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RESEARCH ARTICLE

Examining Secondary School Teachers' Perceptions of Students with Twice-Exceptionality (2e) in Sabah, Malaysia: A Quantitative Study

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ABSTRACT

Students who are twice-exceptional (2e) are those identified as gifted (possessing high intellectual or creative potential), while simultaneously exhibiting one or more disabilities, such as attention deficit disorder, autism, or dyslexia. This dual nature often leads to masking, whereby the talent conceals the disability, or vice versa, making the identification and support of 2e a significant challenge. The purpose of this study was to examine secondary school teachers' perceptions of 2e in Sabah, Malaysia. Respondents were required to fill out a 2e checklist on Google Forms and their responses were subsequently analyzed using SPSS 29.0. First, ANOVA revealed non-significant differences in perceived 2e by way of age, gender, and job experience. Second, Wilcoxon signed rank test revealed that (1) three of the general characteristics items were significant at $p < .05$, (2) two of the autism items were significant at $p < .05$, (3) seven of the anxiety and depression items were significant at $p < .001$, (4) two of the visual processing items were significant at $p < .001$, (5) three of the attention deficit disorder items were significant at $p < .05$, (6) four of the sensory processing items were significant at $p < .05$, (7) three of the attention deficit items were significant at $p < .05$, and (8) three of the dyslexia items were significant at $p <. 001$. In general, current findings indicate the presence of students with 2e at Sabah's secondary schools although the exact number is not known. Lastly, in light of the findings, some recommendations were made on ways to meet the needs of students with 2e in Sabah, Malaysia.

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Contribution/Originality: This research offers a valuable contribution by examining secondary school teachers' perceptions of students with twice-exceptionality (2e) in Sabah, Malaysia. Besides narrowing the gap that exists in the special education literature, it is the first quantitative study that examines teachers' perceptions of the construct in the Bornean state, adding to the limited evidence base on the characteristics and unique needs of the twice-exceptional in the Malaysian educational landscape.

1. Introduction

Students with 2e are among the most under-identified and underserved population at schools because a majority of school districts lack the specific procedures for identifying the construct, besides lacking appropriate educational services. Additionally, students with 2e are difficult to identify because their gifts and disabilities often mask one another. Nevertheless, appropriate educational programming is urgently needed to ensure that the twice-exceptional and their talents are realized (Davidson Institute, 2021; Lydian Academy, n. d.; Maddocks, n. d.). The "twice exceptional" or "2e" pertains to students who are gifted with one or more special needs, including specific learning disorders, attention deficit hyperactivity disorder (ADHD), or autism spectrum disorder. Besides having different cognitive and affective processes, students with 2e tend to be more intellectually and emotionally sensitive compared to their average peers. Simultaneously, due to asynchronous development or learning differences, it is an ongoing, personal battle for them to deal with things that others find effortless and simple. Due to their unique abilities and characteristics, they need a distinctive blend of academic programming and counseling services (Davidson Institute, 2021 Lydian Academy, n. d.; Maddocks, n. d.).

Characterized by high intelligence, students with 2e often mask or compensate for their disability. While they often maintain grade-level performance, they may not qualify for special education services. Besides, their achievement and standardized test performance are often deflated by their special needs; hence, they are neither recognized as gifted nor qualified for gifted programming. Seemingly average, students with 2e often possess gifts/talents and disabilities that mask one another. Often experiencing discrepancies between their strengths and weaknesses, they are unable to achieve goals or experience serious learning difficulties. Therefore, they become thwarted and disheartened, which causes them to exhibit cognitive, socioemotional, and behavioral problems (National Education Association, 2006).

While there is ample evidence that students can possess both gifts/talents and special needs simultaneously, they are often neglected owing to limited awareness on this group. Most schools do not make any special provisions for 2e, which is in direct opposition to meeting the needs of students with dual exceptionalities. In particular, schools face two significant obstacles that adversely impact students with 2e, which include (1) inadequate identification procedures, and 2) the unavailability of appropriate educational services. Just as students with special needs require services along a continuum, the twice-exceptional also require a conflation of gifted programming and special education. Instead of allowing them to merely achieve grade-level performance, schools should provide special services, programs, and resources that address both the giftedness/talents and special needs amongst students with 2e to uphold "the holistic child" concept (National Education Association, 2006).

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1.1. Characteristics and Strengths of 2e

1.1.1. Gifted with High Functioning Autism

In an empirical study, Aziz (2020) examined the characteristics of the gifted with high functioning autism. Findings showed that they tend to constantly seek stimulating challenges, and at times, regarded as geniuses. Categorized as 2e, they rarely face any significant problems when learning subjects that they enjoy or are interested in. Besides demonstrating a keen interest in their preferred subjects, they inevitably become much more knowledgeable than their same-aged peers in those subjects. However, they eventually encounter challenges when it comes to subjects that they find boring. Additionally, they tend to dislike repetitious learning because they learn complex concepts with little effort. Lastly, they become disruptive out of boredom, while their declining focus makes others perceive that they have behavioral disorders, emotional problems, or learning disabilities.

1.1.2. Multifarious Skills

In their investigation, Alsamani et al. (2023) explored elementary school teachers' perceptions of the characteristics of students with 2e. Findings indicated that teachers tend to associate certain gifted characteristics with 2e, including good communication skills, problem-solving ability, strong retention, curiosity, creativity, abstract thinking, and leadership skills. However, they also perceive that students with 2e tend to experience academic challenges related to their disabilities in reading, writing, and mathematics, besides poor concentration and negative self-esteem.

1.2.3. Multifaceted Problems

The multifarious problems faced by students who possess both intellectual giftedness and neurodevelopmental disorders (2e) were investigated by Huey et al. (2024). Findings showed that students with 2e tend to face academic challenges due to discrepancies related to their cognitive abilities, socioemotional development, and appropriate educational placement, reflecting the lack of proper mental and psychological procedures to assess their unique strengths, learning disabilities, mood, or functioning. Findings imply the urgent need for comprehensive assessments and tailored interventions to support students with 2e to ensure that their potential is maximized. Lastly, gaps in current services and policies with regard to 2e should be narrowed, while more effective support services should be advocated to help them become meaningful contributors to society.

1.2.4. Specific Strengths

Students with 2e often display strengths in certain areas (Davidson Institute, 2021; Lydian Academy, n. d.; Maddocks, n. d.). First, they have outstanding critical thinking and problem-solving skills that enable them to objectively analyze information, identify patterns, and use logical reasoning to develop innovative solutions. Besides their ability to observe, infer, and evaluate evidence, they often adopt creative approaches to overcome complex, unpredictable, or novel challenges. Second, students with 2e display a strong sense of curiosity; they often demonstrate an insatiable desire to learn, explore, and determine how things function. Their mindset drives them to read between the

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lines, challenge assumptions**,** thrive on ambiguity, and indulge in discovery. Third, students with 2e have superior ability to concentrate deeply in their areas of interest. Rather than just asking questions, they often focus intensely on cognitively demanding tasks, while ignoring distractions. Their heightened state of attention often results in cognitive productivity, creative output, and accelerated learning.

1.2. Challenges of 2e

1.2.1. Above Average Sensitivity

Research shows that students with 2e tend to face certain challenges (Davidson Institute, 2021; Lydian Academy, n. d.; Maddocks, n. d.). Their above average sensitivity tends to make them react more intensely to sounds, tastes, smells, and other things. Many students with 2e are vulnerable to sensory overloading, whereby they experience heightened, sometimes painful, reactions to sensory stimuli, including unpleasant sounds, specific textures, exotic smells, and blinding lights. Besides, their emotional intensity makes them experience feelings more deeply than others, leading to extreme mood swings, anxiety, and a strong sense of injustice. Many also struggle between perfectionism and frustration caused by asynchronous development between cognitive abilities and core competencies, which often leads to intense frustration, negative self-esteem, and fear of failure. On the other hand, their social sensitivity and overexcitabilities often make them become extremely aware of others' moods and expectations, which can lead to overcompensation to fit in and, subsequently, over-calibration and emotional exhaustion. Lastly, their overexcitabilities often lead them to intensely focus on specific interests, characterized by high vivacity, reactivity, and arousal.

1.2.2. Cognitive Processing Deficits

In their study, Kranz et al. (2024) found that students with 2e often encounter significant reading and writing difficulties due to cognitive processing deficits that are often masked by their strengths, leading to inconsistent performance, poor fluency, spelling issues, and exasperation. Moreover, their weak phonological processing is often linked to dyslexia, leading to poor spelling, slow reading, and reduced speech intelligibility, while poor working memory makes it difficult for them to temporarily holding and manipulating information, resulting in forgetfulness, poor focus, and challenges with multi-step tasks. Due to slow processing speed or a cognitive bottleneck, it takes longer for their brains to receive, decode, and respond to information, leading to challenges with timed tasks, multi-step directions, and social interactions. Lastly, their poor executive functioning, characterized by chronic forgetfulness, procrastination, inefficient multitasking, and emotional outbursts, makes it challenging for them to plan, organize, and initiate writing tasks.

1.2.3. Behavioral Problems

Students with 2e often exhibit behavioral problems due to underlying stress, boredom, and lack of motivation (Sofologi & Bonti, 2023). For example, those with high ability and a learning disability or disorder frequently exhibit such behavioral issues as impulsivity, defiance, or withdrawal, which are associated with chronic frustration, boredom, and anxiety. Their asynchronous development causes them to excel in some areas, while struggling in others, leading to misperceptions of laziness, apathy, or purely oppositional

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behavior (e.g., argumentative, vindictive). Although they are aware of their high potential, students with 2e often experience intense anxiety because they are hindered by their special needs, which causes extreme distress and mental anguish. When the curriculum appears unchallenging, they often become mentally unstimulated, restless, or unmotivated. Besides being overly sensitive to sensory input or criticism, a strong drive for perfection, or fear of failure, often leads them to avoid challenging, novel activities requiring significant effort, skill, and persistence. Unfortunately, these undesirable attitudes or behaviors are often mischaracterized as indolence rather than being acknowledged as signs of a dual-diagnosis.

1.3. Statement of the Problem

Students with 2e exhibit prominent characteristics of both giftedness and disability (Kaufman, 2018). They may have reading difficulties, but demonstrate advanced knowledge on topics of keen personal interest; for example, while they may struggle with reading written text, they can elaborate on multiple theories about a topic and provide evidence to support their thinking. While feeling overwhelmed in specific subjects, they may display innovative problem-solving skills or excellent leadership skills. Since they tend to demonstrate a wide array of abilities, it is crucial for educators to adequately meet their cognitive, affective, and psychomotor needs. With reference to 2e, empirical research is essential to (1) provide careful and simultaneous considerations to students' gifts and special needs, (2) generate greater awareness of the learning needs of the twice-exceptional, and (3) recognize and address the unique characteristics of 2e. Overall, 2e research is necessary for educators to transition from a traditional system that often misses or mislabels the twice-exceptional to one that recognizes, nurtures, and empowers them to reach their full potential. The primary purpose of this study was to examine secondary school teachers' perceptions of students with 2e in Sabah, Malaysia.

1.4. Significance of the Study

Very few studies on school teachers' perceptions of students with 2e are available in Malaysia. Knowledge on these students becomes critical considering the importance of early intervention for both the gifted and those with disabilities. Examining teachers' perceptions of 2e will render deeper insight into how 2e is conceptualized in the Malaysian educational context, besides identifying the gaps in teachers' understanding of the attributes and challenges associated with 2e. The current investigation will demonstrate that greater understanding and appropriate identification of students with 2e are critical in helping them reach their highest capabilities. Additionally, exploring school teachers' perceptions of 2e is vital to better serve the twice-exceptional grounded on both their strengths and special needs. After reviewing the literature, it is concluded that no study to date has examined teachers' perceptions of the twice-exceptional in East Malaysia, and how these perceptions impact their teaching. This conclusion reflects a gap in the literature; thus, the 2e construct holds merit to be researched.

2. Review of Literature

A literature review is included in this research project to (1) provide the most prevalent theories and studies on 2e, (2) evaluate and compare 2e studies, and (3) identify research gaps in the literature. Acting as a foundational component for the new

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research, it allows the authors to critically evaluate existing knowledge, identify key themes, and highlight the issues or contradictions in the current studies on 2e.

2.1. Identification Barriers of 2e

Primary school teachers' perceptions of the identification barriers of 2e were explored by Alsamani et al. (2026). Findings revealed four primary identification barriers. The first barrier tends to revolve around the shortage of dual-trained staff; teachers face significant challenges in accurately identifying and recognizing students who exhibit both giftedness and specific learning disabilities, due to their unique and often complex needs. The current gaps in professional development or insufficient training indicate that many teachers feel unprepared to identify 2e. Besides, the lack of dual-trained staff makes it difficult to recognize the complex interplay between students' advanced capabilities and specific learning challenges. The second barrier is related to overcrowded classrooms, which makes it almost impossible to implement effective identification strategies and provide individualized attention and support to students with 2e. Teachers often do not have enough time to observe and assess each student's unique abilities and challenges, highlighting the time constraints associated with large class sizes.

The third barrier is the lack of specialized training in dealing with 2e (Alsamani et al., 2026). Teachers often lack professional training, which hinders their efforts to accurately recognize and support students exhibiting both exceptional talents and learning difficulties. Without adequate training, teachers often struggle to distinguish between signs of giftedness and symptoms of learning disabilities, leading to misidentification or inadequate support. The fourth barrier is insufficient funding; the lack of financial resources limits the availability and quality of specialized programs, tools, and interventions for 2e. Since schools often struggle to provide essential resources for students with special needs due to limited funding, teachers are often constrained by outdated materials and absence of support staff, which hinders their ability to offer effective assistance. Financial constraints also limit the availability of specialized teacher training programs. Overall, due to budget limitations and fiscal restrictions, many teachers are deprived of the essential training to support students with 2e. Moreover, budget cuts and reduced appropriations also impede the implementation of comprehensive support programs to provide customized interventions, tools, and assistance designed to meet the unique needs of students with 2e.

2.2. Teachers' Perceptions and Beliefs

Teachers' perceptions of the educational needs of the twice exceptional were investigated by Bailey and Rose (2011). Findings showed that teachers tend to have compassion for the twice exceptional and are aware that their needs often go undetected.

First, many teachers tend to regard student diversity and socioemotional growth as important components in their instructional planning and delivery in terms of 2e, while emphasizing the need to transition from identification to the provision of specialized instruction for the twice exceptional. Second, teachers with a more inclusive educational philosophy are more willing to modify their instruction for students with 2e. Besides expressing a need for more staff development, they also demonstrate a real need for empowerment to pursue what they require, experiment, or accept responsibility for 2e

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development. Third, many teachers tend to perceive that current special education programs lack focus on 2e, including invisible IEPs, pulling students out of class, inability to modify the curriculum, and the lack of trust in special education labels. Fourth, special educators seem to have the most difficulty working with the twice exceptional, feeling that they are falling short and that much remains to be accomplished in terms of 2e.

In their investigation, Rowan and Townend (2016) explored newly graduated teachers' beliefs about their preparedness to meet the needs of the gifted and twice-exceptional. Findings indicated that beginning teachers tend to feel most prepared in terms of pedagogy, assessment, professional ethics, and engagement with ongoing learning. However, they tend to feel less prepared in terms of (1) teaching students with diverse abilities, (b) supporting students with disability, and (3) communicating sensitively with parents. Findings imply that beginning teachers require more training in both gifted education and special education, as well as an understanding of the intersectional needs of 2e students. Training programs should expose them to strength-based approaches that focus on superior ability, while providing accommodations for students with 2e. Lastly, schools need to promote collaboration amongst general education teachers, gifted specialists, and special educators to help students with 2e elevate their capabilities and unleash their potential.

In their study, Alsamiri and Aljohni (2019) delved into teachers' perceptions of the need for professional development in both gifted programming and special education (learning disabilities). Findings showed that very few teachers tend to receive simultaneous professional development in gifted education and special education, citing the lack of opportunity and cost as the primary reasons. Findings imply that teachers need professional development to gain awareness of the latest developments in academic talent programming, exceptional student education, and individualized education to identify and engage students who are twice-exceptional. Further, the education system tends to follow a deficit model, whereby teachers tend to focus more on learning disabilities, despite noticing that some students exhibit both giftedness and learning problems. Findings imply that teacher professional development should include identification training to help them recognize the co-occurrence of high ability and disability, while addressing the common issue where one ability/disability masks the other. Additionally, they need to adopt the strengths-based approach by shifting from remediation to nurturing students' high potential, while accommodating their disabilities. This can be accomplished through integrated instruction by employing techniques that merge gifted education with special education strategies to address the socioemotional needs (e.g., low self-esteem, perfectionism, frustration) amongst students with 2e.

Elementary school teachers' perceptions of the characteristics of 2e were analyzed by Alsamani et al. (2023). Findings indicated that teachers tend to perceive that the twice-exceptional have good communication, problem-solving, and leadership skills; besides, they also demonstrate strong retention, curiosity, creativity, and abstract thinking. Nevertheless, teachers also perceive that the twice-exceptional tend to experience significant academic challenges in terms of reading, writing, and mathematics, besides struggling with low self-esteem and weak concentration. Findings imply that teachers tend to treat giftedness and learning disabilities as separate entities rather than as a single, integrated profile, which complicates the identification and support of students with 2e. The independent condition approach makes it difficult for teachers to understand the complex interplay between students' gifts/talents and special needs,

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which inhibits the adoption of unified 2e support strategies. With a deficit focus, teachers, particularly those lacking specialized training, often focus on addressing students' learning disabilities, while overlooking their burgeoning potential, or vice versa.

In their qualitative study, Matthews and McKinney (2024) recorded the lived experience of five educators who self-identified as 2e. Findings showed the teachers tend to draw upon their own experiences as a person with dual exceptionalities when designing lessons, which primarily focus on mastery learning, multiple learning modalities, and modified instructional practices that address the needs of students with 2e without singling them out as different, while creating learning environments where all students thrive. First, they practice mastery learning that allows students to achieve a high level of competence (typically 80 to 90 percent accuracy) in a unit's learning objectives before advancing to new material, in conjunction with formative assessments, individualized support, and extra time to ensure complete understanding. Second, they encourage the use of multiple learning modalities, which allows students to use diverse sensory channels (visual, auditory, reading/writing, and kinesthetic) to improve engagement, retention, and understanding. By presenting information through multiple, simultaneous methods, they help students strengthen their neural connections, besides catering to different processing styles. Lastly, they modify their instruction through (1) content modification by simplifying or narrowing the material to be learned, such as teaching fewer, more fundamental concepts, (2) alternative assignments by giving students different, more accessible tasks, for example, by creating a video instead of writing a report, (3) performance reduction by reducing the number of questions, shortening assignments, or providing two-choice options instead of four-choice multiple-choice questions, (4) adjusted assessment by changing how students are graded or evaluated, focusing on individual growth or specific, modified goals rather than grade-level standards, and (5) input/output changes by using simplified text (lower-level material), providing notes or study guides, and using oral instead of written assessments.

Teachers' experiences in handling students with 2e were scrutinized by Flores (2024). Findings revealed that teachers tend to improve their pedagogy after spending some time managing students with 2e despite their initial lack of effort and experience. Besides adopting winning approaches and impactful plans grounded on their own experiences, they also evidence success in identifying students' strengths, communicating with parents, and using the Montessori method. Nevertheless, teachers tend to face certain challenges and issues associated with 2e, including social or peer relationships, personal defeats, and insufficient expertise. Findings imply that teachers need more specialized training related to 2e, a comprehensive checklist on 2e characteristics, and guidelines in handing students with 2e and their parents.

On the other hand, Khan et al. (2025) studied teachers' perceptions of students with 2e in relation to management, learning differences, and barriers. Findings revealed that teachers tend to employ management strategies that aim to balance between exceptionality and disorder by leveraging students' extraordinariness or singularity as reinforcement, and their strengths to compensate for their vulnerability. Additionally, learning differences tend to be evident as the twice-exceptional appear more responsive and engaging, compared to their regular peers. Nevertheless, teachers tend to face several barriers in terms of 2e, including the condition itself, cultural variations, parental pressure, and general expectations. Findings imply an urgent need for developing better

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management plans and support strategies to address the unique needs of the twice-exceptional. Schools should provide dual-goal programming by implementing individualized education programs that blend gifted enrichment and special education services, rather than opting one over the other. Lastly, curriculum compacting and differentiation is needed to allow students with 2e to skip material that they have already mastered to give way to deeper, more complex learning.

In their study, Sakar and Baloglu (2025) investigated teachers and counselors' perceptions of students with 2e. Findings showed that teachers and counselors tend to perceive students with 2e as creative with solid verbal skills in areas of interest; however, they also tend to demonstrate inconsistent academic performance and restlessness. Findings imply the need for professional development and collaboration when working with the twice-exceptional. First, teachers need to gain greater understanding of 2e profiles by learning how to recognize the distinctive asynchronicity of 2e, which is characterized by high intellect alongside significant difficulties in executive functioning (planning, organization, motivation). Second, teachers need to adopt strengths-based pedagogy by shifting to a positive psychology framework that leverages students' potentiality and prospects. Third, they need to adopt specialized instructional strategies by applying the concept of dual differentiation, which involves an accelerated curriculum for giftedness with the necessary accommodations for disabilities. Fourth, they should provide socioemotional support to the twice-exceptional by fostering a growth mindset, managing students' anxiety, and helping them understand their unique learning profiles. Lastly, they should utilize appropriate identification and assessment techniques related to 2e, being aware that the twice-exceptional are often misdiagnosed because their strengths often mask their special needs, or vice-versa.

Primary school teachers' knowledge and recognition of twice-exceptionality was surveyed by Oman et al. (2025). Findings showed that teachers tend to associate giftedness with competition achievements, argumentative ability, persistence in personal beliefs, and unusual questioning. Additionally, they are more likely to recognize giftedness when behavioral difficulties are not prominent. Additionally, teachers who hold a traditional view of giftedness tend to focus primarily on measurable achievements and cognitive abilities, while also recognizing such behavioral traits as curiosity, critical thinking, and logical reasoning skills. Due to their persistent reliance on traditional markers of giftedness, teachers often pay little attention to the behavioral and emotional indicators. Findings imply the need for a multidimensional and holistic approach to giftedness identification by combining academic, psychological, and behavioral assessments. Besides, systematic professional development and institutional adjustments are needed to ensure that students with 2e receive adequate support, while ensuring the full realization of their potential.

2.3. Impact of Professional Development on 2e Staff

The impact of a teacher professional development program on the instruction of students identified as gifted with learning difficulties (2e) was analyzed by Lewis (2004). Findings showed that, after completing the program, teachers tend to demonstrate more favorable attitudes toward the gifted, besides greater willingness to modify the gifted programs. Nevertheless, they tend to express reservations about the effectiveness of their interventions for students with 2e, especially in terms of the latter's ability to perform independent work.

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According to Bechard (2019), general and special education teacher preparation programs need to do five things to ensure that teachers can effectively manage students with 2e. First, teacher education faculties should develop capacity by encouraging faculty members to examine their deep beliefs, besides hiring people with proven experience in both general and special education. Further, they should encourage faculty members to broaden their own understanding of 2e to identify gaps in the preparation programs, besides initiating critical dialogues across credential areas. Second, teacher preparation programs should develop course content across credential areas that underscores neurodiversity, explores the complexity of 2e, and supports the socioemotional learning needs of students with 2e via the strengths-based approach. Third, teacher preparation programs should include specialized training that ensures knowledge of individualized education planning, referral protocols, and the continuum of placement options. Specialized training should also integrate dual differentiation, universal learning design, co-teaching techniques, and specific strategies for students with 2e. Fourth, teacher preparation programs should develop strategic partnerships with K-12 schools and create fieldwork experiences to generate 2e awareness, while exploring how the twice-exceptional are served in schools. Lastly, teacher preparation should involve ongoing in-service professional development programs that respond to the evolving understanding of 2e.

On the other hand, Neumeister (2023) investigated how an independent school for the gifted helps parents, teachers, and students maximize the potential of the twice-exceptional. Findings indicated that the school's success with 2e could be attributed to a triangular framework that supports all stakeholder groups. First, it provides targeted instruction that simultaneously provides enrichment (gifted programming) and specialized remediation (disability support) to address asynchronous development. Second, it emphasizes that active partnership and consultation with parents is essential to understand the complex profiles of the twice-exceptional, besides ensuring consistent, holistic, and empathetic support both at home and school. Third, it emphasizes professional training that moves beyond deficit-focused instruction, focusing on strengths-based instruction that bypasses or compensates for learning weaknesses. Overall, the framework enables the school to propagate a culture of acceptance of 2e together with a belief in team problem-solving.

Lastly, in their investigation, Margot et al. (2025) examined the impact of a professional development program on ancillary staff's knowledge and confidence in supporting 2e. Findings showed that the program seems to have a significant impact on staff's knowledge and confidence (self-efficacy) in scaffolding students with 2e. Further, initial baseline familiarity with the term "2e" tends to vary significantly across staff types, with social workers being disproportionately represented among those unfamiliar with the term, while school psychologists being more likely to report prior familiarity. Nevertheless, the program appears to be effective across roles, despite initial disparities. Findings imply the need for more professional development programs to address 2e terminology, while providing additional experiential learning opportunities (hands-on, project-based, case studies) to ancillary staff, who need deeper understanding about 2e to comprehensively evaluate and effectively support the twice-exceptional.

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3. Methodology

3.1. Research Design and Approach

This study employed a quantitative research design for five reasons. First, it is objective and produces precise results because it focuses on numerical data derived from a survey. Using a survey helps reduce researcher bias, besides producing facts and verifiable information on 2e. Second, the research design helps increase generalizability of findings because it allows the utilization of a representative sample, allowing the findings to be extended to a larger teacher population. Third, it promotes replicability because the structured, standardized methodology makes it easy for other researchers to repeat the study in different contexts to verify or compare results. Fourth, it ensures efficient data analysis, whereby SPSS can be used to quickly process data. Lastly, it helps maintain anonymity, making it easier to study 2e without requiring teachers to divulge personal details.

3.2. Research Location

This study was conducted in Kota Kinabalu, Sabah, the capital city of the island state where quantitative research on 2e is scarce. Kota Kinabalu was chosen for its vast educational landscape that can provide a sufficiently representative sample of the teacher population in Sabah, thus allowing for a relatively fair assessment of teachers' perceptions of 2e at local schools.

3.3. Sample and Justification

The sample of this study comprised 64 teachers (n = 64) recruited from three secondary schools in Kota Kinabalu, Sabah, who possess at least a basic degree and proficiency in English and the Malay Language. They come from culturally, linguistically, and ethnically diverse communities in Sabah. The sample size was determined according to the central limit theorem (CLT), which states that a minimum of 30 subjects is required to provide enough statistical power for a basic survey (Roscoe, 1975; RUBIKTOP, 2023). Moreover, the CLT stipulates that sampling distributions will approach normality when there are 30 or more subjects, allowing for acceptable statistical inference and a reasonable margin of error, besides identifying modest effects in nonparametric analyses, such as the Wilcoxon signed rank test, which was used to interpret data in the current study.

The sample consisted of 39.1 percent males and 60.1 percent females. Age-wise, 53.1 percent are 23 to 33 years old, 21,9 percent are 34 to 44 years old, 14.1 percent are 45 to 55 years old, 10.9 percent are above 56 years old. Experience-wise, 32.8 percent have worked for one to five years, 34.4 percent have worked for six to 11 years, 15.6 percent have worked for 12 to 17 years, and 17.2 percent have worked for more than 17 years (see Table 1).

Table 1: Demographic Information of Respondents (n = 64)

Profile	Variables	Frequency	Percentage
Gender	Male	25	39.1
	Female	39	60.9
Age	23 - 33	34	53.1
	34 - 44	14	21.9

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	45 - 55	9	14.1
	Above 55	7	10.9
Job experience (years)	1 - 5	21	32.8
	6 - 11	22	34.4
	12 - 17	10	15.6
	Over 17	11	17.2

3.4. Instrument

The Checklist for Recognizing Twice Exceptional Children (Silverman et al., 2019) was adapted to assess teachers' perceptions of 2e. It comprises 101 Likert-scale items categorized into eight different dimensions, including (1) general characteristics of 2e, (2) visual processing weaknesses, (3) auditory processing weaknesses, (4) sensory processing issues, (5) attention deficit/hyperactivity disorder symptoms (6) dyslexia or stealth dyslexia, (7) autistic spectrum disorder, and (8) anxiety and depression. The checklist was administered on Google Forms to measure teachers' perceptions at three secondary schools in Kota Kinabalu, Sabah. Responses range from strongly agree = 5 to strongly disagree = 1. To determine its reliability, a pilot study was conducted on 20 teachers and data were analyzed by using SPSS 29.0. Cronbach analysis was used to assess its reliability; results indicated that its Cronbach's alpha is 0.858, suggesting that the items within the checklist are internally consistent, measuring the same underlying construct. The high coefficient also means that the items are closely correlated, and are therefore, measuring the 2e dimensions in a reliable and consistent manner.

3.5. Data Collection and Analysis

Teachers were required to complete the checklist on Google Forms. Ethical procedures for the research included (1) informed consent, whereby teachers were informed of the purpose, confidentiality, and voluntary nature of the study. The rights of teachers to make their own choices were respected, including the right to withdraw without consequences. Lastly, confidentiality and privacy were ascertained by protecting teacher data and personal information from unauthorized access.

Data were subsequently transferred onto a spreadsheet and analyzed using SPSS 29.0. First, ANOVA was conducted to determine if there were any significant differences in teachers' perceptions of 2e in relation to age, gender and job experience. Second, Wilcoxon signed rank test was used to determine if any of the 2e items were significant at a hypothesized value of 3.5. Third, percentages of agreement (strongly agree/agree) were collapsed to get an overview of perceived 2e. For this teacher perception survey on the characteristics of 2e, a high level of perception or high prevalence is generally indicated when 55 percent or more of teachers agree strongly/agree.

4. Findings

4.1. Non-significant Differences

ANOVA results showed non-significant differences in perceived 2e among teachers by way of age, gender, and job experience. Non-significant differences could be due to chance rather than a real effect, indicating there was insufficient evidence to conclude real differences exist in terms of age, gender and job experience, or merely an inability to detect subtle differences (see Table 2).

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Table 2: ANOVA for Gender, Age, and Job Experience

Gender	0.190	1	0.190	0.507	.479
Residuals	23.267	62	0.375		
Age	1.312	3	0.437	1.185	.323
Residuals	22.145	60	0.369		
Job Experience	0.768	3	0.256	0.677	.569
Residuals	22.689	60	0.378		

4.2. Wilcoxon Signed Rank Results on General Characteristics

Based on a hypothesized value of 3.5, Wilcoxon signed rank test showed that only three of the general characteristics items were significant at $p < .05$, indicating that students with 2e tend to (1) excel in one subject, but just average in other subjects, (2) perform well with challenging work, but struggle with easy material, and (3) have wonderful ideas, but have difficulty organizing tasks and activities (see Table 3).

Table 3: Wilcoxon Signed Rank Results on General Characteristics (Hypothesized Value = 3.5)

General characteristics: In my school, there are gifted students who …	***p*-value**	**Conclusion**
Appear smarter than grades or test scores suggest	.518	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Have good speaking vocabulary, but poorer written expression	.390	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Participate well in class discussions, but does not follow through with implementation	.426	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Have uneven academic skills, inconsistent grades and test scores	.908	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Do well when given sufficient time, but perform poorly on timed tests	.159	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Study hard and get good grades, but soon forget most of the information	.555	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Have excellent problem-solving skills, but low self-esteem	.098	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Excel in one subject, but just average in other subjects	.041*	Median significantly differed from the test value, indicating strong agreement.
Perform well with challenging work, but struggle with easy material	.020*	Median significantly differed from the test value, indicating strong disagreement.
Are better with reading comprehension	.741	Median did not significantly differ from the

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than with phonetics (speech)		test value, indicating a neutral or undecided stance.
Are better at reasoning than computation	.529	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Have wonderful ideas, but have difficulty organizing tasks and activities	.016*	Median significantly differed from the test value, indicating strong agreement.
Are good at computers, but have illegible or slow handwriting	.468	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Have a sense of humor and may use it to distract the class	.213	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Good at complex work, but have difficulty with rote memorization	.360	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Understand concepts easily, but get frustrated with the performance requirements (speed, resource usage, and response time)	.141	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Fatigues easily due to the energy required to compensate	.683	Median did not significantly differ from the test value, indicating a neutral or undecided stance.

*$p < .05$

4.3. Wilcoxon Signed Rank Results on Autism, Anxiety, and Depression

Based on a hypothesized value of 3.5**,** Wilcoxon signed rank test revealed that only two of the autism items were significant at $p < .05$, indicating that students with 2e tend to (1) resist or refuse tasks that they dislike and (2) have difficulty with inferential language, being more literal and see things in black and white (see Table 4).

The same test revealed that seven of the anxiety and depression items were significant at $p < .001$, indicating that students with 2e tend to (1) fear going to school or try to avoid attending school, (2) have phobias, such as fear of separation, fear of the dark, fear of burglars breaking in, (3) feel hopeless, worthless, or unhappy, (4) lack motivation, (5) make statements about wishing to be dead or to have never been born, (6) make threats of self-harm (e.g., cut themselves with a razor, pull their own hair), and (7) have a negative or gloomy outlook on life (express many negative things about self or others). Besides, three of the items were significant at $p < .05$, indicating that students with 2e tend to (1) obsess about things (e.g., germs, pollution, contamination, weight) and cannot escape such thoughts, (2) feel compelled to do things multiple times (e.g., wash hands/count many times/ repeat certain actions many times), and (3) exhibit very poor self-esteem (see Table 4).

Table 4: Wilcoxon Signed Rank Results on Autism, Anxiety, and Depression (Hypothesized Value = 3.5)

Autism: In my school, there are gifted students who ...	***p*-value**	**Conclusion**
Struggle to read social cues (read other people's thoughts/feelings/nonverbal responses/body language)	.591	Median did not significantly differ from the test value, indicating a neutral or undecided stance.

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Do not respond appropriately to others' feelings	.196	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Are rigid (once a decision has been made, it is very difficult for them to change it)	.147	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Are inflexible about tasks (will only do them in one specific way)	.366	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Resist or refuse tasks that they dislike	.016*	Median significantly differed from the test value, indicating strong agreement.
Have sensory issues (poor fine/gross motor coordination; difficulty with loud sounds, crowds, close proximity to others, touching/jostling, or transitions)	.792	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Experience anxiety, particularly regarding social expectations and conventions/rules of behavior	.725	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Have flat affect (blank facial expression, a monotone voice, and a lack of gestures)	.529	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Have difficulty with inferential language, idioms, etc. (are more literal, black and white)	.025*	Median significantly differed from the test value, indicating strong disagreement
Have limited eye contact	.890	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Show strong emotional distress with unexpected changes	.599	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Have limited initiation of social interaction and difficulty responding to others' overtures	.959	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Anxiety and depression: In my school, there are gifted students who …	*p*-value	Conclusion
Are very perfectionistic; obsess over unimportant details	.370	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Are excessively anxious about tests, presentations, projects, and grades, despite usually obtaining high grades	.563	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Are paralyzed and unable to think clearly with difficult or timed items, until they are able to relax	.409	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Worry excessively about things great and small (e.g., school bullying, whether people like them, getting into trouble, getting things done, animals, climate change, extinction)	.059	Median did not significantly differ from the test value, indicating a neutral or undecided stance

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Fear going to school or try to avoid going to school	< .001***	Median significantly differed from the test value, indicating strong disagreement
Have phobias, such as fear of separation, fear of the dark, fear of burglars breaking in	< .001***	Median significantly differed from the test value, indicating strong disagreement
Obsess about things (e.g., germs, pollution, contamination, weight) and can't escape such thoughts	.002*	Median significantly differed from the test value, indicating strong disagreement
Feel compelled to do things multiple times (e.g., wash hands/count many times/ repeat certain actions many times)	.006*	Median significantly differed from the test value, indicating strong disagreement
Feel hopeless, worthless, or unhappy	< .001***	Median significantly differed from the test value, indicating strong disagreement
Lack motivation	< .001***	Median significantly differed from the test value, indicating strong disagreement
Have very poor self-esteem	.002*	Median significantly differed from the test value, indicating strong disagreement
Make statements about wishing to be dead or to have never been born	< .001***	Median significantly differed from the test value, indicating strong disagreement
Make threats of self-harm (e.g., cut themselves with a razor, pull their own hair)	< .001***	Median significantly differed from the test value, indicating strong disagreement
Have a negative or gloomy outlook on life (express many negative things about self or others)	< .001***	Median significantly differed from the test value, indicating strong disagreement

***$p < .001$, *$p < .05$

4.4. Wilcoxon Signed Rank Results on Visual, Auditory, and Sensory Processing Problems

Based on a hypothesized value of 3.5**,** Wilcoxon signed rank test revealed that only two of the visual processing items were significant at $p < .001$, indicating that students with 2e tend to (1) put their faces close to the paper when writing or reading and (2) skip lines and lose place in reading. Another five of the items were significant at $p < .05$, indicating that students with 2e tend to (1) struggle with reading, (2) mix up plus and minus signs, (3) have difficulty lining up numbers in calculations, (4) have difficulty copying from the blackboard, ad (5) have poor spacing when writing (see Table 5).

Based on the same test, four of the sensory processing items were significant at $p < .05$, indicating that students with 2e tend to (1) wear very similar soft clothes every day, (2) get upset when brushed against accidentally, as in a queue, (3) have low energy and tire easily, and (4) have difficulty deciding handedness when younger (see Table 5).

Table 5: Wilcoxon Signed Rank Results on Visual, Auditory, and Sensory Processing Problems (Hypothesized Value = 3.5)

Visual processing problems: In my school, there are gifted students who …	***p*-value**	**Conclusion**
Struggle with reading	.013*	Median significantly differed from the test value, indicating strong disagreement

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Mix up plus and minus signs	.003*	Median significantly differed from the test value, indicating strong disagreement
Have difficulty lining up numbers in calculations	.002*	Median significantly differed from the test value, indicating strong disagreement
Have difficulty copying from the blackboard	.002*	Median significantly differed from the test value, indicating strong disagreement
Put face close to the paper when writing or reading	< .001***	Median significantly differed from the test value, indicating strong disagreement
Skip lines and lose place in reading	< .001***	Median significantly differed from the test value, indicating strong disagreement
Have poor spacing when writing	.009*	Median significantly differed from the test value, indicating strong disagreement
Tire easily when reading or writing	.184	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Make careless errors in written work	.783	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Auditory processing problems: In my school, there are gifted students who …	*p*-value	Conclusion
Do not seem to hear people; need many repetitions before responding	.278	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Mispronounces words or letter sounds	.720	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Confuses similar sounding words (e.g., “agent” and “ancient”)	.166	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Makes grammatical errors in speech	.471	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Misunderstand information	.087	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Watch other students to find out what to do	.711	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Do not pay attention when being read to or during lectures	.218	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Are weak at phonics; poor at spelling and pronouncing unfamiliar words	.515	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Has a loud voice, especially when there is background noise	.631	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Responds better to directions when shown examples of what is expected	.395	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Sensory processing problems: In my school, there are gifted students who …	*p*-value	Conclusion
Are exhausted after prolonged listening, particularly in the	.127	Median did not significantly differ from the test value, indicating a neutral or undecided

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afternoon		stance
Are clumsy and awkward	.127	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Have an odd pencil grip	.415	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Do not hold paper in place when writing	.072	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Have illegible handwriting and tend to avoid writing	.390	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Are poor at sports	.058	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Wear very similar soft clothes every day	.035*	Median significantly differed from the test value, indicating strong disagreement
Get upset when brushed against accidentally, as in a queue	.008*	Median significantly differed from the test value, indicating strong disagreement
Props themselves up in the chair rather than sitting up straight	.126	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Become easily overstimulated and may throw temper tantrums	.348	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Have low energy and tire easily	.009*	Median significantly differed from the test value, indicating strong disagreement
Are uncomfortable with crowds	.449	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Have difficulty with transitions (adjusting to new situations)	.668	Median did not significantly differ from the test value, indicating a neutral or undecided stance
Have difficulty deciding handedness when younger	.028*	Median significantly differed from the test value, indicating strong disagreement

***$p < .001$, *$p < .05$

4.5. Wilcoxon Signed Rank Results on Attention Deficit Problems and Dyslexia

Based on a hypothesized value of 3.5**,** Wilcoxon signed rank test revealed that only three of the attention deficit items were significant at $p < .05$, indicating that students with 2e tend to (1) be in motion as if driven by a motor, (2) concentrate deeply when interested, but not at all when not interested, and (3) respond to partial information, but thinking that they fully understand (see Table 6).

Based on the same test, only three of the dyslexia items were significant at $p <. 001$, indicating that 2e students tend to (1) show reversals (writing or reading backward), (2) have trouble with right and left, and (3) have difficulty learning to read analog clocks. Only two of the items were significant at $p <.05$, indicating that students with 2e tend to (1) have sequential and rote memory that lack permanence (have short-term memory only) and (2) forget spelling and math facts after practice (see Table 6).

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Table 6: Wilcoxon Signed Rank Results on Attention Deficit Disorder and Dyslexia (Hypothesized Value = 3.5)

Attention deficit problems: In my school, there are gifted students who ...	***p*-value**	**Conclusion**
Have difficulty waiting for their turn	.150	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Act impulsively without awareness of consequences	.969	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Intrude on others	.067	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Are in motion as if "driven by a motor"	.010*	Median significantly differed from the test value, indicating strong disagreement.
Have difficulty remaining seated	.384	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Fidget with hands or feet or squirm in their seat	.311	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Easily distracted	.150	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Have highly variable performance on different days or during different periods	.061	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Space out during assignments and homework, often not completing their tasks	.555	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Are forgetful; may only remember part of an instruction	.162	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Concentrate deeply when interested and not at all when not interested	.011*	Median significantly differed from the test value, indicating strong agreement.
Respond to partial information, but thinking that they understand fully	.024*	Median significantly differed from the test value, indicating strong agreement.
Dyslexia: In my school, there are gifted students who	*p*-value	Conclusion
Read at a lower level than expected for ability, but have superior reasoning	.554	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Struggle with phonological processing and sound-symbol relationships	.378	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Show reversals (writing or reading backward)	< .001***	Median significantly differed from the test value, indicating strong disagreement.
Have trouble with right and left	< .001***	Median significantly differed from the test value, indicating strong disagreement.
Have difficulty learning to read analog clocks (with moving hands and a circular dial)	< .001***	Median significantly differed from the test value, indicating strong disagreement.

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Have sequential and rote memory that lack permanence (have short-term memory only)	.002*	Median significantly differed from the test value, indicating strong disagreement.
Forget spelling and math facts after practice	.009*	Median significantly differed from the test value, indicating strong disagreement.
Spell the same word in several different ways	.126	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Have more difficulty with written output than verbal discussion	.384	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Struggle to sequence ideas on paper	.493	Median did not significantly differ from the test value, indicating a neutral or undecided stance.
Are anxious about reading aloud; leave out words or substitute words with similar meanings or appearance	.245	Median did not significantly differ from the test value, indicating a neutral or undecided stance.

***$p < .001$, *$p < .05$

4.7. Percentages of Agreement on General Characteristics

In terms of general characteristics, findings revealed that high percentages (above 55 percent) of teachers tend to strongly agree/agree that their school has students with 2e who (1) have good speaking vocabulary, but poorer written expression, (2) do well when given sufficient time, but perform poorly on timed tests, (3) study hard and get good grades, but soon forget most of the information, (4) excel in one subject, but just average in other subjects, (5) have wonderful ideas, but have difficulty organizing tasks and activities, (6) have a sense of humor and may use it to distract the class, and (7) understand concepts easily, but get frustrated with the performance requirements, including speed, resource usage, and response time (see Table 7).

Table 7: Percentages of Agreement on General Characteristics

General characteristics	1	2	3	4	5	4+5 (Collapsed)
Appear smarter than grades or test scores suggest	3.1	9.4	32.8	39.1	15.6	54.7
Have good speaking vocabulary, but poorer written expression	4.7	7.8	29.7	43.8	14.1	57.9
Participate well in class discussions, but does not follow through with implementation	4.7	17.2	26.6	42.2	9.4	51.6
Have uneven academic skills, inconsistent grades and test scores	3.1	10.9	37.5	32.8	15.6	48.4
Do well when given sufficient time, but perform poorly on timed tests	1.6	12.5	28.1	32.8	25.0	57.8
Study hard and get good grades, but soon forget most of the information	6.3	10.9	25.0	40.6	17.2	57.8
Have excellent problem-solving skills, but low self-esteem	7.8	17.2	35.9	21.9	17.2	39.1
Excel in one subject, but just average in other subjects	1.6	10.9	21.9	45.3	20.3	65.6
Perform well with challenging work, but struggle with easy material	6.3	17.2	40.6	25.0	10.9	35.9

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Are better with reading comprehension than with phonetics (speech)	7.8	4.7	37.5	40.6	9.4	50
Are better at reasoning than computation	3.1	9.4	40.6	37.5	9.4	46.9
Have wonderful ideas, but have difficulty organizing tasks and activities	3.1	7.8	20.3	50.0	18.8	68.8
Are good at computers, but have illegible or slow handwriting	4.7	15.6	32.8	31.3	15.6	46.9
Have a sense of humor and may use it to distract the class	3.1	10.9	25.0	43.8	17.2	61
Good at complex work, but have difficulty with rote memorization	1.6	10.9	42.2	37.5	7.8	45.3
Understand concepts easily, but get frustrated with the performance requirements (speed, resource usage, and response time)	3.1	9.4	25.0	46.9	15.6	62.5
Fatigue easily due to the energy required to compensate	3.1	7.8	35.9	40.6	12.5	53.1

4.8. Percentages of Agreement on Autism, Anxiety, and Depression

In terms of autism, high percentages (over 55 percent) of teachers tend to strongly agree/agree that their school has students with 2e who (1) struggle to read social cues (read other people's thoughts/feelings/nonverbal responses/body language), (2) do not respond appropriately to others' feelings, (3) are rigid (once they have made a decision, it is very difficult for them to change it), (4) are inflexible about tasks (will only do them in one specific way), (5) resist or refuse tasks that they dislike, and (6) have limited eye contact (see Table 8).

Table 8: Percentages of Agreement on Autism**,** Anxiety, and Depression

Autism	**1**	**2**	**3**	**4**	**5**	**4+5 (Collapsed)**
Struggle to read social cues (read other people's thoughts/feelings/nonverbal responses/body language)	6.3	7.8	28.1	46.9	10.9	57.8
Do not respond appropriately to others' feelings	4.7	9.4	23.4	46.9	15.6	62.5
Are rigid (once a decision has been made, it is very difficult for them to change it)	4.7	4.7	32.8	37.5	20.3	57.8
Are inflexible about tasks (will only do them in one specific way)	4.7	9.4	29.7	35.9	20.3	56.2
Resist or refuse tasks that they dislike	1.6	7.8	28.1	34.4	28.1	62.5
Have sensory issues (poor fine/gross motor coordination; difficulty with loud sounds, crowds, close proximity to others, touching/jostling, or transitions)	4.7	14.1	32.8	29.7	18.8	48.5
Experience anxiety, particularly regarding social expectations and conventions/rules of behavior	1.6	10.9	35.9	35.9	15.6	51.5
Have flat affect (blank facial expression, a monotone voice, and a lack of gestures)	4.7	12.5	35.9	32.8	14.1	46.9

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Have difficulty with inferential language, idioms, etc. (are more literal, black and white)	4.7	14.1	46.9	23.4	10.9	34.3
Have limited eye contact	4.7	20.3	18.8	39.1	17.2	56.3
Show strong emotional distress with unexpected changes	3.1	15.6	26.6	32.8	21.9	51.6
Have limited initiation of social interaction and difficulty responding to others' overtures	3.1	17.2	28.1	32.8	18.8	51.6
Anxiety and Depression	1	2	3	4	5	4+5 (Collapsed)
Are very perfectionistic; obsess over unimportant details	4.7	17.2	29.7	35.9	12.5	48.4
Are excessively anxious about tests, presentations, projects, and grades, despite usually obtaining high grades	6.3	15.6	28.1	34.4	15.6	50
Are paralyzed and unable to think clearly with difficult or timed items, until they are able to relax	6.3	17.2	28.1	32.8	15.6	48.4
Worry excessively about things great and small (e.g., school bullying, whether people like them, getting into trouble, getting things done, animals, climate change, extinction)	4.7	14.1	42.2	29.7	9.4	39.1
Fear going to school or try to avoid going to school	9.4	25.0	40.6	15.6	9.4	25
Have phobias, such as fear of separation, fear of the dark, fear of burglars breaking in	4.7	25.0	43.8	17.2	9.4	26.6
Obsess about things (e.g., germs, pollution, contamination, weight) and can't escape such thoughts	10.9	14.1	45.3	20.3	9.4	29.7
Feel compelled to do things multiple times (e.g., wash hands/count many times/ repeat certain actions many times)	9.4	15.6	43.8	18.8	12.5	31.3
Feel hopeless, worthless, or unhappy	18.8	25.0	37.5	12.5	6.3	18.8
Lack motivation	15.6	26.6	28.1	18.8	10.9	29.7
Have very poor self-esteem	14.1	18.8	34.4	21.9	10.9	32.8
Make statements about wishing to be dead or to have never been born.	37.5	12.5	29.7	12.5	7.8	20.3
Make threats of self-harm (e.g., cut themselves with a razor, pull their own hair)	34.4	21.9	23.4	10.9	9.4	20.3
Have a negative or gloomy outlook on life (express many negative things about self or others)	34.4	18.8	25.0	14.1	7.8	21.9

4.9. Percentages of Agreement on Auditory and Sensory Problems

In terms of auditory problems, high percentages (over 55 percent) of teachers tend to strongly agree/agree that their school has students with 2e who (1) do not seem to hear people and need many repetitions before responding, (2 watch other students to find out what to do, (3) do not pay attention when being read to or during lectures, and (4) respond better to directions when shown examples of what is expected (see Table 9).

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Table 9: Percentages of Agreement on Visual Processing, Auditory, and Sensory Problems

Visual processing problems	**1**	**2**	**3**	**4**	**5**	**4+5 (Collapsed)**
Struggle with reading	9.4	26.6	28.1	18.8	17.2	36
Mix up plus and minus signs	14.1	17.2	37.5	17.2	14.1	31.3
Have difficulty lining up numbers in calculations	14.1	18.8	31.3	28.1	7.8	35.9
Have difficulty copying from the blackboard	15.6	23.4	26.6	20.3	14.1	34.4
Put face close to the paper when writing or reading	20.3	18.8	35.9	17.2	7.8	25
Skip lines and lose place in reading	14.1	23.4	29.7	21.9	10.9	32.8
Poor spacing when writing	9.4	21.9	31.3	26.6	10.9	37.5
Tire easily when reading or writing	4.7	15.6	34.4	35.9	9.4	45.3
Make careless errors in written work	3.1	14.1	28.1	39.1	15.6	54.7
Auditory processing problems	1	2	3	4	5	4+5 (Collapsed)
Do not seem to hear people; need many repetitions before responding	4.7	10.9	26.6	34.4	23.4	57.8
Mispronounce words or letter sounds	6.3	14.1	26.6	40.6	12.5	53.1
Confuse similar sounding words (e.g., “agent” and “ancient”)	7.8	15.6	32.8	29.7	14.1	43.8
Make grammatical errors in speech	6.3	10.9	28.1	29.7	25.0	54.7
Misunderstand information	4.7	15.6	40.6	26.6	12.5	39.1
Watch other students to find out what to do	1.6	15.6	26.6	42.2	14.1	56.3
Do not pay attention when being read to or during lectures	6.3	7.8	26.6	37.5	21.9	59.4
Are weak at phonics; poor at spelling and pronouncing unfamiliar words	6.3	9.4	40.6	26.6	17.2	43.8
Have a loud voice, especially when there is background noise	6.3	12.5	35.9	25.0	20.3	45.3
Respond better to directions when shown examples of what is expected	0	14.1	29.7	39.1	17.2	56.3
Sensory processing problems	1	2	3	4	5	4+5 (Collapsed)
Are exhausted after prolonged listening, particularly in the afternoon	1.6	12.5	25.0	39.1	21.9	61
Are clumsy and awkward	7.8	10.9	40.6	28.1	12.5	40.6
Have an odd pencil grip	6.3	12.5	32.8	37.5	10.9	48.4
Do not hold paper in place when writing	14.1	9.4	32.8	34.4	9.4	43.8
Have illegible handwriting and tend to avoid writing	6.3	17.2	29.7	29.7	17.2	46.9

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Are poor at sports	7.8	17.2	35.9	25.0	14.1	39.1
Wears very similar soft clothes every day	7.8	9.4	50.0	18.8	14.1	32.9
Get upset when brushed against accidentally, as in a queue	14.1	14.1	34.4	28.1	9.4	37.5
Props themselves up in the chair rather than sitting up straight	12.5	9.4	32.8	35.9	9.4	45.3
Become easily overstimulated and may throw temper tantrums	12.5	9.4	32.8	35.9	9.4	45.3
Have low energy and tire easily	6.3	20.3	37.5	26.6	9.4	36
Are uncomfortable with crowds	6.3	15.6	31.3	29.7	17.2	46.9
Have difficulty with transitions (adjusting to new situations)	0	18.8	23.4	43.8	14.1	57.9
Have difficulty deciding handedness when younger	6.3	17.2	40.6	23.4	12.5	35.9

Table 10: Percentages of Agreement on Attention Deficit Disorder and Dyslexia

Attention deficit disorder	**1**	**2**	**3**	**4**	**5**	**4+5 (Collapsed)**
Have difficulty waiting for their turn	7.8	18.8	28.1	31.3	14.1	45.4
Acts impulsively without awareness of consequences	1.6	17.2	28.1	37.5	15.6	53.1
Intrudes on others	4.7	18.8	34.4	32.8	9.4	42.2
Are in motion as if “driven by a motor”	3.1	17.2	43.8	29.7	6.3	36
Have difficulty remaining seated	4.7	15.6	34.4	29.7	15.6	45.3
Fidget with hands or feet or squirm in their seat	6.3	10.9	40.6	26.6	15.6	42.2
Are easily distracted	3.1	12.5	25.0	32.8	26.6	59.4
Have highly variable performance on different days or during different periods	1.6	7.8	31.3	35.9	23.4	59.3
Spaces out during assignments and homework, often not completing their tasks	6.3	6.3	34.4	34.4	18.8	52.2
Are forgetful; may only remember part of an instruction	4.7	6.3	29.7	40.6	18.8	59.4
Concentrate deeply when interested and not at all when not interested	1.6	9.4	23.4	37.5	28.1	65.6
Respond to partial information, but thinking that they understand fully	1.6	6.3	32.8	31.3	28.1	59.2
Dyslexia	1	2	3	4	5	4+5 (Collapsed)

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Read at a lower level than expected for ability, but have superior reasoning	1.6	10.9	43.8	29.7	14.1	43.8
Struggle with phonological processing and sound-symbol relationships	1.6	15.6	39.1	29.7	14.1	43.8
Show reversals (writing or reading backward)	15.6	20.3	39.1	15.6	9.4	25
Have trouble with right and left	18.8	23.4	31.3	21.9	4.7	26.6
Have difficulty learning to read analog clocks (with moving hands and a circular dial)	10.9	23.4	39.1	12.5	14.1	26.6
Have sequential and rote memory that lack permanence (have short-term memory only)	6.3	20.3	42.2	21.9	9.4	31.3
Forget spelling and math facts after practice	10.9	14.1	40.6	23.4	10.9	34.3
Spell the same word in several different ways	3.1	17.2	39.1	28.1	12.5	40.6
Have more difficulty with written output than verbal discussion	4.7	15.6	34.4	29.7	15.6	45.3
Struggles to sequence ideas on paper	4.7	15.6	31.3	34.4	14.1	48.5
Are anxious about reading aloud; leave out words or substitute words with similar meanings or appearance	7.8	9.4	40.6	28.1	14.1	42.2

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In terms of sensory problems, high percentages (over 55 percent) of teachers tend to strongly agree/agree that their school has students with 2e who (1) are exhausted after prolonged listening, particularly in the afternoon and (2) have difficulty with transitions, for example, adjusting to new situations (see Table 9).

4.10. Percentages of Agreement on Attention Deficit Disorder and Dyslexia

In terms of attention deficit disorder, high percentages (over 55 percent) of teachers tend to strongly agree/agree that their school has students with 2e who (1) are easily distracted, (2) have highly variable performance on different days or during different periods, (3) are forgetful and may only remember part of an instruction, (4) concentrate deeply when interested, but not at all when not interested, and (5) respond to partial information, but thinking that they fully understand (see Table 10).

5. Discussion

5.1. Implications

Finding imply that high percentages of teachers tend to strongly agree/agree that their school has students who exhibit seven of the general 2e characteristics. For example, 68.0 percent reveal that they have students who have wonderful ideas, but have difficulty organizing tasks and activities, while another 65.6 percent indicate that they have students who excel in one subject, but obtain just average scores in other subjects.

In terms of autism, high percentages of teachers tend to strongly agree/agree that their school has students who exhibit five of the characteristics of autism. For example, 62.5 percent disclose that they have students who do not respond appropriately to others' feelings or resist tasks that they dislike. Additionally, high percentages of teachers (57.8 percent) tend to strongly agree/agree that their school has students who struggle to read social cues, including reading other people's thoughts/feelings/nonverbal responses/body language.

In terms of auditory processing, high percentages of teachers tend to strongly agree/agree that their school has students who exhibit four types of auditory processing problems. For example, 59.4 percent indicate that they have students who do not seem to hear people and need many repetitions before responding, while another 57.5 admit that they have students who do not pay attention when being read to or during lectures.

In terms of sensory processing, high percentages of teachers tend to strongly agree/agree that their school has students who exhibit two types of sensory processing problems. For example, 61 percent divulge that they have gifted students who feel exhausted after prolonged listening, particularly in the afternoon, while another 57.9 percent express that they have students who have difficulty with transitions, for instance, adjusting to new situations.

In terms of attention deficit disorder, high percentages of teachers tend to strongly

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agree/agree that their school has students who exhibit five of its characteristics. For example, 65.6 percent maintain that they have students who concentrate deeply when they are interested but not at all when they are not, while another 59.4 percent disclose that they have students who are easily distracted and forgetful.

In general, current findings indicate the presence of students with 2e at Sabah's secondary schools although the precise number is not known. According to Maddocks (2018), in the USA, the number of students with 2e is approximately 360,000 students or two to five percent of gifted children, while Urbatsch (2024) affirmed that an estimated six percent of children with special needs are also gifted. Besides, Cheek et al. (2023), who reviewed the empirical literature on 2e, found a prevalence rate of 0.14 based on the most elastic standards in terms of its definitions and inclusion criteria.

In a study, Aziz et al. (2021) discovered that the estimated population of Malaysians who are gifted between the ages 0-14 years is 8.9 million, while the Malaysian Education Ministry has registered 87,574 students with special education needs in June 2019 (Kannan, 2019). Since individuals with 2e are found within every socioeconomic, cultural, racial, and ethnic population, and are present in most schools (National Education Association, 2006), a certain percentage of the gifted in Malaysia can be 2e. While there is no official national census for the exact percentage of Malaysian students with 2e, research and international benchmarks suggest that they likely represent between two to and five percent of the school-age population.

Lastly, according to the 2025 population estimates, Malaysia is home to 9.03 million children under the age of 18, representing 26.4 per cent of the total population of 34.23 million (Ministry of Economy, Department of Statistics Malaysia, 2025). In the island state of Sabah, where this study was conducted, the 2025/2026 school session involved 526,370 students in 1,298 schools (Daily Express, 2025). Using the International Dyslexia Association's (2020) lower-bound prevalence figure of two percent, it can be conservatively estimated that 180,000 Malaysian students are 2e. Applying these estimates to Sabah suggests that at least 10,527 of its student population may be 2e.

5.2. Recommendations

5.2.1. Dually Differentiated Programs

Baum et al. (2014) postulated that, although students with 2e possess gifts and disabilities simultaneously, educational settings often address the two exceptionalities separately, rarely considering the influence of one exceptionality on the other. Further, the default is to focus on disability areas, whereby strengths and special needs are again addressed separately. On the other hand, many professionals, educators, and parents tend to believe that children with 2e will flourish when their areas of challenge are appropriately accommodated. However, accommodations often focus on meeting grade-level objectives without factoring in the gifted characteristics and potential. For example, while students with learning disabilities often receive accommodations that allow them to successfully navigate their challenges, their gifts and talents are largely ignored. They may be receiving extended time on tests and other special education activities, but they may still misbehave or lose motivation unless they can also develop their gifts or talents. Therefore, students with 2e need a dually-differentiated program that nurtures their gifts and talents, while accommodating their learning challenges.

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Additionally, Baum et al. (2014) recommended a dually-differentiated program based on a strengths-based approach, which encompasses five critical factors that are necessary for the growth and development among the twice-exceptional. First, students with 2e need a psychologically safe environment that can help establish a favorable learning community, while allowing teachers to do emotional check-ins (e.g., mood assessment, emotional temperature check, feelings check, wellbeing check) with students. Second, teacher, students, and parents need to develop greater tolerance for asynchrony. Teachers should employ differentiated instruction strategies and implement a socioemotional curriculum for students, while parents should receive fundamental information on 2e. Third, it is crucial to allocate sufficient time to allow students with 2e to develop their cognitive, affective, and psychomotor skills, for example, by embedding extra time in their individualized educational plans. Fourth, schools should foster positive interpersonal relationships through extracurricular clubs that underscore common interests and student mentoring. Fifth, schools should adopt a strengths-based, talent-focused approach to identify strengths and talents amongst students with 2e to design appropriate learning plans to meet their exceptional needs, besides allowing for differentiated learning products and outcomes. Lastly, schools should provide a challenging curriculum to encourage students with 2e to explore their gifts and talents, while adequately coping with their special needs.

5.2.2. Strength-based Approach

According to Reis et al. (2022), a strength-based approach should be utilized to educate students who are academically talented with autism spectrum disorder (2e), who have the potential to succeed in high school and later in college. The approach consists of strategies that can help the twice-exceptional to be academically successful in high school, while preparing for competitive tertiary experiences. It emphasizes that the gifted are individuals first, and that they deserve opportunities to develop their talents and interests. It also underscores that all students deserve the appropriate support in areas of challenge so that they can fully capitalize on those talents and interests. By fore-fronting students' assets and capabilities, a strength-based approach enables them to leverage their inner resources, which places them in a better position to improve their difficulty areas; as students grow in one area, they also allow other areas to flourish.

In other words, a strength-based approach for the twice-exceptional prioritizes fostering their superior abilities, talents, and interests first, while providing targeted support for their learning challenges. This method enhances students' confidence, engagement, and self-esteem by allowing them to leverage their aptitude and mental resolve to create a more favorable, inclusive learning environment (Davidson Institute, n. d.). First, this approach underscores the importance of identifying students' talents early; assessments, interest inventories, or observation can be used to identify students' areas of passion or high aptitude (e.g., complex systems, creative arts, advanced knowledge). Second, it provides curriculum compacting and enrichment by replacing repetitive, mastered work with more in-depth projects or advanced learning opportunities that match students' interests. Third, it emphasizes strengths-based instruction through the application of students' fortitude as the entry point for learning new or challenging material; for example, students can learn history through their appreciation of art or antiques. Fourth, it provides accommodations for challenges that allow teachers to implement, but without over-focusing on, necessary supports (assistive technology, flexible seating, extended time to mitigate difficulties). Finally, it supports

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socioemotional needs development by encouraging students to self-advocate, reduce perfectionism, and develop resilience.

In their study, Lawson et al. (2025) explored the effectiveness of a strengths-based approach in supporting a student with 2e within a mainstream secondary school. Findings showed that success of the strength-based approach depends on creative timetabling, structural flexibility, and teacher empowerment. Findings imply that strengths-based programming should be implemented within flexible institutional structures with low-stakes assessment regimes, alongside a non-standardized curriculum and adequate resourcing. Overall, students with neurodivergent with asynchronous learning profiles are better served when their interests and strengths are integrated into their curriculum. Overall findings imply that strengths-based educational planning, together with teacher-led inquiry and collaboratively planned, personalized practices can enhance the learning engagement and wellbeing amongst students with 2e.

5.2.3. Awareness of 2e Characteristics

To support the academic achievement and socioemotional wellness of students with 2e, teachers and parents need to develop greater awareness on 2e characteristics (Fairfax County Public Schools, n. d.). First, they need to acknowledge that students can be gifted and have a learning disability simultaneously. Students with 2e often have high cognitive abilities alongside learning challenges or disabilities. Understanding their needs can be difficult because strengths may mask disabilities, or vice versa. It is therefore important for schools to provide instruction based on students' strengths, while providing support for areas of challenge.

Second, students should receive special education services in advanced academic programs and courses (Fairfax County Public Schools, n. d.). Students with 2e need accommodations and specialized instruction and services; therefore, they should have access to an appropriate high-level curriculum. Moreover, individualized education programs should be delivered in various settings, including advanced academic classes. Students should have the right to select any course for which they have satisfied the prerequisites.

Third, students with good grades are eligible for special education services (Fairfax County Public Schools, n. d). Schools should adopt the "whole child" concept when making eligibility decisions, instead of using grades as the sole indicator of progress or ability. They should evaluate students if disabilities are suspected by using a variety of assessment tools and strategies to gather relevant functional, developmental, and academic information about them. In other words, schools should not rely on any single measure or assessment as the sole criterion for determining whether a student has a disability or whether an educational program is appropriate for him or her.

Fourth, it is acceptable to reduce work or provide extra support for students with 2e even though they are gifted or talented (Fairfax County Public Schools, n. d). Equity does not mean that all students get the same treatment, but rather, all students get what they need. Students with disabilities, including those who are also gifted, are entitled to receive accommodations and specialized instruction and services required by the ministry of education, which strives to level the playing field and to empower students to acquire knowledge and skills without being hindered by a special need.

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Fifth, besides mastering fundamental skills, students with 2e should be given opportunities to engage in high-level curriculum and instruction (Fairfax County Public Schools, n. d). Instead of focusing on skill deficits alone, they should also be given access to interesting, relevant, emotionally engaging activities to increase their motivation. A strengths-based approach using advanced curriculum with supports and accommodations is more likely to yield higher academic success amongst students with 2e.

Sixth, many students with 2e do not develop cognitively and emotionally at the same level and pace. While they may have advanced intellect, some may be socially or emotionally immature. To address this uneven development, teachers need to help them explore their areas of strength, while continuing to support the areas of need through explicit instruction and accommodations. For example, students' social skills, hypersensitivities, and executive functioning skills can be improved with awareness, compassion, time, strategic instruction, and interventions (Fairfax County Public Schools, n. d).

Lastly, while students who are gifted tend to be self-motivated, high achievement does not come easily to some of them. Many students with 2e possess gifts and talents; however, they may be unable or unwilling to handle challenging academic tasks due to learning disabilities, poor executive functioning skills, insufficient academic support, or socioemotional problems. Over time, they may develop low self-esteem and become less willing to engage in challenging academic tasks. Therefore, schools need to offer them more support and empathy to help them navigate academic challenges, persevere through inevitable problems, and maximize their potential (Fairfax County Public Schools, n. d).

5.2.4. Effective Strategies for Supporting 2e

In their literature review, Josephson et al. (2018) summarized several strategies for supporting students with 2e. First, schools should try to balance their attention between the strengths and needs of students with 2e to appropriately help them meet their individual education needs. Students' strengths and interests should be addressed before their remediation areas because talent development is the most crucial component of 2e education. To identify the specific strengths on which to capitalize, teachers should consider the areas in which students excel, topics that they demonstrate advanced knowledge, and ways they mitigate problems. Additionally, family input, assessments, checklists, and interviews should be used to determine the specific strengths of students with 2e. When their strengths are incorporated into their educational experiences, students will develop a more positive outlook on their difficulties.

Second, teachers should capitalize on the strengths of students with 2e by accommodating to their cognitive processing styles. For those who learn best through restating new content, teachers can provide multiple opportunities for student response. For students who learn best when subject matter is represented in multiple ways, teachers should allow students to use different modalities (visual, kinesthetic, tactile, auditory) to process information. Another way that teachers can leverage students' strengths is by setting a fair level of challenge for them. Students who are given the opportunities to solve problems and demonstrate their creativity often become more

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willing to participate in challenging activities. For example, gifted and creative students with a writing disability (2e) can often create products that go beyond traditional paper-and-pencil approaches; they may best illustrate what they have learned by creating original video content or photo essays (Josephson et al., 2018).

Third, schools should provide instruction that addresses the special needs of students with 2e. Targeting students' needs while placing less emphasis on their disabilities often increases their willingness to attempt difficult tasks, besides encouraging them to become more creative and productive. Since the needs of students with 2e are often masked by their obvious strengths and gifts in other areas, schools should implement problem-solving, child study student support, or multidisciplinary teams to help identify students' learning or socioemotional needs (Josephson et al., 2018).

Fourth, educators need to balance between identifying and addressing the needs of students with 2e, while simultaneously avoiding unnecessary or inappropriate labeling. Teachers should explicitly link new content to previous learning to ensure that students with a comorbid learning disability can associate novel content with the old; for example, they should encourage students to demonstrate their prior knowledge on a novel topic, complete an advance organizer about the topic, or complete a knowing/ wondering/learning chart. For students who are disorganized, teachers should provide structure; for example, they can use color-coding materials to assist students in locating and storing subject-specific belongings in and out of the classroom. Providing students with a note-taking structure can also help them organize new content. Lastly, to help students with organizational difficulties, teachers can provide an overview of the assignment and establish short-term goals and checkpoints to optimize learning (Josephson et al., 2018).

Fifth, schools should support the socioemotional needs of students with 2e, who tend to experience greater asynchronicity compared to their neurotypical age-peers. Traditional academic interventions for remedial purposes are often counterproductive for students with 2e, who are well aware of their strengths and difficulties, besides feeling inadequate. Students with 2e may display elevated levels of anxiety, poor academic self-concept, and executive functioning deficits due to the significant discrepancies between their strengths and weaknesses. Teachers can support their socioemotional needs by acknowledging their exceptional abilities, while simultaneously providing appropriate accommodations, therapeutic interventions, and specialized instruction. Besides, teachers can also implement evidence-based interventions to help them improve their social skills and executive functioning, besides offering therapeutic supports and accommodations that provide alternative ways for them to master material and demonstrate comprehension (Josephson et al., 2018).

Sixth, students with 2e need a nurturing and safe classroom environment that enhances their potential. Teachers should incorporate a variety of features and strategies into their lessons to propagate a supportive environment that is calm and predictable, in which individual differences are acknowledged and appreciated. Instruction-wise, teachers can encourage students with 2e to maximize their learning capacity by providing appropriately challenging activities, aligning assessment with students' strengths and weaknesses, and incorporating multiple modalities and flexible learning groups. Additionally, to support the socioemotional needs of students with 2e, teachers should define excellence in terms of individual student progress and model the use of compensation strategies. To help develop a nurturing classroom environment for

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students, teachers should identify and eradicate “banished” or “dead” words. For example, they should avoid labelling the gifted and talented as brainiacs, nerds, or bookworms, which often result in popularity loss, exploitation, or unrealistic expectations. Similarly, they should avoid labelling students in terms of their disability status (e.g., slow, disabled, impaired, handicapped) that often leads to low expectations of their capabilities (Josephson et al., 2018).

Lastly, collaboration in planning and instruction for students with 2 should be prioritized in schools. It should include a problem-solving team for 2e that not only involves remediation staff, but also designated providers of gifted services. These two professional groups should collaborate to offer a balanced program that addresses students’ disability, while also providing the appropriate level of challenge and opportunity in the areas of giftedness. Additionally, various stakeholders can serve as the foundation for deep and relevant collaboration and planning; teachers and parents can collaborate in fostering a school climate where "difference" is viewed as natural variation rather than a deficit or flaw. Since parents often have deeper insight into their children’s strengths, preferences, creativity, and motivation level, they can furnish important details about their children’s attributes, which can help schools determine the most appropriate programming options (Josephson et al., 2018).

5.2.5. Professional Development Programs and Collaboration

According to Alsamani et al. (2026), professional development programs are essential to equip educators with the skills and knowledge needed to identify and address the exceptional needs of students with 2e. Training should include strategies for recognizing overlapping characteristics of giftedness and learning disabilities, as well as practical approaches for providing differentiated instruction. Besides, specialized workshops on 2e can offer teachers the tools to better identify and address 2e issues, for example, when they see a student underperforming despite high potential, they need to evaluate if the issue is an underlying learning disability or a lack of motivation.

As aforementioned, teachers need specialized training in differentiated instruction to customize content, process, and products to accommodate the diverse processing styles, abilities, and paces among students with 2e; for example, dual-trained teachers can often equitably distribute resources based on specific student needs and utilize materials that reflect various cultures, ethnicities, and abilities to ensure that all students feel represented. Moreover, a resource room staffed with teachers skilled in both gifted and special education can provide a more accurate assessment of students’ abilities and challenges. Students with 2e should be evaluated by professionals who understand both their strengths and learning difficulties; therefore, teachers should be able analyze the complex interplay between giftedness and learning disabilities, besides tailoring assessments and interventions for 2e. In brief, specialized training that blends both gifted and special education equips teachers with the dual expertise to comprehensively assess both advanced abilities and specific learning needs in a thorough, accurate manner (Alsamani et al., 2026).

Dual-trained teachers are able to design tasks to challenge students, while identifying their underlying learning disabilities by observing how students approach and solve problems. They are also able to utilize various diagnostic tools to cater to students with both gifted and special education needs; for example, they can adopt complex problem-solving tasks alongside traditional assessments to spot discrepancies indicating 2e.

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Additionally, dual-trained teachers can also recognize the subtle signs of 2e; for instance, they can look for high verbal reasoning skills combined with difficulties in written expression or math, which signal the presence of both giftedness and a learning disability (Alsamani et al., 2026).

Collaboration between specialist teachers and mainstream classroom teachers is particularly relevant when addressing the needs of students who are both gifted and have learning disabilities (2e). It is one of the effective ways to support 2e because teachers with different pedagogic knowledge and skills can work together to meet students' needs more effectively. Collaboration helps combine specialized knowledge with regular classroom experiences to create a more inclusive learning environment. Regular teachers who work closely with specialist teachers are able to develop individualized education plans (IEPs) that cater to students' advanced learning needs and learning disabilities. For instance, regular teachers can collaborate with specialist teachers to develop individual educational plans that simultaneously meet students' advanced learning needs, while accommodating to their learning disabilities. Collaboration also provides balanced support in an integrated classroom because regular teachers and specialists can co-plan lessons and share strategies to create dual-exceptionality programs that make learning more accessible and engaging for students with 2e (Alsamani et al., 2026).

5.2.6. Responsibility and Teacher Preparation

Responsibility is an ongoing debate in the education of students with 2e. All teachers, regardless of their qualifications and specializations, should take responsibility in providing the essential resources and guidance to effectively support 2e. This issue is particularly relevant when considering current teacher support for students with 2e. Central to the issue of responsibility is accountability for the educational needs amongst students with 2e. While specialized educator leadership provides the necessary expertise, all teachers should be trained in 2e identification and support to promote an inclusive learning environment. Besides, the ministry of education and school leaders should ensure that regular teachers receive adequate training in both gifted and special education to increase their understanding of 2e characteristics. Additionally, teachers should receive clear guidelines and resources to focus on talent development to boost students' confidence, while leveraging their areas of interests to increase engagement in challenging subjects. Lastly, a concerted effort to standardize support across all schools is needed to create a unified and sustained approach that addresses both exceptionality and disability, ensuring that both dimensions are supported (Alsamani et al., 2026).

Finally, robust professional development initiatives are important for preparing all educators in supporting students with 2e. They equip teachers with the knowledge and skills to recognize and address the unique challenges associated with 2e, ultimately enhancing their pedagogic practices and student outcomes. Regular classroom teachers should receive comprehensive 2e training to better identify students needing additional support through tailored strategies. Further, 2e training can also enhance their teaching efficacy and confidence. Moreover, ongoing professional development is essential to keep teachers updated in terms of research and innovative pedagogic practices related to 2e. On the other hand, regular workshops can have a positive impact on collaboration because they provide a common framework for staff, besides facilitating collaboration and developing cohesive support plans for students with 2e. Further, teacher training is also beneficial in terms of resource utilization because it encourages teachers to

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effectively use assistive technologies and tools to improve students' learning experiences. It also encourages them create a more inclusive and supportive environment, besides empowering them to refine their pedagogic skills and adopt best practices to benefit students with 2e (Alsamani et al., 2026).

5.3. Final Thought

Although this study generates new knowledge on 2e, generalizability of findings should be improved. Future researchers exploring 2e should define the sample by precisely identifying the group through random sampling to ensure that it is representative of the entire population. Additionally, future researchers should encourage higher participation rates to reduce bias associated with more/less motivated respondents. The study should also be replicated in different contexts or with different samples to determine if findings are consistent. Finally, future researchers should clearly document their methodology, sample characteristics, and any contextual factors so that others can accurately assess the applicability of findings in relation to particular situations.

Ethics Approval and Consent to Participate

This study has strictly adhered to all ethical procedures involving the use of human subjects. Informed consent was obtained from all respondents who were ascertained of their anonymity, with their responses kept strictly confidential. They were also informed that the study was of low risk and that they could stop participating any time without any repercussions.

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Conflict of Interest

The authors report no potential conflict of interest regarding this study in terms of the research or publication of this article.

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