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# Elementary school teachers' perceptions of the characteristics of twice-exceptional students

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The current study explored the perceptions and understanding of Saudi elementary school teachers regarding the characteristics of twice-exceptional (2e) students. This qualitative phenomenological study recruited 14 elementary school teachers at schools in Medina City in Saudi Arabia. Data were gathered through in-depth semi-structured interviews to gain insight into participants' perceptions of this student population. Findings indicated that teachers associate certain characteristics with the giftedness trait of 2e students, including excellent communication skills, problem-solving ability, strong retention, curiosity, creativity, abstract thinking, and leadership skills. Moreover, Saudi elementary school teachers perceive that 2e students experience academic challenges related to their disabilities in reading, writing, and mathematics, as well as are aware that such students tend to struggle with low self-esteem and maintaining concentration. Overall, there is a tendency to view these students as having two independent conditions—giftedness and disabilities that cause academic challenges—rather than identifying these individuals as having a single condition of being twice exceptional that comprises traits that impact their learning in combination.

## KEYWORDS

twice-exceptional students, gifted students with learning disabilities, elementary teachers' perceptions, gifted students characteristics, gifted education, Saudi Arabia

## 1. Introduction

Although gifted students with disabilities, commonly known as twice-exceptional (2e) learners, have diverse characteristics and abilities, they are often overlooked in identification for support services. While these students have specific talents—higher-level intellectual abilities, superior vocabulary, exceptional comprehension of abstract ideas and concepts, and high levels of creativity—at the same time, they tend to exhibit poor reading and writing skills, lack organizational and study skills, and have low self-esteem (Buică-Belciu and Popovici, 2014; Lee and Ritchotte, 2019). This category of students, ones whose giftedness is accompanied by another condition that requires special education support, includes those with such conditions as autism spectrum disorder (ASD), attention-deficit hyperactivity disorder (ADHD), and learning disabilities like dysgraphia, dyslexia, and dyscalculia (Levi, 2019; Weiss, 2022).

Ironically, school system processes often identify 2e students as having learning or other types of disabilities but regularly overlook their giftedness, due to the challenges related to conceptualizing students that might possess both traits (Hays, 2016; Wellisch, 2016). Moreover, teacher identification for gifted programs is often the elementary method of identification in

the early years because it is seen as difficult to test for giftedness in the K-3 years. Therefore, if teachers do not have a comprehensive perception of what giftedness comprises, including that it might involve special education needs, they might not be able to identify children who are twice exceptional and may face substantial challenges in understanding, identifying, and teaching these students (Chimhenga, 2016; Amran and Majid, 2019; Cody et al., 2022).

### 1.1. Importance of teacher identification of the 2e

The literature highlights the significant role of elementary school teachers in the identification and education of students with both giftedness and learning disabilities (Alsamirani and Aljohani, 2018; Firat and Bildiren, 2022). In this regard, teachers' awareness of the characteristics of students with this combination of traits facilitates early identification and intervention for these students (Firat and Bildiren, 2022). Yet there is limited research on the perceptions of teachers during the elementary school period when the identification and education of students with giftedness and learning disabilities are of critical importance (Akinbote et al., 2017; Alsamirani, 2019). If teachers understand that students can be simultaneously gifted and have special education needs, they are better equipped to identify 2e students, recognize their unique learning needs, and modify teaching styles and curricula to accommodate them (Alsamirani and Aljohani, 2018; Maddocks, 2020). Teachers need comprehensive knowledge of the general characteristics of these students to identify them and provide interventions when necessary (Firat and Bildiren, 2022).

One of the prominent characteristics of 2e students that has been discussed in past research is the discrepancy between their strengths and their weaknesses, characterized by their high potential and low attainment (Ritchotte and Zaghawan, 2019; Mohammad, 2020). According to Hopwood (2019), most 2e students fall through the cracks of the education system, due to the lack of professional development programs and university preparation available to teachers. In addition, the high ability of 2e students often masks their special education needs in the early years and so interventions and accommodations are not implemented; this can result in these children facing significant and prominent challenges at the middle and high school levels (Baldwin et al., 2015; Lee and Ritchotte, 2019; Ritchotte and Zaghawan, 2019; Mohammad, 2020).

### 1.2. Training and experience of teaching 2e

Elementary school teachers in Saudi Arabia are inadequately prepared to recognize and support 2e students (Alsamirani, 2018). However, many of those teachers are willing to help 2e students when relevant forms of training and support are offered. 2e students in Saudi Arabia are placed in general education, where they spend their time in a regular classroom with a general education teacher. Training about teaching and understanding 2e students is not officially provided for general education teachers in pre-services teachers preparations (Alsamirani, 2018). However, there are regular education teachers who are voluntarily involved in some in-services courses related to gifted education and special education where they developed a better understanding of the characteristics of those 2e students. In regard to the

lack of training of general education teachers, Alsamirani (2019) suggested that elementary school teachers should be supported by gifted and special education educators to better recognize and support 2e students.

Studies have shown that the teachers' professional development regarding twice-exceptionality can significantly impact their 2e students' educational progress (Cody et al., 2022). For example, Coolahan (2004) and Chessman (2005) studied how receiving postgraduate training in gifted education can positively affect the understanding of 2e students' needs that is reflected in providing better education experiences for those students. Research also demonstrated that experienced teachers have a deeper understanding of the needs of gifted students including 2e students (Alsamirani, 2019). Teachers' perspectives of 2e students are associated with their experiences and training in gifted and special education (Ramsay-Cohen, 2016). Teachers who have experience in teaching 2e students are less likely to be biased against them compared to teachers without such expertise (Alkhunaini, 2013; Ramsay-Cohen, 2016; Alsamirani, 2018). Many inexperienced teachers are reluctant to refer 2e students to special education regarding their learning disabilities as they would not expect that a gifted child may have a learning disability (Wormald et al., 2015). Bianco and Leech (2010) argue that inexperienced teachers and inadequate teacher training in twice-exceptionality interfere with effectively determine 2e students and then refer them to support programs (Shaunessy, 2007). Generally, only a small proportion of general education teachers have the capability and are prepared to recognize and support 2e students (Alkhunaini, 2013).

### 1.3. Characteristics of 2e students

Educational researchers have noted certain consistent traits in this population, including poor organizational skills, lack of focus in class, difficulty with basic spelling/reading skills, poor peer relationships, and low self-esteem—all of which may result in the individual experiencing academic failure or demonstrating a dislike of school. At the same time, studies have found these students may have exceptional vocabulary, analytical/problem-solving and comprehension skills, and show extraordinary interest or talent in a particular area (Coleman and Gallagher, 2015; Roberts et al., 2015; Mayes and Moore, 2016; Wright and Ford, 2017).

Gifted students who also have learning disabilities may face academic challenges that directly affect their learning journey. They might have difficulty handling activities that require sequencing and memorization, and some might have spelling, phonics, and computation difficulties (Barnard-Brak et al., 2015; Lee and Ritchotte, 2019; Maddocks, 2020). A significant number of 2e students have poor organizational and handwriting skills (Firat and Bildiren, 2022). Additionally, they often perform poorly on timed tests and may fail to achieve learning objectives and experience difficulties engaging in activities that require focus—including reading and writing (Wormald et al., 2015).

### 1.4. Twice-exceptional students in the Saudi context

There are only a few studies regarding Saudi elementary school teachers' awareness of this student population and their characteristics

(Weiss, 2022). The understanding and perceptions of elementary school teachers regarding these children becomes critical when considering the importance of early intervention for both the gifted and those with disabilities that affect academic achievement (Wellisch, 2016; Alsamiri and Aljohani, 2018). Early identification of 2e students is integral to successful intervention; thus, elementary school teachers should possess good understanding and accurate perceptions of them (Firat and Bildiren, 2022). This situation grows even more complex when these teachers' lack of knowledge about gifted students is coupled with the difficulties of identifying learning disabilities at the K-6 level (Wellisch, 2016).

## 1.5. Purpose of the study

No in-depth analyses have been conducted in Saudi Arabia on the perceptions of elementary school teachers regarding gifted students with learning and other disabilities that affect educational achievement. For this reason, and those previously described as barriers for this population of students, this research was designed to explore the perceptions and understanding of Saudi elementary school teachers regarding the characteristics of gifted students with learning disabilities. Understanding how these teachers perceive and conceptualize these students is a wise addition to the literature. In this study, we endeavored to develop a clearer picture of the views of this population of teachers and to identify the gaps in their understanding of the attributes and challenges of these students. Such an investigation is critical as the delay in understanding and identifying 2e students may lead to their failure to achieve to their academic potential.

Examining elementary school teachers' understanding and perceptions of 2e students and their characteristics is vital to better supporting these children. We therefore engaged in this qualitative study to deeply explore participants' perceptions and understanding of the twice exceptional through an interview designed to obtain data on the teachers' perceptions of both the strengths and weaknesses of these children, by first establishing the following research questions.

RQ1. How do Saudi Arabian elementary school teachers perceive the gifted characteristics of twice-exceptional students?

RQ2. How do Saudi Arabian elementary school teachers perceive the academic challenges twice-exceptional students experience?

## 2. Research design

Qualitative research is considered the most appropriate design when examining a social or human problem, as it allows the researcher to create a multifaceted picture of an understudied phenomenon (Creswell and Poth, 2018). Qualitative design was employed for this research since the goal was to acquire a deep understanding of elementary school teachers' perceptions of 2e students (Merriam and Tisdell, 2016).

### 2.1. Participants

After receiving approval to conduct the study, we first contacted elementary schools in Medina city via email explaining our study and the inclusion criteria for recruiting the participants. The first inclusion

criterion was that only certified current elementary teachers from Medina city are invited to participate in the study. Second, as there is only a small portion of teachers who have sufficient understanding of 2e students, we invited only elementary teachers who identified themselves as aware of the existence of 2e students in their classrooms and have successfully taught them. The third inclusion criterion was that only teachers who had at least 3 years of experience teaching 2e students in public schools. Teachers with less than 3 years of experience were excluded and those with no experience teaching 2e students were also eliminated.

We received a total of 27 responses to our initial inquiry, of which we eliminated 13 teachers as they did not meet one or more of the inclusion criteria. Therefore, we had a final group of 14 teachers to participate in the study and be interviewed regarding their perceptions. Before the interviews were conducted, we obtained a signed consent form from each teacher. This study involved 14 elementary school teachers, seven of whom were female and seven of whom were male. The age of the participants range between 28 and 45 years old; their range of teaching experience was 5–14 years. Most of the participants ( $n = 12$ ; 85.71%) had a bachelor's degree; two had a master's degree. The participants were coded as follows: FT=female teacher and MT= male teacher (e.g., "MT2" stands for the second male teacher interviewed).

### 2.2. Instrument

The research instrument was a semi-structured, in-depth interview based on a list of eight questions, to obtain data from the participants regarding their perceptions and lived experiences (Van den Berg, 2005). There were follow-up questions based on the interviews' directions. We began with a list of 10 questions, which were then reviewed by two experts in special education who teach special education curriculum at a Saudi university. Based on the responses of these experts, we eliminated two questions that were deemed unnecessary and made some adjustments to four questions so that they would be more understandable to our proposed participant population. This resulted in the 8 questions that were incorporated into each interview. During the interviews, based on the individual participant's responses, additional questions were asked to obtain clarification or to encourage the participant to expand upon their answer. The interview questions focused primarily on obtaining an understanding of the participants views on the giftedness characteristics and the learning challenges of 2e students. The interviews were conducted in a private room within the individual interviewee's school. Each interview was 45–60 min in length.

### 2.3. Procedure

To conduct the study, we first obtained permission from the Ministry of Education of Saudi Arabia. Due to the gender segregation of schools in Saudi Arabia, male teachers are not permitted to teach in girls' schools. Therefore, a female elementary school teacher with a postgraduate degree in special education was recruited to conduct the interviews with the female teachers. As previously mentioned, each interview was conducted in-person and was audio-recorded so it could be transcribed later. The transcriptions were created by the first

author who then had each interviewee review their interview transcript to confirm its accuracy. Each interviewer also took handwritten notes during the interviews for use during the data analysis process. The interviews were conducted in Arabic and the transcriptions were also done in Arabic.

## 2.4. Data analysis

A comprehensive approach to thematic analysis consisting of six stages that were followed during the data analysis of this research (Braun and Clarke, 2006). This approach works well with analyzing qualitative interview data (Braun and Clarke, 2006). First, all interviews were recorded and transcribed. Second, the transcription of each interview was read line-by-line to identify the initial codes. The first and second authors created their codes separately for each interview to ensure reliability and compare the results. Rigorous discussions between the researchers were conducted to identify any inconsistencies and disagreements and to ensure agreement. This helped develop a guideline according to which the rest of the transcribed data were coded. The results of the open-coding phase were repeatedly checked and read to ensure that the coded information was accurate.

Next, the researchers identified the emerging categories in the coded information, which were later merged to develop themes and subthemes (Braun and Clarke, 2006). Both researchers developed and reviewed the themes separately to ensure reliability. Then, the researchers work on assessing the themes utilizing a two-step process and jointly reflected on these data sources to ensure that the reality and coherence of the participants that were accurately reflected in the findings. This process enabled peer-checking and investigator triangulation (Creswell and Poth, 2018). Next, the themes and categories were evaluated and studied and make sure all codes are coalesced with their themes and had a profound connection (Creswell and Poth, 2018). To strengthen the transferability and trustworthiness of this study, the actual words of the participants are frequently presented. Finally, a thorough evaluation was conducted concerning the “narrative” of each theme and how each theme narrative is related to the overall narrative of the entire research data that answer research questions concerning the study questions, and then the final report was developed (Braun and Clarke, 2006, p. 92).

## 3. Results

Through the semi-structured interview questions that focused on exploring the participants’ perceptions and understanding of the characteristics of 2e individuals, two main themes were identified: (a) Giftedness Characteristics of Twice-Exceptional Students, and (b) Academic Challenges of Twice-Exceptional Students. Each main theme had subthemes, as shown in Table 1.

### 3.1. Theme 1: giftedness characteristics of twice-exceptional students

In the interviews, the teachers described the strengths of elementary school-aged twice-exceptional students in various ways

(see Table 1) and discussed gifted characteristics of these children they had observed in their personal experience. The related themes that emerged from their insights were: (a) excellent communication skills, (b) problem-solving skills, (c) strong retention, (d) curiosity, (e) abstract thinking, (f) creativity, and (g) leadership skills.

Communication skills were identified by most of the participants ( $n = 12$ ; 85.71%) as a clear strength of 2e students. The participants indicated that these students have well-developed communications skills, emphasizing aspects such as their students’ ability to apply language effectively. One teacher, for example, stated “One of my students is very good in how [they] speak during class and has advanced oral presentation skills” (FT3); another said, “The strengths of twice-exceptional students is they speak well, ... I believe that they have good speaking skills [when called upon] in class” (MT6).

Many participants emphasized cognitive characteristics of 2e students and linked these to problem-solving skill. This theme emerged among both the male and female teachers. For example, FT5 stated, “Some students in my class were very good and highly-skilled in problem-solving”; and MT2 said, “Problem-solving is one of the strengths of twice-exceptional students, because they can identify the causes of [an] issue and understand it fully.”

In addition, strong retention and curiosity were identified by 10 participants (71.43%) as gifted characteristics of 2e students, which was referenced by FT1 with the following statement: “From my working experience as a teacher, twice-exceptional students display strong skills in areas such as strong retention, and some twice-exceptional students have high levels of curiosity and an eagerness to learn.” This was also remarked upon by MT4, who said: Twice-exceptional students demonstrate curiosity for learning new subjects...also they are curious about their peers and have the desire to learn everything new... [In general, they have] curiosity, uninhibited expression of their advanced ideas, and strong insights into highly complex topics.

The majority of the participants ( $n = 12$ ; 85.71%) cited abstract thinking as another characteristic of these students, with MT3 mentioning, “When I teach them, I can see that they can learn abstract concepts very quickly.” Similarly, MT1 stated, “I am sure twice-exceptional students [are] abstract thinkers; it is one of their strengths. I have several students in my class that have this gift, but school should help them to develop such potential.” One participant, FT7, noted that she had identified a twice-exceptional student as a gifted underachiever. The teacher had decided that relocating the student within the classroom might make a difference, stating:

I had a student in Grade 3 who was underachieving in school ... I put this student in the front row and found that this caused her to become a more active participant in the class. I came to realize [after this move] that [this 2e student] has excellent abstract-thinking skills.

Quite a few of those interviewed ( $n = 11$ ; 78.57%) stated they consider creativity to be an observed gifted characteristic of 2e students. They emphasized that these children tend to exhibit many aspects of creativity and that this is a trait of the twice exceptional (FT4; MT5; MT7). Similarly, leadership skills were cited by 11 (78.57%) of the teachers as a common strength of their 2e students, as described in statements such as: “[A] gifted characteristics of twice-exceptional students is that they are leaders, and they like to take responsibility for tasks beyond their chronological age” (MT4). This was also mentioned by FT2 who

TABLE 1 Themes and subthemes for each research question regarding the twice exceptional.

RQ	Themes	Sub-themes	n	%	Representative quotes
RQ1	Giftedness characteristics of 2e	Excellent communication skills	12	85.71	“They speak well.”
		Problem-solving	13	92.86	“Some [twice-exceptional] students in my class were very good and highly skilled in problem-solving.”
		Strong retention	12	85.71	“Twice-exceptional students display strong skills in areas such as strong retention.”
		Curiosity	10	71.43	“Twice-exceptional students demonstrate curiosity for learning new subjects.”
		Creativity	11	78.57	“There are many gifted characteristics of twice-exceptional students, such as being highly creative.”
		Abstract thinking	12	85.71	“I had a student in Grade 3 who was underachieving in school ... I put this student in the front row, and I found her to be an excellent abstract thinker.”
		Leadership skills	11	78.57	“They are leaders, and they like to take responsibility for tasks beyond their chronological age.”
RQ2	Academic challenges of 2e	Poor reading skills	14	100.00	“A weakness of twice-exceptional students is poor reading skills; they struggle with reading when asked to read.”
		Poor writing skills	14	100.00	“One of my best-performing students in terms of creativity, who is twice-exceptional, struggles significantly with writing skills.”
		Math is challenging	11	78.57	“The math teacher in the school told me that several twice-exceptional students in our school have weak mathematics skills.”
		Difficulties in concentration	10	71.43	“One of my students performs exceptionally in many subjects but still has an issue where he cannot concentrate well.”
		Low self-esteem	9	64.29	“I can say that one of the difficulties twice-exceptional students have is feelings of low self-esteem.”

said, “Twice-exceptional students are leaders, whether in class projects or sports, and are popular and persuasive.” Another comment that referenced this was, “Twice-exceptional students tend to be popular and persuasive, and to function as leaders during class” (FT6).

### 3.2. Theme 2: academic challenges of twice-exceptional students

Under the theme regarding challenges of the twice-exceptional, several subthemes emerged, which were: (a) Poor Reading Skills, (b) Poor Writing Skills, (c) Math Is Challenging, (d) Difficulty Concentrating, and (e) Low Self-Esteem.

Almost all the participants ( $n = 13$ ; 92.86%) highlighted poor reading skills as a distinguishing characteristic of 2e students, with comments such as, “A weakness of twice-exceptional students is poor reading skills in that when called upon to read aloud, they tend to struggle” (MT7). This was also noted specifically by FT4.

All respondents indicated that poor writing ability is a common challenge for 2e students. However, because of their learning disabilities, some twice-exceptional students struggle with motor skills related to their handwriting, which might interfere with their ability to complete assignments that require hand-written responses. Examples of related statements on this topic were as follows: “One of my best-performing twice-exceptional students in creativity struggles

significantly with writing skills” (FT2); and “There are several weaknesses of twice-exceptional students, such as difficulties with writing” (MT5).

Another sub-theme that emerged under that of the challenges of 2e students was “Math Is Challenging.” Participants noted these students do poorly in mathematics (FT6), and also mentioned that this is something other teachers mention to them when they have discussions regarding their 2e students. For example, one teacher referenced asynchronous development when stating, “The math teacher in the school told me that several twice-exceptional students in our school have weak mathematics skills” (MT1).

A large number of participants ( $n = 10$ ; 71.43%) also mentioned that some 2e students have trouble concentrating, noting they may “performs exceptionally in many subjects but still have an issue where [they] cannot concentrate” (MT3). A female teacher similarly said, “Some [2e students] are unable to concentrate well, and it is the responsibility of teachers to [help them] address this problem” (FT1). Participants also pointed to these students having limited attention spans, stating they are easily distracted during class activities (MT2). MT6 also referenced this sub-theme by saying, “I think the twice-exceptional student in my class is easily distracted and has difficulty completing assignments.”

The issue of low self-esteem is another trait that the teacher participants identified as a perceived characteristic of 2e students (MT4). Similarly, a female teacher indicated these students not only

have low self-esteem, but that this trait causes them to struggle in school (FT5).

In general, participants were aware that twice-exceptional students exist, meaning these teachers were able to perceive that these students are gifted despite their different disabilities. However, although participants were able to describe certain negative and positive characteristics of 2e students, the quality and depth of their knowledge and perceptions of the traits of 2e students were limited; for example, they exhibited little knowledge of such characteristics as problem-solving, strong retention, curiosity, abstract thinking, creativity, and leadership characteristics.

## 4. Discussion

This study focused on exploring the perceptions and understanding of Saudi elementary school teachers regarding the characteristics of 2e students. In general, we found the teachers to be aware of the fact that some students can present with both giftedness and learning disability at the same time.

One of our main findings was that the elementary school teachers believe that 2e students are more developed than their peers in terms of language and communication skills. This finding echoes those of previous studies, which have argued that 2e students are different from other students in their level of language use (Wright and Ford, 2017; Alsamiri, 2019). Chimhenga (2016) found that in contrast with their peers, these students may possess extensive vocabularies, have high listening comprehension skills, and fluent speech.

We also found that Saudi elementary school teachers believe 2e students possess advanced problem-solving skills, which is also consistent with the findings of other researchers, including Coleman and Gallagher (2015) and Roberts et al. (2015). Moreover, in comparison with their peers who solely have disabilities that impact learning, Ritchotte and Zaghawan (2019) found that 2e students significantly positively differ in their problem-solving skills, particularly in area of the coping strategies they develop to deal with difficult school situations.

As was found by other researchers, our teacher participants also identified strong retention as a strength of 2e students (Baldwin et al., 2015; Alsamiri and Aljohani, 2018). The Saudi elementary school teachers in our study also indicated that twice-exceptional students have high levels of curiosity and an eagerness to learn, which was a trait also identified by Lee and Ritchotte (2019).

Unsurprisingly, most of the teachers interviewed noted abstract-thinking skills as a characteristic of 2e students in Saudi schools, which again comports with the findings of past research (Levi, 2019; Firat and Bildiren, 2022). In agreement with our findings, Wellisch (2016) stated strong abstract thinking skills is commonly associated with giftedness in 2e students.

Consistent with the literature, this study also found that according to our participants, creative thinking is a distinguished characteristic of 2e students (Ritchotte and Zaghawan, 2019; Mohammad, 2020). Renzulli (2005) described two groups of gifted students, the academically gifted and the creatively gifted. As with the creatively gifted, 2e students possess advanced creative thinking skills (Alsamani, 2020). Nielsen and Higgins (2015) found, as we did, that leadership skills are another characteristic of the 2e in terms of their relationships

with their peers and the difficulty of the tasks they are willing to take on.

On the other hand, this research identified certain characteristics of these students that contribute to the academic challenges they often experience; these traits, as noted by the study participants, include poor reading comprehension, poor writing skills, challenges with mathematics, poor concentration, and low self-esteem (Firat and Bildiren, 2022). However, despite the teachers noting these traits, few of them indicated that they had referred 2e students to services and support for their learning disabilities. This lack of referral for special education support was also mentioned by Ritchotte and Zaghawan (2019).

Several of the teachers in the study noted they had students who showed a high level of curiosity but displayed poor verbal and writing skills in different subjects, such as Arabic studies; previous studies have obtained similar findings (Mayes and Moore, 2016; Ramsay-Cohen, 2016). However, although the participants noted these issues, they did not draw conclusions about the implications of these conflicting findings and did not provide more in-depth information on them. We found, as did Mayes and Moore (2016), that teachers identified the following as weaknesses of 2e students in the general area of writing: difficulty in spelling and poor handwriting; the absence of organizational skills; and low scores on tests and assessments. This might be related to the limited training provided for elementary school teachers regarding 2e students and their unique traits (Al-Hroub and Whitebread, 2019).

One trait our participants mentioned that has received significant attention in educational research literature, such as Weiss (2022), is that 2e students perform poorly in mathematics compared to their peers. Amran and Majid (2019) also found that some 2e require educators consider accommodations and best teaching strategies for those with learning disabilities when instructing this population in mathematics to address issues with focus.

Regarding the trait of low self-esteem, which our participants noted as a common trait of 2e students, our findings are supported by those of Amran and Majid (2019), which noted low self-esteem—as well as a lack of motivation, depression, and stress—in this population.

## 5. Conclusion

Saudi elementary school teachers have an important role in identifying 2e students and ensuring these children receive the full range of support they require. As a result, it is necessary they be fully aware of all the traits such children possess, both in terms of strengths and weaknesses. The present study found that the teachers are aware of various characteristics 2e students exhibit in the classroom and are able to identify them as related to their giftedness traits (e.g., communication skills, problem-solving, strong retention, curiosity, abstract thinking, creativity, and leadership) and as related to disability traits that can impact learning outcomes (e.g., poor reading comprehension, poor writing skills, difficulties with mathematics, poor memory and focus, and low self-esteem).

## 6. Limitations

In the current study, we explored the perceptions of Saudi elementary school teachers regarding the characteristics of 2e

students using the qualitative method of in-depth, semi-structured interview. While this allowed us to obtain deep insights that could not have been achieved through quantitative methods, this does make our findings less generalizable to other contexts, such as other regions of the country. Since we only obtained data from 14 individuals, this is also a factor that limits generalizability to the larger population of all Saudi elementary school teachers. Moreover, our subjects were relatively young and therefore might be more open to newer trend in education in Saudi, such as accommodations for students with special education needs and the importance of teacher awareness regarding the identification processes for students, whether gifted, challenged in some way, or both. This study was also limited to only elementary school teachers. Perceptions of other types of educators, such as special and gifted education teachers, are also important to capture.

## 7. Implications for practice

From our findings, while Saudi elementary school teachers are aware of the common traits of 2e students, it appears they are not well-trained in how to best support students who possess both gifted traits and also struggle with learning due to different types of disabilities. Moreover, our study participants indicated that they only infrequently refer identified 2e students for special education services. To address this critical gap in the support of twice-exceptional students, it is necessary that stakeholders—especially the Ministry of Education—invest in training providers and administrators in developing programs to better serve these students as well as in professional development to better educate teachers regarding the special needs of 2e students. Since teachers are often the first professionals to identify gifted learners for accelerated programs, they are uniquely positioned to identify when a gifted learner also has a disability and/or academic challenges. However, if teachers are not better trained, preferably during their university studies, in the true characteristics of 2e students as well as in the special education services these students require, this population might only be served in terms of their gifted traits and not receive necessary support for their learning disabilities, leading to chronic academic underachievement and even failure.

## 8. Considerations for future research

The current study focused only on the perceptions of elementary school teachers. Other types of educators play important roles in the education of 2e students, including special education teachers, gifted education teachers, school personnel, and parents. Obtaining qualitative data on the views of these other populations is an important

area for future research. Moreover, in future studies researchers should directly obtain information from 2e students themselves regarding their feelings and perceptions of their needs, learning experiences, and the difficulties they face in education. In the future, we should also explore whether teachers at all educational levels perceive 2e students as a separate and unique population requiring special education support that possesses a unique set of traits, rather than obtaining data from participants based on what they perceive as strictly gifted traits and what they perceive as traits specifically connected to the learning challenges of this group of students.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Ethics statement

The studies involving human participants were reviewed and approved by the Standing Committee for Research Ethics at Hail University-Research Number: H-2022-394. The patients/participants provided their written informed consent to participate in this study.

## Author contributions

YA reviewed the literature, collected the data, and collaborated in data analysis and discussion. OA wrote the methodology, result, and discussion and collaborated in data analysis. SA drew the conclusion and collaborated in data analysis and the literature review. All authors helped to draft the manuscript, read, and approved the final manuscript.

## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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