. The following twenty teachers stated:

Teacher 1001: It helps me alleviate the work load because I know what to do when attending groups

Teachers 1002, 1008, 1019, 1026, 1035, 1058, 1073, 1076, 1080 & 1109: So I concentrate to those that need attention the most.

Teacher 1009, 1038 & 1067: Ability, So that you give attention to relevant learners, according to their abilities. You can prepare the relevant lesson also.

Teacher 1053, 1082, 1083 & Teacher 1084: To enable the weak learners to work harder so that they can move to the gifted group or the next group.

Teacher 1085: Save time because the slow one's become confidence to learn at their own level. While the gifted may continue driving themselves.

Teacher 1094: To help other learners to grasp the content.

4.3.13.6 Theme 6: ability grouping allows learners with same ability to assist one another according to their pace and understanding including sharing activities as stated by these seven teachers:

Teacher 1012: Effective learning takes place in turn courage, participation of all learners, no one is bored in group of his or her ability because they assisting each other with their pace and understanding

Teacher 1014: To let learners work together and be able to help those who are struggling

Teacher 1018: For them to share activities

Teacher 1028: Learners should be able to help each other.

Teacher 1079: Grouping help learners to work together so that those who are behind to recover.

Teacher 1100: Most of the learners teach to other learners to understand. They must have group leader in the group.

Teacher 1104: The slow or non-gifted learners will be grouped alone, at their average so that they can help each other

4.3.13.7 Theme 7: ability grouping is used to give learners work according to their level of understanding as well in writing and reading as stated by these three teachers:

Teacher 1037: Give them work influenced by their level of understanding eg reading sessions

Teacher 1106: Grouping according to their abilities so that you know their levels of reading and writing

Teacher 1106: Grouping according to their abilities so that you know their levels of reading and writing

4.3.13.8 Theme 8: ability grouping is used to differentiate tasks, adjusting the pace of instruction and ask questions according to learners' needs by the following four teachers:

Teacher 1039: Grouping in classroom positively affects learning outcomes if cooperative learning strategies are appropriately applied. Learners also can discover new talents and hidden skills when taking on unfamiliar roles while working in groups.

Teacher 1051: So as to treat matters accordingly. And to give them questions they deserve. And work that stimulates their interest

Teacher 1089: To give different tasks

Teacher 1090: Allows me to adjust the pace of instruction to learners needs.

4.3.13.9 Theme 9: ability grouping assist learners to be dependent and not rely on the gifted learners as well as delaying them as stated by five teachers:

Teacher 1016: The not gifted must not depend on the gifted

Teacher 1063: When you pair gifted and slowly ones they delay the gifted ones

Teacher 1081, 1096 & 1101: If you group them mixed the slow learners rely on the gifted learners

4.3.13.10 Reasons of "other"

The following two teachers opted to give their reasons for their choice of "other" as grouping:

Teacher 1005: Gifted learners understands faster than others and expected more work.

Teacher 1088: They are not as wild as when they sit as friends. I have found their need to impress the other gender makes it easier for them to try answering even if they do not know.

4.3.14. The following are teachers who answered the question, "In what ways does your grouping strategy help gifted learners?"

4.3.14.1 Theme 1: mixed ability grouping helps gifted learner to lead the class and being kept busy as indicated by these sixteen teachers:

Teachers 1020, 1032, 1055, 1071, 1072, 1077 & 1103: Development of leadership happen here. I give them work to lead like reading and counting

Teacher 1021: In a group they are usually team leaders read the instructions to the fellow team members and make sure that everyone take part in discussion or given task.

Teachers 1023, 1025, 1029, 1059 & 1099: They get to know more as they explain to other it keeps them busy because they come across challenging question

*Teacher 1054 & Teacher 1066**:** Gifted learners are given chance to explain/teach other learner how did they managed to solve the problem. Gifted learners play a role model to other learners*

Teacher 1110: To gain more self-esteem. To motivate them. To be leaders in future.

4.3.14.2 Theme 2: mixed ability grouping helps gifted learners because other can learn from them while exchanging ideas as they help fellow learners with barriers: the following twenty teachers stated:

Teacher 1004 & Teacher 1007: They are always aware of their level of work. The others can learn from the rest.

Teacher 1011: They can cope very easily when explained by others from the group

*Teacher 1015, 1044, 1056, 1095, 1112 & 1117**:** Help other learners having learning barriers in class.*

Teacher 1022: Conduct the lesson to the whole class, after I group them according to their mixed ability groups, so that they exchange the ideas, thereafter I give the gifted ones more written work.

Teacher 1024: It boosts their self-confidence and their ability to share with other children. The more they share ideas, is the more they become clearer in what they know.

*Teacher 1027**:** To learn from others how to answer, speak, write and co-operate*

Teachers 1036, 1040 1041& 1043: By repeating what they know to others, they gain more knowledge or become sure of what they know. Because they finish their work fast, they do not get bored when other haven't finished yet because they become busy helping them

Teacher 1064: The weak one's [Sic] feel confident as they are afraid to come and ask. The gifted ones help them a lot. The weak ones feel confident when they are helped by others. They keep order in class, because they don't panic.

Teacher 1093: They get a chance to help their peers. And they work harder than before.

Teacher 1062 & Teacher 1111: So that they can share different ideas and learn from one another. In sharing and cooperating with others. Respect others.

4.3.14.3 Theme 3: mixed ability grouping help gifted learners to explore and realise their competence and do the work on their own as they become motivation to others. These seven teachers stated:

Teacher 1048 & Teacher 1052: They can learn more. They will see their competence

Teacher 1057: They go with their own speed or they learn at their own pace

Teacher 1060: It encourages them to work harder or give themselves work on their own

Teacher 1046: Every child must have chance to showcase his or her ability so in that case gifted leaner must be mixed group so that other learners must try to push themselves by wishing and trying to perform like gifted

Teacher 1075: Motivating the learners in his/her group. Enlarge the learner's natural gifts. Push him/her to higher personal standard

Teacher 1105: They will become more motivated, because they will see themselves as role model to the others.

4.3.14.4 Theme 4: Mixed ability helps gifted learners toward building their confidence, independency and their knowledge and or level of their understanding being challenged. These fifteen teachers indicated:

Teacher 1065 & Teacher 1092: They have more insight in subjects and this build confidence in them

Teacher 1068: It encourages the learners to work harder [Sic] and get recognition from their teachers. It help them to believe in themselves.

Teacher 1069: Helping others to them is what they like so they always learn fast and ahead so that when they help others they know [Sic] better.

Teacher 1070: They learn more in peer group because they understood each other.

Teacher 1086 : It help them to have more knowledge and it keeps them busy not to get bored while others are still busy writing work which they are done with

Teacher 1087: They can assist other learners. They help the educator. They can listen without disturbance

Teacher 1091: It encourages the learner to work harder [Sic] and get recognition from their teachers. It helps them to believe in themselves

Teacher 1098 & Teacher 1108: By giving them different task is where you can see he or she must able to do things by her own

Teachers 1102, 1113 & 1114: To allow gifted learners access to suitable levels of challenge and complexity

Teacher 1115 & Teacher 1116: Grouping can give gifted learners challenge of explain to others.

4.3.14.5 Theme 5: Ability grouping allows gifted learners to share their knowledge and skills and help other learners who are struggling in class. The following eighteen teachers stated:

Teacher 1014: They share their knowledge and skills with those who are experiencing problems in the class

Teacher 1016 & Teacher 1094: They sometimes help them with reading and because they are gifted they will help others in their respective group.

Teacher 1019 & Teacher 1026: It helps gifted learners to do new things and explore more so that they can be able to do more things on their own.

Teacher 1038: It helps them to participate excellently by competing with those who are at the same group with them

Teacher 1039: It helps a lot because learners become confident about their work. And they learn more and explore.

Teacher 1051: My grouping strategy help gifted learners by sharing matters. Where they were having a problem they can solve it easier [Sic]. Grouping improve their relationship to others. And promote them in different discussion.

Teacher 1053: Mostly they are given extra task to complete. They are given leadership role and help slow learners.

Teacher 1058: To help them face challenging work and to understand that work

Teacher 1074: They become more talented, because they help each other [Sic]. They discuss the answer they don't agree with the correct answer first, they like argument.

Teacher 1079 & Teacher 1090: It help gifted learners by giving a challenge work so that those who are behind to have opportunity to recover.

Teacher 1101: I give them instructions to follow when I am busy with other groups. I use them to help me with those who struggle.

Teacher 1104: So that they can work alone, at their pace level.

Teachers 1063, 1106 & 1109: They manage to help those who are slow by spending a lot of time explaining to them and showing them what it is that they exactly need to do.

4.3.14.6 Theme 6: Ability grouping makes gifted learners to be vigilant and want to compete with their peers. The following eleven teachers stated:

Teacher 1001: It makes them to always be on their toes as learners know each other. And a lot of competition is exercised and no time for irritation and restlessness in class.

Teacher 1002: Push them to want to do more work and to work harder to be in the group of gifted learners and remain in the group.

Teacher 1006: My strategy help gifted learners to do more than she/he is doing. Learners with same ability compete with each other and you as a teacher can know which are coping or not.

Teacher 1009: Competition is so high between those groups and confident is being improved, amongst them.

Teacher 1018: They can learn, compete against each other. You can give them activities to do while your attention is with those who struggles

Teacher 1030 & Teacher 1031: They always challenge, compete with each other. Everyone proofs I point that he/she is better than the other. They usually ask for more work after school. After marking them they compare their marks.

Teachers 1035, 1037 & 1096: They are in competition with each other and it makes their intelligence [Sic] grow. They are also able to share the information.

Teacher 1073: They get to do their work on time and excel without being delayed by the slow ones

4.3.14.7 Theme 7: ability grouping helps the gifted learners in getting more challenging work or special tasks to do independently and think positively while the teachers are busy with others. These twelve teachers indicated:

Teachers 1008, 1010, 1082, 1083 & 1084: To give them more work while I am teaching others

Teacher 1012 : To be more creative, critically thinkers, solve problem on their own, active, not afraid of challenges, work independently not to be shy to be responsible for their own learning, express themselves freely, take part in learning competitions, improve to communication skills

Teacher 1028: They got extra work than others because they are faster than other learners

Teacher 1067: I give gifted learners special tasks which allow them to work on their own. I try to give them challenging tasks which keeps them busy most of the time because they can sometimes be troublesome if they idle.

Teacher 1076: Make them feel comfortable to learn harder than ever. Also to motivate them, to make them better person ever. Also to encourage them to think positively

Teacher 1080: They are quick to finish their work so they are given advanced activities to complete

Teacher 1085: They drive themselves (challenge the problem) and come out with the solution, use their thinking skills because of their good memories

Teacher 1089: Their work is up to their level and it's a bit challenging

4.3.14.8 Responses of "other" towards ways of helping gifted learners

The following two teachers opted to give their reasons in the way their choice of other help gifted learners:

Teacher 1005: Gifted learners without teacher they can be able to do work on their own. Sometimes they will make teacher to be aware of the mistake done and make it correct.

Teacher 1088: They are calmer. They listen better. They try – even when frustrated – try to copy on the board and even answer orally.

4.4 Awareness of latest development in Gifted Education

The research sub question 2 was: “To what extent are teachers aware of latest developments in gifted education?” This question’s responses are presented and analysed through statements created for foundation phase teachers on their awareness of latest developments in Gifted Education. The responses are presented from 4.4.1 to 4.4.6 below:

4.4.1 Statement 1 seeks to find out whether teachers have read the recent released statement by National Planning Commission on vision 2030 document’ “Our future-make it work”

Figure 4.5 Responses on reading the document “Our future-make it work"

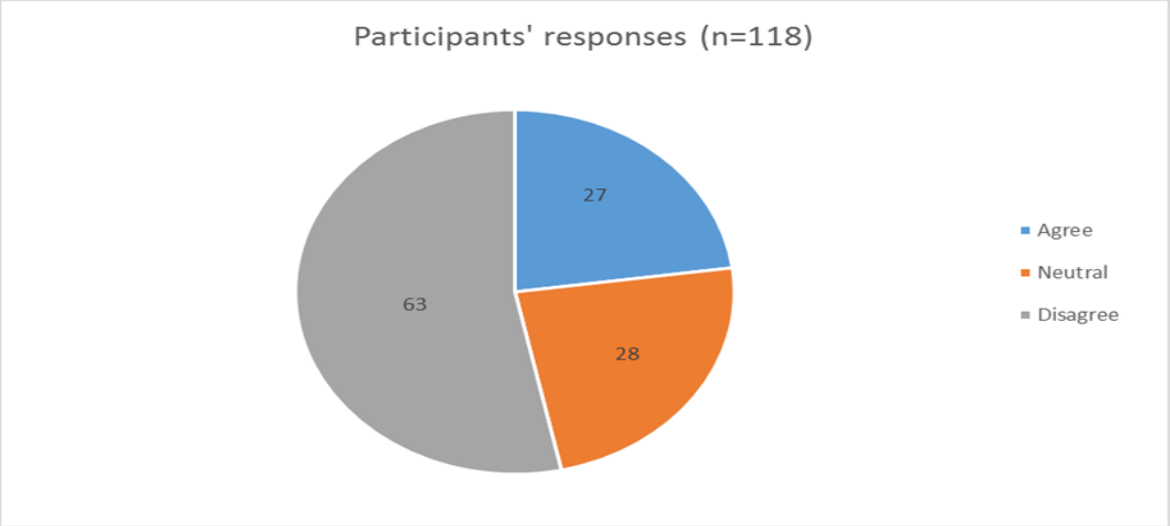


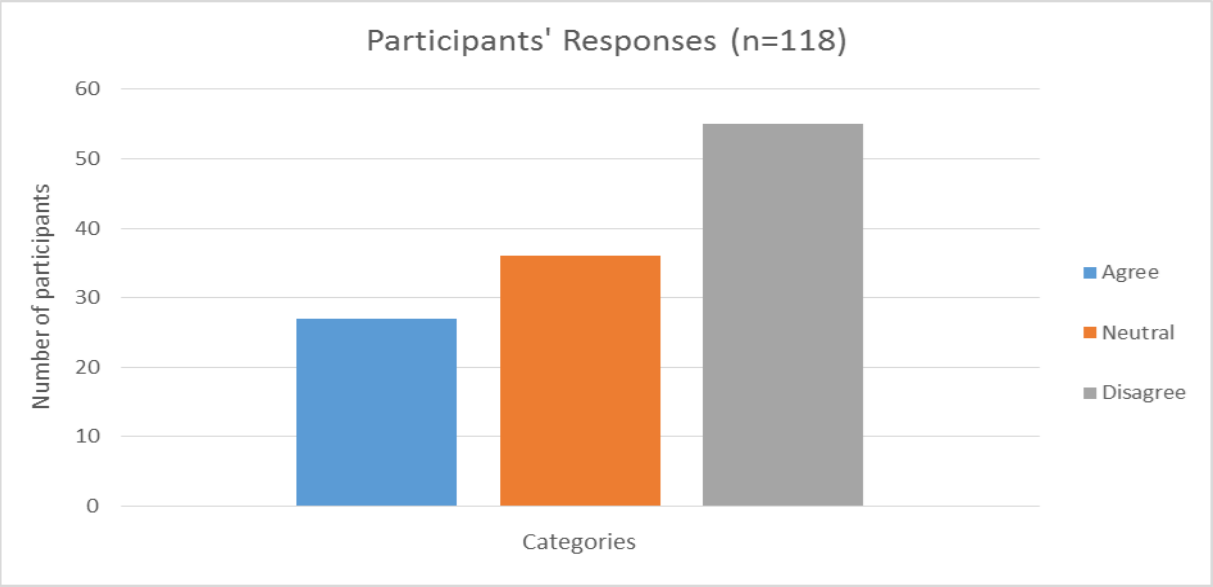
Figure 4.5 above shows that 63 (53%) of teachers have read the document while 28 (24%) of them are neutral in reading the document “Our future – make it work”. The remaining 27 (23%) have disagreed on reading the document. This could imply that 47% of the teachers have not seen a need to accustom themselves with the content of the document.

4.4.2 Statement 2 determines the awareness of teachers about the National Planning Commission’s recommendation regarding gifted learners

Figure 4.6 below shows that 27 teachers agree to have been aware of the National Planning Commission’s recommendation regarding gifted learners. The other 36 teachers are neutral on being aware of such a recommendation. The majority of them, 55 teachers disagree in terms of being aware of this recommendation. This

could imply that teachers are not considerate in reading about the developments around gifted education.

Figure 4.6 Responses on the awareness of the National Planning Commission's recommendation regarding gifted learners



4.4.3 Statement 3 determines the number of teachers who have read a report about investigation on MST education implementation

Figure 4.7: Teachers responses on the report read about investigation on MST education implementation

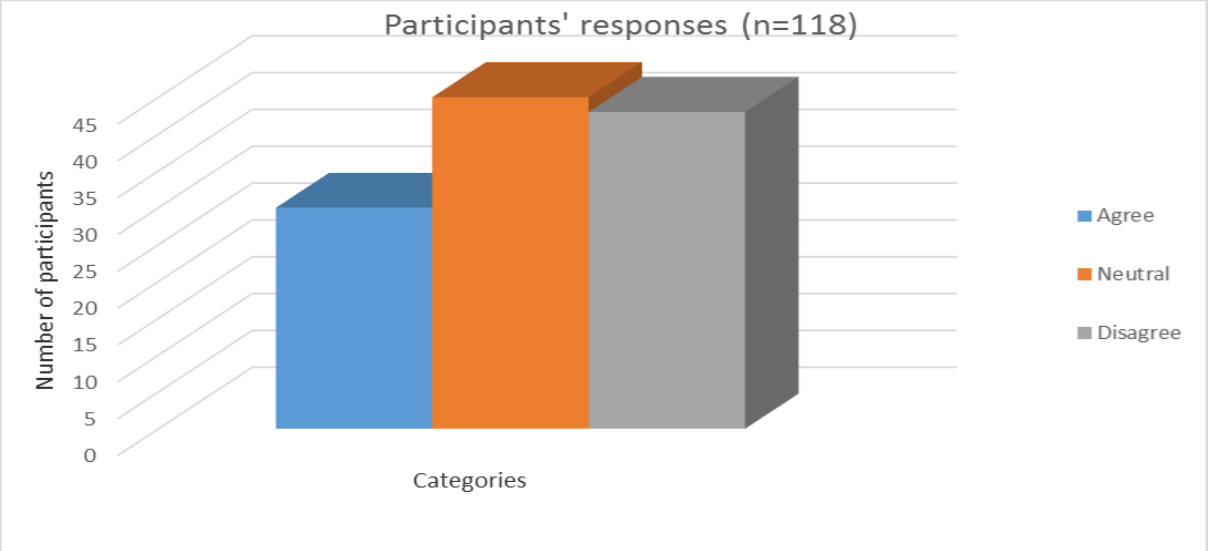


Figure 4.7 above shows that 30 teachers out of 118 agree to have read the report about investigation on MST education implementation while 45 of them are being neutral in reading such a report. The remaining 43 teachers have disagreed on reading such a report. This could imply that the majority of the teachers are not keen on reading about the developments in gifted education.

4.4.4 Statement 4 determines the awareness on the Task Force's recommendation regarding gifted learners

Table 4.4 Teachers' responses on the awareness of the Task Force's recommendation regarding gifted learners

	Category of responses (n=118)			
	Agree	Neutral	Disagree	Total
Number of respondents	23	57	38	118
Percentage (%)	20	48	32	100%

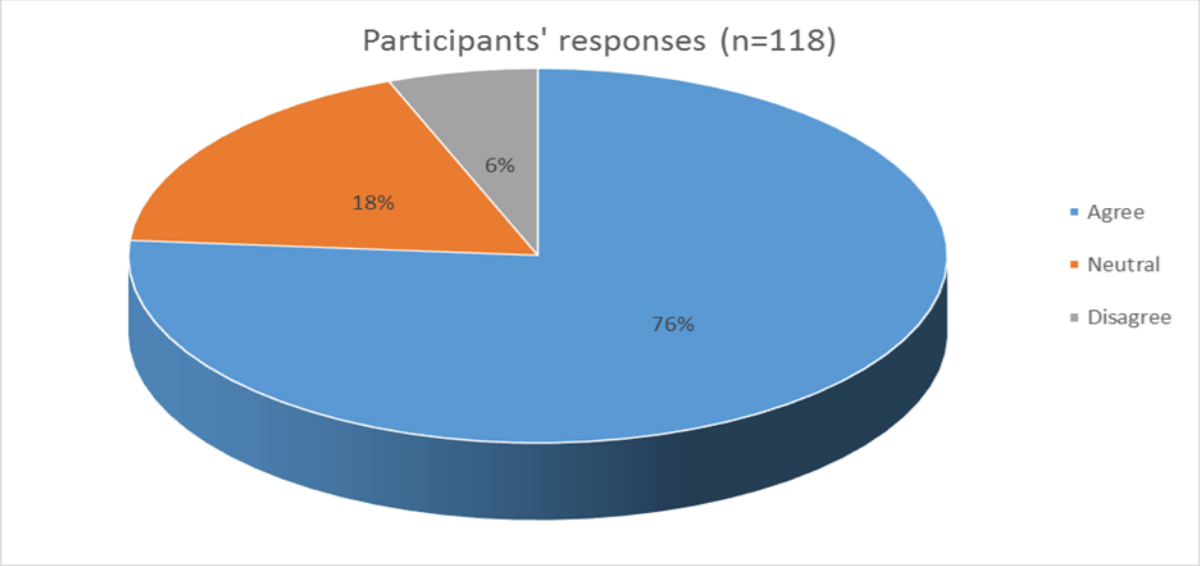
According to Table 4.4, 23 teachers agree to have been aware of the Task Force's recommendation regarding gifted learners. The other 57 teachers are neutral on being aware of this recommendation. Further 38 teachers disagree in terms of being aware of such recommendation. This could imply that the majority of teachers need an awareness campaign about the developments regarding gifted education through workshops or their cluster meetings.

4.4.5 Statement 5 determines whether the teachers have read the new CAPS document with guidelines for responding to learner diversity in the classroom

Figure 4.8 below shows that 76% of the teachers agree to have read the new CAPS document with guidelines for responding to learner diversity in the classroom. On the other hand, 18% of the teachers are being neutral on having read this document. The remaining 6% have disagreed to have read the concerned document. This implies that the majority of the teachers are aware of the new CAPS document with

guidelines for responding to learner diversity in the classroom because they have read it.

Figure 4.8 Distribution of responses on new CAPS document with guidelines for responding to learner diversity in the classroom



4.4.6 Statement 6 determines the level of sufficient provision the document makes for teachers to attend to the needs of gifted learners

Table 4.5 Distribution of respondents in regard to sufficient provision of the document to attend to the needs of gifted learners (n=118)

Responses' category	No of respondents	Percentage (%)
Agree	57	48
Neutral	46	39
Disagree	15	13
Total	118	100

Table 4.5 above shows that out of 118 teachers, 57 (48%) have agreed that the document makes sufficient provision to attend to the needs of gifted learners, 46 (39%) are neutral to this statement, while 15 (13%) disagree. This could imply that the majority of the teachers are making effort in attending to the needs of gifted learners in their classrooms. This section demanded the awareness of latest

development in gifted education. However, gifted education is not yet implemented at schools or at universities in the Sub-Saharan African countries (Mhlolo, 2014). Given the results above, Gagné (2015) recommends that gifted and talented program coordinators prioritise services for their “garden-variety” or “mildly” gifted students found in regular classrooms.

4.5 Barriers that hinder gifted Education

The research sub question 3 was: “What are the barriers teachers perceive as hampering gifted education?” This final sub question made a provision for teachers to state 3 barriers, that is, Barrier 1; Barrier 2 and Barrier 3 which are analysed through identified themes by the researcher. The Responses of Barriers to gifted education for this last sub question range from 4.5.1 to 4.5.4 below:

4.5.1 Theme 1: Socio-economic barriers

A barrier is an obstacle or circumstance that keeps people or things apart and it hinders both communication and access to advancement. The barriers include poverty, unplanned urbanisation and unemployment, moral confusion and uncertainty about values, the HIV and AIDS pandemic, the disintegration of family life and the abuse of children. Lack of support from the parents. The following forty five participants stated the above barriers in this way:

> *Teacher 1001: Social background: some gifted learners experience problems at home whereby a child is neglected and don’t get the necessary support. Socio Economic factor: in some instances gifted learners have no parents or are orphans. And had to leave school at early age to support their siblings.*
>
> *Teachers 1002, 1009, 1012, 1037, 1011 & 1067, 1113 & 1114: Lack of support from the parents (negligence). Parents use alcohol and drugs during pregnancy. Abuse plays a major role.*
>
> *Teacher 1007 & Teacher 1013: Not having opportunity to go to university due to lack of finance not getting bursary*
>
> *Teachers 1018, 1019, 1003, 1035, 1101 & 1110: Poverty and underdevelopment. Inability of families to meet basic needs such as nutrition and shelters. Social economic barriers*

Teachers 1020, 1025: 1034, 1044 & 1051: Background is a big challenge for instance here, sometimes the behaviour of the parents is not pleasing at all and that hurts so much because it disturbs those children.

Teacher 1021: Lack of information from the teacher or parents to deal with such learners.

Teacher 1022 & Teacher 1061: Poverty- the imbalance of ability of parents most of learners sleep and go to school in an empty stomach. Gangsterism [Sic], drugs and service delivery protests- learners loose more schooling time.

Teacher 1038: Some of the parents don't give support to the teachers and learners.

Teacher 1045 & Teacher 1052: If they don't have enough money they cannot be able to go further with their studies. Some of them if they don't get help, because of their gifted mind they turn themselves into criminals as they will prove some things on their own.

Teacher 1056 & Teacher 1074: socioeconomic factors. Parents' divorce

Teacher 1058: Background at home. Poverty. Lack of financial status

Teachers 1062, 1063, 1082, 1083 & 1084: Smoking dagga and drinking alcohol. Banking school and gangsters. High rate of HIV

Teacher 1064: Orphans. Child headed. Divorce. Negligence. Abuse

Teacher 1066: Work in the home. Learners with gifted talents will be given burden of responsibilities especially at homes where they are supposed to manage both career and house chores. Gender critic- Women are told that there is no way they can choose certain careers e.g. President, most men feel that they cannot not be ruled or take orders from a woman.

Teacher 1068: Medical problems may hamper the education of gifted learner in a way that he/she will lack confidence in the ability to learn if they have been absent for long. Physically impaired such as deformed limbs or burn lesion he/she will feel unaccepted and depressed and also other learners will look and act differently towards a gifted learner. It may be a learner has eye problems. Eye strain cause headaches that affect concentration and study time. He/she may also lack confidence in participating in group work.

Teacher 1076: Background of their family. Most of their parents are not working. They don't get what they want. Staying far from school, other parents are single. Poverty as

well hamper their education, travel by foot to school without eating a thing. Don't even have school uniform. Parents left them alone with siblings to take care of the young ones. Some are working far from home. Others are ignorant. Other parents neglect their own biological child. Some parents come home once a month. Lack of parental love. Negligence. Abuse of their mother or sister at their presence. Also divorce could also be the factor that hamper the education. As well as illiteracy of their parents

Teacher 1077: Poverty- some parents are not working. Children's social grant is the only income for the family. Some parents are HIV positive. Many learners are orphans. They live with their grandparents and relatives. They end up absenting and dropout of schools. Uneducated parents. Learners don't get support from their parents when doing school work. They don't see the necessity of education.

Teacher 1091 & Teacher 1092: Medical problems may hamper the education of gifted learner in a way that he/she will lack confidence in the ability to learn if they have been absent for long. Physically impaired such as deformed limbs or burn lesion he/she will feel unaccepted and depressed and also other learners will look and act differently towards a gifted learner. If maybe a learner has eye problems- eye strain cause headaches that affect concentration and study time. He/she may also lack confidence - in participating in group work.

Teacher 1101: Poverty= parents have to leave their learners to work far away, so learners didn't get enough support when coming to school activities and home works. Unemployment- Learners can be educated from primary to high schools and when they passed their schooling there is no money to finish or further their studies. Death- Learners are taken from their homes to be placed somewhere because the parents are deceased, in many cases they are not well-treated.

Teacher 1107: Health problem. Poverty. Parental care- Abuse

4.5.2 Theme 2: School related

4.5.2.1 Peer pressure

The following four participants responded in this manner regarding the peer pressure that is explained by some as the effect of bullying:

Teacher 1001 & Teacher 1074: Peer pressure: mostly gifted child are bullied by their colleagues and they are easily influenced by their peers.

Teacher 1056 & Teacher 1077: Bullying is the cause of drop out because those learners that are slow learners became jealous and start abusing gifted ones.by forcing them to do homework for them etc.

4.5.2.2 Lack of facilities/ overcrowding

In responding to the above barrier, the following twenty eight participants share their views in this manner:

Teachers 1004, 1005, 1028, 1105, 1100, 1111 & 1118: Facilities. There are no good enough facilities e.g. Laboratories maths labs. We always do not have enough facilities for those gifted learners to assist them.

Teacher 1009 & Teacher 1038: Lack of facilities at some areas of the country. Overcrowded classes

Teachers 1015 & Teacher 1022: Overcrowding classes. -educator can't reach all the children in time. Feedback cannot be done in time. In most cases overcrowding classes are noisy.

Teachers 1023, 1029 & 1099: Overcrowding. Shortage of special schools

Teacher 1024: Most of the institutions have limited or no facilities at all and that is a barrier on its own.

Teacher 1026: Overcrowding in the classroom hamper gifted learners because the teacher take more time to help slow ones and they are more in the classroom. If learners with severe disabilities can be accommodated in special schools the teacher will be able to deal with gifted ones.

Teacher 1031: problem arranging time and place of instruction.

Teachers 1032, 1037, 1055, 1081 & 1094: Overcrowded classrooms, the teacher can't give each learner the attention they should get/receive. The number of learners should be 1:20.

Teacher 1035: Our community schools are overcrowded so it is very difficult for the gifted children to expand and apply their knowledge.

Teacher 1044: Institutions which doesn't have resources, like rural areas where they have to travel long distance to school.

Teacher 1050: They want to be separated with the other. They need their special class.

Teacher 1113 & Teacher 1114: Adequate time, overcoming barriers to learning and development. Attitudes. Learning support resources because this kind of learners need more advanced facilities.

4.5.2.3 Unchallenging curriculum leading to dropouts

The following sixty two participants responded in different ways toward unchallenging curriculum in some cases leading to dropouts:

Teachers 1004, 1012, 1015, 1019, 1028, 1090 &1100: Our education does not cater for the special needs of the children.

Teachers 1006, 1024, 1037, 1044, 1051, 1053, 1054, 1055, 1061, 1080, 1086, 1093,1097, 1098, 1112, 1113 & 1116: Same education cater for all learners regardless of their abilities for example although they are gifted, nothing is challenging in their education they are given the same work as other children who are not gifted.

Teachers 1027, 1030, 1031, 1064, 1074, 1075, 1095, 1102, 1104, 1108, 1109, 1114, 1115 & 1117: To be place in a mixed ability group. They cannot weigh themselves since they are not challenged. To the school where there is no challenge for them. They end up doing mischief at school. Lack of learning facilities e.g. LTsm in school.

Teachers 1008, 1010, 1049, 1050, 1057, 1059, 1060, 1065, 1069, 1070, 1071, 1072, 1073, 1079, 1085, 1087, 1088, 1103, 1107, 1111 & 1118: They are always hyperactive. They get bored easily when teaching them with other learners. Most of them became drop-outs.

Teacher 1105 & Teacher 1106: Department must stop changing the curriculum.

4.5.2.4 Language and cultural differences

In responding to the above barriers, the following three participants' views are:

Teacher 1103: Language. Culture

Teacher 1107: Reading. Writing

Teacher 1110: Language and communication. Teaching and learning for many learners takes place through a language which is not their mother tongue.

4.5.3 Theme 3: Teacher related

The following are fifteen participants who responded in this manner in regard to the above barrier:

Teachers 1010, 1036, 1112 & 1116: They did not get more attention because we thought they knew

Teacher 1014: Most of gifted learners completes the activity quickly and disrupt the class. That shows that they need attention and time.

Teacher 1027: Workload sometimes. Educators neglects them sometimes to do on their own.

Teacher 1030 & Teacher 1031: The teachers always ignore them since they believe they know everything or that they are the best. Teachers only focus on underperforming learners.

Teacher 1032: shortage of teachers. Nobody is willing to teach mathematics especially in rural areas. Teachers that do not like mathematics or that show no interest in mathematics.

Teacher 1046: gifted learners are not supported in some way or another by teacher because they think gifted don't need support from them.

Teacher 1050: They want their special attention. They are the trouble makers in class because if they are finish with their work they will disturb the others by making noise.

Teacher 1075: Limited classroom management skills. Classroom management is the most common concern arises when educators attempt differentiation. SDT must include training in classroom management skills.

Teacher 1096: Sometimes teachers tend to not focus on them and when change happens a teacher becomes aware late. Teacher favouring them and telling them they are clever, they became excited when writing tasks then fail.

Teacher 1105 & Teacher 1106: Poor contribution and teaching methods of lazy educators

Teacher 1112 & Teacher 1116: Support is not enough from the educator.

4.5.3.1 Lack of teacher training

The following eight participants see lack of teacher training as a barrier in these ways:

Teacher 1020: The teacher who is not preparing well everyday

Teacher 1021: Teacher development. Teachers must be well trained to deal with such learners. They must be trained concerning their behaviour and activities that can be

used to keep them meaningfully busy. Lack of information from the teacher or parents to deal with such learners. Teachers consider them as restless learners in the classroom and just need punishment.

Teacher 1024: Little or no special training is given to educators as to how to deal with such learners.

Teacher 1028: Well-trained educators

Teacher 1054: Lack of experience teacher in teaching gifted learners

Teacher 1074: Lack of quality educator can be barrier to such learners.

Teacher 1075: Lack of sufficient subject matter. Subject matter knowledge becomes critical for educators working with gifted learners. Lack of content knowledge also affect the use of important pedagogy.

Teacher 1089: lack of teacher training on such learners.

4. 5.4 Theme 4: Material related

4.5.4.1 Lack of teaching material

In responding to lack of teaching material as a barrier, these thirty one participants expressed their opinions in this way:

Teachers 1002, 1003,1012,1015, 1016,1018,1019,1023,1029,1035,1045,1051, 1053,1054, 1055, 1061, 1077,1081,1086, 1093: 1094: 1097: 1099: 1102: 1106,1110, 1118: Lack of teaching material.

Teacher 1021: advanced and relevant material appropriate to their needs. Teacher training and development

Teacher 1026: Lack of things used when learners are doing things for example things like science apparatus in primary schools

Teacher 1036: No resources available for them in our school to explore.
Teacher 1090: In most cases they attend schools without good materials and that impact them from learning to their best abilities. Enough learning materials are unavailable.

4.6 Interview responses of school principals

Principals' interviews (see Appendix E) were used in this study to obtain supplementary information to that of teachers' questionnaires about the education of

mathematically gifted learners in an inclusive classroom. A structured interview schedule with 10 questions was conducted at the conducive time to the principals as the researcher made appointments prior to her visit to respective schools through emails and telephones. All the interviews were audio-recorded by the researcher and transcribed with the use of VLC audio player. They were further edited by the researcher for relevancy in accordance to the questions about inclusive education toward mathematically gifted learners in regular classrooms. The researcher used the acronyms such PX which stands for Principal X and SV that is School V for the confidentiality of participants' identities.

Inclusive education in South African context, is provided by all schools known as full-service schools (FSS) that are inclusive and welcoming of all learners which also increase participation and reduce exclusion by providing support to all learners to develop their full potential irrespective of their background, culture, abilities or disabilities, their gender or race (Department of Basic Education, 2014). Inclusive also known as special education or instruction designed to meet the unique needs of the disabled and as well as the gifted and the talented (Eggen & Kauchak, 2014).

4.7 How do you view inclusive education?

The researcher presents the responses of the principals in regard to their view on inclusive education built on these four themes: barriers to learning; all learners, the gifted and special schools.

4.7.1 Barriers to learning

The following four principals with different codes for identification, seem to understand that inclusive education is meant for learners with learning barriers that need to be overcome and such learners be supported at all costs.

PT: *inclusive education is very much important in many schools because it deals with problems or barriers learners are having so that they should be overcome.*

PV: *I think inclusive education is a great initiative that the Department of Education has established to assist the learners with barriers to learning.*

PB: *I view it as part of curriculum that is based on learners with learning barriers as well as learners who are normal. This learners with learning barriers are learners that need to be given more support at all costs based on their cognitive level of education.*

PG: *Inclusive education is important at schools. It has been meant for certain learners but, up to so far it's still working fine. If a learner has got some problems regarding the work that has been done, then with inclusive education, we, as teachers, are able to at least reach out for those learners.*

4.7.2 All learners

The total of twelve principals view inclusive education as education that caters for the needs of all learners in a classroom, irrespective of their barriers, abilities, disabilities, gender, race and culture. It is also viewed as education that is not discriminative but equally valuing all learners. For example, these principals state their views in this manner:

SL: *I view inclusive education as an opportunity to teach children to learn regardless of their barriers, gender or different problems.*

SD: *Inclusive education is a very good process that makes sure that learners with different abilities in a classroom are catered for in terms of the outcomes the teacher wants to achieve at the end of his or her lesson. All learners are allowed to participate freely and supported throughout the process irrespective of their abilities. I think inclusive education makes sure that learners benefit at the end of each and every lesson. No learner has to be left out because of maybe being slow, average or high performer. All learners are treated the same and are catered for.*

SC: *I view inclusive education as any number of teaching approaches that address the needs of students or learners and in this inclusive education all learners must feel equally valued.*

4.7.3 The gifted

These two principals view inclusive education as a mainstream system in which all children can learn being gifted and middle gifted and with different abilities and levels:

PA: *Inclusive education under the South African conditions it is a good thing since we have 2 extremes we have a side of children that are gifted or middle-gifted and we have those children that are struggling quite a lot.*

SM: *In an inclusive education, we deal with learners with different abilities and levels.*

4.7.4 Special schools

PO and **PP** below maintain that learners with inclusive education needs, should be handled at special schools because it is difficult to handle them due to lack of development specifically toward inclusive education.

PO: *I view it to be positive although parents don't give us support. This is a mainstream school but we got a lot of children who belong to special schools. If we have full support of parents children could get help. Teachers that we have here are not that much equipped to handle children with inclusive education needs, so they need some kind of development in that direction.*

PP: *It is difficult especially from grade 4 to grade 7, we cannot handle those learners.*

4.8 What types of inclusive practices are being used at your school?

The responses to the above question generated the following themes: remedial teaching; didactic program; using the gifted learners and referral to special schools

4.8.1 Remedial teaching

The following principals are examples of eleven principals who use remedial teaching at their schools as inclusive practice and with the help of the SBST:

PV: *I will start with conduction of special classes after school for learners with barriers to learning. Learners knock off at 13:30 but the relevant committee which is the SBST (School Based Support Team) has prolonged or extended the time for learners with an hour which means that our learners are currently knocking off at 14:30. It means an hour will be used by educators to try and assist learners suffering from barriers to learning.*

PM: *at our school the types of inclusive practices that we use we make sure that we adapt the assessment for the learners who are struggling and number two, we also have SE (Special Education) classes whereby learners who are in level 5 that are really struggling are taught by the educators especially for them and we have those learners in the mainstream that we identify to attend the remedial education*

4.8.2 Didactic programme

The following two principals use didactic program as their type of inclusive practice at their schools:

PF: *We are having didactics programs, that's the pull out system and curriculum differentiation where all the learners are grouped in one class and different methods of planning and teaching are used.*

P1: *I think we arrange for a sitting period after school to assist those who are still struggling. And again those who are gifted we give them the chance to assist ones who are still struggling in other groups while we are still busy with the other ones.*

4.8.3 Using the gifted learners

There are three principals who use gifted learners to assist in the teaching and learning environment such as:

SD: *It doesn't mean you as a teacher have to stand in front of the learners and teach all the time, whereas there are those learners who have potential who are able to assist one another. So you give them a chance to do that and by so doing they gain more information and they become confident within themselves. We give them a chance to assist one another and make groups where they will lead such groups*

because sometimes learners learn more when they work together. As a teacher you just monitor all their work and go around the class and make sure that whatever work you've given them is carried out.

PS: *gifted learners are used as facilitators or group leaders in the different groups in the class so that they assist these learners who are struggling. So, they are being used as managers or mentors to their peers.*

4.8.4 Referral to special schools.

The responses of the remaining five principals differ in the sense that other principals' referrals include the K numbers which refer to learners who are in need more than other learners whereas others' views are different, for example:

PT: *in any case I would say to you Mme that here at school we do have the school based support team (SBST). It's some sort of cluster of teachers who are lacking behind say for example, after school they are referred to that particular organisation to identify such learners if nothing is being done they are referred to the district or department, we refer them as the K learners.*

But ***PO*** has this to say*: We have identified levels that are not good. For example, I have got a very good boy here who can sing harmoniously but when it comes to the academic abilities, he is not coping and what is worse is his age. The Department honestly, they are not doing much to assist us 'cause these children stay here for a long time and some of them become dropouts. They don't get referred to the schools where they can cope.*

Given the above, some principals are of the opinion that inclusive education is meant for learners with learning barriers. As a result, such learners should not be taught in mainstream classes but at the special schools.

4.9 Which educational practices does your school use to help ensure that the gifted learners perform to their full potential in an inclusive classroom?

The following themes emerged in answering the above question: Mathematics competitions; grouping; more challenging work; differentiation

4.9.1 Mathematics competitions

Principals use the academic maths competitions such as Hey Maths, AMESA, Mental Maths, Maths quiz, Maths Olympiad and conquesta for gifted learners to perform to their full potential in an inclusive classroom**.** Here are two examples of the six principal's saying:

SM: *We have mathematics competitions in our school such as AMESA and Conquesta that we organize for our learners. (Conquesta Olympiads that encourage and inspire learners to become aware of their self-worth and potential)*

PA: *We provide them with more challenging activities and also with more work. We allow them to participate in challenging competitions like Mental Math's, Math's quiz and Math's Olympiad so that we keep challenging their potential.*

4.9.2 Grouping

These gifted learners are grouped by six principals to help other learners in the regular classrooms, for instance ***PV*** states**:** *The first method is that grouping or mixing learners. the groups will be established according to the cognitive abilities of learners, learners struggling in other words I'm referring to learners with low IQ levels will be paired with gifted learners hence it will grant the gifted learners an opportunity to test the IQ levels by explaining something which is abstract to the learners with low IQ. They will be using all the methods to try to cultivate or to try to instill the sense of understanding.*

4.9.3 More challenging work

The following two principals give the gifted learners more challenging work.

SS: *Like I have explained in the previous question we usually give them more challenging work especially those of their next class so that they can prove themselves there.*

PX: *Learners are given more challenging work. Teachers must make sure that these learners are given more challenging work than other learners. They must give them time to go and research in the library and computer room. Teachers must make time for those who do not know anything, the less gifted and the gifted learners. All learners must have the attention of the teacher.*

4.9.4 Differentiation

These other two principals differentiate gifted learners' lessons and assessment from the normal planning and thus give enrichment work.

PT: *I would say in this case, the type of the planning, the preparation form that we use now of late, down there it has a room for those learners we call it the extended opportunities. If we realize that this child for example is gifted or is excelling in mathematics, there is a special task that is allocated to that particular child.*

PR: *I think differentiated assessment is being used where you see that this learner or a group of learners are ahead of others and you give them extra work that other learners didn't do. It is the one that is mostly used, enrichment work.*

The response of **PP** below is congruent to Gagné's model that demonstrates the rarity of gifted learners in regular classrooms. **PG** also emphasizes the lack of educational practices for gifted learners.

PP: *None, as we have few in each class. Sometimes we get one or two they are never 10 in a class, its 1 or 2.*

PG: *"Truly speaking up to this far according to experience that I have in terms of gifted learners, schools and my school, don't have those extended opportunities for gifted learners. We think they know almost whatever has been taught, so we don't have any matters that we can help them with. If I have a class with learners with barriers and there are those learners that are gifted I just give them an extended opportunity where I give them work while I'm still busy working with the ones with barriers. We don't have those measures of inclusive education to help them to perform more or to get a better result in terms of their achievement. Since they know,*

we just take for granted that they know, even if we can do whatever we do, the focus is with these ones which have problems, in trying to capture or rather know what's taught in class. So, we don't have anything at this time that we are doing as a school to help gifted learners".

The last two principals' responses are addressing the method of teaching generally in class and the referral of learners with special needs beside the gifted learners.

SL: *I think you give them resources to help them especially the concrete materials so that they can touch and see it live.*

PB: *The school invites the subject facilitators or subject advisers to get the learners tested. Such learners must have K numbers so that these learners do not feel vulnerable. There is also one-on-one teaching that is done by learners that the school encourages where learners help one another with some tasks that they are given for classroom or homework purposes.*

4.10 What leadership style(s) do you use to influence your mathematics teachers' efforts in planning for the gifted learners in their regular classrooms?

Thirteen principals use democratic style where the team members participate in decision making. It allows team teaching and teachers to discuss Mathematics matters such as planning for all learners including the gifted learners. ***SM1*** has put it in this way***:*** *We use democratic leadership. It accommodates all teachers with different teaching styles who share good teaching practices to help the gifted learners in a class. We have a varied learner population according to their levels, that is, the slow ones to grasp, the middle ones as well as the gifted accommodated in one class.*

One of the five principals who encourage their teachers to plan in such a way that they give extra challenging work for gifted learners and do peer teaching as well, says:

SC: *I use a participative leadership style: I participate, show and do and then the educators do what I do. We have PLC meetings where each educator shows*

her expertise and we do extra planning of work for the gifted learners. This means we give them activities that are more challenging and when they are done with those activities, they also help the other peers with their activities.

The following two principals encourage participation in Maths competitions for both teachers and learners.

PR: *I encourage the educators to do the competition amongst learners so that those who do well, for instance, in Mental Maths, compete against each other and get exposed to competing with other learners outside the school.*

PV: *Department of Education is assisting our learners by establishing competitions such as AMESA, Mental Math's, Math's Olympiad and etc. the principal encourages educators to participate in such competitions. If an educator has registered with one of the competition the Teacher will be given papers to practice with before the commencing time of the competition.*

4.11 What criterion does the admission committee use in selecting mathematically gifted learners into your school?

All twenty principals do not have or use any criteria to admit mathematically gifted learners into their schools. Here are some of the examples in regard to admission of mathematically gifted learners into schools.

PG: *At our school we don't have any criterion of selecting learners based on their performance. We just admit learners according to the criteria put by the department. When we admit the learners from other schools, we do look at the report whether the learner is average or performing good but the departmental policy doesn't allow us to select learners based on their performance. So, for admitting mathematically gifted learners we are just considering the policy of the Department that says no learner should not be allowed nor be admitted at schools based on certain things including performance. Even if a learner comes to the school with the report card saying that he or she has failed from where he comes from, as long as we still have space for that learner we should admit such a learner. We are not considering whether he or*

she has performed well or not in mathematics we admit learners according to the policy of the Department.

PB: *There is no criteria specifically for The Gifted learners. Our school is an ordinary public school that takes all learners of different walks of life and that follows the policy of Admission according the South African Schools Act. We admit without looking at the ability of the learner we just consider a learner as a learner that only needs to be taught in order for him or her get the best education and the better future including those that are different in learning*

PO: *We don't have a criterion per se, we take learners from different schools. It's not like in model C schools. We take learners in general, we don't take them based on mathematically giftedness.*

PS: *At our school no criteria is used in selecting gifted learners. All learners are admitted the same way. The only thing will differ when it comes to the class, where the learner has got more potential will be utilized by the teacher to help the other learners as a group leader or an assistant to his or her peers. However, at the end of the year, these learners who are more gifted are rewarded at a function called diploma ceremony for their Excellency.*

PX: *Most fortunately at our school, we don't allow any criteria or discriminating of learners, based on the learner's intellectual. We accommodate every learner. During our time there was that aptitude test we used to do but today we don't do that. So, I'm not sure of the type of learners we admit at the beginning of the year. I don't know how intellectually they are in mathematics but, we don't really have that.*

4.12 What educational training or experience do you have in supporting your mathematics teachers to cater for the needs of the gifted learners in regular classrooms?

In response to the above question, twelve principals support their mathematics teachers by encouraging them to attend conferences such as AMESA, and departmental workshops held by LFs (Learning Facilitators). One of those principals encourages his mathematics teachers to study further to upgrade their qualifications.

PX: *Teachers must first attend workshops but fortunately in our circuit at the beginning of the year they attend the startup workshops where the Lfs lay down what is being expected of them. Teachers select only the gifted learners at schools to participate in mathematics competitions because they want to win. These learners are being used in those competitions organised by the department. Teachers are being encouraged to upgrade their qualifications more especially in mathematics because they are teaching the subject. They must have the knowledge of mathematics so that they cannot be embarrassed by these gifted learners for they have got their own method of doing things which the teacher doesn't know in the classroom.*

PA: *I do attend a lot of AMESA conferences where I learn about new things and new methodologies of approaching mathematics. That helps quite a lot and I also engage with Google and try to find more different ways of teaching a particular topic.*

The following two principals are the examples of the four teachers who do not have specific training but one of them shares his/her experience.

SS: *I don't have that specific training.*

SM1: *I don't have educational training concerning that but the experience that I have is that one of the demonstration lessons. As a school we organize the demonstration lessons where all the teachers are going to demonstrate how they treat a certain aspect in mathematics. In that way we exchange good teaching practices, maybe, using a certain teaching method. As teachers we only use one teaching method when it works for you but we don't realize that we have different learners in class. When we come together and have demonstrations lessons, we pick good teaching practices from one another.*

One of the principals is not giving much support to the teachers but appears to be relieved from workload by what gifted learners are capable of in regular classrooms.

SQ: *I'm not giving much support to the teachers. These gifted learners are doing a lot of work and as a teacher you don't have a burden because if you have treated*

something in mathematics, they are the ones who help others seeing that we have lots of numbers in our classrooms.

The following two principals support the teachers differently to the above 12 teachers.

PP: *We bought different resources for them to use in the classroom when they have finished their work.*

PB: *I encourage my teachers to identify such kind of learners by looking at their term results and continuous assessment. I tell them to use some group works when dealing with the math's practices in their classrooms on daily basis. They must use these learners in conducting Mental Math's in classrooms daily for the first 10 minutes of the lesson presentation. They must use these learners to write down the daily class work corrections as they will be presenting at the same time to other learners. They must give them some extra advanced work of past question papers and of other grades to deal with. They must also be encouraged to enter into math's competitions such as Hey Maths and mental Maths competitions. This will identify and encourage them to go extra mile and feel important and recognized as they do this every day. There will be improvement of Maths in our country, in our schools as well. We will be having the majority of gifted learners in mathematics although we understand that it is not all possible to have learners who have the potential in Maths but they need to be math's literate.*

The last principal below rather supports both teachers and learners with barriers toward teaching and learning in regular classrooms in this way:

PR: *I am concentrating a lot to the learners with barriers even to the teachers who are not achieving their objective in teaching the learners. I usually take the teachers whom I know are doing well and I organise an internal workshop and use them to share their good practices with others.*

4.13 How do you go about with your mathematics teachers to facilitate effective inclusive education for the gifted learners in regular classrooms?

The response given by seven principals, is that they are of the view of assisting teachers through differentiation of teaching methods or strategies and resources in lesson planning to facilitate effective inclusive education for the gifted in their regular classrooms, for instance, the following two principals have responded in this way:

PA: *Since the principal is the one who will always monitor the work of teachers he always check the books of the learners and make sure that the most gifted learners get more work compared to the work that is actually given to struggling learners. That alone is not necessarily to facilitate effective inclusive education but it helps to separate and also allows the teacher to prepare better for the future in making sure that he/she prepares better for the struggling learners. The ones that are gifted work faster and they get bored very easily in class if you don't give them sufficient work to do. Through the learners books and teachers lesson plans you are able to see if the teacher has differentiated and provided for both learners, the struggling ones and the most gifted ones .*

PF: *I encourage them to differentiate their lessons, use different types of resources, expose the learners to the variety of topics, and give them opportunity to explore complex problems.*

The following two principals organise Maths competitions for their schools in order to facilitate effective inclusive education for the gifted learners in regular classrooms.

SV: *We organise mathematics competitions, e.g. Mental Maths. Every Friday at assembly and once a term we hold such competitions to motivate learners for better performance. Some schools have Hey Math programmes.*

PR: *I expose them to competitions against other learners to represent the school.*

The following two principals are concerned about teachers' training on inclusive education before they can address learners' needs in the regular classrooms.

PG: *At our school we don't cater for gifted learners and most of our educators are not acquainted with inclusive education. Only those ones who have been trained as individuals from their pockets, attended those classes or rather courses based on*

inclusive education. So, whenever you want to say something about inclusive education you need to have a workshop, invite someone from somewhere just to teach them how to prepare or give learners knowledge or information based on inclusive education and how to tackle learners' problems in class.

PV: *As a principal, you will need to influence the staff so that they are able to know, understand and interpret what inclusive education is. Educators need to understand the causes of learners to be engaged inclusively before they try to treat such learners. Then thereafter the SBST will organize workshops for educators to give them knowledge on assisting learners who are struggling.*

The following two principals emphasize the need for the workshop about inclusive education and its implementation including the use of resources.

PM 1: *As workshops have been provided, their implementation is supposed to be provided after the training.*

PP: *We encourage teachers to use resources in hand and also to compromise and attend workshops.*

In responding further to the above question, one of the three principals who use grouping to facilitate effective inclusive education for the gifted in their regular classrooms, has responded in this way:

PS: *Learners are grouped in groups of different abilities and skills, groups are always mixed groups. We can't group them as one group of gifted learners and one of average learners but we mix them so that everybody feels as part of the class.*

On the other hand, one principal indicates the less practice of inclusive education but awarding the gifted for their performance.

SQ: *It's not so much active but those that have done well in mathematics in each and every term, we identify them then we give them awards.*

The three remaining principals have responded differently in facilitating effective inclusive education for the gifted learners in regular classroom.

SL1: *Sometimes we find that there are those who are gifted But for them to be assessed we just give them work like from known to unknown. They tend to copy from others or they will do some things that they don't understand but if ever you give them work from known to unknown they will know exactly what to do.*

SS: *I usually encourage them to give them more challenging activities so that they won't disrupt their classes because usually if you give them activities that all other learners are doing they finish quickly, then they seem to disrupt.*

PB: *For daily improvement of each learner in mathematics these learners are taken back to the mainstream according to their performance from RE class. Teachers must not sit with the learners who have long improved in their classes.*

4.14 How far do learning facilitator and subject head of department make a provision for teachers to help the gifted to perform to their full potential in regular classrooms?

The responses of seventeen principals indicate that they acknowledge the developmental workshops and Maths competitions that the learning facilitator and subject head of department make a provision for teachers to help the gifted to perform to their full potential in regular classrooms. These three principals demonstrate such in this manner:

SM: *I think the learning facilitators and subject heads departments are the ones who organize the workshop for educators and competitions like Mental Maths and AMESA to guide the learners and educators to deal with the gifted learners.*

PM 1: *They attend to areas which need development to individual teachers.*

SD1: *They are conducting some workshops for the teachers. Last week I attended a workshop in Bloemfontein about Hey Maths. They were giving us some skills on how to use that Hey Maths effectively and very easier for the learners to minimize this writing on the chalk board.*

Among the seventeen principals' responses, the following five of them differ in terms of helping the gifted to perform to their full potential in regular classrooms.

PG: *The facilitators invite educators to attend workshops and conferences but in not one given day they've said anything about gifted learners. In a nutshell, gifted learners at schools are not catered for. They are excluded from being prepared to their full potential because in any given workshops that educators or I've attended, there's no way in which LFs or whoever responsible for the workshop has said anything about gifted learners. The only thing they'll tell you is to give the ones with an idea the expanded opportunities while you are busy with the ones with problems or barriers. That's the word that they use, expanded opportunity.*

SC: *From the Department side, we never got a formal training about the gifted learners. So, the LFs always interact through workshops and seminars throughout the year. We get a lot of math's workshops and we are not concentrating on gifted learners but on different learners with different abilities.*

SQ: *Not according to my knowledge, they are doing nothing. It's only that we must identify the learners who are performing well. Then we must keep the records of such learners like, number 1 in Maths. Something specifically dealing with those gifted ones is not yet implemented.*

PR: *I'm not aware of any. When they come from the workshop, cluster meetings facilitated by learning facilitators, they do share with us but I haven't heard any information about that one.*

SS: *It's not specifically for supporting us on catering for gifted learners, they just come to assist us with whatever we request but it's not that regular, it's only when you need them or sometimes only when they call us to cluster meetings.*

The following two of the remaining three principals are of a different opinion about the quality of learning facilitator, subject heads and teachers in regard to mathematics education.

PX: *We will always talk about the knowledge of all who are involved, the learning facilitator, the teacher and the subject heads. The Lfs must come to school and sit*

down with teachers and render necessary help so that teachers may start to help learners in the classroom.

PO: *We request the departments to train the departmental heads so that they should motivate teachers and in return, teachers should be able to motivate the gifted learners to perform to their full potential. Although sometimes it is difficult, some of our teachers do not come out very clear that mathematics is their specialization. The issue of specialization must be taken seriously, not everybody can teach mathematics. Someone who has specialized in mathematics should be given a chance, this is the primary school were we need to lay foundation. So, if at a primary school level we can't have people with very strong qualifications they can't build good foundations for our secondary schools.*

This last principal seems to respond to the concern of the above two principals in this manner:

PA: *Unfortunately at my school I don't have a mathematics HOD, I am the subject head and thus provides me with an opportunity to make sure that I engage with educators from other schools and hear how they approach certain topics. I was telling my learning facilitator that I would wish to see a set-up where teachers that are good in all the topics have a database so that you can make sure that you know where to go and look for a teacher that is good in a particular topic. You might find that the teacher is expected to teach all the five topics but unfortunately he/she is good with only 2 topics. The other 3 he/she is going to teach them but the problem is, are learners going to understand what they have been taught. If a teacher is good with data handling or with measurements, why not look at the database and call the teacher to come and help you or Skype with that particular topic! It's easy to teach the topic but you'll find that you're teaching it for the sake of wanting to move on with the syllabus. Actually, you are doing a disservice to the learners because at the end of the day they do not understand what you have been teaching*.

4.15 What do you do to support on-going staff development opportunities that provide information and strategies for teaching mathematically gifted learners in your school?

In responding to the above question, seventeen principals develop their teachers through workshops, PLCs and conferences such as AMESA as exemplified by the following three principals:

PF: *I encourage educators to join mathematics bodies such as AMESA, Hey Maths, and programs for Professional Learning Committee, PLC, to empower one another and to learn other practices from colleagues.*

PO: *We encourage teachers to attend workshops to meet frequently with the subject advisors. Organizations like AMESA are helping mathematics teachers including CUT. CUT is helping Mathematics teachers and the University of the Free State as well, they've got workshops. They've got people who visit schools to assist specifically with Mathematics and English.*

SM1: *In order to sustain ongoing staff development I encourage teachers to attend the math's workshop, math's conferences and also to be the members in the PLCs whereby they are going to continue with whatever they were doing in their staff development sessions.*

The following two principals have extended their responses to the above in this manner:

PS: *Educators are encouraged to enroll for further qualifications in order to broaden their skills, knowledge and abilities. This will help them to broaden their horizon and be able to look further than just a field at school level. They'll be able to do research and to come up with strategies. When they enroll, do short time courses and attend workshops and seminars they'll acquire new knowledge to the existing knowledge.*

PR: *I have a developmental plan in the beginning of the year and then I source out people who will present some workshops to us. I have taken 1 educator last year to*

AMESA otherwise, I usually take the SMT to the principal conferences where different expertise empower us in regard to teaching and learning.

PG differ though with all other sixteen principals above in this way:

PG: *The school doesn't do anything about mathematically gifted learners. It's only the expanded opportunity and then they get bored but up to so far the workshop are in place for educators to enrich their minds and, even the department is helping us in that regard to see to it that educators are well trained in terms of trying to make mathematics easy for them to be able to teach learners effectively. But generally so for gifted learners as the school, we are not doing anything till this far.*

These remaining three principals, have responded differently to the seventeen above in this regard:

PM: *They make sure they use the CAPS document which gives them guidelines on how to do everything. They differentiate the activities for the gifted and the slow ones.*

SQ: *We are presently attending Brain Boosters under Mathematics. It deals with how to teach the learners the different key areas of the subject. So teachers used to attend from Grade 1 up to senior phase but presently they are dealing with the Grade 1's. Another one is Family Maths that have different books and pictures that tell you how to treat a certain part in Mathematics.*

SS: *We are going to get assistance from the Shanduka. It's an NGO that assists the department. They are going to assist us to cater for all learners, especially those who are retained in classes than progressed. So, I think just because you have indicated this one of gifted learners I will include that and ask them to assist us with regards to gifted learners.*

4.16 What measures do you take as the principal to overcome the barriers that hinder your mathematics teachers to teach the gifted learners to learn to their full potential?

There are six principals who hold or organise seminars, meetings and or training workshops for their teachers to discuss on extra work for gifted learners to perform to their full potential. For example here are what principals are saying:

SS: *We usually hold meetings and many workshops to assist educators on how to deal with the gifted learners in the classrooms. We encourage them to let them be leaders, divide learners in groups, sometimes children learn more or easily when they are educated by other learners. So we encourage them to involve them in many activities that they do in their classrooms.*

Of the six principals, **PG** says**:** *We organise workshops, we pay for seminars, conferences but not forgetting this one: the main thing here is gifted learners. I haven't seen any workshop that says principals are going to be taught on how to help the gifted learners to reach their potential or to see how far they can go with mathematics. Having said that, educators attend workshops, seminars and also amongst themselves if there is anyone who has a certain or more ideas regarding some issues based on mathematics they have workshops. They teach each other and I haven't heard of them saying or asking me of what to do with gifted learners. If I give them pamphlets from the Department, they attend workshops and they acquire a lot of information but not regarding gifted learners.*

Similarly, **PP** also emphasizes**:** *I have indicated before that gifted learners are not as many that we can have something for them. We have put effort in those who are less gifted, for them to pick up.*

The following four principals have other measures than workshops in addressing the barriers that hinder education for gifted learners to perform to their full potential

PS1: *Teachers are utilizing these learners to become leaders of tomorrow. Those gifted become mentors to others and at the same time that helps them to widen their minds to have knowledge of mathematical skills.*

PM: *The educators do error analysis where they identify the problems that the learners had and even themselves as educators, too. Where there are sections they are having problems, they do the team teaching. They meet at the PLCS's to discuss*

the problems they have and as the principal I involve the subject heads and subject advisors to come and assist the educators on such problems. Teachers are encouraged to use the CAPS document as a guideline to what they have learnt at AMESA workshop and others conducted by the department for implementation.

PT: *It is the same thing that goes with praising the teacher as I have said before. Just as the school and SGB we buy these [shows trophies] to appreciate teachers who did well*.

SK: *We support them to create working atmosphere at a school or work place .The working atmosphere is a tool to overcome whatever. Here we have 1 goal "let these learners in front of me achieve to their expected level". That's what we do even in the foundation phase.*

They must share and work together and have a good working spirit through planning together. So, teachers plan together as they develop each other through that planning and sharing of skills. We also make time for the underachieved ones because at the end of the day they are here with a purpose and they'll achieve according to their abilities.

The other five principals use available Mathematics resources including Maths lab to develop teachers in hindering barriers to teach gifted learners to perform to their full potential: for example the saying goes like this:

PX: *We must make sure that all the required Maths resources are available for both teacher and learners, without the required resources teachers can't teach the learners effectively. We cannot do away with the gifted learners but to enrich their minds and nurture them. Teachers must have an access to the Maths lab where learners must go to and do mathematics through computers and teaching aids available. The school also have a computer room made available to Maths teachers and all learners for research purposes. They are shown on how to research on everything regarding Maths.*

SD: *Placing of teachers should be done at the beginning of the year with regards to the subject, not everyone will just take mathematics as a subject. Placing of teachers is the most important thing because if a particular teacher teaches mathematics he*

must be able to give it to learners. You must make sure that resources are available at all times and teachers must not struggle with anything. The teachers support material will always be in place as well as the program for development.

PF: *I invite learning facilitators to empower educators, organize teaching and learning material and lastly we have been so fortunate at our school. We have been selected as one of the schools that got assistance from overseas project, Madeira. The lady who runs the project comes to our school every second week to empower and develop the educators at the math's lab. Thereafter she comes weekly to present lessons to the grade 4's. Because in the past the focus was on the slow learners. It's for the first time it happens what we do now for the gifted ones.*

The following three principals encourage their teachers to develop themselves by studying further:

PB: *In our staff meetings I let the HOD together with teachers to draw up quarterly program for mathematics teaching, on how to conduct extra classes to help this gifted learners cope with their general school work. This program does not hinder or hamper their academic programs or affect their school progress when coming to other subjects. He must give me a report every week so as to monitor it and give necessary support where I can because I'm also teaching Maths. I encourage teachers to go for in-service training to improve their career fields by studying further.*

PO: *We encourage our teachers even to study part time to develop themselves that they must always be a step ahead. The subject must be within the fingertips, they must know the subject, and they must love the subject so that in return, they can make our children never to lose focus and never to lose the love of mathematics. You know if your teacher is on fire the learner will also be on fire. So we encourage our teachers to study, grab opportunities in as far as mathematics is concerned so that in return, they can plough back and motivate our learners.*

SM1: *I will encourage teachers to study further in mathematics and attend the math's conferences. Whenever they attend these Math's conferences it's where they gain new information that they are going to blend it with the knowledge that they have to get rid of the barriers in their teaching.*

These last two principals have different opinions on stating the measures they use toward the barriers that hinder mathematically gifted learners to perform to their full potential in this manner:

PA: *Mam I'm not going to be able to give an educated answer to that one but I think for all the years that I've been teaching mathematics, I have always held very strong views that I suspect that mathematics is just not a skill, it's also a talent. Mathematics is a talent, by talent I mean you can help inherent the genes of being able on how to manipulate mathematical problems. It also helps you with the mathematical critical thinking and I've discovered that you can teach a learner to solve mathematical problems but with a gifted learner it's going to be very much easy to understand you by just giving him a problem because that learner has that talent to do that. Mathematics can never be mathematics without any practice, if you don't practice you are bound to fail. I always encourage my learners to practice like in soccer. You may be talented in soccer but if you don't practice that talent of yours will just go to waste. So it's also very important for those learners with the learning barriers to understand that because they don't have the talent, I can only help them so far and so that at least they can compete during exams.*

PR: *You've just given me something to investigate this aspect, as I never thought that teachers can have this kind of barriers. So, I am going to investigate this and do something about it.*

4.17. Data Discussion

4.17.1 Introduction

This section addresses the responses of the research main question through its sub questions of this study. The researcher discusses the individual statements relevant to literature so as to support the findings and the recommendations of this study.

Research Main question: What are foundation phase teacher perceptions about teaching and learning of mathematically gifted learners in regular classrooms?

4.17.2 Research Sub question 1: What are teacher perceptions in terms of their preparedness to meet the needs of mathematically gifted learners? In an attempt to

answer this sub question, foundation phase teachers responded to subjects trained for, the training received, the level of competence to teach gifted learners and their view of gifted education being included in the content of higher education institutions. Data indicate that most foundation phase teachers are well trained to teach the phase as per curriculum demand even though some of them have additional subjects among others such as Natural science, technology and computer science. In regard to being trained to teach gifted learners in regular classrooms, only the minority of 35% agree to have acquired such training. However, 64% of teachers state that they are competent to teach the gifted learners in regular classrooms. Lastly, 88% of teachers agree that gifted education should be included in higher education institutions' content.

Although Mhlolo (2014) in his survey of 15 Sub-Saharan African countries had found none that offered teacher training specifically for teachers of gifted and talented students, teacher-education programmes, both pre-service and in-service, should be oriented and aligned to inclusive education approaches (UNESCO, 2009).

4.17.2.1. How are teacher perceptions about their attitudes and strategies for identification of gifted learners in regular classrooms?

This sub question, addresses the identification of gifted learners in regular classrooms. Data show that 81% of teachers agree to have gifted learners in their regular classrooms. Data further give the explanation on the identification of such learners as curious, attention seekers and the learners who always ask questions that challenge teachers and they are quick in finishing the given tasks compared to their peers. The respondents also indicate that gifted learners understand complex work, complete the given tasks without teachers' assistance and they score higher marks. The gifted learners are identified as independent thinkers, good guesser and leaders of the groups in the classrooms.

The researcher also provided choices to teachers for further identification of gifted learners in their regular classrooms. The data show that 89 teachers indicate that gifted learners can make it on their own without teacher's support. The other 47

teachers state that gifted learners should receive special attention from the teacher while 58 indicate that gifted learners are “troublemakers” in class. Further 82 teachers indicate that gifted learners ask questions that teachers are not ready for and 46 of them support the statement that indicate gifted learners should be educated in their own special classes. There are 75 teachers who agree that gifted learners should be educated in the normal class with all other learners. In comparison to teachers’ responses and researcher’s choices provided in regard to identifying gifted learners in regular classes, there is a common understanding of characterising such gifted learners. Freeman (2011) indicated that teachers who are intuitive and inspiring can spot and nurture talent which is not on varying check-lists used by teachers worldwide. Kokot (1999) positive characteristics include learning comes easily; abstract reasoning abilities; questioning- critical thinking skills and ability to work independently. Similarly, Stepanek (1999) argued that characteristics include common myths about gifted students such as: gifted children are smart, so they can get by on their own; gifted students excel in all school subjects; gifted students are a homogeneous group.

4.17.2.2 What are teacher perceptions about grouping strategies to cater for gifted learners in regular classrooms? Given that South African teachers are not trained to teach gifted learners through inclusive education but focus on learners who struggle (Oswald & de Villiers, 2013), this study’s participants could not use among identified grouping strategies by Rogers (1993) such as full-time gifted programs, cluster grouping within heterogeneous classrooms and grouping for acceleration of the curriculum as suggest by literature in chapter 2 above. This sub question demands the insight of teachers in using grouping strategies to teach gifted learners in an inclusive classroom. The grouping strategies are categorised into ability, mixed ability and “other” with substantiating reasons of such choices. The sub question also requires the benefits of the choice of grouping toward the gifted learners. The above sub question was answered through questions presented in 4.17.2.3, 4.17.2.4, 4.17.2.5 and 4.17.2.6 below:

4.17.2.3 “How do you group your learners in your class?”

In attempt to find out how teachers group their learners in class, the data show that the majority of teachers, 59%, groups learners according to mixed ability. Furthermore, 39% of teachers groups their learners according to ability. The remaining 2% of teachers chose the option “other” in grouping their learners with these explanations for their choices:

Teacher 1005: The gifted learners understand teaching lesson and do what is expected. They need more work than others.

Teacher 1088: Gender preferably! This assist with their self-confidence – even if they are gifted, it calms them down better if they are with a different gender + they try to impress each other.

The majority of teachers, 59%, groups learners according to mixed ability. So, Rogers (2002) asserted that a mixed-ability class comprises the same material and learning tasks at the same time for all learners but does not assist gifted children in any way. The choice of “other” that demanded explanation as stated above, it indicates that teachers cannot group accordingly due to lack of training in gifted education.

4.17.2.4 “What is your reason for your choice of grouping?’’

In attempt to respond to the reasons of teachers’ choices of grouping learners in 4.17.2.5 above, data show a high number of fifty four teachers who use mixed ability grouping so that the gifted learners help and motivate the slow/struggling ones as well others learning from them as they share ideas in class. The following teachers are examples of those fifty four teachers:

Teacher 1007: Is because is helping the learner to learn quickly because their learning from others.

Teacher 1015: To share ideas

Teacher 1020: So that those who are weak must be lifted by those who are strong

Furthermore, four teachers use mixed ability grouping for slow learners’ better understanding and to improve their performance by gifted learners as team leaders

for an example: *Teacher 1071 : To become a team leader of a group and improving their performance of their work.*

On the other hand, another four teachers use mixed ability to identify different abilities, accommodate and treat learners fairly equal as they all need support from their teachers as exampled by *Teacher 1075: To accommodate each individual learner's learning style, readiness, and interest, and also using a variety of different instructional methods.*

However, other three teachers differ in using the grouping mentioned above but ability grouping for the reason that learners with the same abilities challenge one another as indicated by a representative of the three, *Teacher 1006: Learners with same abilities must sit together because they must challenge each other.*

Data also show that twenty teachers use ability grouping to overcome work load of teachers and enable them to attend to learners according to their abilities including those who need attention the most, the struggling or slow learners with learning barriers. The following three examples are from the group of twenty teachers:

Teacher 1001: It helps me alleviate the work load because I know what to do when attending groups.

Teacher 1009: So that you give attention to learners according to their abilities.

Teacher 1026: Because I can be able to help the slow learners in their group while other are doing something else.

Furthermore, seven teachers use ability grouping to allow learners with same ability to assist one another according to their pace and understanding including sharing activities as stated by *Teacher 1012: Effective learning takes place in turn courage, participation of all learners, no one is bored in group of his or her ability because they assisting each other with their pace and understanding*

On the other hand, three teachers have indicated that they use ability grouping to give learners work according to their level of understanding as well in writing and reading for example, *Teacher 1037: Give them work influenced by their level of understanding eg reading sessions.*

Ability grouping is used to differentiate tasks, adjusting the pace of instruction and ask questions according to learners' needs by the four teachers represented by: *Teacher 1039: Grouping in classroom positively affects learning outcomes if cooperative learning strategies are appropriately applied. Learners also can discover new talents and hidden skills when taking on unfamiliar roles while working in groups* and*, Teacher 1089: To give different tasks.*

The other five teachers use ability grouping to assist learners to be dependent and not rely on the gifted learners as well as delaying them as exampled by T*eacher 1063: When you pair gifted and slowly ones they delay the gifted ones* and, *Teacher 1063: Gifted learners can help others,* as well as *Teacher 1094: If a child is gifted he/she can grouped with slow learner, to boost them.*

Lastly, reasons provided by two teachers who chose "other" in grouping strategies are in this way: *Teacher 1005: gifted learners understands faster than others and expected more work* and *Teacher 1088: they are not as wild as when they sit as friends. I have found their need to impress the other gender makes it easier for them to try answering even if they do not know.*

Data show the above different reasons of teachers for grouping learners into categories such as mixed-ability and ability grouping as well as "other". There is a clear indication that teachers cannot group learners accordingly due to lack of training in gifted education as affirmed by (Walker & Seymour, 2002; Kuliks, 1990 in Rogers, 1993) that ability grouping requires trained teachers specifically in gifted education. Let us recall what Rogers (1993) said about mixed ability class that comprises the same material and learning tasks at the same time for all learners and does not assist gifted children in any way.

4.17.2.6 "In what ways does your grouping strategy help gifted learners?"

In attempting to respond to the above question, sixteen teachers use mixed ability grouping to help gifted learner as leaders of the class and being kept busy for examples: *Teacher 1020 : Development of leadership happen here. I give them work to lead like reading and counting* and *Teacher 1099: To keep them busy.*

The other twenty teachers use mixed ability grouping in order to help gifted learners in way that others can learn from them while exchanging ideas as they help fellow learners with barriers as representative state: *Teacher 1056: It help them to explore more because when they see other learners struggling they help them fast* and *Teacher 1095: They assist those who are slowly to understand on what we are doing.*

Furthermore, seven teachers use mixed ability grouping at it helps gifted learners to explore and realise their competence and do the work on their own as they become motivation to others, for an example: T*eacher 1052: They can learn more. They will see their competence.*

The other fifteen teachers use mixed ability grouping to help gifted learners toward building their confidence, independency and their knowledge and or level of their understanding being challenged. These two teachers serve as examples: T*eacher 1098: They become more independent* and *Teacher 1113: To allow gifted learners access to suitable levels of challenge and complexity.*

However, eighteen teachers use ability grouping as it allows gifted learners to share their knowledge and skills and help other learners who are struggling in class. For example, the following two teachers stated: *Teacher 1014: They share their knowledge and skills with those who are experiencing problems in the class. Teacher 1019: It help them to face the challenge and learn how they can overcome that.*

Data show that ability grouping makes gifted learners to be vigilant and want to compete with their peers as stated by eleven teachers, for examples: *Teacher 1002: Push them to want to do more work and to work harder to be in the group of gifted learners and remain in the group. Teacher 1035: They are in competition with each other. They are also able to share the information.*

On the other hand, twelve teachers use ability grouping to help the gifted learners in getting more challenging work or special tasks to do independently and think positively while the teachers are busy with others. For example, *Teacher 1008: To give them more work while I am teaching others. Teacher 1012 : To be more creative, critically thinkers, solve problem on their own, active, not afraid of*

challenges, work independently not to be shy to be responsible for their own learning, express themselves freely, take part in learning competitions, improve to communication skills.

The findings in regard to ways the mixed ability and ability grouping including "other" below as categories used in this study help gifted learners, we need to recall what (Rogers, 1993) said about one size that does not fit all, being in mixed-ability classroom conformations or any sort of ability grouping.

Lastly, the following two teachers under category "other" state: *Teacher 1005: Gifted learners without teacher they can be able to do work on their own. Sometimes they will make teacher to be aware of the mistake done and make it correct. Teacher 1088: they are calmer. They listen better. They try- even when frustrated-try to copy on the board and even answer orally.*

The above data also want us to recall what Oswald and de Villiers (2013) said about South African teachers who were interviewed in regard to gifted education. Similarly, Mhlolo (2017) affirmed that the gifted learners are still not receiving adequate support in mainstream classes due to lack of teachers' training particularly in catering for such exceptional learners' needs.

4.17.3 Sub question 2: To what extent are teachers aware of the latest developments in gifted education? This sub question demanded the teachers' responses on reading educational documents and their awareness on the recommendations and provision made toward the education of the gifted learners in regular classrooms. 53% of teachers have read the document "our future-make it work" even though data show that only 22.9% of them is aware of the recommendation regarding gifted learners. The NPC recommended that talented students be provided with opportunities for excellence (Department of Basic Education. 2013). On the other hand, 25% has read the report's investigation and implementation of MST education, while 23% agrees to be aware of the task's recommendation. They recommended that MST talent development programmes should be incorporated into the revised national MST strategy. The task team also recommended that at least one dedicated Maths and Science Academy or a special Mathematics, Science and Technology school be established as a boarding school in

each province. Additionally, such a school should accommodate learners and teachers from across the province and be managed nationally (Department of Basic Education, 2013).

In regard to new CAPS document with guidelines for responding to learner diversity in the classroom, 76% of teachers agree to have read this document. However, the minority of 48% agrees that the provision is made to attend to the needs of gifted learners. The intention of The guidelines for Responding to Diversity through the National Curriculum Statements (NCS), was to provide teachers, principals, subject advisors, administrator, school governors and other personnel, parameters and strategies to respond to learner diversity in the classrooms through facilitation and support of curriculum differentiation (Department of Basic Education, 2011). However, Mhlolo (2015) asserted that implementation of an inclusive education policy in south Africa is still a main concern affected by a number of factors.

4.17.4 Sub question 3: What are the barriers teachers perceive as hampering gifted education? This last sub question seeks respondents to share the barriers they perceive to hamper gifted education in their regular classrooms. Data show that the different barriers such as social background, peer pressure, socio economic factor, unemployment, death, inflexible curriculum changes, minimum or lack of resources, overcrowded classes, the usage of alcohol and drugs during pregnancy, medical problems, bullying, abuse gangsters, high rate of HIV and shortage of special schools are mentioned in this study. However, Teacher 1004 responded in accordance to literature: “our education does not cater for the special needs of the children. In addition to that, Teacher 1086 says: “I think in this country there is no enough support for the gifted learners, they have to get their own work and attention, so that they can feel welcome in class. We always do not have enough facilities for those gifted learners. Teacher 1010 has elaborated further: “they did not get more attention because we thought they knew”. On the other hand, teacher 1021 says: “teacher development. Teachers must be well trained to deal with such learners. They must be trained concerning their behaviour and activities that can be used to keep them meaningfully busy. Furthermore, teacher 1032 indicates: “Shortage of

teachers. Nobody is willing to teach mathematics especially in rural areas. Teachers that do not like mathematics or that show no interest in mathematics". Teacher 1046 also indicates: "Gifted learners are not supported in some way or another by teacher because they think gifted don't need support from them".

Department of Education (2011) indicated that in all classrooms, learners got diverse learning needs that due to failure to support and responded to, would lead to barriers toward learning. Such barriers included poverty, difficulty in reading, writing, hearing, remembering and with health and emotional difficulties. Additionally, Nieman and Monyai (2006) reported these types of barriers: socio-economic factors causing barriers to learning, barriers caused by language, medical factors, barriers caused by learning problems, barriers caused by behavioural problems, gifted learners and classroom factors.schools that practise gifted education have adequate materials and skilful professional teachers who can recognise and nurture these talents. The above won't affect schools that implement gifted education with adequate materials and skilful professional teachers to recognise and nurture these talents (Borland, 2004).

4.18 Interview results

4.19 The first question of this study's interview was: "How do you view inclusive education? Out of 20 principals interviewed, 8 of them state that inclusive education is education meant for learners with learning barriers and disabilities or differences without being discriminated but necessary support be given to such learners and overcome their learning barriers. PV states: "I think inclusive education is a great initiative that the Department of Education has established to assist the learners with barriers to learning. However, PM's view on inclusive education is: "it makes sure that every learner even if they have disabilities or intellectual disability attend formal school, there's no need for them to go to special school". On the other hand, 10 other principals view inclusive education as welcoming and accommodating learners with different abilities, levels, disabilities, race, religion, gifted or not learn and their needs catered for. SQ states: "Under inclusive education all children can learn, that is why each and every learner whether gifted or not, is supposed to learn each and

everything included". The last 2 principals view inclusive education differently in that teachers are not able to handle those learners and principal PO elaborates further to support the above view. PO: "I view it to be positive although parents don't give us support. Parents are still in denial. My school is a mainstream school but we got a lot of children who belong to special schools because parents are denying the truth so they send them to the mainstream school. If we have full support of parents children could get help. Teachers that we have here are not that much equipped to handle children with inclusive education needs, so they need some kind of development in that direction. This is an indication of 50% of the participants who view an inclusive education as education that caters for learners with different disabilities and learning barriers. However, the other 50% have the knowledge and understanding that inclusive education caters for all learners irrespective of their abilities (assumed to be gifted), disabilities, race, religion and learning barriers in a mainstream classroom".

4.20 The second question was: "What types of inclusive practices are being used at your school?" In attempt to respond to this question, 15 principals use remedial teaching of which the school based supporting team plays an important role in identifying learners with learning barriers and refer them accordingly to be attended to. Such learners are being placed in ELSEN and remedial/special classes that are held during and after school hours, respectively. The following principals give clarity on these two classes. PV says: "I will start with conduction of special classes after school for learners with barriers to learning. Learners knock off at 13:30 but the relevant committee which is the SBST has prolonged or extended the time for learners with an hour which means that our learners are currently knocking off at 14:30. It means an hour will be used by educators to try and assist learners suffering from barriers to learning". Then SV says: "We are using a mainstreaming inclusion but we also have a full inclusion. In full inclusion we teach all the learners regardless of their disability. We are having 2 classes of ELSEN (Education for Learners with Special Education Needs) in which learners are helped according to their learning disabilities. These learners do not perform as others in the mainstream. We also have a remedial class for learners with partial learning problems. Such learners are

attended to during school hours at a certain period and later go back to their classes".

Of the remaining five principals, PF says: "We are having different programs, that's the pull out system and curriculum differentiation where all learners are grouped in one class and different methods of planning and teaching are used". However, PO is of the opinion that these learners be referred to special schools as he says: "We have identified levels that are not good. For example, I have got a very good boy here who can sing harmoniously but when it comes to the academic abilities, he is not coping and what is worse is his age. The department honestly, they are not doing much to assist us 'cause children stay here for a long time and some of them become dropouts. They don't get referred to the schools where they can cope". On the other hand, SQ and PR seem not to have an idea of the inclusive practices that other principals use at their schools. Here are their responses in regard to inclusive practices. SQ: "The learners who are slow, who are not gifted are receiving the low marks in their classes. The gifted and the non-gifted learners are in the same class". PR: "They are visual, practical and listening that is mostly used where the learners only listen and then capture what is being taught".

SD has a different idea on inclusive practices for he uses gifted learners to benefit him and the other learners in class. He says**:** "It doesn't mean you as a teacher have to stand in front of the learners and teach all the time, whereas there are those learners who have potential who are be able to assist one another. So you give them a chance to do that and by so doing they gain more information and they become confident within themselves. We give them a chance to assist one another and make groups where they will lead such groups because sometimes learners learn more when they work together. As a teacher you just monitor all their work and go around the class and make sure that whatever work you've given them is carried out".

4.21 The third question, which educational practices does your school use to help ensure that the gifted learners perform to their full potential in an inclusive classroom? This question's responses have 6 principals use academic maths competitions such as Hey Maths, AMESA, Mental Maths, Maths quiz, Maths

Olympiad and Conquesta to challenge gifted learners to perform to their full potential in an inclusive classroom. Other 6 principals use grouping strategy for these learners to use their potential in helping other learners in their regular classrooms. 2 of the participants provide the gifted learners with more challenging work while other 2 are of the idea of the differentiation of gifted learners' lessons and assessment and be given enrichment work. The other 2 participants are addressing the method of teaching generally in class and referral of learners with special needs.

Then1 participant indicates that there is no help that the school offers to gifted learners, **PG:** "Truly speaking up to this far according to experience that I have in terms of gifted learners, schools and my school, don't have those extended opportunities for gifted learners. We think they know almost whatever has been taught, so we don't have any matters that we can help them with. If I have a class with learners with barriers and there are those learners that are gifted I just give them an extended opportunity where I give them work while I'm still busy working with the ones with barriers. We don't have those measures of inclusive education to help them to perform more or to get a better result in terms of their achievement. Since they know, we just take for granted that they know, even if we can do whatever we do, the focus is with these ones which have problems, in trying to capture or rather know what's taught in class. So, we don't have anything at this time that we are doing as a school to help gifted learners".

Only 1 of the 18 principals supports the participant PG above by being in accordance to Gagné's model that demonstrates the rarity of gifted learners in regular classrooms (Gagné, 2015). PP says: "None, as we have few in each class. Sometimes we get one or two they are never 10 in a class, its 1 or 2"

4.22 The fourth question was, what leadership style(s) do you use to influence your mathematics teachers' efforts in planning for the gifted learners in their regular classrooms? 13 participants use democratic style that allows team teaching and discussion in maths matters such as planning for all learners including the gifted learners. Other 5 participants encourage their teachers to plan in such a way that they give extra challenging work for gifted learners as well as peer teaching to their fellow learners. The remaining 2 participants encourage both teachers and learners

to participate in maths competitions to gain exposure and get papers to practise with in preparation for such competitions.

4.23 All 20 participants agree on not having the criterion in admitting gifted learners into their schools but follow the departmental policy that emphasizes that every learner has a right to education. The question asked in this regards was: what criterion does the admission committee use in selecting mathematically gifted learners into your school?

4.24 The sixth question was: What educational training or experience do you have in supporting mathematics teachers to cater for the needs of the gifted learners in regular classrooms? In attempt to respond to this question, 12 participants support their mathematics teachers by encouraging them to attend conferences such as AMESA, and departmental workshops held by LFs. One of these participants encourages his mathematics teachers to study further to upgrade their qualifications. PX: “Teachers must first attend workshops but fortunately in our circuit at the beginning of the year they attend the startup workshops where the Lfs lay down what is being expected of them. Teachers select only the gifted learners at schools to participate in mathematics competitions because they want to win. These learners are being used in those competitions organised by the department. Teachers are being encouraged to upgrade their qualifications more especially in mathematics because they are teaching the subject. They must have the knowledge of mathematics so that they cannot be embarrassed by these gifted learners for they have got their own method of doing things which the teacher doesn't know in the classroom”.

The 3 participants; SS,SQ and PR do not have specific training but SS is using the gifted learners to teach other learners in overcrowded classrooms while PR concentrates on learners with barriers and uses teachers who are doing well to workshop other teachers and share their good practices as well. In addition to PR says, PV uses SBST to assist educators to be equipped with the necessary knowledge needed to assist learners with barriers to learning. PP states: **“**We bought different resources for them to use in the classroom when they have finished their work”. It seems like PP was referring to the support given to the gifted learners

in particular not the mathematical teachers. On the other hand, SK and PB have projects and competitions for their mathematics teachers such as Family Maths, Hey Maths and mental Maths to use in catering for the needs of the gifted learners in regular classrooms. The last principal, SM1**,** doesn't have educational training but the experience of demonstration lessons. He further says: "As a school we organize the demonstration lessons where all the teachers demonstrate how they treat a certain aspect in mathematics. In that way they exchange good teaching practices, maybe, using a certain teaching method. As teachers we only use one teaching method when it works for you but we don't realize that we have different learners in class. When we come together and have demonstrations lessons, we pick good teaching practices from one another".

4.25 In responding to the seventh question, "how do you go about with your mathematics teachers to facilitate effective inclusive education for the gifted learners in regular classrooms?" The 7 principals are assisting their teachers through differentiation of teaching methods or strategies and resources in lesson planning to facilitate effective inclusive education for the gifted in their regular classrooms. Of the above 7 principals, PA responds in this manner**: "**Since the principal is the one who will always monitor the work of teachers he always check the books of the learners and make sure that the most gifted learners get more work compared to the work that is actually given to struggling learners. That alone is not necessarily to facilitate effective inclusive education but it helps to separate and also allows the teacher to prepare better for the future in making sure that you prepare better for the struggling learners. The ones that are gifted work faster and they get bored very easily in class if you don't give them sufficient work to do. Through the learners books and teachers lesson plans you are able to see if the teacher has differentiated and provided for both learners, the struggling ones and the most gifted ones".

SV and PR organise Maths competitions such as Mental Maths for their schools in order to facilitate effective inclusive education for the gifted learners in regular classrooms. SV elaborates further: "We organise mathematics competitions, e.g. Mental Maths. Every Friday at assembly and once a term we hold such competitions to motivate learners for better performance. Some schools have Hey Math programmes". PG and PV are concerned about teachers' training on inclusive

education before they can address learners' needs in the regular classrooms. PG's opinion is: "At our school we don't cater for gifted learners and most of our educators are not acquainted with inclusive education. Only those ones who have been trained as individuals from their pockets, attended those classes or rather courses based on inclusive education. So, whenever you want to say something about inclusive education you need to have a workshop, invite someone from somewhere just to teach them how to prepare or give learners knowledge or information based on inclusive education and how to tackle learners' problems in class". PM1 and PP emphasize the need for the workshop for inclusive education and its implementation including the use of resources and PP says: "We encourage teachers to use resources in hand and also to compromise and attend workshops".

PS as one of the three principals who use grouping to facilitate effective inclusive education for the gifted in their regular classrooms, has responded in this way: **"**Learners are grouped in groups of different abilities and skills, groups are always mixed groups. We can't group them as 1 group of gifted learners and 1 of average learners but we mix them so that everybody feels as part of the class". SQ indicates the less practice of inclusive education but the rewarding of the performance of the gifted learners; "It's not so much active but those that have done well in mathematics in each and every term, we identify them then we give them awards". However, the following last three principals responded differently in facilitating effective inclusive education for the gifted learners in regular classroom. SL1 states: "Sometimes we find that there are those who are gifted But for them to be assessed we just give them work like from known to unknown. They tend to copy from others or they will do some things that they don't understand but if ever you give them from known to unknown they will know exactly what to do". On the other hand SS's response is: "I usually encourage them to give them more challenging activities so that they won't disrupt their classes because usually if you give them activities that all other learners are doing they finish quickly, then they seem to disrupt". Finally, PB indicates: "For daily improvement of each learner in mathematics these learners are taken back to the mainstream according to their performance from RE class. Teachers must not sit with the learners who have long improved in their classes".

4.26 The eighth question was: “How far do learning facilitator and subject head of department make a provision for teachers to help the gifted to perform to their full potential in regular classrooms?”

In response to the above question, 17 principals acknowledge the developmental workshops and Maths competitions that the learning facilitator and subject head of department provide the teachers with to help the gifted to perform to their full potential in regular classrooms. SM states: “I think the learning facilitators and subject heads departments are the ones who organize the workshop for educators and competitions like Mental Maths and AMESA to guide the learners and educators to deal with the gifted learners”. Although 17 principals acknowledge the provision made by the department to help teachers to push the gifted to perform to their full potential in regular classrooms, five of them have different opinions represented by PG: “The facilitators invite educators to attend workshops and conferences but in not one given day they’ve said anything about gifted learners. In a nutshell, gifted learners at schools are not catered for. They are excluded from being prepared to their full potential because in any given workshops that educators or I've attended, there's no way in which Lfs or whoever responsible for the workshop has said anything about gifted learners. The only thing they'll tell you is to give the ones with an idea the expanded opportunities while you are busy with the ones with problems or barriers. That’s the word that they use, expanded opportunity”.

Furthermore, principals PX and PO are of a different opinion about the quality of learning facilitator, subject heads and teachers in regard to mathematics education. PO elaborates: “We request the departments to train the departmental heads so that they should motivate teachers and in return, teachers should be able to motivate the gifted learners to perform to their full potential. Although sometimes it is difficult, some of our teachers do not come out very clear that mathematics is their specialization the issue of specialization must be taken seriously, not everybody can teach mathematics. Someone who has specialized in mathematics should be given a chance but these days it's difficult. If you have somebody who's been at school for 6 months temporarily the unions will fight you that person should be converted into being permanent regardless of the specialization of that person and that will prevent

a lot of learners from knowing and developing the love of mathematics. Some of the teachers that we have are not necessarily specializing in mathematics. They have been long in the system. They've got experience but the know-how of mathematics is not there and this is the primary school were we need to lay foundation. So, if at a primary school level we can have people with very strong qualifications they can't build good foundations for our secondary schools". On the other hand, the last principal being PA, seems to have responded to the concern of the above 2 in this manner: "Unfortunately at my school I don't have a mathematics HOD, I am the subject head and thus provides me with an opportunity to make sure that I engage with educators from other schools and hear how they approach certain topics. I was telling my learning facilitator that I would wish to see a set-up where teachers that are good in all the topics have a database so that you can make sure that you know where to go and look for a teacher that is good in a particular topic. You might find that the teacher is expected to teach all the five topics but unfortunately he/she is good with only 2 topics. The other 3 he/she is going to teach them but the problem is, are learners going to understand what they have been taught. If a teacher is good with data handling or with measurements, why not look at the database and call the teacher to come and help you or Skype with that particular topic! It's easy to teach the topic but you'll find that you're teaching it for the sake of wanting to move on with the syllabus. Actually, you are doing a disservice to the learners because at the end of the day they do not understand what you have been teaching".

4.27 In responding to the ninth question: "What do you do to support ongoing staff development opportunities that provide information and strategies for teaching mathematically gifted learners in our school?" there have been 19 principals who support their teachers in an ongoing staff development through workshops, PLCs and conferences such as AMESA. Of the 19 principals, PO says: "we encourage teachers to attend workshops to meet frequently with the subject advisors. Organizations like AMESA are helping mathematics principals including CUT. CUT is helping Maths teachers and the University of the Free State as well, they've got workshops. They've got people who visit schools to assist specifically with Mathematics and English. PM as the remaining principal indicates: "They make sure they use the CAPS document which give them guidelines on how to do everything.

They differentiate the activities for the gifted and the slow ones. PM is aware of the new CAPS document's content which has guidelines for responding to learner diversity in the classroom.

4.28 The tenth and last question, "what measures do you take as the principal to overcome the barriers that hinder your mathematics teachers to teach the gifted learners to learn to their full potential?"

In responding to the above question, five principals indicate that they hold meetings, training workshops and send their teachers to seminars, conferences and workshops to assist educators in overcoming the barriers that hinder mathematics teachers to teach gifted learners to learn to their full potential. However, among the five of them, PG states: "we organise workshops, we pay for seminars, conferences but not forgetting this one: the main thing here is gifted learners. I haven't seen any workshop that says teachers are going to be taught on how to help the gifted learners to reach their full potential or to see how far they can go with mathematics. In addition to what PG has stated, there emphasis is made on the lack of measures to overcome the barriers that hinder mathematics teachers to teach gifted learners to learn to their full potential and PP says: "I have indicated before that gifted learners are not as many that we can have something for them. We have put effort in those who are less gifted for them to pick up." On the other hand, PR states further: You've just given me something to investigate this aspect as I never thought that teachers can have this kind of barriers. So, I am going to investigate this and do something about it. The other five principals encourage the use of available Maths resources whereas two of them additionally, have some programmes they use to develop teachers in an attempt to overcome barriers that hinder teachers to teach gifted learners to perform to their full potential. PX verifies the use of resources in this way: "We must make sure that all the required Maths resources are available for both teachers and learners, without the required resources teachers can't teach the learners effectively. We cannot do away with the gifted learners but to enrich their minds and nurture them. Teachers must have an access to the Maths lab where learners must go to and do mathematics through computers and teaching aids available. The school also have a computer room made available to Maths teachers and all learners for research purposes. They are shown how to research on

everything regarding Maths." SD and PF are using Developmental Program and overseas project called Madeira, respectively. SD further states the importance of placing teachers effectively: "Placing of teachers is the most important thing because if a particular teacher teaches mathematics he must be able to give it to learner." However, PF sees the importance of the overseas project as it caters for gifted learners: "we have been selected as one of the schools that got assistance from overseas project Madeira. The lady who runs the project comes to our school every second week to empower and develop the educators at the Math's lab. Thereafter she comes weekly to present lessons to the grade 4s because, in the past the focus was on the slow learners. It's for the first time it happens, what we do now, for the gifted ones."

The other three principals encourage their mathematics teachers to study further as part of self-development. PB elaborates further though: "In our staff meeting I let the HOD together with teachers to draw up quarterly program for mathematics teaching, on how to conduct extra classes to help this gifted learners cope with their general school work. This program does not hinder or hamper their academic programs or affect their school progress when coming to other subjects. He must give me a report every week so as to monitor it and give necessary support where I can because I'm also teaching Maths. I encourage teachers to go for in-service training to improve their career fields by studying further. The last principal entails that: "mathematics is a talent, by talent I mean you can help inherent the genes of being able on how to manipulate mathematical problems. It also helps you with the mathematical critical thinking and I've discovered that you can teach a learner to solve mathematical problem but with a gifted learner it's going to be very much easy to understand you by just giving him a problem because that learner has that talent to do that. Mathematics can never be mathematics without any practice, if you don't practice you are bound to fail. I always encourage my learners to practice like in soccer. You may be talented in soccer but if you don't practice that talent of yours will just go to waste. So it's also very important for those learners with the learning barriers to understand that because they don't have talent, I can only help them so far and so that at least they can compete during exams.

4.29 Conclusion

This chapter discussed the data from both questionnaires and interview schedules of teachers and their principals at the selected primary schools of Motheo and Xhariep districts of Free State province. The results show that both teachers and their principals are focusing more on the learners who are struggling academically. Teachers seem not ready to handle gifted learners for the use them to help other learner in their regular classroom. Given this information, teachers lack training in regard to gifted education as PV stated: “As a principal, you will need to influence the staff so that they are able to know, understand and interprete what inclusive education is. Educators need to understand the causes of learners to be engaged inclusively before they try to treat such learners. Then thereafter the SBST will organize workshops for educators to give them knowledge on assisting learners who are struggling. This confirms what Mhlolo (2017) asserted that the gifted learners are still not receiving adequate support in mainstream classes due to lack of teachers’ training particularly in catering for such exceptional learners’ needs.

CHAPTER 5

Summary, conclusion and recommendations

5.1. Introduction

This chapter presents the purpose of this study which investigated the foundation phase teacher perceptions about teaching and learning of mathematically gifted learners in Motheo and Xhariep districts primary schools of Free State province.

This study intended to seek solution to its main question through its sub-questions. Therefore, the researcher presents the summary, conclusion, findings and recommendations related to the literature and empirical studies in regard to research question which was answered by its sub-questions through quantitative and qualitative analyses that used questionnaires and structured interviews, respectively.

Main Research question

What are foundation phase teacher perceptions about teaching and learning of mathematically gifted learners in regular classrooms? This question was answered through the following generated research sub-questions:

5.2. Research Sub question 1

The question asked was: what are teacher perceptions in terms of their preparedness to meet the needs of mathematically gifted learners? In responding to the above question, foundation phase teachers of this study are trained to teach the respective phase with 94 teachers for Numeracy, Literacy with 91 and Life Skills with 83 of the teachers. In addition to these numbers, the further 33 of 87 teachers are trained for other subjects to supplement the curriculum either for foundation phase or other phases such as intermediate and senior. This concludes that teachers are well trained and qualify to teach foundation phase subjects as per curriculum demand irrespective of possessing other qualifications with other different subjects. The results in regard to teacher preparation show that 35% of participants agreed to have been trained to teach gifted learners. Then 64% of teachers were confident in teaching gifted learners. Lastly, 88% of participants were of the opinion that higher institutions should offer gifted education. In regard to the high competence teachers have in teaching the gifted learners, it confirms what Démuth (2013) justifies about

perceptions that the environmental pressures are in such a way that they sensitively relevant and adapt to such environment. Currently, South African teachers have declared that they have been trained to meet the needs of learners who struggle through inclusive education (Oswald & de Villiers, 2013) and its focus being on underperforming school (Department of Basic Education, 2013) but not on gifted or MST potential learners. This confirms what Mhlolo (2014) asserted that, 15 Sub-Saharan African countries do not offer teacher training specifically for teachers of gifted and talented students. These findings are being guided by literature study that emphasized that teacher-education programmes, both pre-service and in-service should be oriented and aligned to inclusive education approaches (UNESCO, 2009). This concludes that there is a vital need for Gifted Education at higher institutions so that teachers can be well prepared to teach gifted learners in their regular classrooms.

The next question was: How are teacher perceptions about their attitudes and strategies for identification of gifted learners in regular classrooms? In responding to the above question, firstly, the results show that 95 teachers agree and only 5 of them disagree to have gifted learners in their classes. Secondly, teachers have demonstrated their different views in identifying a gifted learner from the rest who are not. This resulted in 4 teachers characterising gifted learners as curious, with a large amount of information and being perceived as attention seekers. Gifted learners are said to understand the work faster than other learners as confirmed by 33 teachers. Furthermore, 18 teachers identify them as learners who understand and complete tasks without teachers' assistance or other learners' help and 22 teachers also declared that these learners score more marks as high performers and demand extra work. Gifted learners were identified as quick respondents by 5 teachers as well as active and self-motivated learners by 6 teachers. These learners were further identified as independent critical thinkers and good guessers by another 4 teachers. The result also indicates 3 teaches who characterised gifted learners with ability to write, read and copy accurately from the chalkboard by 3 teachers.

Lastly, further results in regard to the choices on agreed statements, show that 89 teachers agree that gifted learners can make it on their own without teachers'

support. Gifted learners should receive special attention from the teacher as indicated by 47 participants and 58 teachers agree that these learners are trouble makers in class. On the other hand, 82 teachers claim that gifted learners ask questions that teachers are not ready for hence 46 participants indicated that these learners should be educated in their own special classes. However, 75 teachers are of the view that gifted learners should be educated in the normal class with all other learners. The results also confirm the previous research where Heller (2004) pointed out that the preparedness of parents, teachers, school counsellors and psychologists in dealing with the tasks of identifying and nurturing the gifted without fear or prejudice, remained a main concern. Papadopoulos (2016) also confirm that the enrollment of gifted children that do not follow any kind of gifted educational program in terms of content and the learning process, poses risk factors for the development of their talents. The participants in this study seemed to have negative attitudes towards gifted learners in their regular classrooms. This confirms what Pajares (1996) states about people engaging in what they feel confident competent about and avoid those which they are not.

So, this study's recommends the continuing emphasis on teacher training in gifted education at higher institutions and as well as in-service training at all school levels.

The grouping strategies are categorised into ability, mixed ability and other with substantiating reasons of such choices. The sub question also requires the benefits of the choice of grouping toward the gifted learners. The majority of teachers, 59%, groups learners according to mixed ability. *Teacher 1052's reason: "we should mix them so that they should interact with those who are unable to cope in class*". The other 39% of teachers group their learners according to ability with *Teacher 1094's* emphasis*: "if a child is gifted he/she can grouped with slow learner, to boost them".* The 2% of teachers chose other with these explanations for their choice as stated by *Teacher 1005: "The gifted learners understand teaching lesson and do what is expected. They need more work than others".*

The question was: what are teacher perceptions about grouping strategies to cater for gifted learners in regular classrooms? Firstly, the results show that the majority of 59% of the teachers groups learners according to mixed ability as their grouping strategy, the results have shown a high number of fifty four teacher who use mixed

ability grouping so that gifted learners help and motivate the slow/struggling ones as well as others learning from them as they share ideas in class as said by *Teacher 1007: "is because is helping the learner to learn quickly because their learning from others"*. The results also show that four teachers use mixed ability grouping to improve the slow learners' performance through gifted learners as team leaders as indicated by *Teacher 1071 : To become a team leader of a group and improving their performance of their work.* The results also show that 4 other teachers of this study use mixed ability grouping also to identify different abilities, accommodate and treat learners fairly equal for they all need teachers' support as stated by *Teacher 1075: To accommodate each individual learner's learning style, readiness, and interest, and also using a variety of different instructional methods.*

The results have shown that sixteen teachers use mixed ability grouping to help gifted learners develop their leadership and keep them busy by helping other learners in class. This is shown by: *Teacher 1020: Development of leadership happen here. I give them work to lead like reading and counting* and *Teacher 1099: To keep them busy.* The results show further that other twenty teachers use mixed ability to help gifted learners as other learners learn from them while exchanging ideas through the process of helping fellow learner with barriers as stated by *Teacher 1056: It help them to explore more because when they see other learners struggling they help them fast* and *Teacher 1095: They assist those who are slowly to understand on what we are doing.*

The results have shown that seven teachers also use this type of ability to help gifted learners to explore and realise their competence and independently do their work as well as motivating others as said by *Teacher 1052- mixed ability: They can learn more. They will see their competence.* The results further show that fifteen teachers also use mixed ability grouping to help gifted learners in building their confidence, independency and knowledge and or level of their understanding being challenged as said by: T*eacher 1098 -mixed ability: They become more independent* and *Teacher 1113 : To allow gifted learners access to suitable levels of challenge and complexity.*

In choosing ability grouping as a strategy, the results show that 39% of teachers groups their learners according to ability. The results further show that three

teachers use ability grouping their reason being that learners with same abilities should challenge one another as stated by *Teacher 1006: Learners with same abilities must sit together because they must challenge each other.* The results also show that twenty teachers use ability grouping to overcome work load of teachers and enable them to attend to learners according to their abilities including those who need attention the most, the struggling or slow learners with learning barriers as stated by *Teacher 1001: It helps me alleviate the work load because I know what to do when attending groups.* The results further show that *seven teachers use ability* grouping for learners with same ability to assist one another according to their pace and understanding as well as sharing activities as indicated by *Teacher 1012: Effective learning takes place in turn courage, participation of all learners, no one is bored in group of his or her ability because they assisting each other with their pace and understanding.* The results also show that three teachers use ability grouping to give learners work in accordance to their level of understanding as well in writing and reading as said by *Teacher 1037: Give them work influenced by their level of understanding eg reading sessions.* The results further show that four teachers use ability grouping to differentiate tasks, adjust the pace of instruction questions learners according to their needs as stated by *Teacher 1039: Grouping in classroom positively affects learning outcomes if cooperative learning strategies are appropriately applied. Learners also can discover new talents and hidden skills when taking on unfamiliar roles while working in groups* and*, Teacher 1089: To give different tasks.* The results of five teachers show that they use ability grouping to be dependent [*Sic*] and not rely on the gifted learners as well as delaying them. This is shown through reasons stated by *Teacher 1063: When you pair gifted and slowly ones they delay the gifted ones* and*, Teacher 1063: Gifted learners can help others,* as well as *Teacher 1094: If a child is gifted he/she can grouped with slow learner, to boost them.*

In helping gifted learners through the choice of ability grouping, the results have shown that eighteen teachers this grouping to help gifted learners to share their knowledge and skills and help other learners who are struggling in class. This is stated by: *Teacher 1014: They share their knowledge and skills with those who are experiencing problems in the class,* and *Teacher 1019: It help them to face the*

challenge and learn how they can overcome that. The results also show this ability grouping makes gifted learners to be vigilant and want to compete with their peers as stated by eleven teachers. This is what *Teacher 1002* says*: Push them to want to do more work and to work harder to be in the group of gifted learners and remain in the group. Teacher 1035: They are in competition with each other. They are also able to share the information.* Lastly, the results on ability grouping show that twelve teachers use this grouping to help the gifted learners in getting and doing more challenging work or special tasks independently and think positively while the teachers are busy with others. This has been shown by *Teacher 1008: To give them more work while I am teaching others.* Similarly *Teacher 1012* says*: To be more creative, critically thinkers, solve problem on their own, active, not afraid of challenges, work independently not to be shy to be responsible for their own learning, express themselves freely, take part in learning competitions, improve to communication skills.*

In regard to the last option "other" on how teachers group learners in their classes the results further show that 2% of teachers has chosen this option having explained that: *Teacher 1005: The gifted learners understand teaching lesson and do what is expected. They need more work than others.* Then *Teacher 1088 added: Gender preferably! This assist with their self-confidence – even if they are gifted, it calms them down better if they are with a different gender + they try to impress each other.* These two teachers have provided the reasons for their choice "other" like this: *Teacher 1005* says*: gifted learners understands faster than others and expected more work* and *Teacher 1088* affirms*: they are not as wild as when they sit as friends. I have found their need to impress the other gender makes it easier for them to try answering even if they do not know.* Lastly, in providing ways to help gifted learner through their choice, the results show that gifted learners can work on their own without teachers' support and even though they get frustrated, gifted learners answer orally as stated by: *Teacher 1005: Gifted learners without teacher they can be able to do work on their own. Sometimes they will make teacher to be aware of the mistake done and make it correct.* Additionally, *Teacher 1088: they are calmer. They listen better. They try- even when frustrated-try to copy on the board and even answer orally.*

The above results wants us to recall what Oswald and de Villiers (2013) said about South African teachers who were interviewed in regard to gifted education. Similarly, Mhlolo (2017) affirmed that the gifted learners are still not receiving adequate support in mainstream classes due to lack of teachers' training particularly in catering for such exceptional learners' needs. This confirms the previous research where Rogers (2002) stated that a mixed-ability class comprises the same material and learning tasks at the same time for all learners but does not assist gifted children in any way. Previous research confirms that teachers as professionals are expected to strive to help students to develop their potential (Szymanski & Shaff, 2013). Furthermore, the ninth commandment, "Though Shalt Group ... Fulltimely!" encourages teachers to group gifted learners full-timely as the only way to create appropriate conditions for an enriched curriculum (Gagné, 2007). Similarly, Freeman (2011) indicated that teachers who are intuitive and inspiring can spot and nurture talent which is not on checklist used by teachers worldwide.

5.3. Research Sub question 2

The second sub question focused on the awareness of teachers about the documents in regard to gifted education. The question asked was: To what extent are teachers aware of the latest developments in gifted education? In response to awareness of educational policies, the results show that 53% of teachers read "Our future-make it work" policy documents while 27 teachers agreed on being aware of the NPC's recommendation regarding gifted learners. However, 23% and 55 teachers disagree to have read the document and being aware of the recommendations regarding gifted learners, respectively. Furthermore, 30 teachers have agreed on reading the investigation report about the MST education implementation though 43 of them disagreed. The other 23 teachers have been aware of the Task Force's recommendation regarding gifted education while 38 of them were not. Lastly, 76% of the teachers agreed but only 6% have disagreed on reading the CAPS document. In terms of sufficient provision by this document toward gifted education, 48% were in support of the statement but 13% opposed it. The results confirm that awareness plays an important role in schools where Sullivan (2017) declared that answers to questions revolving around gifted education would provide valuable information to form future educational policy, teacher preparation or

professional development and classroom practice. Although 48% of teachers agreed that there is sufficient provision documented toward gifted education, teachers of this study were not aware of the current developments in regard to gifted education. This confirms what Mhlolo (2015) found to be the main concern about South Africa's implementation of inclusive education. Yet, Sullivan (2017) emphasized that answers to questions revolving around gifted education would provide valuable information in forming future educational policy, teacher preparation or professional development and classroom practice.

5.4. Research Sub question 3

The last question was phrased thus: What are the barriers teachers perceive as hampering gifted education? This section's findings are guided by Department of Education (2011) which indicated that in all classrooms, learners got diverse learning needs that due to failure to support and responded to would lead to barriers to learning. Such barriers included poverty, difficulty in reading, writing, hearing, remembering and with health and emotional difficulties. Although nothing or much was said in South African context in particular, some previous research in chapter 2 of this study, that is, literature review, accommodates the abovementioned barriers and others that emerged from the results of this study. According to Nieman and Monyai (2006) types of barriers include: socio-economic factors causing barriers to learning, barriers caused by language, medical factors, barriers caused by learning problems, barriers caused by behavioural problems, gifted learners and classroom factors.schools that practise gifted education have adequate materials and skilful professional teachers who can recognise and nurture these talents. The results of this study have shown that socio-economic-, school related- and teacher related barriers are being identified to hamper gifted education. Firstly, 45 teachers indicate social-economic barriers like it is stated by *Teacher 1076: Background of their family. Most of their parents are not working. They don't get what they want. Staying far from school, other parents are single. Poverty as well hamper their education, travel by foot to school without eating a thing. Don't even have school uniform. Parents left them alone with siblings to take care of the young ones. Some are working far from home. Others are ignorant. Other parents neglect their own biological child. Some*

parents come home once a month. Lack of parental love. Negligence. Abuse of their mother or sister at their presence. Also divorce could also be the factor that hamper the education. As well as illiteracy of their parents.

Secondly, school related barriers in terms of peer pressure are being indicated by 4 participants, for example in this way: *Teacher 1001: Peer pressure: mostly gifted child are bullied by their colleagues and they are easily influenced by their peers.* Furthermore, 28 teachers encounter a challenge of lack of facilities or overcrowding as the barrier, where *Teacher 1026* states*: Overcrowding in the classroom hamper gifted learners because the teacher take more time to help slow ones and they are more in the classroom. If learners with severe disabilities can be accommodated in special schools the teacher will be able to deal with gifted ones.* In responding to unchallenging curriculum as a barrier, the results show that 62 teachers are challenged in dealing with gifted learners in their classrooms, for example, this is what is said by *Teacher 1024: Same education cater for all learners regardless of their abilities for example although they are gifted, nothing is challenging in their education they are given the same work as other children who are not gifted.* The results also show that 3 teachers are faced with language and cultural difference as school related barrier as is stated by *Teacher 1110: Language and communication. Teaching and learning for many learners takes place through a language which is not their mother tongue.*

Thirdly, in responding to teacher related, a teacher as a barrier toward gifted education, the results show that 15 teachers do not give attention to gifted learners as it is stated by *Teacher 1030: the teachers always ignore them since they believe they know everything or that they are the best. Teachers only focus on underperforming learners.* The results also show that 8 teachers view a lack of teacher training as a barrier as quoted by *Teacher 1021: Teacher development. Teachers must be well trained to deal with such learners. They must be trained concerning their behaviour and activities that can be used to keep them meaningfully busy. Lack of information from the teacher or parents to deal with such learners. Teachers consider them as restless learners in the classroom and just need punishment.*

Lastly, in responding to lack of teaching material as a barrier, the results show that 31 teachers are not exposed to such resources to or advanced teaching resources that can challenge gifted learners relatively to their needs. Here are examples: *Teacher 1019: The barriers that hamper our gifted learners is the resources that can challenge them.* Similarly, *Teacher 1021: advanced and relevant material appropriate to their needs. - teacher training and development.*

The above results are confirmed by Nieman and Monyai (2006) who reported barriers such as socio-economic factors causing barriers to learning, barriers caused by language, medical factors, barriers caused by learning problems, barriers caused by behavioural problems, gifted learners and classroom factors. Borland (2004) confirms the above results where he states that schools implementing gifted education are hindering such barriers. Such schools are equipped with adequate materials and skilful professional teachers who can recognise and nurture such talents. Mhlolo (2018) confirms this where he states that children with outstanding talent perform at remarkably high levels of accomplishment when compared to that of their peers, experience or environment.

5.5 Interview results

This section wanted to explore the perceptions of the principals about inclusive education and its practices and the support they render in attempt of helping teachers who have to deal with learner diversity in the classrooms through facilitation and curriculum differentiation.

5.5.1 The first question of the interview schedule for principals was: how do you view inclusive education? In responding to this question, the results show that the majority of principals, 16 in number, seemed to associate inclusive education with education that deals with barriers to learning, which caters for all learners' needs including the gifted being accommodated at mainstream schools in the following manner: **SS** says: "Inclusive education is very helpful especially to educators who implement it, even though we are not trained for. There are some teachers who are trying their level best to include all types of learners since learners are not equal, they are not of the same level to education. So, it's very helpful because you are able to identify

learners with different abilities and you have to make means to cater for all of them". Although in its definition South African Schools as full-service schools that are supposedly inclusive and welcoming of all learners which increase participation and reduce exclusion by supporting all learners to develop their full potential regardless their background, culture, abilities or abilities, their gender or race (Department of Basic Education, 2014), **PO** and **PP** below maintain that learners with inclusive education needs should be handled at special schools. PO says: I view it to be positive although parents don't give us support. Parents are still in denial. This is a mainstream school but we got a lot of children who belong to special schools because parents are denying the truth so they send them to the mainstream school. If we have full support of parents children could get help. Teachers that we have here are not that much equipped to handle children with inclusive education needs, so they need some kind of development in that direction. **PP** also emphasizes: "it is difficult especially from grade 4 to grade 7, we cannot handle those learners". This concludes that the principals are of the view that inclusive education is meant to cater for all learners' needs in both mainstream and special schools especially for learners with learning disabilities.

5. 5.2 The second question: What types of inclusive practices are being used at your school? In responding to the above question, the results show that the majority of 17 principals use remedial teaching through School Based Supporting Team (SBST), didactic program and referral to special schools as types of inclusive practice at their schools as **PV** states: "I will start with conduction of special classes after school for learners with barriers to learning. Learners knock off at 13:30 but the relevant committee which is the SBST has prolonged or extended the time for learners with an hour which means that our learners are currently knocking off at 14:30. It means an hour will be used by educators to try and assist learners suffering from barriers to learning". The results shows that the focus is on learners with learning barriers not particularly gifted learners. This is confirmed by **PO**: "We have identified levels that are not good. For example, I have got a very good boy here who can sing harmoniously but when it comes to the academic abilities, he is not coping and what is worse is his age. The Department honestly, they are not doing much to assist us 'cause these children stay here for a long time and some of them become dropouts.

They don't get referred to the schools where they can cope". The results confirm the findings that gifted learners and learners with MST potential are being neglected but the focus on underperforming schools (Department of Basic Education, 2013).

5. 5.3 The third question: Which educational practices does your school use to help ensure that the gifted learners perform to their full potential in an inclusive classroom?

In responding to the above question, the results show that 14 principals use the academic maths competitions such as Hey Maths, AMESA, Mental Maths, Maths quiz, Maths Olympiad and conquesta, grouping and more challenging work for gifted learners to perform to their full potential in an inclusive classroom**. PA** states: "We provide them with more challenging activities and also with more work. We allow them to participate in challenging competitions like Mental Math's, math's quiz and math's Olympiad so that we keep challenging their potential". It is further stated **PV:** The first method is that grouping or mixing learners. the groups will be established according to the cognitive abilities of learners, learners struggling in other words I'm referring to learners with low IQ levels will be paired with gifted learners hence it will grant the gifted learners an opportunity to test the IQ levels by explaining something which is abstract to the learners with low IQ. They will be using all the methods to try to cultivate or to try to instill the sense of understanding. The other 2 principals use differentiation as **PT** says: "I would say in this case, the type of the planning, the preparation form that we use now of late, down there it has a room for those learners we call it the extended opportunities. If we realize that this child for example is gifted or is excelling in mathematics, there is a special task that is allocated to that particular child". However, the results show that the majority of schools do not present an ideal environment for gifted learners as confirmed by **(**Mhlolo, 2014) who argued that mathematics Olympiads are being used in 12 of 15 Sub-Saharan countries to recognise mathematical achievement but without supporting and nurturing it.

5.5.4 The fourth question: What leadership style(s) do you use to influence your mathematics teachers' efforts in planning for the gifted learners in their regular classrooms? The result show that 13 principals use democratic style that allows

team teaching and teachers to discuss maths matters such as planning for all learners including the gifted learners as **SM1** states: “We use democratic leadership. It accommodates all teachers with different teaching styles who share good teaching practices to help the gifted learners in a class. We have a varied learner population according to their levels, that is, the slow ones to grasp, the middle ones as well as the gifted accommodated in one class”. The results confirm what principals and teachers interviewed by Oswald and de Villiers (2013) argued about the need of training for teachers and principals in gifted education and should be funded by the National Education Department.

5.5.5 Fifth question: What criterion does the admission committee use in selecting mathematically gifted learners into your school?

The results show that all 20 principals do not have or use any criteria to admit mathematically gifted learners into their schools. For example, **PG** says: “At our school we don't have any criterion of selecting learners based on their performance. We just admit learners according to the criteria put by the department. When we admit the learners from other schools, we do look at the report whether the learner is average or performing good but the departmental policy doesn't allow us to select learners based on their performance. So, for admitting mathematically gifted learners we are just considering the policy of the Department that says no learner should not be allowed nor be admitted at schools based on certain things including performance. Even if a learner comes to the school with the report card saying that he or she has failed from where he comes from, as long as we still have space for that learner we should admit such a learner. We are not considering whether he or she has performed well or not in mathematics we admit learners according to the policy of the Department”. The results confirm the definition of South African schools as FSS which are inclusive and welcoming of all learners which increase participation and reduce exclusion by providing support to all learners to develop their full potential irrespective of their background, culture, abilities or disabilities, their gender or race (Department of Basic Education, 2014).

5.5.6 Sixth question: What educational training or experience do you have in supporting your mathematics teachers to cater for the needs of the gifted learners in

regular classrooms? In responding to the possession of educational training or experience to support mathematics teachers to cater for the needs of the gifted learners, the results show that 12 principals support their mathematics teachers by encouraging them to attend conferences such as AMESA, and departmental workshops held by LFs. One of those principals encourages his/her mathematics teachers to study further to upgrade their qualifications. For example, **PX** says: "Teachers must first attend workshops but fortunately in our circuit at the beginning of the year they attend the startup workshops where the LFs lay down what is being expected of them. Teachers select only the gifted learners at schools to participate in mathematics competitions because they want to win. These learners are being used in those competitions organised by the department. Teachers are being encouraged to upgrade their qualifications more especially in mathematics because they are teaching the subject. They must have the knowledge of mathematics so that they cannot be embarrassed by these gifted learners for they have got their own method of doing things which the teacher doesn't know in the classroom". Here is, **PA**'s input: "I do attend a lot of AMESA conferences where I learn about new things and new methodologies of approaching mathematics. That helps quite a lot and I also engage with Google and try to find more different ways of teaching a particular topic". The results show that schools lack some information or training in gifted education. Previous research confirms that teachers and principals interviewed by Oswald and de Villiers (2013) indicated that they were never trained in gifted education and they needed it to be funded by the National Education Department.

5.5.7 Seventh question: How do you go about with your mathematics teachers to facilitate effective inclusive education for the gifted learners in regular classrooms?
The results of this study show that 7 principals are of the view of assisting teachers through differentiation of teaching methods or strategies and resources in lesson planning to facilitate effective inclusive education for the gifted in their regular classrooms. **PA** among the 7 principals has responded in this way: "Since the principal is the one who will always monitor the work of teachers he always check the books of the learners and make sure that the most gifted learners get more work compared to the work that is actually given to struggling learners. That alone is not necessarily to facilitate effective inclusive education but it helps to separate and also

allows the teacher to prepare better for the future in making sure that he/she prepares better for the struggling learners. The ones that are gifted work faster and they get bored very easily in class if you don't give them sufficient work to do. Through the learners books and teachers lesson plans you are able to see if the teacher has differentiated and provided for both learners, the struggling ones and the most gifted ones" . The results show the emphasis of differentiation with reference to struggling learners. This confirms what Mhlolo (2015) argued about the implementation of an inclusive education policy in South Africa being a main concern still, affected by a number of factors.

5.5.8 Eight question: How far do learning facilitator and subject head of department make a provision for teachers to help the gifted to perform to their full potential in regular classrooms? The results show that 17 principals acknowledge the developmental workshops and Maths competitions that the learning facilitator and subject head of department make a provision for teachers to help the gifted to perform to their full potential in regular classrooms. **SD1** serves as an example**:** "They are conducting some workshops for the teachers. Last week I attended a workshop in Bloemfontein about Hey Maths. They were giving us some skills on how to use that Hey Maths effectively and very easier for the learners to minimize this writing on the chalk board". However, the results do not precisely indicate teachers' assistance towards gifted learners. This confirms what Oswald and de Villiers (2013) argued that all teacher and principals who they interviewed acknowledged the negligence of gifted learners.

5.5.9 Ninth question: What do you do to support ongoing staff development opportunities that provide information and strategies for teaching mathematically gifted learners in your school? In responding to the above question, the results show that 18 principals develop their teachers through workshops, PLCs and conferences such as AMESA as stated by using acronyms: **PF:** I encourage educators to join mathematics bodies such as AMESA, Hey Maths, and programs for Professional Learning Committee, PLC, to empower one another and to learn other practices from colleagues. The results show that the staff is not supported relevant to mathematically gifted learners. This confirms what Mhlolo (2017) argued that the

gifted learners are still not receiving adequate support in mainstream classes due to lack of teachers' training particularly in catering for such exceptional learners' needs.

5.5.10 Tenth question: What measures do you take as the principal to overcome the barriers that hinder your mathematics principals to teach the gifted learners to learn to their full potential? In responding to final question, the results show that 4 principals hold meetings and or training workshops for their teachers to discuss on extra work for gifted learners to perform to their full potential as stated by **SQ:** "We attend workshops. The LFs conduct workshops for the teachers including Foundation phase also. They have been clustered according to the schools to attend these workshops. Each and every one of the leaders for the grades or phase will come with a report on their findings concerning Maths. Then they will combine a report on those leaners". The result shows that principals lack information about gifted education hence they take measures they perceive to be of assistance but not in the content of gifted education. They need support in dealing with mathematically gifted learners appropriately but, if support would not be provided to gifted students in public schools from the disadvantaged backgrounds, Galton's philosophy would be perpetuated because at the moment quintile 5 school learners are the ones who appear to receive some support (Mhlolo, 2017).

5.6. Findings

The research sub questions 1 and 2 used the 3-point Likert scale questionnaire to collect data for this study. The research sub question 1 wanted to find out about teacher perception in terms of their preparedness to meet the needs of mathematically gifted learners.

My findings are that teachers are trained to teach Numeracy, Literacy and Life Skills as subjects taught in foundation phase. However, there are teachers who are trained to teach other phases' subjects who are currently teaching in foundation phase.

Few teachers agree that they are trained to teach gifted learners. Above 60% of them are competent to teach these gifted learners but more than 80% call for gifted

education at higher institutions. These findings are not aligned with literature but recommendation of this study.

Teachers of this study are aware of gifted learners in their regular classrooms. This awareness is brought through their characteristics such as attention seekers, they can work without teachers support, they ask question that teachers are not ready for and they are curious. Similarly, Stepanek (1999) summed up these characteristics as myths used in identifying gifted learners from the rest who are not.

Furthermore, teachers are able to use both ability and mixed ability grouping strategies in their regular classrooms. Teachers use both strategies in order for gifted learners to help other struggling learners or learners with learning barriers. The majority of teachers use mixed ability grouping strategy to group learners in the regular classes. These findings are not aligned with literature but recommendation of this study.

The research sub question 2 focused on the extent of teachers' awareness of the latest developments in gifted education.

Data show that teachers read the documents presented in this study. However, the majority of them is not aware of the recommendations made particularly in regard to gifted learners. Teachers also feel that the CAPS guidelines in responding to learner diversity does not make a sufficient provision to attend to the needs of gifted learners. These findings do not align with literature but recommendation of this study.

The research sub question 3 was concerned with barriers teachers perceive as hampering gifted education. The question made a provision for teachers to state 3 barriers that the researcher analysed thematically.

Data show that teachers mention socio-economic barriers such as poverty, unemployment and lack of support from parents. They also mention school related barriers such as peer pressure among learners. In addition to this, a teacher as a barrier due to lack of training and lack of both facilities and resources. Similarly, Nieman and Monyai (2006) also identified factors that lead to barriers to learning. Such factors include socio-economic barriers, medical factors and classroom factors.

This study also used the structured interviews to collect data from the principals of the selected schools.

The interview results of this study have indicated that principals are familiar with what inclusive education entails although it is not practised in high school. **PG** says: “Inclusive education is important at schools. It has been meant for certain learners but, up to so far it’s still working fine. If a learner has got some problems regarding the work that has been done, then with inclusive education, we, as teachers, are able to at least reach out for those learners. I don’t know if our government can at least extend the inclusive education to high schools because it is applied to primary schools only. Secondary schools need it because we still have learners battling with their studies there. No one is catering for them, in terms of trying to reaching out to them”. The other principal **PO:** I view it to be positive although parents don't give us support. This is a mainstream school but we got a lot of children who belong to special schools. If we have full support of parents children could get help. Teachers that we have here are not that much equipped to handle children with inclusive education needs, so they need some kind of development in that direction”. **PS** also asserted**:** “Gifted learners are used as facilitators or group leaders in the different groups in the class so that they assist these learners who are struggling. So, they are being used as managers or mentors to their peers”. The results confirm what the principals and teachers interviewed by Oswald and de Villiers (2013) emphasized that they were never trained in gifted education but, inclusive education that is meant for learners who are struggling academically. As **PG stated:** “Truly speaking up to this far according to experience that I have in terms of gifted learners, schools and my school, don’t have those extended opportunities for gifted learners. We think they know almost whatever has been taught, so we don’t have any matters that we can help them with. If I have a class with learners with barriers and there are those learners that are gifted I just give them an extended opportunity where I give them work while I’m still busy working with the ones with barriers. We don’t have those measures of inclusive education to help them to perform more or to get a better result in terms of their achievement. Since they know, we just take for granted that they know, even if we can do whatever we do, the focus is with these ones which

have problems, in trying to capture or rather know what's taught in class. So, we don't have anything at this time that we are doing as a school to help gifted learners". **PG** further states: **"**At our school we don't cater for gifted learners and most of our educators are not acquainted with inclusive education. Only those ones who have been trained as individuals from their pockets, attended these classes or rather courses based on inclusive education. So, whenever you want to say something about inclusive education you need to have a workshop, invite someone from somewhere just to teach them how to prepare or give learners knowledge or information based on inclusive education and how to tackle leaners' problems in class". The researcher have used the above principals in this section as they emphasize what teachers go through about gifted learners in regular classrooms. Teachers have indicated the need of implementation of gifted education at higher institutions for they are unable to cater for their gifted learners needs due to lack of training specifically in gifted education. Freeman (2011) emphasizes the findings when stated that teachers who are intuitive and inspiring can spot and nurture talent.

5.7. Conclusion

Both teachers and principals acknowledge that inclusive education caters for all learners' needs irrespective of the background, gender or race, barriers to learning, abilities or disabilities but not specifically in gifted education context. The results of this study have shown that teachers are trained in teaching foundation phase subjects but not necessarily trained to teach gifted learners. The results also indicated that 20% of teachers were aware of the recommendation of the Task Force in regard to gifted learners. The results further show that 59% of teachers use mixed ability grouping as "one size fits all" strategy. Roger (1998 & 2002) maintain that both mixed and ability grouping hinder gifted education due to this "one size fits all" strategy. This is the implication that teachers of this study lack training in gifted education. The majority of principals has confirmed that they use remedial teaching through SBST, didactic program and referral to special schools as inclusive practices that are specifically for learners with learning barriers. Although the results show that 64% of teacher are competent to teach gifted learners, it is evident that they unable to cater for these precocious learners' needs but the focus being on the underperforming learners. Principals have shown the dependence on workshops,

meetings, PLC, mathematics competitions and AMESA in facilitating effective inclusive education to assist teachers to develop gifted learners' potential in regular classrooms. However, teachers are not aware of the developments in regard to gifted education. The results have shown that teachers lack necessary information in identifying these gifted learners hence they struggle in grouping them accordingly. Gifted learners are being used as mentors and leaders of the groups to help learners who are struggling academically instead of being nurtured. In his theoretical model, Gagné (2007) demonstrates that natural abilities (gifts) should be developed into competence (talents). Gagné (2007) further emphasizes that if the developmental process is negatively affected by teachers and principals (intrapersonal catalysts), that translation of gifts into talents won't exist. Principals in this study hold meetings, training workshops and send their teachers to seminars and conferences in overcoming the barriers that hinder their mathematics teachers to teach gifted learners to learn to their full potential. However, barriers that teachers perceive to hamper gifted education seem not to be overcome by above measures taken by their principals. Such barriers among others are: inflexible curriculum, minimum or lack of resources, overcrowded classes, and shortage of special schools. Given this, the researcher emphasizes the inclusion of gifted education at schools so that gifted learners' needs are met in regular classrooms. The results show that gifted learners' needs are not catered for through inclusive education at schools. Previous research confirms this negligence where Heller (2004) pointed out that the preparedness of parents, teachers, school counsellors and psychologists in dealing with the tasks of identifying and nurturing the gifted without fear or prejudice, remained a main concern. The data also show that teachers have attitudes in identifying gifted learners in a way that they associate them with the myths revolving around gifted learners' characteristics such as they can cope on their own without teachers' assistance. In using grouping strategies, the results have shown that the majority of teachers prefer the mixed ability as a result of not knowing what to do. Gagné's (2007) model demands that learners' potential be sharpened into talents through developmental process systematically. Failure to identify these learners' potential due to teachers' negative attitudes, their potential won't be translated into talents. Currently, South African classrooms are not conducive to learning due to a lot of barriers that prevailed in this study. Such barriers are for examples, overcrowding

that is being taken care of by grouping learners according to mixed ability that disadvantage the gifted learners. These gifted learners cannot be developed to their full potential because the “one size fit all” strategy is being applied as a result of mixed ability grouping. The results confirm what Roger (2002) argued that a mixed-ability class comprises the same material and learning tasks at the same time for all learners but does not assist gifted children in any way. Furthermore, Sullivan (2017) declared that answers to questions revolving around gifted education would provide valuable information to form future educational policy, teacher preparation or professional development and classroom practice. As a result, teachers of this study are not ready to cater for the gifted learners’ needs in regular classroom due to lack of training in gifted education. The previous research also confirms the above where South African teachers interviewed by Oswald and de Villiers (2013) declared that they have been trained to meet the needs of learners who struggle through inclusive education and not gifted learner. Similarly, this confirms what Mhlolo (2014) asserted that, 15 Sub-Saharan African countries do not offer teacher training specifically for teachers of gifted and talented students.

Empirical evidence has shown that if government fails to support gifted leaners in the public schools, parents of gifted learners from affluent families will always make special provision for their children. If support would not be provided to gifted students in public schools from the disadvantaged backgrounds, Galton’s philosophy would be perpetuated because at the moment quintile 5 school learners are the ones who appear to receive some support (Mhlolo, 2017).

5.8. Recommendations

The results presented above, were responding to the research question of this study: What are the foundation phase teacher perceptions about teaching and learning of mathematically gifted learners in regular classrooms? This research question was answered through the following three emerged sub questions.

Research sub question 1 was: What are teacher perceptions in terms of their preparedness to meet the needs of mathematically gifted learners?

In responding to this sub question, data show that teachers were trained to teach foundation phase subjects: Numeracy with 94 teachers, Literacy with 91 teachers and Life Skills with 83 trained teachers. However, the other 87 teachers are qualified to teach other subjects that are not of foundation phase. Such subjects include computer application and technology, Life sciences, social sciences and so forth. Given this, I recommend that teachers should be allocated appropriate subjects to teach in relevant phases.

Secondly, data also show that 35% of teachers agree to have been trained to teach gifted learners. Yet 64% of teachers feel competent to teach gifted learners in regular classrooms. In regard to teacher's opinion on the inclusion of gifted education content at higher Education Institutions, 88% agrees to this view. So, I recommend that higher institutions include content on gifted education in their courses and as well as in-service training at school levels.

Research sub question 2 was: To what extent are teachers aware of the latest developments in gifted education?

In responding to this second sub question, 53% of teachers agree to have read vision 2030 document "Our future-make it work". Data also show that only 27 teachers of this study are aware of the National Planning Commission's recommendation regarding gifted learners. Furthermore, 30 teachers agree to have read the report about investigation on MST education implementation. Only 20 teachers agree that they are aware of the Task Force's recommendation toward gifted education. Lastly, 76% of teachers do read new CAPS document with guidelines for responding to learner diversity in the classroom. However, 48% of teachers agree that there is a sufficient provision made to attend to the needs of gifted learners in this document. Based on this, I recommend that teachers should regularly be informed of the new educational developments through workshops, PLCs, subject-meetings and so forth.

Research sub question 3 was: What are the barriers teachers perceive as hampering gifted education?

In responding to this sub question, 45 teachers indicate that poverty and unemployment are disadvantaging parents to support their children to learn to their full potential at schools. Data show that 28 teachers are concerned with overcrowded classes that deny them to reach out for all learners' needs. Furthermore, 62 teachers are not happy about the curriculum that doesn't challenge learners' potential. The other 23 teachers indicate that they neglect the gifted learners because they do not know how to handle them due to lack of training, rather they concentrate on learners who are academically challenged. Data also show that 4 teachers indicate that peer pressure is also a perceived barrier toward the education of the gifted. The other 3 teachers also mention that language and culture differences hinder the education of learners. Lastly, 59 teachers indicate that there is a lack of facilities such as equipped science and maths laboratories. Based on the results presented above, I recommend the implementation of curriculum differentiation for leaners' diverse needs. I also recommend that schools for gifted education be built and disadvantaged learners with Mathematical potential be accommodated in such schools.

This study further recommends the implementation of inclusive education that caters for all learners, gifted learners included. This recommendation emanates from this study's interview results where data show that 16 out of 20 principals associate inclusive education with education that is meant for learners with learning barriers. Data also show that such learners should be referred to special schools in order to receive the necessary help.

Recommendations for further research

Given only 20 schools participated in this study, I recommend that further research be done in other provinces or nationwide so that we get a clear national picture on gifted education.

For further knowledge on gifted education, I recommend further research so that teachers and learners could be assisted toward teaching and learning in gifted education.

I also recommend further research on the role played by the department of education in supporting schools toward teaching and learning of gifted learners.

Acknowledgement

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APPENDIX A

PERMISSIONS TO CONDUCT RESEARCH

APPENDIX B

ETHICAL REQUIREMENTS: FREE STATE DEPARTMENT OF EDUCATION

The scientific research enterprise is built on a foundation of trust and that the reports by others are valid. The reports should reflect an honest attempt by the researcher to describe the world accurately and without bias; this trust will endure only if the researcher devotes himself or herself to exemplifying and transmitting the values associated with ethical research conduct.
There are many ethical issues to be taken into serious consideration when conducting research. The Free State Department of Education believes that the researchers conducting research in this department would, amongst others, adhere to the following ethical conduct:

ETHICS GENERAL APPLICATION
1. Be aware of having the responsibility to secure the actual permission and interests of all those involved in the study;

2. Not misuse any of the information discovered

3. Moral responsibility maintained towards the participants

4. Embracing corporate social responsibility

5. Protecting the rights of people in the study as well as their privacy and sensitivity

6. Confidentiality of those involved in the observation must be carried out, keeping their anonymity and privacy secure.

7. Follow the ethical clearance guideline of the institution that granted such.
Amplifying the voice of the participants
Enhancing collective plurality.

ETHICS: INHERENT PRINCIPLES
8. Reliability

9. Informing the participants about the importance of the research

10. Values of trust, fairness and integrity are maintained in the study.

ETHICS
11. The value of transparency is considered.

12. The research is committed to delivering the intended promise as informed by the objectives.

13. The research accentuate the values of reputation and respect.

RESEARCHER: INITIALS AND SURNAME **SIGNATURE:** 
MG van Wyk

DATE: 16 February 2017

APPENDIX C

Central University of Technology, Free State

Private Bag X 20359, Bloemfontein, 9300
SOUTH AFRICA

14th February, 2017

To whom it may concern

I write this letter in support of Mrs Gertrude van Wyk who is applying for clearance from the Free State Department of Education to carry out data collection for her Masters' Study. Gertrude is my Masters' student in Mathematics Education and she is doing research on giftedness. Studies on gifted education especially in mathematics, are in line with national calls towards increasing capacity in technological intelligence and within these calls female scientists are particularly encouraged hence as a university we are also particularly interested to support such budding female researchers. I sincerely hope you will also find it worthy to support her application.

Central University of Technology, Free State

www.cut.ac.za

Prof. Mike Mhlolo (PhD) Mathematics Educ (Wits)
Faculty Research Manager & FRC Chairperson

Faculty of Humanities

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Central University of Technology, Free State (CUT)
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10 YEARS AS A UNIVERSITY OF TECHNOLOGY

APPENDIX D

A LETTER TO PRINCIPALS

15 February 2017

To: The Principal of the school

Permission to conduct the study: Primary School teacher perceptions about teaching and learning of mathematically gifted learners in some selected Districts of Free State.

Dear Sir/Madam

This letter serves as a **request** to conduct the study at your institution/school. The process (conduction of this study) will include the survey questionnaire for all Foundation Phase Teachers. This study requires all Numeracy teachers of grades 1, 2 and 3. The principal is also required to participate in a structured one on one interview with the researcher for the sake of this study.

The contribution of this study will assist in improving and increasing the knowledge of teachers towards educating, supporting, nurturing and catering for the gifted learners' needs in their regular classrooms. This study will also be used as a guide/aid towards enhancing policy matters relating to education of the mathematically gifted learners in inclusive classrooms.

This study will strive in minimizing the disruption of teaching and learning time by issuing the questionnaire during break (lunch time) and or after school, which will be completed at home by selected teachers. The school principal will be interviewed within 15 minutes of his or her lunch time or after school.

For any clarity, please feel free to contact me or my supervisor on the email addresses and cell numbers below.

Thank you for your cooperation

Kind Regards,

Motshidisi Gertrude van Wyk

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(Supervisor)

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APPENDIX E

TEACHERS' QUESTIONNAIRE

Central University of Technology, Free State

Project Title: Primary School teacher perceptions about teaching and learning of mathematically gifted learners in some selected districts of Free State.

The purpose of this questionnaire is to obtain your perceptions about mathematically gifted learners and the kind of challenges you face when teaching such learners. Kindly respond to the 6 page questionnaire truthfully and in as much detail as possible. This information is for academic purposes only and the researcher will ensure confidentiality of respondents.

Bibliographical information

Tick in the appropriate box

Gender: Male ☐ Female ☐

Race: Black ☐ White ☐ Coloured ☐ Indian ☐

Your age in years: 20 -25 ☐ 26 – 30 ☐ 31 – 35 ☐

36 – 40 ☐ 41 – 45 ☐ 46 – 50 ☐ over 50 ☐

Teaching Experience: 0 – 5 years ☐ 6-10 years ☐ over 10 years ☐

1.0 Teacher preparation

1.1 Which of the following areas were you trained to teach?

Numeracy ☐ Literacy ☐ Life Skills ☐ Other ☐

1.2 If you answered 'other' in the above question please explain

.....

.....

.....

1.3 Did you receive training on how to teach gifted learners?

Agree ☐ **Neutral** ☐ **Disagree** ☐

1.4 Do you feel competent enough to teach gifted learners?

Agree ☐ **Neutral** ☐ **Disagree** ☐

1.5 Do you think Higher Education Institutions should include content on gifted education in their courses?

Agree ☐ **Neutral** ☐ **Disagree** ☐

2.0 Awareness of latest developments in Gifted Education

2.1 Recently the National Planning Commission released a statement on vision 2030 entitled "Our future - make it work". Tick the appropriate boxes in 1.1 and 1.2 regarding yourself in relation to this document.

I have read this document.

Agree ☐ **Neutral** ☐ **Disagree** ☐

2.2 I am aware of the National Planning Commission's recommendation regarding gifted learners.

Agree ☐ Neutral ☐ Disagree ☐

2.3 The Department of Basic Education set up a task force to investigate into the implementation of Mathematics, Science & Technology Education. In 2012 their report was published.

I have read this document.

Agree ☐ Neutral ☐ Disagree ☐

2.4 I am aware of the Task Force's recommendation regarding gifted learners.

Agree ☐ Neutral ☐ Disagree ☐

2.5 The new CAPS documents come with Guidelines for Responding to Learner Diversity in the classroom.

I have read this document.

Agree ☐ Neutral ☐ Disagree ☐

2.6 The document makes sufficient provision for teachers to attend to the needs of gifted learners.

Agree ☐ Neutral ☐ Disagree ☐

3.0 Teacher attitudes and strategies for identification of gift learners

3.1 Do you have gifted learners in your class?

Agree ☐ Neutral ☐ Disagree ☐

3.2 How do you identify a gifted learner from the rest who are not? Explain

……

……

3.3 Tick the boxes against statements which you agree with. (You can tick more than 1 box)

Gifted learners can make it on their own without teacher support ☐

Gifted learners should receive special attention from the teacher ☐

Gifted learners are trouble makers in class ☐

Gifted learners ask questions that teachers are not ready for ☐

Gifted learners should be educated in their own special classes ☐

Gifted learners should be educated in the normal class with all other learners ☐

4.0 Grouping Strategies

4.1 How do you group your learners in your class?

According to their abilities ☐

According to mixed ability ☐

Other ☐

4.2 If you answered 'other' please explain

……

4.3 What is your reason for your choice of grouping?

.....

.....

4.4 In what way does your grouping strategy help gifted learners?

.....

.....

5.0 Barriers to gifted education

In your opinion what are the barriers that hamper the education of gifted learners in this country?

Barrier 1

.....

.....

Barrier 2

.....

.....

Barrier 3

.....

.....

Thank you for your valuable contribution

APPENDIX F

PRINCIPALS' INTERVIEW SCHEDULE

Project Title: Primary School principals' perceptions about teaching and learning of mathematically gifted learners in some selected districts of Free State.

The purpose of this interview is to obtain your perceptions and compare them to those of principals about the mathematically gifted learners' education. Kindly respond to the following questions in as much detail and truthfully as possible. The researcher will be using a recorder for responses and will ensure confidentiality of identity as this information is for academic purpose only.

STRUCTURED INTERVIEW QUESTIONS FOR SCHOOLS' PRINCIPALS

1. How do you view inclusive education?
2. What types of inclusive practices are being used at your school?

3. Which educational practices does your school use to help ensure that the gifted learners perform to their full potential in an inclusive classroom?
4. What leadership style(s) do you use to influence your mathematics principals' efforts in planning for the gifted learners in their regular classrooms?
5. What criterion does the admission committee use in selecting mathematically gifted learners into your school?
6. What educational training or experience do you have in supporting your mathematics principals to cater for the needs of the gifted learners in regular classrooms?
7. How do you go about with your mathematics principals to facilitate effective inclusive education for the gifted learners in regular classrooms?
8. How far do learning facilitator and subject head of department make a provision for principals to help the gifted to perform to their full potential in regular classrooms?
9. What do you do to support ongoing staff development opportunities that provide information and strategies for teaching mathematically gifted learners in your school?
10. What measures do you take as the principal to overcome the barriers that hinder your mathematics principals to teach the gifted learners to learn to their full potential?
Thank you for your valuable contribution

APPENDIX G

APPLICATION TO CONDUCT RESEARCH

Ref: Research Application

APPLICATION TO REGISTER AND CONDUCT RESEARCH IN THE FREE STATE DEPRARTMENT OF EDUCATION

- Please complete all the sections of this form that are applicable to you. If any section is not applicable please indicate this by writing N/A.

- If there are too few lines in any of the sections please attach the additional information as an addendum.

- Attach all the required documentation so that your application can be processed.

- Send the completed application to:

DIRECTOR: STRATEGIC PLANNING, POLICY AND RESEARCH

Room 319, 3rd Floor
Old CNA Building
Bloem Plaza
Charlotte Maxeke Street
BLOEMFONTEIN, 9300

OR

Free State Department of Education
Private Bag X20565
BLOEMFONTEIN, 9300

Email: berthakitching@gmail.com and research@edu.fs.gov.za
Fax: 086 692 9092
Tel: 051 404 9283 /9211

1. **TITLE** (eg Ms, Mrs, Mr, Dr, Prof, etc):

M	r	s	

2. **INITIALS**

M	G			

3. **SURNAME**

v	a	n		W	y	k									

4. **TELEPHONE HOME:**

0	8	2	7	7	1	1	9	8	1						

5. **TELEPHONE WORK:**

6. **TELEPHONE CELL:**

0	8	3	7	9	1	9	9	0	1

7. **FAX:**

8. **E-MAIL**

t	o	t	v	a	n	w	y	k	@	g	m	a	i	l	.	c	o	M

9. **ADDRESS HOME:**

9	6	0	2		G	r	a	s	s	l	a	n	d	
H	e	i	d	e	d	a	l		3					
B	L	O	E	M	F	O	N	T	E	I	N			
Postal Code											9	3	0	6

10. **ADDRESS WORK:**

1		P	a	r	k		R	o	a	d				
W	e	s	t	d	e	n	e							
B	l	o	e	m	f	o	n	t	e	i	n			
Postal Code											9	3	0	0

11. POSTAL ADDRESS

B	o	x		1	2	5	7	8						
B	r	a	n	d	h	o	f							
Postal Code											9	3	2	4

12. NAME OF TERTIARY INSTITUTION / RESEARCH INSTITUTE AND STUDENT NUMBER

C	U	T													
2	1	2	0	8	7	0	2	9							

13. OCCUPATION

P	a	r	t	-	t	i	m	e		l	e	c	t	u	R
e	r														

14. PLACE OF EMPLOYMENT

C	U	T													

15. NAME OF COURSE

P	R	O	F	E	S	S	I	O	N	A	L				
S	T	U	D	I	E	S	(	R	F	S	4	0	A	B	)

16. NAME OF SUPERVISOR / PROMOTER

P	r	o	f		M	h	l	o	l	o					

17. TITLE OF RESEARCH PROJECT

Gifted Education in Mathematics, Science & Technology Education Research Project

18. CONCISE EXPLANATION OF THE RESEARCH TOPIC

What are the needs of the gifted learners in MST and how can principals be assisted to meet the needs of these learners in the regular classrooms.

19. APPLICATION VALUE THAT THE RESEARCH MAY HAVE FOR THE FREE STATE EDUCATION DEPARTMENT

Annually South Africans get a report from the National Planning Commission (NPC) which was set up by the president in 2010. The commission's mandate was to develop a vision of what the country should look like in 2030 together with a plan for achieving that vision. In their 2011 report the NPC observed that skills acquisition was out of line with the needs of a modernizing economy - evidenced by the number of unfilled vacancies in the critical skills categories, such as engineering, actuarial science, medicine, financial management, and chartered accountancy. Responding to what it viewed as a sense of complacency about investment in future innovations, the NPC (2011) recommended that opportunities for excellence be provided for the nation's most talented students in these areas. According to the NPC's recommendations many of the new graduates between now and 2030 must be in these critical skills categories. From a similar report made by the task team appointed by the Minister of Basic Education to conduct an investigation into the implementation of Maths, Science and Technology (MST) Strategy, their observations were that more often than not, provincial education departments seem to focus on under-performing schools to the neglect of gifted learners and learners with MST potential (DBE, 2012). One of their recommendations in this regard was that MST talent development programmes should be incorporated into the revised national MST strategy. History shows that a number of countries that are strong in terms of their knowledge-based economies take pride in and nurture the potential in their gifted students. In South Africa most of the gifted students are in the regular classroom following a decision guided by the 'education for all' philosophy. However, there is limited research done on how gifted learners are catered for in these regular classrooms where there is limited knowledge of who the gifted are and what their particular needs are. Given this brief background of the challenges the country is facing regarding mathematics, science and technology education we see our research project as responding to this urgent call by contributing to this gap in knowledge as well as to national efforts towards building a knowledge-based economy.

20. LIST OF SCHOOLS AND DISTRICTS INVOLVED IN THE RESEARCH

(If not enough space, please attach addendum)

M	**O**	**T**	**H**	**E**	**O**		**S**	**C**	**H**	**O**	**O**	**L**	**S**
K	O	b	u	E									
M	O	i	p	o	n	e							
M	O	k	i	t	l	a	n	e					
M	O	k	w	e	n	a							
N	A	m	a	n	y	a	n	e					
R	A	t	a	u									
S	E	l	o	s	e	s	h	a					
S	T		A	u	g	u	s	t	i	n	e		
S	T		P	a	u	l	‘	s					
T	S	h	i	p	i	n	a	r	e				
X	**H**	**A**	**R**	**I**	**E**	**P**	**S**	**C**	**H**	**O**	**O**	**L**	**S**
B	O	t	l	e		B	a		T	h	u	t	O
I	N	o	s	e	n	G							
I	T	e	m	e	l	e	n	g					
J	B		T	y	u								
L	e	p	h	o	i								
L	e	r	e	t	l	h	a	b	e	t	s	e	
M	a	d	i	k	g	e	t	l	a				
M	o	f	u	l	a	t	s	h	e	p	e		
P	h	i	l	i	p	p	o	l	i	s			
S	p	r	i	n	g	f	o	n	t	e	i	n	

21. LIST OF DIRECTORATES / OFFICIALS IN THE DEPARTMENT INVOVLED IN THE RESEARCH

22. DETAILS OF TARGET GROUP WITH WHOM THE RESEARCH IS TO BE UNDERTAKEN

Target group	Number	Grade	Subject	Age	Gender	Language
Foundation Phase Teachers	all	1-3	Numeracy		M/F	English
Schools’ Principals	20				M/F	English

23. FULL PARTICULARS OF HOW INFORMATION WILL BE OBTAINED, EG QUESTIONAIRES, INTERVIEWS, STANDARDIZED TESTS, ETC.

Please attach copies of questionnaires, questions that will be asked during interviews, tests that will be completed or any other relevant documents regarding the acquisition of information.

See attached copy of questionnaires and interviews

24. STARTING AND COMPLETION DATES OF THE RESEARCH PROJECT

Please bear in mind that research is usually not allowed to be conducted in schools during the fourth academic term (October to December).

This project has been approved and is co-funded by the National Research Foundation (NRF) and Central University of Technology (CUT). The project extends over a three year period starting January 2016 to December 2018. The research team will observe the Free State Department of Education's policy which prohibits data collection in schools during the fourth academic term (October to December). Motheo schools: 13/03/2017 to 24/03/2017 (During break/lunch time and after school) Xhariep schools: 18/04/2017 to 02/05/2017 (During break/lunch time and after school)

25. WILL THE RESEARCH BE CONDUCTED DURING OR AFTER SCHOOL HOURS?

Please bear in mind that research is usually not allowed to be conducted in schools during normal teaching time.

The project will be conducted after school hours in accordance with the Free State Department of Education's policy on doing research in schools.

26. HOW MUCH TIME IS NEEDED WITH THE TARGET GROUP/S TO CONDUCT THE RESEARCH?

Target Group	Activity (ie interview, questionnaire, etc)	Time Needed
Foundation phase Principals	Questionnaire	20 minutes
Schools' Principals	Interview	15 minutes

27. HAVE YOU INCLUDED / ATTACHED? N/A

27.1 A letter from your supervisor confirming your registration for the course you are following?

Yes	No
√	

27.1 A draft letter / specimen that will be sent to principals requesting permission to conduct research in their schools?

Yes	No
√	

27.2 A draft letter / specimen that will be sent to parents requesting permission for their children to participate in the research project?

Yes	No
	√

27.3 A copy of the questionnaires that you wish to distribute to the target group/s?

Yes	No
√	

27.4 A list of questions that will be asked during interviews with the target group/s?

Yes	No
√	

28 I **Mrs Motshidisi Gertrude van Wyk** herewith confirm that all the information in this application form is correct and that I will abide by the ethical code and the conditions under which the research may be undertaken, ie:

28.1 I will abide by the ethical research conditions in the discourse of my study in the FSDoE.

28.2 I will abide by the period in which the research has to be done

28.3 I will apply for extension if I cannot complete the research within the specified period

28.4 If I fall behind with my schedule by three months to complete my research project in the approved period, I will apply for an extension.

28.5 I will not conduct research during the fourth quarter of the academic year

28.6 I will not disrupt normal learning and teaching times at schools to undertake my research

28.7 I will submit a bound copy or CD of the research document to the Free State Department of Education, Room 319, 3rd Floor, Old CNA Building, Charlotte Maxeke Street, Bloemfontein, upon completion of the research.

28.8 I will upon completion of my research study make a presentation to the relevant stakeholders in the Department as per the arrangements of the Department.

28.9 The ethics documents will be adhered to in the discourse of my study in your department.

28.10 The costs relating to all the conditions mentioned above are for my own responsibility.

SIGNATURE:  DATE: 15th February 2017.

APPENDIX H

LIST OF PUBLICATIONS COMING OUT OF THIS STUDY

Van Wyk, M.G & Mhlolo, M.K. (2018). Primary school teachers' related barriers perceived to hinder teaching and learning of the gifted learners in inclusive classroom. In (Ed). Proceedings of MASSEE International Congress on Mathematics- MICOM, Cyprus University Department of Education pp. ISBN

Van Wyk, M.G. (2018). Strategies of primary school teachers toward mathematically gifted learners in an inclusive classroom in Xhariep district of Free State province. In (Ed). Proceedings of MASSEE International Congress on Mathematics- MICOM, Cyprus University Department of Education pp. ISBN

Mhlolo, M.K & Van Wyk, M.G. (2018). Elementary school principals' perceptions about inclusive education with specific reference to giftedness. In (Ed). Proceedings of MASSEE International Congress on Mathematics- MICOM, Cyprus University Department of Education pp. ISBN