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Primary school teachers' knowledge of differentiation for students with giftedness and learning disabilities in mixed-abilities classrooms in Saudi Arabia

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Primary school students with both giftedness and learning disabilities (SGLD) in inclusive educational settings may not always receive a differentiated curriculum. Differentiation in all-level classrooms is necessary for consistently meeting the needs of SGLD. There is insufficient research on teachers' knowledge of SGLD and differentiation in Saudi Arabia and the Middle East. To fill this knowledge gap, we interviewed 9 primary school teachers in Madinah, Saudi Arabia. The interview data were analysed using content analysis. Our conceptual framework is based on the theories of Howard Gardner, who believe that all students learn in different ways. We also considered Lev Vygotsky's view that students learn best with instructions that meet their individual developmental level and address their zone of proximal development. Our findings suggest that teachers are willing to teach SGLD along with other students in the same classroom. Although they understand that differentiation is important, they were not implementing it for SGLD. Professional training and development related to teaching SGLD can improve the educational outcomes for SGLD. These results can assist teachers and educational personnel to seek optimal methods to identify and assist SGLD in Saudi Arabia and other regions. Finally, we provide recommendations for accommodations, strategies, and a differentiated curriculum for SGLD in primary schools.

Keywords: differentiated education; giftedness and learning disabilities; learning disabilities; primary school teachers; SGLD

Introduction

The concept and challenges related to students who experience both giftedness and learning disabilities (SGLD) are receiving more attention due to increased recognition of high-potential students who face difficulties in their educational tasks both in classrooms and at home (Alsamiri & Aljohani, 2019; Ruban, 2005). During assessment of students for either giftedness or specific learning disabilities (LDs), SGLD are often neglected. Numerous researchers are working to develop interventions to solve this problem (Alsamiri, 2018; Alsamiri & Aljohani, 2019; Lovett & Sparks, 2013). It is estimated that 2% of students in the Kingdom of Saudi Arabia fall in the category of gifted students (Bondagjy, 2000).

In education literature, different terms are used to refer to students with LDs, among which SGLD is a recent addition (Assouline, Foley Nicpon & Whiteman, 2010). According to Beckmann and Minnaert (2018), SGLD can be considered twice exceptional (2E) because their academic, cognitive, and creative abilities fall within the exceptional range, and they simultaneously have one or more critical learning deficits (Beckmann & Minnaert, 2018).

Education experts still do not agree on a definition of giftedness (Baudson, 2016; Gagné, 2011; Wellisch, 2016). Gagné (2011) developed the Differentiated Model of Giftedness and Talent (DMGT), in which giftedness refers to the possession of natural capabilities known as aptitudes, and the application of those aptitudes in at least one ability domain such that an individual is among the top 10% of his/her peers in that domain (Gagné, 2011).

Literature Review

Researchers define a learning disability (LD) as a disorder of the nervous system that affects the overall ability of the brain to handle the information received through various stimuli (Al-Ahmadi, 2009; Shukla & Agrawal, 2015). Additionally, the term "LD" is used for challenges militating against the development of basic learning skills vital for success in school, in the workplace, and in life (Alsamiri & Aljohani, 2019; Danforth, 2011; Scanlon, 2013). However, it is important to note that the term "LD" encompasses a wide range of disabilities including dysgraphia (inability to learn how to write), dyslexia (inability to develop reading skills), and dyscalculia (inability to develop skills for solving mathematical problems) (Alsamiri, 2018; Al-Yagon & Margalit, 2016; Deeksha, 2016; Hayek, Dorfberger & Karni, 2016). Therefore, it is of great importance that staff involved in teaching such students are professionally skilled in gifted education. They should understand that differentiated instruction in the learning process is effective in stimulating academic growth among students with higher academic abilities, including SGLD (VanTassel-Baska, 2013). Differentiation is extremely important for improving academic outcomes, as students possess varying abilities. Likewise, an individual

student's assessment of their abilities is also important (Gardner, 2011; Kilgore, 2018; Tomlinson, 2001; Tomlinson & Imbeau, 2010).

Contemporary researchers agree that characteristics by which to identify SGLD should be based on the strengths and weaknesses that are tied to areas of giftedness and disability (Mayes, 2016; Song & Porath, 2011; Webster, 2015). According to Song and Porath (2011), SGLD are often adept at problem-solving, are highly imaginative with strong visual skills, and possess high mathematical reasoning ability (Song & Porath, 2011). Additionally, SGLD often have notably high abstract reasoning ability. Contrastingly, researchers have observed that SGLD often have poor short-term memory, are easily frustrated, have poor computation skills, and are overly emotional (Alsamiri, 2018; Barnard-Brak, Johnsen, Pond Hannig & Wei, 2015; Song & Porath, 2011; Webster, 2015; Wong, 2004). Studies have also reported that SGLD often have pitiable communication skills, including poor spelling, handwriting, and listening skills, and are deficient in decoding (Crepeau-Hobson & Bianco, 2013; Nielsen & Higgins, 2005).

Al Qarni (2010) explains that teachers must play a primary role in designing and implementing interventions to address challenges faced by SGLD in Saudi Arabia because these students are regularly taught in all-level classroom environments (Al Qarni, 2010). Similarly, studies show that the needs of SGLD in terms of giftedness are often overlooked in most primary school classrooms due to instructors' lack of knowledge and failure to understand differentiated instructions (Aljuwaiber, 2013; Alsamiri, 2018; Alsamiri & Aljohani, 2019; Heidari & Tahriri, 2015).

Teachers play a pivotal role in the development and facilitation of educational tasks for such students, including SGLD (Alsamiri, 2018; Diezmann & Watters, 2000). Our study involved nine Saudi Arabian primary school teachers teaching "mixed-abilities" classes. By mixed-abilities classrooms, we refer to classes where students of various categories including normal students, students with disabilities, SGLD, et cetera are taught together. We focused on the teachers' knowledge and understanding of such students as well as their knowledge of differentiating such students from others. Our research was primarily based on the following research questions:

What are the primary school teachers' perspectives on teaching SGLD in mixed-abilities classroom settings in Saudi Arabia?

How are primary school teachers implementing differentiation for SGLD in mixed-abilities classroom?

With this study we aimed to assess primary school teachers' perspectives on differentiation and

identification of SGLD in general education classes in Saudi Arabia.

Theoretical Framework

We integrated Gardner and Vygotsky's frameworks to ensure that all the developmental needs of SGLD were considered through instruction differentiation. Differentiation is the only effective way of guaranteeing equal distribution of learning outcomes in a classroom comprised of students with mixed abilities. Both theories were considered to develop a questionnaire to determine teachers' knowledge of SGLD. The interview questions were based on both theories. Differentiation ensures that SGLD are equally challenged to enhance their academic growth according to their abilities (Kilgore, 2018). As noted by Tomlinson (2001), effective learning only takes place when students are given challenging academic tasks as opposed to relearning things they have already mastered. Gardner's (1983) multiple intelligences (MI) theory holds that individuals have different strengths and talents, which cause them to acquire knowledge differently. Gardner (1983) further argues that MI can be strengthened to promote knowledge acquisition, and that failure to strengthen MI results in underdevelopment. Therefore, teachers must understand effective methods for identifying and facilitating students whose MIs need strengthening to ensure that their academic potential is optimized. When teachers fail to ensure equal achievement of learning outcomes in mixed-abilities classrooms, they become ineffective in disseminating knowledge (Kilgore, 2018). Tomlinson and Imbeau (2010) argue that a classroom where knowledge dissemination effectively occurs is one where teachers are able to modify and differentiate the content and learning processes to cater to the needs of all students.

Vygotsky's (1978) sociocultural theory has also been indispensable in enhancing the well-being of SGLD in mixed-abilities primary school classrooms. The sociocultural theory holds that knowledge acquisition is influenced by social and cultural aspects that have accompanied human evolution. A critical idea in sociocultural theory is the zone of proximal development (ZPD). According to Vygotsky (1978), ZPD reflects the difference between independent learning, and what can be learned with the assistance of teachers, partners, peers, parents, and tutors who are considered as knowledgeable others (Vygotsky, 1978). Knowledge of students' ZPD will help teachers ensure that SGLD experience challenging environments that enhance their academic growth.

Unchallenging curricula have been found to create boredom, lack of interest, and lack of motivation. According to Vygotsky (1978), failure

to tailor tasks to students' ZPD is likely to lead to loss of interest in learning which can contribute to unequal achievement of learning outcomes, particularly in mixed-abilities classrooms. This failure is a clear impediment to the main goal of education, which is to ensure that the potential of each student is harnessed to enhance their progress with adequate challenges. Knowledge of students' ZPD is required to implement differentiation techniques, which are potent strategies for meeting the needs of SGLD and thereby promoting inclusivity in classrooms and equal achievement of learning outcomes.

Method

Study Design

In this study we employed a qualitative design to investigate the research question. The rationale behind choosing qualitative study design is a lack of quantitative data in the country of research, as well as a lack of facilities and awareness of needs for SGLD. Semi-structured, in-depth interviews were conducted to collect data. In-depth interviews have proven efficient for capturing multi-dimensional aspects during qualitative research (Creswell, 2002). The respondents were nine primary school teachers in the city of Madinah, Saudi Arabia. The open-ended interview questions solicited teachers' perspectives on delivering differentiated instruction to SGLD in mixed-abilities classrooms.

The developed questionnaire form consisted of three sections. The first part included general personal information such as name, gender, region of work, academic qualifications, teaching experience and professional training. The second part focused on information related to their personal experiences with SGLD. The last section was about the support that they provided to the students, facilities they are provided with to support such students, and their feedback on current facilities and suggestions to improve the situation.

Ethical approval for the study was obtained from the ethics committee of the Ministry of Education, Kingdom of Saudi Arabia (KSA). One male and one female research assistants were recruited to collect data from male and female teachers respectively. This is because of cultural requirements, as there are no mixed-gender schools in Saudi Arabia.

Data Collection and Analysis

The interviews were conducted individually at the respondents' schools. All interviews were recorded after seeking the respondent's permission. On average, each interview lasted about 25 minutes. The recorded interviews were transcribed in Arabic and analysed using inductive content analysis following guidelines from two studies (Alamri, 2014; Elo, Kääriäinen, Kanste, Pölkki, Utriainen & Kyngäs, 2014). The coding unit was used to

abstract key information during data processing. We and an experienced co-coder coded two interview transcripts individually and then compared the results to set a criterion for coding. Subsequently open coding of the other interview transcripts was completed according to the initially agreed codes.

After open coding, the list of codes was grouped through data categorisation as described by Elo and Kyngäs (2008) for effective data management (Elo & Kyngäs, 2008). Data categorisation is essential as it assists in describing the phenomenon, thereby enhancing the understanding of the generated knowledge (Polit & Beck, 2004).

Finally, peer debriefing was conducted. The purpose of this exercise was to ensure that the researcher's bias was minimised (Lincoln & Guba, 1985). External peer reviews provided assurance of the quality of the research. The peer reviewer and co-coder were special education teachers with extensive training and experience in qualitative data analysis. The external reviewer also assisted in evaluating the processes of data collection, analysis, and verification of the transcripts to ensure that they matched the interview audio.

Participants

Five male and four female teachers participated in this study. There were no specific inclusion or exclusion criteria for including the participants. The teachers included in this study were those who showed willingness to participate in this study. The average age of the participants was 33 years (between 25 to 41 years). They had an average of 11 years of teaching experience (ranging from 3 to 24 years). Seven participants held bachelor and two held master's degrees. The coding for participants is as follows: MT = male teacher; FT = female teacher. For instance, MT2 indicates the second male teacher to be interviewed.

Results

Two main themes emerged from the data: (1) general problems with teaching in mixed-abilities classrooms, and (2) the lack of training in differentiation and identification of SGLD.

Theme 1: Problems with Teaching in Mixed-abilities Classrooms

The participants struggled to effectively teach SGLD in their classrooms. In fact, most of them were unaware of SGLD terminology before the interview for this research, which included two teachers, each with 15 years of teaching experience (FT3 and FT4). One teacher (MT5) could not think of any student he taught in the past who presented giftedness and learning disabilities. Other teachers recalled teaching SGLD characteristics. One teacher (MT2) expressed the following: "*Prior to this study, I'd never heard of SGLD, so I would be*

poorly equipped to teach these students if they were in my classes."

Three participants believed that the lack of facilities, materials, the curriculum, and the large students numbers in the classes produced obstacles in addressing the varying needs of the various levels of students.

An important factor affecting identification of SGLD by teachers is the class size. Usually, a single session in a primary level school has 25 to 30 enrolments which makes it difficult for a single teacher to pick out such students and effectively focus on their education.

One teacher (MT3) even perceived such efforts as a waste of time: *"I can't waste time focusing on a student or two who is gifted or has a learning disability [when] I have 40 or 42 students."*

Other teachers (MT2, FT3) had reservations about the teaching of SGLD in a single classroom in terms of the time required to prepare separate material for all ability levels. MT2 explained: *"Time is the biggest challenge I have in teaching all students in the classroom. It is difficult and challenging to prepare lessons in the time available."*

Teaching experience was also perceived an important element by participants to identify SGLD.

For instance, a couple of teachers (FT3 and MT3) linked their ability to identify and effectively teach SGLD with their teaching experience. They said that their ability increased with increasing experience.

However, one teacher (MT4) with over 8 years of experience stated the following: *"Training and experience ... [do] not qualify teachers to identify SGLD. This identification is based on teachers' personal interpretations of SGLD according to their own knowledge."*

Several teachers had an understanding of how to teach the same standards while teaching students with varying abilities (MT1, MT5, FT3, and FT4). Teachers were concerned about employing a strategy that simplified work for some students and made it more challenging for others. The lack of time to meet with other teachers for developing lesson plans and not having other teachers in the classroom were other concerns (e.g., for peer-assessment).

Theme 2: A Lack of Training in Differentiation and Identification of SGLD

The lack of training to identify and differentiate SGLD was the main factor described by participants in this study. The absence of SGLD-specific training is not a problem linked with work and professional improvement only, but rather starts much earlier. For example, one teacher reported that he was not taught about SGLD in his

university degree programme, which included many other topics (MT4).

Another participant (MT3) expressed a similar viewpoint: *"Training should not only address various teaching strategies and technologies, and many of my colleagues hope that the results of this study will produce policy changes that might serve as an impetus for them to receive SGLD-related training."*

In general, the lack of training was a main concern among participants, as highlighted by the following statements:

Teachers lack training in differentiation and identification of SGLD. There is no support from the Ministry of Education (MT5).

Due to a lack of training in differentiation and identification of SGLD, we cannot help or teach some students; teachers should receive training to support and assist SGLD (FT1).

The teachers included in this study expressed eagerness to improve their shortcomings related to SGLD. For instance, they showed great interest in training programmes that would enable them to help SGLD with financial support from the Ministry of Education. The following are some of their expressions:

Teachers need training, perhaps a workshop that runs for several days, to help us gain knowledge of differentiation and understand how to identify and support SGLD (FT4).

Training in differentiation and the identification of SGLD is very important, especially in pre-service teacher education. I took such a course when I completed my teaching degree, and that [provided] me with a lot of knowledge before commencing my teaching career. (FT3)

One teacher (MT2) indicated that he had prior training for differentiated instruction during his teacher training: *"[When] students are struggling in a classroom. The on-task students should be put together, and [for] the higher-level students, give them more of a challenge. They are given more opportunities to work on other grade level materials"* (FT1).

With this study we aimed to investigate primary school teachers' perspectives on differentiation and identification of SGLD in general education classes in Saudi Arabia. The findings indicate that primary school teachers believed that teachers did not have enough time or resources to adequately accommodate and teach SGLD in mixed-abilities classrooms. Thus, the lack of training in differentiated teaching of SGLD was a major issue.

To summarise, the lack of government funding for training was the main factor to provide and maintain necessary facilities for SGLD. This study can serve as a foundation for further data collection and designing an action plan to address this important area of education.

Limitations

Some limitations of our study need to be acknowledged. Firstly, the study involved a small number of participants, and the data only represent primary school teachers in a specific area of Saudi Arabia. The results could be different for other areas and higher school levels, such as secondary and high schools. Secondly, the current deficiency of primary school teachers' training in Saudi Arabia would affect the results in comparison to developed countries with sufficient training and education facilities for teachers of SGLD. Thirdly, for further studies, the reliability of the results could be increased by increasing the number of participants and collecting data from various areas and different education levels. Finally, as this is one of the pioneering studies in Saudi Arabia, we suggest that further research in the area would be valuable.

Discussion

Teachers need sufficient knowledge and training to design and implement various activities that can help SGLD and support them in their achievements based on their individual abilities (Bangel, Moon & Capobianco, 2010; VanTassel-Baska, 2010; Willard-Holt, Weber, Morrison & Horgan, 2013). Furthermore, people working at higher ranks in the hierarchy such as school counsellors are also in dire need of such training to enhance their ability to deal with the needs of SGLD (Ozcan & Uzunboylu, 2020). The study results are consistent with those of previous studies (Alsamiri & Aljohani, 2019; Weber, Johnson & Tripp, 2013; Willard-Holt et al., 2013) in which the need to develop the facilities and policies for such students, and the current available facilities and understanding, need huge improvement. The topic of gifted students is globally important as such students can be found everywhere, including South Africa (Kalobo & Mhlolo, 2021).

Although most teachers were unaware of the existence of SGLD, after introduction to the concept, they believed that they had already observed some SGLD characteristics in their former students. The participants expressed their desire to be involved in formal training programmes that would increase their knowledge and skills on the topic, as the current schooling system, in general, provides little support for such students (Alsamiri & Aljohani, 2019; Barnard-Brak et al., 2015; Besnoy, Swoszowski, Newman, Floyd, Jones & Byrne, 2015; Kilgore, 2018).

Students possess various levels of intelligence. Understanding this is beneficial for teachers who are interested in designing and developing differentiated curricula. Understanding students' interests and tapping into their strengths can help teachers design material that they will find relevant and which may have positive implications

for SGLD taught in general classrooms (Kilgore, 2018). Dedifferentiation training can help teachers direct students' learning by using various strategies and methods of instruction (Alsamiri & Aljohani, 2019; Tomlinson & Imbeau, 2012). Additionally, material must be meaningful, purposeful, and challenging for all students, including SGLD (VanTassel-Baska, 2013).

Teaching SGLD in mixed-abilities classes requires promoting student engagement (Tomlinson, 2001). Therefore, teachers – as environmental catalysts – should provide alternate instruction to meet students' ZPD throughout Gardner's developmental phases. Importantly, such professional development should be continued to ensure that teachers remain abreast of the current developments in teaching SGLD – particularly in mixed-abilities classes.

There is a need for providing more support and training for teachers to identify requirements of such students and methods to identify SGLD in their classes. At the same time, improving facilities for SGLD is extremely important.

Conclusion

Our study was conducted in the Kingdom of Saudi Arabia. The findings have important implications for practice in relation to primary school teachers' perspectives of differentiation and identification of SGLD in general education classrooms in the KSA and elsewhere. The deficiency in understanding of differentiation of SGLD in KSA can be linked to the lack of relevant training. It is important to arrange professional development courses and workshops for teachers targeting enhanced awareness and information about identification and differentiation of SGLD. It would be highly beneficial if the government can formulate policies and provide funding for educating, training, and equipping teachers to effectively assist SGLD in the classrooms.

In addition to teachers, there are several other important factors that influence such students. These include parents, friends, relatives, the education ministry, and on a large scale, the government. Thus, there is a need to formulate research and develop policies to increase positive contributions from these important actors. Furthermore, cultural differences in teachers' attitudes toward the differentiation of SGLD should also be investigated.

To summarise, further research is necessary for developing policies and facilities not only for classes but also for teachers and other community members to acquire knowledge and have access to resources for helping SGLD.

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Authors' Contributions

All authors have significantly contributed to the article. All authors have been involved in the conceptual design, data interpretation and analysis, writing and formatting, and the review process. Dr Yasir, Dr Mansour and Dr Ibraheem were involved in acquiring funding, data collection and analysis. Dr Malik was involved in data interpretation, writing and reviewing as corresponding author.

Notes

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