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Artificial Intelligence Tools for Students with Learning Disabilities: Opportunities, Risks and Educational Implications-A Narrative Review

Ilias Vasileiou[1*]

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ABSTRACT

Artificial Intelligence (AI) technologies are rapidly transforming contemporary educational practices and are increasingly being explored as tools for supporting students with learning disabilities (LD). These technologies include intelligent tutoring systems, natural language processing applications, adaptive learning environments, speech-to-text tools, automated feedback systems, and generative AI platforms capable of assisting reading and writing processes. The purpose of this narrative review is to synthesize the emerging literature on the use of Artificial Intelligence tools in supporting students with learning disabilities and to examine their educational benefits, potential risks, and broader implications for inclusive education. The review draws on research from educational technology, cognitive psychology, and special education published between 2010 and 2024. The findings suggest that AI-based tools can enhance reading accessibility, support written language production, facilitate executive functioning and self-regulated learning, and contribute to early identification of learning difficulties. At the same time, the literature highlights important concerns regarding ethical issues, data privacy, algorithmic bias, and the potential over-reliance on automated systems. The review argues that Artificial Intelligence should be understood as a form of cognitive and pedagogical support that can enhance inclusive educational environments when integrated within appropriate pedagogical frameworks. Future research should focus on longitudinal classroom studies, the impact of generative AI on independent learning skills, and the development of ethical guidelines for responsible AI implementation in education.

INTRODUCTION

Artificial Intelligence (AI) has emerged as one of the most transformative technological developments of the twenty-first century, profoundly influencing multiple sectors including healthcare, economics, communication, and education. In the educational domain, AI technologies are increasingly being integrated into teaching and learning processes in order to enhance personalization, automate assessment, and provide adaptive instructional support (Holmes, Bialik, &Fadel, 2019; Luckin *et al.*, 2016). Educational Artificial Intelligence (AIED) refers to the use of computational systems capable of performing tasks that typically require human intelligence, such as pattern recognition, decision-making, language processing, and adaptive feedback (Russell &Norvig, 2021). Over the last decade, advances in machine learning, natural language processing, and generative AI have significantly expanded the potential applications of AI within educational contexts.The increasing adoption of AI technologies has generated considerable interest among researchers and policymakers who view AI as a potential catalyst for transforming learning environments and improving educational outcomes (Zawacki-Richter *et al.*, 2019). AI systems can analyze large volumes of learner data, identify patterns of learning behavior, and deliver personalized instructional experiences tailored to individual learners' needs. Such capabilities are particularly relevant in inclusive educational settings where learners present diverse cognitive profiles, learning styles, and educational needs (Holmes &Tuomi, 2022).Among the student populations that may benefit significantly from AI-based educational tools are students with learning disabilities (LD). Learning disabilities constitute a heterogeneous group of neurodevelopmental conditions characterized by persistent difficulties in academic skills such as reading, writing, or mathematics despite adequate intelligence and educational opportunities (American Psychiatric Association, 2022). Common forms of learning disabilities include dyslexia, dysgraphia, and dyscalculia, all of which can significantly affect academic performance and participation in classroom activities (Snowling&Hulme, 2012). In addition to specific academic challenges, many students with learning disabilities experience deficits in executive functions, including working memory, cognitive flexibility, planning, and self-regulation (Diamond, 2013; Meltzer, 2018).

These cognitive and academic difficulties often create barriers to learning in traditional classroom environments that rely heavily on standardized instruction and written forms of assessment. As a result, students with learning disabilities frequently require additional instructional support, differentiated teaching strategies, and assistive technologies in order to fully participate in educational processes (Graham & Harris, 2018). Over the past three decades, assistive technologies have played a crucial role in supporting these learners by providing tools such as

[1] College for Humanistic Sciences-ICPS, University of Lancashire, Greece
[*] Corresponding author's e-mail: ivasileiou@lancashire.ac.uk

text-to-speech systems, word prediction software, digital graphic organizers, and speech recognition applications (MacArthur & Graham, 2016).Recent developments in Artificial Intelligence have significantly expanded the capabilities of assistive technologies used in education. Modern AI-based educational tools can perform complex tasks such as automated text generation, intelligent feedback provision, adaptive learning pathways, and personalized tutoring. Generative AI systems, including large language models, are now capable of assisting students in drafting essays, revising written texts, summarizing information, and organizing ideas (Kasneci *et al.*, 2023). These technologies have the potential to reduce cognitive load, facilitate written language production, and enhance academic participation for students with learning disabilities.In addition to supporting writing and reading skills, AI technologies can also contribute to the development of executive functioning skills. Digital tools that incorporate AI algorithms can help students organize tasks, plan assignments, monitor progress, and receive timely feedback on their learning activities. Such functionalities may support self-regulated learning processes, which are often impaired in students with learning disabilities (Zimmerman, 2008; Meltzer, 2018). Despite the promising potential of AI technologies in special and inclusive education, the rapid expansion of AI tools has also raised important concerns. Scholars have highlighted a range of ethical, pedagogical, and social challenges associated with AI integration in educational settings (Zawacki-Richter *et al.*, 2019). These challenges include issues related to data privacy, algorithmic bias, transparency of AI systems, and the risk of excessive reliance on automated technologies. Furthermore, some researchers argue that AI tools may inadvertently reinforce existing educational inequalities if access to these technologies is uneven across schools and socioeconomic contexts (Holmes &Tuomi, 2022).Another important concern relates to the pedagogical implications of AI-supported learning. While AI technologies can provide valuable instructional support, they cannot replace the complex social, emotional, and motivational functions performed by teachers within the learning process. Effective integration of AI in education therefore requires a balanced approach in which technological tools complement rather than substitute human instruction (Luckin *et al.*, 2016).Given the rapid development of AI technologies and their increasing presence in educational environments, there is a growing need to critically examine how these tools can support students with learning disabilities while also addressing potential risks and limitations. Understanding both the opportunities and challenges associated with AI integration is essential for designing inclusive educational practices that leverage technological innovations responsibly.The purpose of the present narrative review is therefore to examine the current state of research on Artificial Intelligence tools designed to support students with learning disabilities. Specifically, the review aims to (a) identify the main categories of AI-based educational tools used by students with learning disabilities, (b) examine the potential educational benefits associated with these technologies, (c) analyze the possible risks and ethical challenges related to their use, and (d) discuss implications for inclusive educational practice and future research. By synthesizing existing research findings, the present review seeks to contribute to the ongoing discussion regarding the role of Artificial Intelligence in promoting equitable and accessible learning environments.

LITERATURE REVIEW

Research on Artificial Intelligence in education has expanded significantly over the past decade, reflecting broader developments in machine learning, natural language processing, and educational data analytics. Early research primarily focused on the technological capabilities of AI systems and their potential to automate instructional processes. More recent studies have shifted toward examining how AI technologies can support personalized learning environments and address diverse learner needs within inclusive educational settings (Chen *et al.*, 2020; Holmes *et al.*, 2019; Zhai *et al.*, 2021). In particular, the field of Artificial Intelligence in Education (AIED) has increasingly explored how intelligent systems can analyze learner behavior, adapt instructional materials, and provide individualized feedback to support learning. One important line of research focuses on the potential of AI technologies to support students with learning disabilities. Learning disabilities are associated with persistent difficulties in academic domains such as reading, writing, and mathematics, often accompanied by deficits in executive functioning and self-regulation (Diamond, 2013; Meltzer, 2018). These challenges can limit students' participation in traditional instructional environments that rely heavily on standardized forms of instruction and assessment. As a result, scholars have increasingly examined how digital and AI-based technologies can function as compensatory or supportive tools that reduce barriers to participation and enhance accessibility within educational contexts (MacArthur & Graham, 2016; Graham & Harris, 2018).

A substantial portion of the literature has focused on the role of AI technologies in supporting literacy development, particularly for students with dyslexia and other reading-related learning disabilities. Research indicates that AI-based reading tools often incorporate natural language processing and adaptive algorithms that modify text complexity, provide vocabulary explanations, and support multimodal reading through speech synthesis technologies (Chen *et al.*, 2020; Wood *et al.*, 2018). Such systems allow learners to access textual information through both visual and auditory channels, which may reduce cognitive load and improve comprehension. In addition, recent studies suggest that machine learning models can analyze patterns of reading errors and behavioral indicators within digital learning environments, potentially contributing to earlier identification of

reading difficulties (Zawacki-Richter *et al.*, 2019; Zhang *et al.*, 2024).Another important research strand concerns the use of Artificial Intelligence technologies to support written language production, a domain that poses considerable challenges for students with learning disabilities. Writing requires the coordination of multiple cognitive and linguistic processes, including planning, lexical retrieval, syntactic organization, transcription, and revision (Graham *et al.*, 2015; MacArthur & Graham, 2016). AI-supported writing environments increasingly incorporate predictive text systems, automated grammar correction tools, and generative language models capable of assisting learners during various stages of the writing process. Recent research on generative AI systems suggests that these technologies may provide cognitive scaffolding that supports idea generation, organization of arguments, and revision of written texts (Kasneci *et al.*, 2023; Perera & Aboal, 2023). For students with dyslexia or dysgraphia, such tools may reduce the cognitive demands of transcription and allow learners to focus more effectively on higher-level aspects of writing.In addition to supporting literacy skills, AI technologies have also been examined in relation to executive functioning and self-regulated learning. Executive functions, including working memory, planning, cognitive flexibility, and inhibitory control, play a central role in academic learning and are often impaired in students with learning disabilities (Diamond, 2013). AI-supported educational platforms can provide structured scaffolding through reminders, task organization systems, and adaptive feedback that help learners manage complex academic tasks. Intelligent tutoring systems and adaptive learning environments, for example, can analyze learner performance and adjust instructional difficulty levels accordingly, thereby supporting engagement and persistence during learning activities (Ma *et al.*, 2014; Holmes *et al.*, 2019; Hopcan *et al.*, 2023). Such systems may also promote self-regulated learning by providing real-time information about progress and performance (Zimmerman, 2008).

Another emerging area of research concerns the use of Artificial Intelligence for the identification and assessment of learning difficulties. Machine learning algorithms can analyze large datasets generated by digital learning platforms, including patterns of student interaction, linguistic performance, and task completion behaviors. These analytical approaches may help identify indicators associated with learning disabilities and support earlier educational interventions (Zawacki-Richter *et al.*, 2019; Zhang *et al.*, 2024). Although such predictive systems remain at an early stage of development, they illustrate the potential of AI-based learning analytics to complement traditional assessment practices.Despite these promising developments, the literature also highlights important ethical and pedagogical concerns related to the integration of AI technologies in education. One frequently discussed issue involves the protection of student data and the responsible management of learning analytics information used by AI systems (Williamson &Eynon, 2020; Dignum, 2019). Concerns have also been raised regarding algorithmic bias and the possibility that AI systems trained on biased datasets may reproduce or reinforce existing educational inequalities (Holmes &Tuomi, 2022). Furthermore, scholars emphasize that while AI technologies can provide valuable instructional support, they cannot replace the complex social, emotional, and pedagogical roles performed by teachers within the learning process (Luckin *et al.*, 2016).Overall, the existing literature suggests that Artificial Intelligence technologies offer significant opportunities for supporting students with learning disabilities by enhancing accessibility, personalizing instruction, and providing cognitive scaffolding during learning activities. At the same time, the research field remains relatively young, and further empirical investigation is needed to evaluate the long-term educational impact of AI-supported learning environments. In particular, scholars have called for more classroom-based studies, longitudinal research designs, and interdisciplinary collaborations that examine how AI technologies can be integrated into inclusive educational practices in ways that promote equitable and meaningful learning opportunities (Hopcan *et al.*, 2023; Holmes &Tuomi, 2022; Zhang *et al.*, 2024).

MATERIALS AND METHODS

Review Design

The present study adopts a narrative literature review design in order to synthesize and interpret existing research concerning the use of Artificial Intelligence technologies to support students with learning disabilities. Narrative literature reviews are particularly suitable for examining emerging and interdisciplinary research areas where studies employ diverse theoretical perspectives, research designs, and methodological approaches (Baumeister& Leary, 1997; Ferrari, 2015). The field of Artificial Intelligence in education represents such a domain, as the existing literature includes empirical investigations, theoretical analyses, technological evaluations, and systematic reviews originating from multiple disciplines including educational technology, cognitive psychology, computer science, and special education.Within this context, the aim of the present review is not to produce a statistical aggregation of empirical findings but rather to provide a structured synthesis of the main research themes and conceptual developments related to Artificial Intelligence applications for students with learning disabilities. Particular emphasis is placed on identifying the main types of AI-based educational tools discussed in the literature, the learning domains in which these technologies are applied, and the potential educational opportunities and risks associated with their implementation in inclusive educational environments.

Literature Search Strategy

The literature search was conducted using widely recognized academic databases that provide extensive coverage of research in education, psychology, and

educational technology. The primary databases consulted included Scopus, Web of Science, ERIC, and Google Scholar. These databases were selected because they index a large number of peer-reviewed publications relevant to the intersection of Artificial Intelligence, educational technology, and special education research. The search focused on publications released between 2010 and 2024 in order to capture contemporary developments in Artificial Intelligence technologies and their applications in educational contexts. During this period, rapid advancements in machine learning, natural language processing, and generative Artificial Intelligence significantly expanded the range of digital tools available for educational use.The search process employed combinations of keywords related to Artificial Intelligence and learning disabilities. These included terms associated with AI technologies in education, intelligent tutoring systems, assistive technologies, generative AI tools, adaptive learning environments, and applications of Artificial Intelligence in inclusive or special education. Boolean operators were used to combine search terms in order to identify studies addressing the intersection between Artificial Intelligence technologies and the educational support of students with learning disabilities.

Study Selection

The initial search across the selected databases yielded approximately 420 publications related to Artificial Intelligence in educational contexts. After removing duplicate records, the titles and abstracts of the remaining publications were examined in order to identify studies relevant to the objectives of the present review.Studies were considered eligible when they examined Artificial Intelligence technologies applied to educational contexts and included implications for students with learning disabilities or related neurodevelopmental conditions. Particular attention was given to studies investigating AI-supported tools for reading assistance, written language production, learning support systems, intelligent tutoring environments, adaptive learning platforms, and digital technologies designed to support executive functioning or self-regulated learning.Publications were excluded when they focused exclusively on general educational technologies without incorporating Artificial Intelligence components or when they examined clinical, medical, or therapeutic applications unrelated to educational environments. In addition, non-academic publications, commentaries without theoretical grounding, and sources lacking peer-review procedures were excluded from the analysis.Following this screening process, ninety-seven publications were retained for full-text review. After a detailed examination of the selected studies, forty-three publications were ultimately included in the final synthesis of the literature.

Data Analysis and Synthesis

The selected studies were analyzed using a thematic synthesis approach aimed at identifying major research themes within the literature. The analysis focused on examining the educational functions of Artificial Intelligence tools, the learning domains most frequently supported by these technologies, and the broader pedagogical and ethical implications discussed in the literature.Through iterative reading and comparison of the selected studies, recurring patterns and thematic areas were identified. The literature was subsequently organized into several conceptual categories reflecting the main domains in which Artificial Intelligence technologies are applied to support students with learning disabilities. These thematic areas include reading support technologies, tools supporting written language production, systems designed to assist executive functioning and self-regulated learning, and Artificial Intelligence applications related to the identification or assessment of learning difficulties.This thematic organization enabled a structured interpretation of the existing literature while highlighting the ways in which different technological approaches attempt to address the cognitive and educational challenges associated with learning disabilities.

Limitations

Although narrative literature reviews provide valuable opportunities for synthesizing diverse bodies of research and identifying emerging trends within a field, they also present certain methodological limitations. Unlike systematic reviews or meta-analyses, narrative reviews do not rely on fully standardized procedures for study identification and statistical synthesis. As a result, the findings presented in the present study should be interpreted as a conceptual synthesis of the existing research landscape rather than as a comprehensive quantitative evaluation of empirical evidence.In addition, the field of Artificial Intelligence in education is evolving rapidly, and new studies continue to be published at a fast pace. Consequently, additional relevant research may emerge following the completion of the present review. Despite these limitations, the narrative synthesis approach allows for a broad and integrative understanding of the current developments in Artificial Intelligence technologies designed to support students with learning disabilities.

RESULTS AND DISCUSSION

Categories of Artificial Intelligence Tools Supporting Students with Learning Disabilities

Artificial Intelligence technologies used in educational contexts can be broadly categorized according to the learning functions they support. The literature indicates that most AI applications designed for students with learning disabilities focus on four major domains: reading support, written language production, executive functioning and self-regulation, and identification or assessment of learning difficulties. These categories reflect both the cognitive characteristics of learning disabilities and the technological capabilities of modern

AI-based educational systems (Holmes *et al.*, 2019; Zawacki-Richter *et al.*, 2019; Holmes &Tuomi, 2022; Chen *et al.*, 2020; Hopcan *et al.*, 2023).

AI Tools for Reading Support

Reading difficulties, particularly those associated with dyslexia, represent one of the most frequently studied areas in the intersection between Artificial Intelligence and special education. Dyslexia affects decoding accuracy, phonological processing, reading fluency, and comprehension, which can significantly limit students' access to academic content (Snowling&Hulme, 2012; Peterson & Pennington, 2015). AI-driven reading technologies attempt to address these difficulties by providing adaptive reading environments and multimodal support systems.Recent research has demonstrated that AI-based reading tools frequently incorporate natural language processing algorithms that analyze textual complexity and automatically adjust reading materials to the learner's level. Such systems can modify vocabulary difficulty, sentence structure, and presentation format, thereby enabling students to access texts that would otherwise be too demanding (Holmes &Tuomi, 2022; Chen *et al.*, 2020). Adaptive reading platforms may also include features such as text-to-speech functionality, vocabulary explanations, automated summarization, and dynamic highlighting of syntactic structures. These functionalities allow students with dyslexia to process written content through multiple sensory channels and maintain engagement with academic texts (Wood *et al.*, 2018; Okonkwo & Ade-Ibijola, 2021).Speech synthesis and text-to-speech technologies represent one of the most widely implemented forms of AI-supported reading assistance. These tools convert written text into spoken language, allowing learners to listen to educational material while simultaneously following the text visually. Empirical studies indicate that such technologies can improve reading comprehension and reduce cognitive load among students with reading disabilities (Wood *et al.*, 2018). Similarly, recent research highlights the role of AI-driven reading assistants that adapt reading speed and provide real-time comprehension feedback during reading activities (Chen *et al.*, 2020; Hopcan *et al.*, 2023). Beyond accessibility features, machine learning algorithms are increasingly being used to detect patterns in reading behavior that may indicate early signs of dyslexia. AI models trained on linguistic and behavioral data can analyze reading errors, eye-movement patterns, and response times during reading tasks. Such technologies may contribute to earlier identification of reading difficulties and facilitate timely intervention strategies (Zawacki-Richter *et al.*, 2019; Holmes &Tuomi, 2022; Alkhurayyif *et al.*, 2024).

AI Tools for Written Language Production

Writing represents one of the most cognitively demanding academic tasks and poses significant challenges for students with learning disabilities, particularly those with dyslexia and dysgraphia. Writing requires the coordination of multiple cognitive and linguistic processes, including idea generation, lexical retrieval, syntactic organization, spelling accuracy, and revision strategies (Graham & Harris, 2018; MacArthur & Graham, 2016). Artificial Intelligence technologies have increasingly been integrated into digital writing environments in order to support these processes.AI-based writing tools include grammar correction systems, predictive text technologies, automated feedback platforms, and generative language models capable of assisting learners during various stages of the writing process. Grammar correction and predictive text systems rely on machine learning algorithms that analyze linguistic patterns and provide real-time suggestions during writing activities. These systems may help students reduce spelling errors and improve grammatical accuracy while maintaining writing fluency (Okonkwo & Ade-Ibijola, 2021; Zhai *et al.*, 2021).Recent developments in generative Artificial Intelligence have significantly expanded the capabilities of digital writing support tools. Large language models can assist learners in generating ideas, organizing arguments, summarizing information, and revising written texts. Studies examining the educational use of generative AI systems suggest that such technologies may function as cognitive scaffolding mechanisms that support the writing process while promoting learner engagement and autonomy (Kasneci *et al.*, 2023; Zhai *et al.*, 2021; Zhao, 2025).For students with learning disabilities, these technologies may help reduce the cognitive load associated with transcription processes such as spelling and handwriting. By automating lower-level writing processes, AI tools may allow learners to focus more effectively on higher-order aspects of writing, including coherence, argumentation, and text organization (MacArthur & Graham, 2016; Graham & Harris, 2018). However, researchers emphasize the importance of examining whether such technologies promote long-term development of writing skills or primarily function as compensatory tools that substitute for certain writing processes (Kasneci *et al.*, 2023; Jaime-Vargas, 2025).

AI Tools for Executive Functioning and Self-Regulated Learning

Executive functions play a crucial role in academic learning and include cognitive processes such as working memory, planning, cognitive flexibility, and self-regulation (Diamond, 2013). Students with learning disabilities frequently experience difficulties in organizing tasks, maintaining attention, monitoring progress, and regulating their learning behavior (Meltzer, 2018). Artificial Intelligence technologies have increasingly been incorporated into educational applications designed to support these processes.AI-based learning management systems and digital planning tools can provide structured support for task organization and time management. For example, intelligent tutoring systems can analyze learner performance and deliver adaptive feedback that helps students monitor their progress during learning

activities (Ma *et al.*, 2014). Similarly, AI-supported planning assistants can provide reminders, structured task sequences, and personalized learning schedules that help students manage complex academic tasks. Research suggests that such technologies may support the development of self-regulated learning strategies by providing real-time feedback and scaffolding during learning activities (Zimmerman, 2008; Holmes *et al.*, 2019). Adaptive learning platforms can also adjust instructional difficulty levels according to learner performance, thereby supporting motivation and engagement among students with diverse learning needs (Zawacki-Richter *et al.*, 2019; Hopcan *et al.*, 2023).

AI Tools for Identification and Assessment of Learning Difficulties

Another emerging application of Artificial Intelligence in special education concerns the identification and assessment of learning disabilities. Traditional assessment methods for learning disabilities often rely on standardized tests and clinical evaluations conducted by specialists. While these methods remain essential, researchers have increasingly explored the potential of machine learning algorithms to analyze patterns of learning behavior and detect early indicators of learning difficulties (Zawacki-Richter *et al.*, 2019).AI-based assessment systems can analyze large datasets derived from digital learning environments, including student responses, interaction patterns, and performance metrics. By identifying patterns in learner behavior, machine learning models may help detect potential learning difficulties at earlier stages of development. For example, AI algorithms can analyze reading accuracy, spelling errors, and linguistic complexity in written texts to identify patterns associated with dyslexia or dysgraphia (Holmes *et al.*, 2019; Alkhurayyif *et al.*, 2024).Such technologies may contribute to earlier identification of learning disabilities and enable educators to implement targeted interventions more rapidly. However, the use of AI for diagnostic purposes also raises important ethical concerns related to algorithmic transparency, reliability, and data privacy. Researchers emphasize that AI-based assessment systems should complement rather than replace professional evaluation conducted by educators and specialists (Holmes &Tuomi, 2022; Hopcan *et al.*, 2023; Zhao, 2025).

Discussion

The rapid advancement of Artificial Intelligence (AI) technologies has significantly transformed the field of educational technology and has opened new possibilities for supporting diverse learners in inclusive educational environments. In recent years, AI-based tools have increasingly been explored as potential supports for students with learning disabilities, particularly in areas such as written language production, reading comprehension, and executive functioning. The literature reviewed in this study suggests that AI technologies may offer important opportunities for addressing several of the cognitive and academic challenges that characterize learning disabilities. One of the most frequently highlighted advantages of AI technologies in education is their capacity to facilitate personalized learning environments. AI systems are capable of analyzing learner data, identifying patterns of learning behavior, and adapting instructional materials to individual needs (Holmes *et al.*, 2019; Luckin *et al.*, 2016). Such adaptive capabilities are particularly relevant for students with learning disabilities, whose learning profiles often require differentiated instruction and individualized support (Graham & Harris, 2018). Recent systematic reviews indicate that AI-supported learning environments can enhance engagement, improve academic performance, and provide more flexible learning pathways for students with diverse educational needs (Zawacki-Richter *et al.*, 2019; Holmes &Tuomi, 2022).

Another important area in which AI technologies appear to provide significant support concerns written language production. Writing is a complex cognitive activity that requires the coordination of multiple linguistic and cognitive processes, including idea generation, lexical retrieval, syntactic organization, spelling, and revision. Students with learning disabilities frequently experience difficulties across these processes, which may negatively affect the coherence and organization of their written texts (MacArthur & Graham, 2016). AI-based writing support tools, including grammar correction systems, predictive text technologies, and generative language models, may help reduce cognitive load during writing tasks and allow students to focus more effectively on higher-level writing processes such as argumentation and organization (Kasneci *et al.*, 2023).Recent research on generative AI systems has attracted particular attention within the field of educational technology. Large language models are capable of assisting learners in generating ideas, structuring arguments, summarizing texts, and revising written work. Studies examining the educational use of generative AI tools suggest that these systems may function as cognitive scaffolding mechanisms that support the writing process while promoting learner engagement and autonomy (Kasneci *et al.*, 2023; Holmes &Tuomi, 2022). For students with dyslexia or dysgraphia, such technologies may reduce the barriers associated with spelling and transcription processes, allowing learners to focus more effectively on the conceptual and communicative aspects of writing. In addition to supporting writing, AI technologies may also enhance reading accessibility and comprehension for students with learning disabilities. Students with dyslexia often experience difficulties in phonological processing, decoding, and reading fluency, which can limit their access to written content (Snowling&Hulme, 2012). AI-based reading tools that incorporate natural language processing can provide features such as text-to-speech support, vocabulary explanations, and automated summarization of complex texts. These technologies may therefore help learners access academic material more efficiently and participate more actively in classroom

learning activities (Wood *et al.*, 2018).Another dimension emphasized in the literature concerns the potential contribution of AI technologies to the development of executive functioning skills. Executive functions, including working memory, planning, cognitive flexibility, and self-regulation, play a crucial role in academic performance and learning processes (Diamond, 2013). Many students with learning disabilities experience difficulties in organizing tasks, managing time, and maintaining attention during learning activities (Meltzer, 2018). AI-based educational applications can support these processes by providing reminders, task organization tools, and real-time feedback during learning activities. Such functionalities may contribute to the development of self-regulated learning strategies and promote greater independence among students with learning disabilities. From a broader pedagogical perspective, the integration of Artificial Intelligence technologies aligns closely with the principles of inclusive education and Universal Design for Learning (UDL). Inclusive education aims to create learning environments that accommodate diverse learners and reduce barriers to participation in mainstream classrooms (Ainscow, 2020). Similarly, the UDL framework emphasizes the importance of flexible instructional approaches and accessible learning materials that support multiple means of engagement, representation, and expression (Meyer, Rose, & Gordon, 2014). AI technologies may contribute to these goals by enabling adaptive learning environments that respond to individual learner needs and preferences.

Despite these promising opportunities, the literature also identifies several important challenges associated with the use of AI in education. One concern relates to the potential over-reliance on technological support. While AI tools can provide valuable assistance during learning tasks, excessive dependence on automated systems may hinder the development of independent learning skills and critical thinking abilities if these technologies are not integrated appropriately into pedagogical practices (Holmes *et al.*, 2019).Ethical considerations also play a crucial role in discussions surrounding AI in education. AI systems often rely on large datasets that include sensitive student information, raising concerns regarding data privacy, transparency, and responsible data management (Zawacki-Richter *et al.*, 2019). Educational institutions must therefore ensure that AI technologies are implemented in ways that protect student privacy and comply with ethical guidelines.Another concern frequently highlighted in recent research involves algorithmic bias. AI systems are trained on datasets that may reflect existing social inequalities or cultural biases. If such biases are embedded in educational algorithms, they may inadvertently reproduce or amplify educational disparities rather than reduce them (Holmes &Tuomi, 2022). Addressing these challenges requires careful design, evaluation, and regulation of AI technologies used in educational settings.Finally, the literature emphasizes that AI technologies should be viewed as complementary tools rather than replacements for teachers. Teaching involves complex interpersonal processes, including emotional support, motivation, and social interaction, which cannot be replicated by automated systems (Luckin *et al.*, 2016). Consequently, the effective integration of AI in education requires a balanced approach in which technological tools support teachers in designing inclusive learning environments. The findings of the present review suggest that Artificial Intelligence technologies offer significant opportunities for supporting students with learning disabilities. When implemented thoughtfully and ethically, AI tools may enhance accessibility, facilitate personalized learning, and contribute to more inclusive educational environments. However, careful consideration of pedagogical, ethical, and social implications remains essential in order to ensure that these technologies are used in ways that genuinely benefit students with learning disabilities.

Future Research Directions and Research Agenda

The rapid expansion of Artificial Intelligence technologies in educational contexts has created significant opportunities for improving learning environments, particularly for students with learning disabilities. Despite the promising findings reported in recent studies, the literature in this field remains relatively fragmented and still at an early stage of development. Consequently, several important research gaps remain that require systematic investigation in order to better understand the long-term educational implications of AI-based learning tools. One important direction for future research concerns the long-term effectiveness of AI-supported learning environments for students with learning disabilities. Most existing studies examine short-term interventions or pilot implementations of AI tools in controlled settings. While these studies provide valuable insights into the potential benefits of AI-supported learning, relatively little is known about the long-term impact of these technologies on academic development, cognitive skills, and learner autonomy. Longitudinal research designs are therefore needed to examine how sustained exposure to AI-supported educational environments affects learning trajectories among students with learning disabilities (Holmes *et al.*, 2019; Zawacki-Richter *et al.*, 2019).

Another important area for future research relates to the integration of generative Artificial Intelligence systems into writing instruction. Recent developments in large language models have significantly expanded the capabilities of digital writing support tools. These technologies can assist learners in generating ideas, organizing arguments, revising texts, and improving linguistic accuracy. However, the pedagogical implications of such tools remain insufficiently understood. While generative AI systems may function as cognitive scaffolding tools that support writing processes, researchers must also examine whether excessive reliance on automated writing assistance may influence the development of independent writing skills and metacognitive strategies (Kasneci *et al.*, 2023).

Future research should also investigate the potential of AI technologies to support executive functioning and self-regulated learning among students with learning disabilities. Executive functions such as working memory, planning, and cognitive flexibility play a crucial role in academic achievement and are often impaired in students with neurodevelopmental disorders (Diamond, 2013; Meltzer, 2018). AI-based digital tools that provide organizational support, task management assistance, and adaptive feedback may help learners develop stronger self-regulation skills. However, empirical evidence regarding the effectiveness of such interventions remains limited, and additional studies are required to explore how AI tools can support executive functioning in real educational contexts.Another important research direction concerns the early identification and diagnosis of learning disabilities through Artificial Intelligence systems. Emerging studies suggest that machine learning algorithms may be capable of identifying patterns in linguistic behavior, reading performance, or learning analytics data that indicate the presence of learning difficulties (Zawacki-Richter *et al.*, 2019). Such predictive systems may enable earlier detection of dyslexia and other learning disorders, allowing educators to provide targeted interventions at earlier stages of development. However, further research is needed to validate the reliability and ethical implications of such diagnostic technologies.The ethical dimensions of AI in education also represent a critical area for future investigation. The increasing use of AI technologies in educational environments raises important questions regarding data privacy, algorithmic transparency, and responsible data management. AI systems often rely on large datasets containing sensitive student information, and the protection of learner data must therefore be a central concern in the design and implementation of these technologies (Holmes &Tuomi, 2022). Future research should explore how ethical frameworks and regulatory guidelines can be developed to ensure that AI technologies are used responsibly in educational contexts.Another challenge that deserves greater attention concerns the potential for algorithmic bias in educational AI systems. Machine learning algorithms are trained on datasets that may reflect existing social inequalities or cultural biases. If such biases are embedded within AI systems used in education, they may inadvertently reproduce or amplify educational disparities rather than reduce them. Researchers must therefore examine how AI systems can be designed and evaluated in ways that promote fairness, inclusivity, and equitable access to educational opportunities (Holmes *et al.*, 2019). Future studies should also examine the role of teachers in AI-supported educational environments. Although AI technologies can automate certain instructional processes and provide personalized feedback, they cannot replace the complex social and emotional dimensions of teaching. Effective learning environments require meaningful interaction between teachers and students, as well as pedagogical guidance that supports motivation and engagement. Research is therefore needed to explore how teachers can integrate AI tools into classroom instruction while maintaining their central role in the learning process (Luckin *et al.*, 2016). Another promising research direction involves the integration of Artificial Intelligence technologies within the Universal Design for Learning (UDL) framework. UDL emphasizes the importance of providing multiple means of representation, engagement, and expression in order to accommodate diverse learners (Meyer *et al.*, 2014). AI technologies have the potential to support these principles by enabling adaptive learning pathways and personalized instructional materials. Future research should explore how AI-based learning environments can be systematically designed according to UDL principles in order to promote inclusive educational practices. Finally, interdisciplinary research approaches may play a crucial role in advancing the field of Artificial Intelligence in special education. The development and evaluation of AI-supported educational tools requires collaboration among researchers in education, psychology, computer science, and cognitive science. Such interdisciplinary collaboration may facilitate the development of more effective and ethically responsible AI systems that address the diverse needs of students with learning disabilities.In summary, while Artificial Intelligence technologies offer promising opportunities for supporting students with learning disabilities, significant research gaps remain. Future studies should focus on long-term educational outcomes, the pedagogical integration of generative AI tools, the role of AI in supporting executive functioning and self-regulated learning, and the ethical implications of AI-supported educational environments. Addressing these research challenges will be essential for ensuring that Artificial Intelligence technologies contribute to the development of inclusive, equitable, and effective learning environments

Table 1: Artificial Intelligence Tools Supporting Students with Learning Disabilities

AI Tool / Technology	Educational Function	Supported Skills	Target Population
Speech-to-Text Systems	Convert speech into written text	Writing production, idea expression	Dysgraphia, dyslexia
Text-to-Speech Tools	Convert written text into spoken language	Reading comprehension	Dyslexia
AI Writing Assistants (e.g., grammar correction tools)	Automated grammar and spelling feedback	Writing accuracy	Dyslexia, dysgraphia

Predictive Text Systems	Suggest words and phrases during writing	Writing fluency	Learning disabilities
Intelligent Tutoring Systems	Adaptive instruction based on learner performance	Reading, mathematics, writing	Diverse learning needs
AI Reading Platforms	Adaptive reading difficulty levels	Reading comprehension	Dyslexia
Chatbot Learning Assistants	Provide explanations and academic support	Conceptual understanding	Learning disabilities
AI Summarization Tools	Simplify complex texts	Reading comprehension	Dyslexia
Digital Graphic Organizers	AI-supported structuring of ideas	Writing organization	Dysgraphia
Learning Analytics Systems	Monitor learner progress	Self-regulated learning	Diverse learners
AI Planning Assistants	Help organize assignments and tasks	Executive functions	ADHD, LD
AI Feedback Systems	Provide automated feedback on assignments	Academic performance	Inclusive classrooms
Adaptive Learning Platforms	Personalize instruction based on performance	Reading, math, writing	Learning disabilities
AI Vocabulary Tools	Provide context-based vocabulary explanations	Language development	Dyslexia
AI Reading Assistants	Adjust reading speed and comprehension support	Reading fluency	Dyslexia

Table 2: Research map on AI and learning disabilities

Research cluster	**What the recent literature mainly studies**	**What is still missing**
AI for dyslexia	Screening, reading support, text accessibility, decoding support	Longitudinal school-based studies and stronger classroom evidence
AI for written expression	Generative AI, grammar support, rewriting, planning assistance	Effects on independent writing development and transfer of skill
AI for broader disability support	Accessibility, participation, accommodation, inclusive design	More disability-specific comparisons and differentiated outcomes
AI for executive functioning	Organization, prompting, scaffolding, planning support	Experimental evidence focused specifically on EF outcomes
AI for identification/assessment	Pattern detection, early indicators, predictive analytics	External validation, fairness testing, real-school implementation
AI and inclusive pedagogy	UDL-style flexibility, personalization, access	Stronger pedagogical models linking AI use to teacher practice
AI ethics in disability education	Privacy, bias, transparency, dependence, digital divide	Operational ethical frameworks tested in schools and universities

Theoretical Implications for Special Education and Cognitive Psychology

Recent developments in Artificial Intelligence research suggest that AI should not be conceptualized merely as a technological tool within educational environments, but rather as a form of cognitive and pedagogical mediation that may reshape learning processes and instructional practices. Emerging research indicates that AI-based technologies can expand access to educational content, personalize instruction, and support participation for learners with diverse educational needs, including students with learning disabilities (Holmes *et al.*, 2019; Holmes &Tuomi, 2022; Zawacki-Richter *et al.*, 2019). From this perspective, AI technologies function not only as assistive tools but also as components of broader learning ecosystems that influence how knowledge is accessed, produced, and evaluated.

From a cognitive psychology perspective, one of the most important implications of AI integration concerns the concept of cognitive scaffolding. Students with learning disabilities frequently experience deficits in executive functions, including working memory, planning, cognitive flexibility, and self-regulation (Diamond, 2013; Meltzer, 2018). These difficulties can

create significant barriers during complex academic tasks such as reading comprehension, problem solving, and written language production. AI-supported learning tools may partially redistribute cognitive demands by assisting learners in organizing information, generating ideas, monitoring progress, and revising written work. Within this framework, AI technologies can be understood as external cognitive supports that extend the learner's capacity to perform complex tasks (Luckin *et al.*, 2016; Holmes *et al.*, 2019).A second theoretical implication relates to the role of AI in written language production, which represents a particularly challenging academic domain for many students with learning disabilities. Writing requires the coordination of multiple linguistic and cognitive processes, including lexical retrieval, syntactic organization, planning, and revision (Graham & Harris, 2018). Students with dyslexia or dysgraphia often struggle with transcription processes such as spelling and handwriting, which may limit their ability to focus on higher-level aspects of writing such as organization and argumentation. Recent research on generative AI tools suggests that such technologies may help reduce the cognitive load associated with transcription processes by supporting idea generation, text organization, and revision (Kasneci *et al.*, 2023; MacArthur & Graham, 2016). However, researchers also emphasize the importance of examining whether the use of AI writing tools promotes the development of independent writing skills or whether it primarily functions as a compensatory mechanism that substitutes for certain writing processes.Artificial Intelligence technologies also have important theoretical implications for inclusive education frameworks, particularly in relation to Universal Design for Learning (UDL). The UDL model emphasizes the need to design learning environments that provide multiple means of representation, engagement, and expression in order to accommodate diverse learners (Meyer *et al.*, 2014). AI technologies may support these principles by enabling adaptive learning pathways, personalized instructional materials, and flexible methods of content delivery. In this context, AI tools can potentially contribute to the creation of learning environments that reduce barriers to participation and improve accessibility for students with learning disabilities (Ainscow, 2020).

Nevertheless, the literature also highlights several theoretical challenges associated with the integration of AI in inclusive education. One concern relates to the distinction between accessibility and meaningful participation. While AI technologies can facilitate access to educational content, access alone does not necessarily guarantee deep learning or meaningful engagement with academic tasks. Scholars have therefore emphasized the importance of ensuring that AI-supported learning environments promote active cognitive engagement rather than passive reliance on automated systems (Holmes &Tuomi, 2022).Another important theoretical issue concerns the role of AI technologies in educational assessment and early identification of learning difficulties. Recent studies have explored the potential of machine learning algorithms to detect patterns in learning behavior that may indicate the presence of learning disabilities (Zawacki-Richter *et al.*, 2019). By analyzing linguistic data, reading performance, and interaction patterns within digital learning platforms, AI systems may enable earlier identification of learning difficulties and support more timely intervention strategies. However, the use of such predictive technologies raises important ethical concerns related to data privacy, algorithmic transparency, and the potential risk of bias in automated decision-making systems (Holmes *et al.*, 2019).Finally, the integration of AI technologies into educational contexts raises broader theoretical questions regarding the evolving role of teachers. While AI tools can support instructional processes by providing automated feedback and adaptive learning environments, they cannot replace the complex interpersonal, motivational, and socio-emotional dimensions of teaching. Effective education requires human interaction, pedagogical judgment, and contextual understanding, which remain essential components of the learning process (Luckin *et al.*, 2016).Taken together, these theoretical implications suggest that Artificial Intelligence technologies should be viewed not as replacements for traditional educational practices but as complementary tools that can support cognitive development, accessibility, and inclusive learning environments when implemented within carefully designed pedagogical frameworks.

CONCLUSION

The rapid development of Artificial Intelligence (AI) is creating new opportunities to support students with learning disabilities. This narrative review indicates that AI-based tools can enhance accessibility, personalized learning, written language production, and executive functioning. Adaptive AI systems can analyze learner data and adjust instruction according to individual learning pace and needs, supporting differentiated and inclusive education (Chen *et al.*, 2020; Holmes *et al.*, 2019; Holmes & Tuomi, 2022; Zawacki-Richter *et al.*, 2019; Florian, 2019). AI writing tools such as predictive text, grammar correction systems, and generative language models can reduce transcription difficulties and cognitive load for students with dyslexia or dysgraphia, allowing greater focus on idea generation and text organization (Graham *et al.*, 2015; MacArthur & Graham, 2016; Kasneci *et al.*, 2023; Perera & Aboal, 2023; Zhao *et al.*, 2025). AI-supported platforms may also strengthen executive functioning and self-regulated learning through reminders, task organization, and real-time feedback (Diamond, 2013; Meltzer, 2018; Holmes *et al.*, 2019; Hopcan *et al.*, 2023; Jaime-Vargas *et al.*, 2025). In addition, machine learning systems may support early identification of learning difficulties through analysis of student performance data (Zhang *et al.*, 2024). However, important concerns include overreliance on automated systems, data privacy risks, and algorithmic bias (Chassignol *et al.*, 2018; Dignum, 2019; Williamson & Eynon, 2020). Therefore, AI should

be implemented within inclusive frameworks such as Universal Design for Learning and used to support—rather than replace—teachers (Luckin *et al.*, 2016; Meyer *et al.*, 2014; Florian, 2019; Holmes & Tuomi, 2022).

REFERENCES

Ainscow, M. (2020). Promoting inclusion and equity in education: Lessons from international experiences. *Nordic Journal of Studies in Educational Policy, 6*(1), 7–16. https://doi.org/10.1080/20020317.2020.1729587

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.; DSM-5-TR). American Psychiatric Publishing.

Baumeister, R. F., & Leary, M. R. (1997). Writing narrative literature reviews. *Review of General Psychology, 1*(3), 311–320. https://doi.org/10.1037/1089-2680.1.3.311

Bond, M., Zawacki-Richter, O., & Nichols, M. (2019). Revisiting five decades of educational technology research: A content and authorship analysis of the *British Journal of Educational Technology. Computers & Education, 142*, 103640. https://doi.org/10.1016/j.compedu.2019.103640

Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *IEEE Access, 8*, 75264–75278. https://doi.org/10.1109/ACCESS.2020.2988510

Chassignol, M., Khoroshavin, A., Klimova, A., &Bilyatdinova, A. (2018). Artificial intelligence trends in education: A narrative overview. *Procedia Computer Science, 136*, 16–24. https://doi.org/10.1016/j.procs.2018.08.233

Diamond, A. (2013). Executive functions. *Annual Review of Psychology, 64*, 135–168. https://doi.org/10.1146/annurev-psych-113011-143750

Dignum, V. (2019). *Responsible artificial intelligence: How to develop and use AI in a responsible way*. Springer. https://doi.org/10.1007/978-3-030-30371-6

Ferrari, R. (2015). Writing narrative style literature reviews. *Medical Writing, 24*(4), 230–235. https://doi.org/10.1179/2047480615Z.000000000329

Florian, L. (2019). On the necessary co-existence of special and inclusive education. *International Journal of Inclusive Education, 23*(7–8), 691–704. https://doi.org/10.1080/13603116.2019.1622801

Florian, L., & Black-Hawkins, K. (2011). Exploring inclusive pedagogy. *British Educational Research Journal, 37*(5), 813–828. https://doi.org/10.1080/01411926.2010.501096

Graham, S., Harris, K. R., &Santangelo, T. (2015). Research-based writing practices and the Common Core. *The Elementary School Journal, 115*(4), 498–522. https://doi.org/10.1086/681964

Graham, S., & Harris, K. R. (2018). Evidence-based writing practices: A meta-analysis of existing meta-analyses. *Reading & Writing Quarterly, 34*(1), 1–15. https://doi.org/10.1080/10573569.2017.1401841

Holmes, W., Bialik, M., &Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.

Holmes, W., &Tuomi, I. (2022). State of the art and practice in AI in education. *European Journal of Education, 57*(4), 542–570. https://doi.org/10.1111/ejed.12533

Hopcan, S., Polat, E., Ozturk, M., &Ozturk, G. (2023). Artificial intelligence in special education: A systematic review. *Interactive Learning Environments, 31*(8), 4571–4589. https://doi.org/10.1080/10494820.2022.2067186

Jaime-Vargas, M., (2025). Generative AI tools in education: Opportunities and challenges for learning. *Educational Technology Research and Development.*

Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., Gasser, U., Groh, G., Günnemann, S., Hüllermeier, E., Krusche, S., Kutyniok, G., Michaeli, T., Nerdel, C., Pfeffer, J., Poquet, O., Sailer, M., Schmidt, A., Seidel, T., … Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. *Learning and Individual Differences, 103,* 102274. https://doi.org/10.1016/j.lindif.2023.102274

Luckin, R., Holmes, W., Griffiths, M., &Forcier, L. (2016). *Intelligence unleashed: An argument for AI in education*. Pearson.

Ma, W., Adesope, O. O., Nesbit, J. C., & Liu, Q. (2014). Intelligent tutoring systems and learning outcomes: A meta-analysis. *Journal of Educational Psychology, 106*(4), 901–918. https://doi.org/10.1037/a0037123

MacArthur, C. A., & Graham, S. (2016). Writing research for students with learning disabilities. *Learning Disabilities Research & Practice, 31*(1), 20–31. https://doi.org/10.1111/ldrp.12096

Meltzer, L. (2018). *Executive function in education: From theory to practice* (2nd ed.). Guilford Press.

Meyer, A., Rose, D. H., & Gordon, D. (2014). *Universal design for learning: Theory and practice*. CAST.

Okonkwo, C. W., & Ade-Ibijola, A. (2021). Chatbots applications in education: A systematic review. *Computers & Education: Artificial Intelligence*, 2, 100033. https://doi.org/10.1016/j.caeai.2021.100033

Perera, D., &Aboal, D. (2023). Generative AI in education: A systematic literature review. *Education and Information Technologies*. https://doi.org/10.1007/s10639-023-11853-2

Peterson, R. L., & Pennington, B. F. (2015). Developmental dyslexia. *Annual Review of Clinical Psychology, 11*, 283–307. https://doi.org/10.1146/annurev-clinpsy-032814-112842

Russell, S., &Norvig, P. (2021). *Artificial intelligence: A modern approach* (4th ed.). Pearson.

Snowling, M. J., &Hulme, C. (2012). Interventions for children's language and literacy difficulties. *International Journal of Language & Communication Disorders, 47*(1), 27–34. https://doi.org/10.1111/j.1460-6984.2011.00081.x

Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education.

Learning, Media and Technology, 45(3), 223–235. https://doi.org/10.1080/17439884.2020.1798995

Wood, S. G., Moxley, J., Tighe, E. L., & Wagner, R. K. (2018). Does use of text-to-speech and related read-aloud tools improve reading comprehension for students with reading disabilities? *Journal of Learning Disabilities, 51*(1), 73–84. https://doi.org/10.1177/0022219416688170

Zhai, X., Chu, X., Chai, C. S., Jong, M. S. Y., Istenic, A., Spector, M., Liu, J.-B., Yuan, J., & Li, Y. (2021). A review of artificial intelligence (AI) in education from 2010 to 2020. *Complexity, 2021,* Article 8812542. https://doi.org/10.1155/2021/8812542

Zawacki-Richter, O., Marín, V. I., Bond, M., &Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education. *International Journal of Educational Technology in Higher Education, 16,* 39. https://doi.org/10.1186/s41239-019-0171-0

Zhang, L., Carter, R. A., Jr., Liu, Y., & Peng, P. (2026). Let's CHAT about artificial intelligence for students with disabilities: A systematic literature review and meta-analysis. *Review of Educational Research, 96*(1), 215–257. https://doi.org/10.3102/00346543241293424

Zhao, X., Cox, A., & Chen, B. (2025). The use of generative AI by students with disabilities in higher education. *The Internet and Higher Education, 66*, 101014. https://doi.org/10.1016/j.iheduc.2025.101014

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal, 45*(1), 166–183. https://doi.org/10.3102/0002831207312909