Research Papers

Critical Issues in the Identification of Twice-exceptional Children

A Systematic Review with Qualitative Synthesis

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Abstract

The present study aims to identify key issues in the identification of twice-exceptional (2e) children by systematically reviewing existing literature to improve learning opportunities and develop an effective identification toolkit. A range of databases including Google Scholar, PubMed, ERIC, and EBSCO, were used to collect relevant articles published between 2000 and 2020. The study applied clear inclusion criteria, focusing on peer-reviewed and full-text studies specifically related to the identification of twice-exceptional children. This qualitative synthesis analyses data from 17 selected studies to explore the critical challenges involved in identifying 2e children. From this review, a total of nine critical issues were identified, highlighting significant barriers in recognising twice-exceptionality. These issues include a lack of definition, no clear identification criteria, compensation, masking, insufficient training for teachers, lack of professionalism, and an overemphasis on learning disabilities rather than recognising children's potential strengths. The analysis emphasises the need for better awareness and understanding among teachers, caretakers, educators, and policymakers. Focusing on these critical issues, this study seeks to illuminate the pathways for improved identification methods. It encourages a shift towards emphasising the strengths of 2e children rather than focusing on their challenges. Such an approach is vital in providing individualised support to maximise their potential for

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success. Ultimately, the findings of this study could significantly contribute to enhancing identification processes, thereby offering better opportunities for 2e children to thrive in their educational and personal development.

Keywords: *Twice-exceptional children, identification, PRISMA, critical issues.*

Introduction

Over the past few decades, researchers, educators and parents have faced a persistent challenge: understanding children who excel in certain areas yet struggle significantly in others. These children, whose abilities challenge simple categorisation sparked debates: were they exceptionally talented or were they struggling learners? Today, the term 'twice-exceptional' encapsulates this complexity. Twice-exceptional (2e) children are those who exhibit high intellectual ability in specific areas while also facing neurological, developmental and learning-related limitations such as, ADHD, autism, specific learning disabilities (Gagne, 2013; Nielsen, 2002; Prior, 2013). These simultaneous exceptionalities create a unique profile that challenges conventional teaching and learning systems. Twice-exceptional learners can perform remarkably well in areas like Mathematics, Art and language but their concurrent disabilities can obscure these talents making identification (Assouline and Foley, 2007). These students often remain a challenge in schools, as the coexistence of their talent and challenge presents a mystery for teachers. The lack of appropriate identification and support system frequently hinders the educational progress of 2e children, despite their vast intellectual potential (Baldwin et al., 2015; Foley-Nicpon et al., 2011). Despite increasing emphasis on twice-exceptionality, identifying these students remains a critical issue. Numerous studies point out the complexities of correctly diagnosing 2e children (Assouline and Foley, 2007; Rizza and Morisson, 2007). Teachers often lack the tools, awareness and training required to recognise 2e students' unique needs. This situation leaves teachers struggling to provide suitable educational opportunities, thus, failing to nurture these students' extraordinary abilities while addressing their disabilities. A key challenge is bridging the gap between gifted education and special education, which historically have operated in isolation from one another (Assouline and Foley, 2007; Assouline et al., 2008).

Twice-exceptionality presents itself as a convergence of exceptional talents with significant challenges, leading to substantial confusion for both families and educators. The absence of a standardised identification process further complicates matters, making it difficult to create suitable educational plans for 2e children. Effective identification and support are crucial for a child's academic, emotional, and social development. Researchers have long argued for comprehensive identification tools to ensure that these children receive both the necessary academic challenges and support for their disabilities (Montgomery, 2015). The uniqueness of 2e children lies in their ability to excel in one or more domains while facing considerable learning hurdles. This duality has led researchers to classify them under various terminologies, such as, Dual and Multiple Exceptionalities (Montgomery, 2015) or Gifted with Learning Disabilities (Assouline and Foley, 2007). Failure to recognise and diagnose these children early means that they miss opportunities for growth in their areas of strength, and do not receive the necessary assistance for their struggles. Teachers' unawareness often results in inaccurate assessments, limiting these children's potential both academically and socially. Addressing these challenges through systematic identification processes, and increased awareness is critical for harnessing the unique capabilities of 2e learners, as well as empowering their families and educators.

The current systematic review aims to address these critical issues in relation to the identification of 2e children. By thoroughly analysing existing research, the study seeks to highlight how best to support this often-overlooked group; ultimately paving the way for improved educational practices that cater to their unique needs. The main objective of this study is 'to systematically analyse the methods, types of disabilities, publication characteristics, and major findings in existing literature to identify critical issues and challenges in the identification of twice-exceptional children.' This objective reflects the study's intent to comprehensively review and synthesise available research in order to understand and highlight the complexities involved in identifying 2e children.

Twice-exceptional

Defining giftedness in children with disability(s) presents significant challenges. These challenges are magnified when addressing the concept of 'twice-exceptionality', which refers to children who

have exceptional abilities in certain areas while simultaneously experiencing disabilities. Twice-exceptionality is characterised by the coexistence of exceptional talents and learning difficulties in the same individual (Baum, 2017; Montgomery, 2015). The National Twice-Exceptional Community of Practice (2014) describes these individuals as having both exceptional abilities and disabilities, leading to a unique set of challenges. As Baldwin et al. (2015) explain, sometimes the exceptional ability can overshadow the disability, making the disability invisible, and vice versa. In some cases, both the ability and the disability may mask each other, leaving neither adequately recognised or addressed. Further defining twice-exceptionality, Reis et al. (2014) suggest that these children possess the potential for high or creative achievements in one or more domains, while also experiencing one or more disabilities. This raises a critical question: how can a child be both gifted and disabled? Twice-exceptional learners often navigate two contrasting worlds—one that celebrates their strengths and another that struggles to understand their complexities and inconsistencies (Cash, 1999). Unfortunately, in an education system focused on outcomes and results, this duality can be difficult for educators to reconcile. Many teachers hold the misconception that gifted students cannot also have special educational needs.

There is still no consensus among psychologists, educators and teachers on a comprehensive definition of giftedness in children, especially when learning disabilities are also present. Gifted children are often seen as having the potential to excel in one or more areas of human endeavour, yet recognising this potential can be difficult when it coexists with disabilities. Several terms in the literature refer to this combination of exceptional ability and disability, including Dual and Multiple Exceptionalities (DME) (Montgomery, 2015), Gifted with Learning Disabilities (GLD), and twice-exceptionality (Prior, 2013). According to Foley-Nicpon et al., (2011 and 2013), as well as Prior (2013), the terms GLD and 2e are generally used interchangeably to describe the coexistence of giftedness, and learning disabilities. In essence, 2e children are those who demonstrate exceptional capabilities in one or more areas (Gagne, 2010), while also facing challenges or limitations in learning due to one or more disabilities (Nielsen, 2002; Prior, 2013). Identifying and addressing the needs of these children remains a complex process, but understanding their unique combination of strengths and weaknesses is crucial for providing appropriate support and intervention.

Twice-exceptional Identification

Theories surrounding identification and assessment are often linked to behaviourist, and psychometric approaches. The behaviourist theory, as discussed by experts, relies on stimulus-response testing to assess the extent to which learning objectives have been achieved. This approach focuses on observable behaviours and outcomes, allowing educators to gauge students' attainment levels based on their responses to specific stimuli. On the other hand, psychometric theory emphasises the importance of standardised testing in measuring achievement and behavioural constructs, such as, abilities, traits and attitudes. The psychometric approach is widely used in educational settings because it provides quantifiable data that can be used to compare students' performances across different domains. These theories form the foundation of many assessment techniques used today (Bildiren, Farat and Tahsin, 2020).

Identifying 2e children, those who are both gifted and disabled, has long posed significant challenges for educators, school psychologists, and other school personnel (Crepeau and Bianco, 2011). The failure to fully nurture the potential of some of the most creative and innovative individuals is a growing concern. The complexity of asynchronous development, cognitive exceptionalities and unique learning styles, along with assumptions, and stereotypes held by parents and teachers, often hinders accurate identification of these children, placing them at risk of being overlooked. Foley et al. (2011) explain that while gifted children may have coexisting disabilities, identifying them remains a difficult task. For example, a child with advanced verbal skills might struggle with written expression or a student who excels at understanding complex math concepts might struggle with basic tasks like multiplication. These children often have abilities that are far beyond their peers, yet they may struggle with tasks that are perceived as simple, such as completing homework on time (Robert and McKenzie, 2010). To accurately assess these unique students, a comprehensive individualised evaluation that considers intra-individual variability differences in ability within the same child is critical (Foley-Nicpon et al., 2011 and 2013). This assessment should be complemented by additional cognitive, functional, psychological and socio-metric measures.

The absence of a clear definition and identification criteria has exacerbated the challenge of recognising 2e students. Brody

and Mills (1997) suggest that the variation in definitions of twice-exceptionality makes it difficult to establish consistent identification processes. Beckley (1998) agrees, noting that the lack of uniformity in definition complicates the recognition process. To properly identify and assess these children, a combination of techniques is essential. This includes methods that are both gifted-oriented and special education-focused (Beckley, 1998; Nielsen, 2002). However, current identification techniques often fail to capture the unique characteristics of 2e students, as many do not meet the criteria for either gifted or special education programmes (Beckley, 1998). For 2e learners, documentation of underachievement is frequently required to assess the presence of learning disabilities, which can be challenging when giftedness is also present (Beckley, 1998). A range of characteristics should be considered when assessing twice-exceptionality. No single criterion is sufficient for identification, but if multiple indicators are present a more comprehensive evaluation is warranted. Experts generally recommend using a combination of IQ tests, achievement evaluations and other measures such as, teacher rating scales, creative assessments, peer and self-referrals, portfolios, and parent nominations (Beckley, 1998). Parents play an essential role in the identification process and often serve as the most critical advocates for their children (Besnoy et al., 2015; Dawn et al., 2021). They can offer valuable insights by observing their child in various unstructured settings such as, during playtime or interactions with siblings and peers. Their anecdotal observations can provide reliable evidence of potential giftedness (Assouline and Foley, 2007; Assouline et al., 2008 and 2010). This role is especially important for young 2e children, as parents can provide early evidence of their unique abilities and challenges (Dawn et al., 2021). Furthermore, it is vital for parents to continuously develop their advocacy skills to support their children effectively, which requires on-going collaboration with educators (Assouline and Foley, 2007; Assouline et al., 2008 and 2010).

Twice-exceptional in India: Long Road Ahead

Twice-exceptionality refers to individuals who are both gifted and possess a learning disability or another exceptional condition. It is an emerging concept in India and its integration into educational discourse remains in its infancy. The process of identifying 2e children in India is particularly challenging due to several systemic and cultural factors. India's educational system has long focused

on providing mass education, often neglecting the needs of gifted students, let alone those who are 2e. The nation is still grappling with the broader issue of formulating a national strategy for gifted education, which hampers any immediate progress towards addressing the nuanced needs of 2e students (Kurup and Dixit, 2016). As noted, the initiative for twice-exceptionality could take years to fully develop due to the prevailing focus on standard educational objectives rather than fostering the unique needs of exceptional learners.

India has a vast talent pool, with 464 million youth making it one of the youngest nations in the world (Kurup and Dixit, 2016). However, the mechanisms to identify and nurture giftedness, especially among those who also face disabilities remain underdeveloped. Millions of gifted children go unidentified and those with dual exceptionalities are even more likely to fall through the cracks. The existing educational policies such as, the National Curriculum Framework (2005), do not place significant emphasis on gifted education, and the concept of twice-exceptionality is almost entirely absent from policy discussions. Unlike in countries like the United States of America, where the field of twice-exceptionality has been researched for decades, India lacks a critical body of research on the subject. This gap in knowledge and resources reflects a broader issue in India's approach to specialised education (Kurup and Dixit, 2016). Moreover, no comprehensive national database or tracking system exists to identify and support 2e students, making it difficult to even begin addressing their needs systematically.

The absence of gifted education in India's policy context further exacerbates the issue. There is no national plan or formal recognition of the need for creativity and exceptional cognitive abilities in the curriculum. As a result, teachers and educators are often ill-equipped to recognise or support students who may be both gifted and have disabilities. The emphasis in Indian education remains largely on standard learning and remediation for students with disabilities, rather than fostering the potential of those who exhibit dual exceptionalities. The challenge of twice-exceptionality in India is compounded by a lack of awareness among educators, administrators and policymakers, leaving a significant portion of gifted students with learning disabilities unsupported. The absence of both research and structured identification processes makes it difficult to create interventions that could help these students thrive (Kurup and Dixit, 2016).

Given this context, a focus on developing a national database and systematic identification process for 2e students is essential. Educational policies must be reformed to include provisions for both giftedness and learning disabilities as interconnected issues, with special attention given to twice-exceptional students. Furthermore, raising awareness, and building capacity among educators is critical in recognising and fostering the unique needs of this population. Without appropriate measures, India may loose the potential contributions of a significant portion of its youth who could otherwise excel with the right support. The road ahead is long, but laying the groundwork now could have profound impacts on both individuals and the nation as a whole.

Research Questions

To thoroughly analyse the existing literature, the investigators formulated four main research questions based on this objective are as follows:

RQ1: How do different research methods influence the identification of twice-exceptional children across existing literature?

RQ2: What types of disabilities are most frequently associated with twice-exceptional children?

RQ3: How do journal characteristics (e.g., journal type, publisher, focus area) impact the framing and focus of studies related to the identification of twice-exceptional children?

RQ4: What are the major findings and critical issues identified in the literature regarding the identification of twice-exceptional children?

These research questions guide a systematic exploration of the issues of identifying twice-exceptional children, highlighting key areas for improvement to enhance educational support and outcomes.

Methodology

The present study used a systematic literature review, along with the selection and detailed analysis of data, following the PRISMA 2020 guidelines. A qualitative synthesis was employed to understand the significance of the included articles. The qualitative synthesis integrated scientific approaches and authorial interpretation to systematically present the collective meaning of the research findings. Based on PRISMA 2020 guidelines, the study addressed

20 relevant items. For item 1, the investigators identified the report as a systematic review in the title. Item 2 was fulfilled by providing a detailed abstract. In the introduction, item 3 (rationale) explained the current state of knowledge and the uncertainties, emphasising the importance of the review. Item 4 was met by clearly stating the objectives and research questions. In the methods section, item 5 (eligibility criteria) outlined the study characteristics for inclusion, and item 6 (information sources) specified the databases used and the date of the last search. Item 7 (search strategy) detailed the search terms and strategy for each database. For item 8 (selection process), the first author collected the articles, the second author verified them, and the third author supervised the final selection. Item 9 (data collection process) involved screening and verifying articles, ensuring that all met the eligibility criteria, and item 10 defined the outcome domains and time frames for which data were collected.

In the results section, item 13a (synthesis methods) described how studies were deemed eligible for synthesis. For item 16a (study selection), a PRISMA flow diagram illustrated the screening process, including records identified, excluded and selected. Item 16b provided citations for excluded studies and item 17 presented key characteristics of each included study. In the discussion, item 23a (interpretation) explained the results in relation to other evidence. Items 23b and 23c covered the limitations of the included evidence and the review process itself, respectively. Item 23d discussed the implications for practice, policy and recommendations for future research. The study met item 25 by acknowledging financial support, and for item 26, no competing interests were declared. Finally, item 27 made the availability of data, code and materials clear, offering them upon request.

Search Strategy

The search strategy was a predetermined plan for identifying relevant studies for the systematic review. The databases searched included Google Scholar, PubMed, ERIC, and EBSCO, covering a period from 2000 to 2020. The first author conducted a total of eight searches, with the first seven conducted in Google Scholar, ERIC, and EBSCO due to their focus on educational research. For the final search, PubMed was used to gather additional articles. Search keywords across various databases included: 'twice exceptional children' and 'identification', with 'academically gifted', 'dyslexia',

'dyslexic test', 'gifted', 'gifted with learning disability', 'disability(s)' in our search on Google Scholar. We conducted searches for ERIC using terms like 'dual exceptional children', 'identification', 'academically gifted', 'dyslexia', 'dyslexic test', 'gifted', and 'gifted with learning disabilities'. The investigators used the terms 'twice-exceptional student', 'identification', and 'gifted with learning disability' on PubMed. We conducted searches on EBSCO using the terms 'twice-exceptional children and identification', 'gifted with learning disabilities', and 'other disability(s)'. The selection process is illustrated in Figure 1.

Inclusion and Exclusion Criteria

The researchers implemented clearly defined inclusion and exclusion criteria to ensure the relevance and quality of the studies selected for the systematic review. Studies were only included if they were: (1) Studies that underwent a formal peer-review process were included, ensuring that they met rigorous academic standards; (2) The review included studies that provided full-text access, allowing for a thorough analysis of the research; (3) The included studies had to specifically relate to the identification of twice-exceptional individuals (those with both high ability and a disability), ensuring that the research was directly relevant to the review topic; (4) To maintain relevance to current practices and developments, the review included studies published within a 20-year period from 2000 to 2020; (5) The review only included studies written and published in English to ensure consistency in language and interpretation.

Studies were excluded if they did not meet these criteria and if they were: (1) Studies that were not peer-reviewed such as, opinion pieces, editorials or unpublished theses, were excluded to maintain the quality and reliability of the findings; (2) Articles that only provided abstracts or summaries without access to full text were excluded, as they did not allow for in-depth analysis; (3) Studies that focused on unrelated topics or populations were excluded to maintain the focus on twice-exceptional identification; (4) Older studies, published before 2000 or more recent studies published after 2020 were excluded to ensure the review reflected current research trends and practices; and (5) Articles published in languages other than English were excluded to avoid potential misinterpretations during translation and to ensure clarity in analysis.

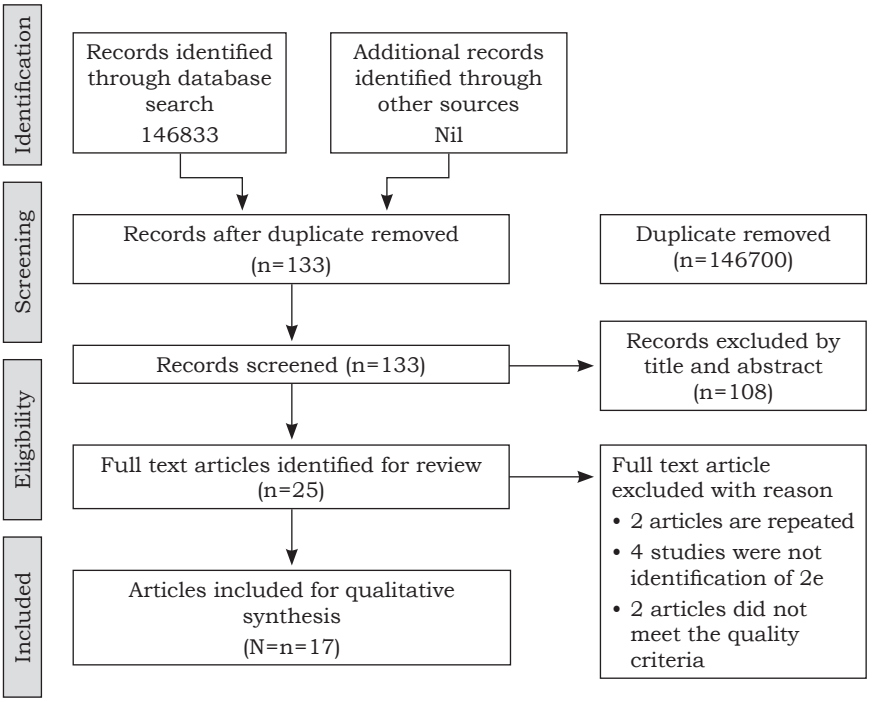

Figure 1: PRISMA Flow Chart

Results

RQ1: How do different research methods influence the identification of twice-exceptional children across existing literature?

The existing literature on twice-exceptional children employs various methods to identify the strengths and challenges associated with this unique group. The studies predominantly employed three types of methodologies: review, qualitative and quantitative methods, each with its own strengths and weaknesses. A total of eleven studies utilised a review approach (Budding and Chidekel, 2012; Crepeau-Hobson and Bianco, 2011; Foley-Nicpon et al., 2011; Morrison and Rissa, 2007; Lovett and Sparks, 2013; Nielsen, 2002; Prior, 2013; McKenzie, 2010; Sumida, 2010; Rizza and Morrison, 2007; Sara and Tonya Huber, 2019). These reviews' strengths lie in their ability to synthesise existing information and provide a broad overview of the current knowledge on 2e identification. For example, Foley-Nicpon et al. (2011) conducted a systematic 20-year review of 25 articles, offering a comprehensive perspective

on the identification challenges over time. Similarly, Lovett and Sparks (2013) systematically reviewed 46 empirical studies, providing detailed insights into the intersection between giftedness and learning disabilities. However, several of these reviews lacked crucial details regarding the scope of their analysis which affected the reliability of their conclusions. For example, Budding and Chidekel (2012), Crepeau-Hobson and Bianco (2011), did not specify the number of articles included leading to questions about the completeness of their findings. McKenzie (2010) also reviewed literature on the Response to Intervention (RtI) model without clarifying the number of articles analysed. Such omissions represent a significant weakness, as the lack of methodological transparency reduces the credibility of these studies.

Three studies employed qualitative methodologies (Dare and Nowicki, 2015; Leroux and Levitt-Perlman, 2000; Morrison and Rizza, 2007). The strengths of the qualitative approach lay in providing rich, detailed data that helped to explore the personal experiences of 2e children and their families. For instance, Dare and Nowicki (2015) conducted interviews with five participants (four mothers and one father), allowing for an in-depth exploration of parental perspectives. Likewise, Leroux and Levitt-Perlman (2000) conducted a case study involving two boys, offering insights into individual experiences in early grades. However, the qualitative studies had limitations primarily related to sample size and generalisability. Dare and Nowicki (2015) used only five participants which limited the applicability of their findings to a broader population. Similarly, Morrison and Rizza (2007) utilised a state-funded project involving three schools, relying on observation, interviews and focus groups. Although the data were detailed, the small number of schools made it difficult to generalise the results beyond those specific cases. Thus, the small, non-representative sample sizes of qualitative methods often limited their ability to provide valuable insights.

A total of three studies used a quantitative approach (McCallum et al., 2013; Snyder et al., 2020; Van Viersen et al., 2016), which aimed to provide more data-driven insights into 2e identification. McCallum et al. (2013) conducted a longitudinal study involving Grade 3 students from eight different elementary schools over three years, which added robustness to their findings. Snyder et al. (2020) analysed data from a large sample of 33,748 undergraduates, providing strong statistical support to their

conclusions about identification challenges. Similarly, Van Viersen et al. (2016) involved 121 children, including those with dyslexia and giftedness, offering a detailed quantitative examination of twice-exceptionality. The strengths of quantitative methods included the ability to provide generalisable data and establish statistical relationships. However, strictly quantitative analyses often lose the deep understanding necessary for the complexity of 2e identification. These studies offered statistical power but lacked the depth of personal experience that qualitative research provided. While review papers provided valuable overviews, many lacked details. Qualitative methods offered rich insights but suffered from small sample sizes, whereas quantitative methods provided generalisable findings but lacked depth. Future studies would benefit from adopting mixed-methods approaches and ensuring greater transparency, and diversity in research samples.

RQ2: What types of disabilities are most frequently associated with twice-exceptional children?

In the existing literature, several disabilities were frequently associated with 2e children. The most commonly cited were learning disabilities, attention deficit hyperactivity disorder and autism spectrum disorder. These conditions often coexisted with high intellectual ability, making it challenging to identify 2e children effectively. Out of 17 studies, ten discussed learning disabilities, making it the most frequently addressed condition among 2e children. Researchers such as, Crepeau-Hobson and Bianco (2011), Lovett and Sparks (2013), McCallum et al. (2013), McKenzie (2010), Nielsen (2002), Rizza and Morrison (2007), Sara and Tonya Huber (2019), Snyder et al. (2020), and Van Viersen et al. (2016), focused on how learning disabilities coexist with giftedness. These studies emphasised that many 2e children experience challenges with specific aspects of learning such as, dyslexia, dyscalculia or dysgraphia, despite their high intellectual abilities. Rizza and Morrison (2007), and Sara and Tonya Huber (2019) specifically addressed 2e children with dyslexia highlighting it as a prevalent form of learning disability among these students.

ADHD was another common focus, with three studies discussing its impact on 2e children. Budding and Chidekel (2012), Leroux and Levitt-Perlman (2000), and Sumida (2010) noted that ADHD often complicates the identification and support of gifted children, affecting their ability to maintain attention, and focus. This duality of high intellectual potential paired with attention

difficulties made it challenging to identify these children's needs accurately. Autism spectrum disorder was highlighted in two studies, specifically those by Foley-Nicpon et al. (2011) and Dare and Nowicki (2015), as a disability frequently seen in 2e children. Additionally, three studies covered multiple disabilities, discussing how a range of conditions can coexist with giftedness, thereby complicating identification and support efforts (Dare and Nowicki, 2015; Sumida, 2010; Prior, 2013). These studies pointed out that 2e children could face a variety of challenges, including learning disabilities, ADHD and ASD, often requiring nuanced educational approaches. The disabilities most frequently associated with 2e children were learning disabilities, ADHD and autism spectrum disorder. Learning disabilities were the most commonly cited, followed by ADHD and ASD, with some studies highlighting other cooccurring emotional or behavioural issues. These disabilities, when combined with giftedness, created a complex profile that made identification and appropriate educational support challenging for educators and researchers.

RQ3: How do journal characteristics (e.g., journal type, publisher, focus area) impact the framing and focus of studies related to the identification of twice-exceptional children?

Sage Publications hosts five journals that feature prominently in this body of literature, including 'Gifted Child Quarterly' (Foley-Nicpon et al., 2011; McCallum et al., 2013), 'Journal of Learning Disabilities' (Lovett and Sparks, 2013; Van Viersen et al., 2016), 'Journal for the Education of Gifted' (Morrison and Rizza, 2007), and the 'Journal of College Student Retention: Research, Theory & Practice' (Snyder et al., 2020). Sage Publications tends to focus on providing a comprehensive understanding of educational challenges from both theoretical and practical perspectives. For instance, 'Gifted Child Quarterly' is dedicated to research on giftedness, allowing studies by Foley-Nicpon et al. (2011) and McCallum et al. (2013) to centre on giftedness as the primary attribute of twice-exceptionality, exploring how to support both the talent, and needs of these children. Conversely, 'Journal of Learning Disabilities' approaches twice-exceptionality with an emphasis on specific disabilities, creating a narrative around managing the challenges of balancing disabilities with inherent strengths. This focus often translates into practical discussions around educational interventions that help manage the disabilities of 2e children while nurturing their gifts.

Taylor and Francis Online is another prominent publisher that influences the framing of twice-exceptionality studies. Their journals, including 'Applied Neuropsychology: Child' (Budding and Chidekel, 2012), 'Roeper Review' (Dare and Nowicki, 2015; Leroux and Levitt-Perlman, 2000), 'Exceptionality' (Nielsen, 2002), and the 'International Journal of Science Education' (Sumida, 2010), offer diverse perspectives. The 'Roeper Review' journals, for example, are largely centred on the issues of giftedness and talent development; with Dare and Nowicki (2015), and Leroux and Levitt-Perlman (2000) focusing on the educational and developmental needs of gifted children who also have other exceptionalities. In contrast, 'Applied Neuropsychology: Child' takes a more neuropsychological approach, emphasising the cognitive processes and neurological characteristics of 2e children. This results in a framing that prioritises understanding how brain functions affect behaviour and learning, providing a clinical angle on twice-exceptionality. Additionally, 'Exceptionality' aims to address specific exceptionalities which allows the research to delve deeply into particular challenges, providing targeted discussions of what makes 2e children unique.

Wiley Online contributes journals such as 'Psychology in the Schools' (Crepeau-Hobson and Bianco, 2011) and 'Learning Disabilities Research & Practices' (McKenzie, 2010), both of which emphasise practical applications of psychological and educational theories in school settings. 'Psychology in the Schools' tends to focus on how psychological concepts can be integrated into school systems to better support 2e students. This practical lens leads to research that is directly applicable in classroom environments, focusing on interventions and support systems. On the other hand, 'Learning Disabilities Research & Practices' has a specific focus on students with learning disabilities, which means that studies published here like McKenzie's (2010), emphasise interventions, pedagogical strategies and support mechanisms designed specifically to address learning challenges, rather than highlighting talent development.

The 'Australasian Journal of Special Education', published by Cambridge Core, also makes an important contribution to the research. This journal brings an international perspective to the discussion of twice-exceptionality. The study by Prior (2013), for example, highlights issues of inclusion and educational equity, emphasising how different educational systems accommodate 2e students. Cambridge's focus on special education means that its publications often discuss broader policy implications, looking at

how schools can create more inclusive environments that foster the development of 2e students. The journal 'Teaching Exceptional Children Plus', published by The Learning and Technology Library, is another notable contributor. The study by Rizza and Morrison (2007) emphasises practical instructional strategies and the use of technology to support twice-exceptional students. Finally, the 'International Journal of Developmental Research', published by the IJDR Team, adds a developmental perspective to the literature on twice-exceptionality. Sara and Tonya Huber (2019) emphasise the growth trajectories of 2e children, not only in terms of their academic skills but also regarding their socio-emotional development.

RQ4: What are the major findings and critical issues identified in the literature regarding the identification of twice-exceptional children?

The major findings of the 17 studies on identifying 2e children reveal significant challenges in accurate identification, largely due to the complex interplay between giftedness and disabilities often termed the 'masking effect.' Budding and Chidekel (2012) and Morison, and Rizza (2007) highlighted the need for standardised tools as the masking effect complicates early detection. Crepeau-Hobson and Bianco (2011), and McKenzie (2010) emphasised the importance of a balanced approach combining standardised assessments with RtI, which must be modified to be more sensitive to the needs of gifted students with subtle disabilities. Dare and Nowicki (2015) identified the critical advocacy role of parents for 2e children, although they often require more support, and noted that many 2e students remain unidentified until higher grades. Foley-Nicpon et al. (2011) argued for specific school protocols that incorporate students' strengths and growth areas. Leroux and Levitt-Perlman (2000) stressed the need for varied instructional interventions, and better collaboration between educators and parents, while Morrison and Rizza (2007), and Rizza and Morrison (2007) proposed a toolkit for multi-faceted identification involving screening, intervention, evaluation and educational planning. Lovett and Sparks (2013) pointed out the inconsistency in identification criteria for students with giftedness and learning disabilities, over-reliance on IQ testing, and the absence of a consensus on academic impairment criteria.

McCallum et al. (2013) also confirmed that the masking effect is a particular challenge for schools using multi-tiered

systems. Nielsen (2002), and Prior (2013) highlighted the need for comprehensive research and multidisciplinary collaboration to understand how transitions impact 2e learners, and to support their growth effectively. Sara and Tonya Huber (2019), and Snyder et al. (2020) noted the lack of research, particularly for 2e students with specific disabilities like dyslexia, calling for more empirical studies. Sumida (2010) discussed the benefits of inclusive Science education, while Van Viersen et al. (2016) found that gifted children with dyslexia exhibit unique cognitive profiles that include both strengths and weaknesses, suggesting potential compensatory strategies. All the reviewed studies call for improved identification processes, comprehensive toolkits, multidisciplinary support and more research on specific 2e subgroups. Table 1 shows the main themes derived from the reviewed studies and their characteristics.

Table 1: Themes Derived from the Reviewed Studies and their Characteristics

S. No.	Theme	Characteristic	References
1.	Limited Empirical Studies	There are few empirical studies available on the subject, limiting the data and knowledge about 2e students.	Foley-Nicpon et al., (2011); Sara and Tonya Huber, (2019); Prior (2013)
2.	Masking	Giftedness or disabilities might hide one another, leading to challenges in proper identification of 2e individuals.	Crepeau and Bianco, (2011); Baum and Owen, (2004) Dare and Nowicki, (2015); Morisson and Rizza (2007)
3.	Variation in Criteria	There is a lack of consistent criteria in identifying 2e individuals, leading to discrepancies in identification.	Nielsen, (2002); Foley-Nicpon et al., (2011)
4.	Teacher's Awareness and Untrained Teachers	Lack of adequate awareness or training among teachers, resulting in challenges to effectively identify and support 2e students.	Nielsen, (2002); Foley-Nicpon et al., (2011)
5.	Lack of Definitional Precision	Lack of precise definition makes it difficult to properly classify and support 2e individuals.	McKenzie, (2010); Sara and Tonya Huber, (2019); Morission and Rizza (2007)

6.	Comorbidity	Presence of multiple conditions can complicate the identification process.	Nielson, (2002); Foley-Nicpon et al., (2011); Rizza and Morison (2007)
7.	Compensation	Twice-exceptional students often develop compensatory strategies that make their disabilities harder to identify.	Nielson, (2002); Foley-Nicpon et al., (2011); Morisson and Rizza (2007)
8.	Discrepancies on IQ Test	Inconsistent or unreliable results on IQ tests complicate identification of 2e students.	Nielson, (2002); McKenzie, (2010); Morisson and Rizza (2007)
9.	Lack of Professionalism	Professionals may lack the skills or awareness needed to correctly identify and support 2e individuals.	Budding and Chidekel, (2012); Dare and Nowicki, (2015)

Critical issues in identifying 2e children are key challenges that significantly affect the process of recognising and supporting these students. The most critical issue in identifying 2e children is the 'lack of teacher awareness and training'. Without proper knowledge and skills, educators are unable to identify or support 2e students effectively, leading to misidentification or missed opportunities for early intervention. This issue directly affects all other aspects of 2e identification and can perpetuate further challenges. Following this, the 'variation in criteria' is the second—as inconsistent standards across educational settings create confusion and hinder the development of unified identification protocols. Next, the 'lack of empirical studies' is crucial, as insufficient research limits our understanding of 2e characteristics and potential identification strategies. 'Masking' is also significant because disabilities can hide giftedness, making identification difficult, especially without proper tools and training. The 'lack of definitional precision' contributes to this by making it harder to establish clear identification guidelines. 'Comorbidity' complicates the diagnosis process, as multiple disabilities obscure the full picture of the child's needs. 'Compensation' and 'discrepancies on IQ tests' are important but rank lower because they are more technical issues that can be addressed with better tools and more comprehensive assessments. Together, these issues emphasise the complexity of identifying 2e children and the need for better training, more research and clearer criteria. Based on the importance and significance of impact in

the identification of 2e children, as well as the issues that hinder the identification process among teachers, parents, caregivers and other stakeholders, the researchers identified eight critical issues, which are illustrated in Figure 2.

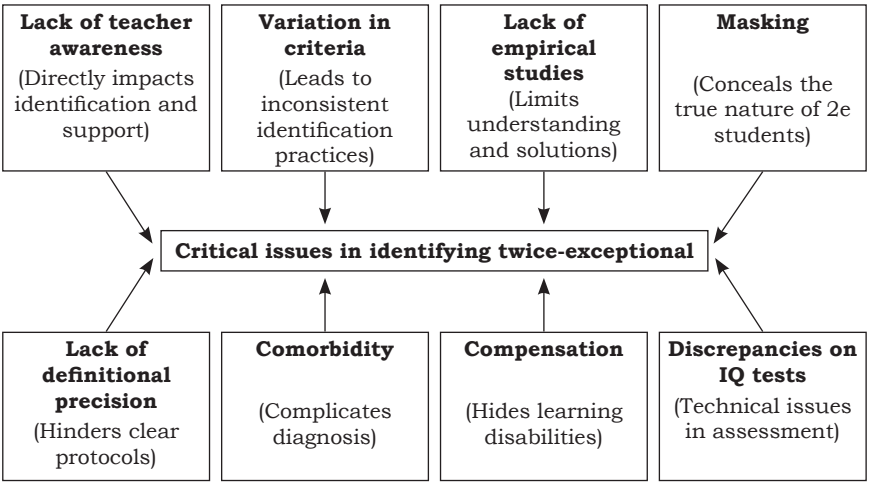

Figure 2: Critical issues in identifying twice-exceptional

Discussion

The present study highlights the on-going complexities in identifying 2e children, where giftedness coexists with a disability. The results indicate that one of the primary challenges in identification is the 'masking effect', where one aspect of a child's abilities conceals another, making early detection difficult (Budding and Chidekel, 2012; Crepeau-Hobson and Bianco, 2011; Baum and Owen, 2004). This phenomenon complicates the recognition of 2e children, as their high abilities can obscure their disabilities and conversely, their disabilities may overshadow their talents. This masking effect has been consistently noted in various studies, suggesting that it remains a critical barrier to accurate identification (Dare and Nowicki, 2015). Another major issue is the lack of standardised criteria for identifying 2e children. Research has shown that different schools and districts apply varying definitions, and identification protocols leading to inconsistent recognition across educational systems (Nielsen, 2002; Foley-Nicpon et al., 2011). The absence of a universal framework

for identification contributes to delays and inaccuracies, as educators may rely on subjective or inconsistent measures to assess twice-exceptionality. Moreover, a lack of clarity in the definition of twice-exceptionality further exacerbates this problem making it difficult to establish clear guidelines (McKenzie, 2010; Sara and Tonya Huber, 2019).

Teacher awareness and training are critical issue in the identification process. The review found that insufficient teacher training and awareness of twice-exceptionality are significant barriers, as many teachers, parents and caretakers may not recognise the unique characteristics of these children (Nielsen, 2002; Foley-Nicpon et al., 2011). The importance of professional development for teachers cannot be overstated, as teachers often serve as the first point of contact for identifying students with exceptional needs. Without adequate training, teachers may overlook or misinterpret the signs of twice-exceptionality, which can result in these students being underserved or misdiagnosed (Dare and Nowicki, 2015). The influence of comorbidity on identification was another notable finding. Comorbid conditions such as, learning disabilities, ADHD and autism spectrum disorder, frequently complicate the identification process by creating diagnostic overlaps (Nielsen, 2002). These overlapping conditions make it challenging to pinpoint twice-exceptionality, as traditional assessment tools such as, IQ tests may not be sensitive to the nuanced needs of these students (Nielsen, 2002). The reliance on IQ tests as a primary identification tool has been questioned, as they often fail to capture the full range of abilities and challenges faced by 2e children.

In addition to these issues, the review emphasised the importance of journal characteristics in shaping the focus and framing of research on 2e children. The study suggests that the emphasis on certain disabilities as well as the methodological approaches favoured by specific journals, can influence how twice-exceptionality is conceptualised and studied. These finding calls for greater diversity in research methodologies and a more holistic approach to studying 2e children to account for the broad range of experiences these children experiences (Budding and Chidekel, 2012). The identification of 2e children remains a multifaceted issue, influenced by the masking effect, lack of standardised criteria, insufficient teacher training, and the complexity of comorbid conditions. To address these critical issues there is a pressing need for more research into effective identification

tools and intervention strategies. Additionally, teachers, parents and caregivers must be provided with comprehensive training to recognise, and support these children effectively. Addressing these gaps, educational systems can better serve 2e students, ensuring that their unique needs are met and their potential is fully realised.

Limitations and Future Research Direction

The present study has several limitations. It did not use a theoretical framework to guide its findings which limits the depth of the analysis. As noted by Kossmeier, Tran and Voracek (2020), systematic reviews are more effective when they connect evidence with theory. Additionally, there was a lack of research available on 2e children in India and Asia, limiting the regional applicability of the results. The study also lacked transparency regarding the number of articles analysed and the criteria used, which affects the reliability of its conclusions. Future research should address these issues by integrating a theoretical framework to link findings to existing theories. Employing a mixed-methods approach would also be beneficial, combining the depth of qualitative insights with the statistical reliability of quantitative research. Reviews should clearly specify their scope and methodology, as emphasised by Lovett and Sparks (2013), to enhance credibility. Furthermore, research should expand to underrepresented regions like India and Asia, and qualitative studies should include larger, more diverse samples to improve the generalisability of the findings. Addressing these gaps will contribute to better understanding and support for 2e children.

Conclusion

The present study on critical issues in the identification of 2e children reveals significant challenges and gaps in effectively identifying and understanding these students. The evidence provided by studies like Snyder et al. (2020) shows that current methods for identifying 2e children are inconclusive and in need of substantial improvement. Numerous significant gaps exist in the literature, beginning with a lack of transparency in research methods, especially in review studies. Many researchers such as, Budding and Chidekel (2012), and others provided minimal information regarding the articles reviewed which affects the credibility and comprehensiveness of their findings. Another gap is related to the sample characteristics, where there is a clear bias towards male participants in most

studies, leading to an underrepresentation of female perspectives. This is seen in studies such as those by Dare and Nowicki (2015), and Leroux and Levitt-Perlman (2000). Additionally, much of the literature consists of repeated analysis rather than new empirical investigation, resulting in a lack of fresh, data-driven insights. The limited focus of existing research is also notable, as most studies tend to examine only Gifted with Learning Disabilities (GLD), while other categories of twice-exceptionality such as ADHD and autism remain underexplored. Moving forward, there is a critical need for collaborative, multidisciplinary research that comprehensively includes all areas of twice-exceptionality such as, learning disabilities, ADHD, autism, and multiple disabilities. Addressing these gaps is essential for enhancing identification processes and providing appropriate support to foster the development of 2e children, ensuring they receive the opportunities they need to thrive.

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