Remixing Special Education Practices with Artificial Intelligence: UDL, EBP, and HLPs

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Journal of Special Education Preparation
4(2), 66-76

DOI: https://doi.org/10.33043/3d-q2d32d

ABSTRACT

This article presents engaging and practical methods of helping educators to "remix" the evidence-based and high-leverage practices they are already familiar with to include the new capabilities of artificial intelligence (AI). Transformational modern technologies can be powerful and disruptive, possessing the potential to impact multiple areas of society, including education. One of the best ways for educators to implement AI in their teaching is using it to help support and extend their current practices (Mishra et al., 2023). Similar to how a new remix on the radio can make an old favorite song fresh again, educators can use AI to uphold and enhance their existing instructional strategies and skills. However, adapting to the new paradigm of AI in education may be challenging for teacher preparation programs in special education. The authors of this article apply some of the strategies from "Leveraging Emerging Technology to Design an Inclusive Future with Universal Design for Learning" (McMahon & Walker, 2019) to effectively implement AI in education. Rather than needing to start fresh or relearn how to teach while incorporating AI, teachers can view this article as a foundation for how to apply AI tools to support current practice. The recommendations are based on Universal Design for Learning (UDL) and strategies for adapting AI tools to support high-leverage practices and established evidence-based practices. The authors aim to inspire special educators to start using AI to help "remix" and innovate the implementation of their existing instructional strategies.

KEYWORDS

artificial intelligence, evidence-based practices, high-leverage practices, special education, Universal Design for Learning

Discussions of artificial intelligence (AI) and its potential to improve special education are not new. Yin and Moore (1987) discussed many of these ideas in their article "The Use of Advanced Technologies in Special Education: Prospects from Robotics, Artificial Intelligence, and Computer Simulation" in the *Journal of Learning Disabilities* all the way back in 1987. While the tools used in their study may not meet our current definitions of AI, this is a prime example of how it is not a new concept in our field. However, what has changed in the last few years is the explosion of new AI tools that have strong educational applications. For instance, large language models (LLMs) such as ChatGPT are designed to assist users by providing information, answering questions, and generating text based on the input they receive. ChatGPT generates responses using a large dataset of text, which helps it understand and produce human-like text (OpenAI, 2023).

AI in education refers to the integration of machine learning and cognitive computing technologies to enhance and personalize the learning experience (Udvaros & Forman, 2023). It further involves the application of algorithms and data-driven approaches to assist in the instructional process (Basham et al., 2020a). This can include the automation of administrative tasks, the development of personalized learning experiences tailored to individual student needs, the use of intelligent tutoring

TABLE 1: Recommended AI Guidance

Recommendation	Explanation in Practice and Considerations for Preservice Teachers
Human-Centered AI	Prioritize human-centric AI design and operation, which considers the unique needs and abilities of all students, including those with disabilities. AI systems should complement human educators' efforts, not replace them, and should be designed to enhance personalized learning experiences.
Inclusive and Equitable AI Use	Ensure that AI systems promote equity and inclusivity, managing harmful biases that might exacerbate existing disparities. For special education, it is critical that AI tools do not disadvantage students based on their learning needs or backgrounds. For preservice teachers, as they explore AI tools to deploy in their classrooms, they need to learn to vet them for a range of diversity, equity, and inclusion issues.
Measuring Trustworthiness	Implement measures to ensure the reliability and validity of AI systems used in special education. This includes regular testing and verification to confirm that AI tools are performing as intended and are robust against failures. Ensuring the safety and security of AI systems is crucial to maintaining the trust of educators, students, and parents.
Privacy and Security	Maintaining stringent data privacy and security measures to protect sensitive student information is a fundamental concern in educational settings, especially when dealing with vulnerable populations such as children with special needs. Data security is very important in all technology applications but is even more critical for educators to be aware of with AI. Across the many AI platforms, there are a wide variety of data privacy practices and many unanswered questions about how long data is retained and used.

systems, and the provision of real-time feedback to students and educators. AI technologies can also analyze large amounts of educational data to identify trends, predict learning outcomes, and provide insights to help educators make informed decisions (Udvaros & Forman, 2023). By automating routine tasks and adapting to the unique learning pace and style of each student, AI in education aims to optimize learning outcomes and increase educational efficiency (Holmes et al., 2019). While AI in education holds tremendous promise, it introduces many concerns as well. As Zhao et al. (2023) point out, without significant training and design work, LLMs "are likely to generate toxic, biased, or even harmful content for humans" (p. 6). AI tools like ChatGPT can also provide widely incorrect hallucination responses, some of which may even be dangerous (Alkaissi & McFarlane, 2023).

Currently, there is an overall lack of information about the use of AI tools in teacher preparation programs. An analysis of the literature from 2000-2023 by Sperling et al. (2024) indicated that very little research has been conducted on AI use and literacy in education. Hopcan et al. (2024) also point out in their literature review of AI that "most of the studies were concerned with the functionality of using AI regarding learning activities of students with special education needs" (p. 7349). Teacher preparation programs are trying to catch up, but only a small amount of information has wended its way into education courses. In answer to this, Trust et al. (2023) recently provided suggestions for integrating ChatGPT in teacher preparation. However, their editorial lacked concrete examples of the types of programs, applications, and sources that teachers might use.

AI IN EDUCATION POLICY

The 2024 *National Educational Technology Plan* (NETP) underscores the role of AI in transforming learning through technology (U.S. Department of Education, 2024). It emphasizes AI's potential to enhance personalization in learning experiences by catering to diverse learning preferences and needs, which is particularly beneficial for students with disabilities. AI's integration into educational technology is targeted to achieve more equitable and effective learning outcomes, ensuring that tailored educational content and interventions are accessible to all students (U.S. Department of Education, 2024). The NETP further highlights the importance of responsibly deploying AI technologies to improve instructional practices and educational decision-making. The plan advocates for the development of guidelines and frameworks to assist educators in effectively integrating AI within the learning environment. This approach aims to ensure that AI tools are aligned with educational goals and that they augment rather than replace the human elements of teaching and learning (U.S. Department of Education, 2024).

State education agencies are also working to responsibly implement AI in education. One example is the Washington Office of the Superintendent of Public Instruction's (OSPI) strong emphasis on AI risk management based on the National Institute of Standards and Technology's *Artificial Intelligence Risk Management Framework* (U.S. Department of Commerce, 2023). This document focuses on the broad application of

TABLE 2: Emerging Technology Propositions and Connections to Teacher Preparation

PROPOSITION	DESCRIPTION	CONNECTIONS TO AI AND SPECIAL EDUCATION PREPARATION
Don't (techno) panic	This proposition encourages educators not to overreact to the rapid changes and potential disruptions caused by new technologies. It advises maintaining a balanced perspective and avoiding fear-driven reactions or "technopanics" about new technological tools.	In the context of AI and teacher education for special educators, this proposition emphasizes the importance of remaining calm and pragmatic when faced with new AI technologies. AI will not end the need for teachers, nor will it fix all the challenges in education. Preservice teachers should be taught to approach AI with a measured mindset, understanding that while AI offers significant potential, it also requires careful and informed implementation. By avoiding technopanics, educators can focus on integrating AI tools thoughtfully and effectively to enhance teaching and learning outcomes for students with disabilities.
Don't believe (all of) the hype (cycle)	This proposition reminds educators to stay grounded and not get carried away by the excitement that typically surrounds new technologies. It refers to understanding the "hype cycle" of technology adoption, which describes the overenthusiasm and subsequent disappointment that often accompanies new technologies before they find a practical and effective role in education.	In the context of AI and special education teacher preparation, this proposition highlights the need to maintain a balanced perspective amidst the excitement surrounding new AI technologies. Preservice teachers should be trained to critically assess the capabilities and limitations of AI tools, recognizing that not all AI advancements will have immediate practical applications in the classroom. Understanding the hype cycle helps educators navigate initial overenthusiasm and subsequent disappointment, allowing them to adopt AI tools that have proven effective and sustainable in special education settings.
Swish and flick (and click)	This proposition encourages educators to actively engage with new technologies, experiment with them, and explore their potential uses in the classroom. It emphasizes the importance of hands-on experimentation and learning by doing, akin to practicing magical spells in a playful and exploratory manner.	This proposition highlights the necessity for preservice teachers to engage hands-on with AI technologies, experimenting and exploring their potential uses in the classroom. By using AI tools during their training, preservice special educators can develop practical skills and confidence in using these technologies to enhance instructional strategies. Encouraging a playful and exploratory approach enables teachers to discover innovative ways to support students with disabilities, fostering a mindset of continuous learning and adaptation
Superheroes assemble	This proposition calls for collaborative efforts in implementing technology. It stresses the importance of gathering a diverse team of educators, developers, students, and other stakeholders to work together in designing meaningful and inclusive educational experiences. As we adapt to the reality of AI in education, we are going to need more stakeholders at the table as we navigate new challenges.	Collaboration is key in implementing AI technologies effectively in special education. This proposition advocates for the formation of diverse teams, including preservice teachers, experienced educators, developers, and other stakeholders, to collaboratively design and implement inclusive educational experiences. In teacher education, fostering a collaborative environment prepares future special educators to work with interdisciplinary teams, ensuring that AI tools are used to their fullest potential to support diverse learning needs.
Are you ready for the remix? (build on what we have)	The final proposition encourages educators to integrate new technologies with existing evidence-based educational practices. It suggests using new tools to enhance and extend proven educational strategies rather than completely replacing traditional methods. AI should not upend all of current instructional best practices which are backed by extensive research evidence. Instead, we can "remix" some of our existing skills and strategies to effectively incorporate AI and assist special educators to address students' needs.	Preservice teachers should be encouraged to integrate new AI technologies with existing evidence-based educational practices rather than completely replacing traditional methods. This proposition supports the idea of remixing proven instructional strategies with AI enhancements to address the unique needs of students with disabilities. By building on established practices, preservice special educators can effectively incorporate AI tools into their teaching repertoire, ensuring that these technologies complement rather than disrupt their pedagogical approaches.

AI technologies and risk management across various sectors, including implications for education. Some relevant recommendations and key points drawn from the framework may be particularly useful for special education preparation programs that are addressing AI in their courses. Ultimately, special education preparation programs need to proactively teach AI skills while simultaneously working to mitigate real-world risks. The Washington OSPI embraced this approach in their implementation of an AI risk management framework as explained in their policy document *Human-Centered AI Guidance for K-12 Public Schools* (Washington OSPI, 2024). Table 1 provides a summary table of selected key recommendations.

AI IN SPECIAL EDUCATION

The recommendations from the Washington OSPI align with the principles of Universal Design for Learning (UDL) and assistive technology practices, aiming to create an inclusive educational environment that supports all learners. Integrating these strategies into special education teacher preparation programs can help harness the potential of AI to improve learning outcomes while managing associated risks effectively. McMahon et al. (2024) presented a webinar for the Council for Exceptional Children titled *Artificial Intelligence and Teacher Education* in which they provided a range of AI applications and strategies. One of their principal recommendations was for educators to find ways of using AI to enhance their existing instructional evidence-based practices. Transformational modern technologies can be powerful and disruptive, possessing the potential to impact multiple areas of society, including education. The use of AI in special education teacher preparation offers numerous innovative opportunities to enhance instructional practices and provide novel support for students with diverse needs (Basham et al., 2020b).

In the article by McMahon and Walker (2019) titled "Leveraging Emerging Technology to Design an Inclusive Future with Universal Design for Learning," the authors present five propositions to help educators effectively use emerging technologies in education. These propositions are designed to foster a culture that supports educators as they create inclusive educational experiences using innovative technologies and are critical for faculty in special education teacher preparation programs to consider as they work to teach preservice teachers about AI. Table 2 outlines the five propositions along with our own connections explaining why each is critical to integrating AI in special education teacher preparation. These propositions are part of a broader discussion on how educators can navigate the challenges of integrating rapidly advancing technologies into inclusive educational practices. They serve as practical guidelines for educators to consider and apply in their professional environments to enhance learning through technology.

As AI rapidly expands into a wide range of technologies and across educational settings, these five propositions remain critical considerations for educators. AI "technopanics" have been present in movies and media for decades and, more recently, many AI tools have faced outright bans because of potential misuse (Harrison et al., 2023). Nevertheless, AI will likely not immediately live up to all of its hype. Humans remain an essential part of professional judgment and critical thinking, at least so far. The third proposition focuses on providing educators with enough time to practice and become adept at using new educational technology tools (McMahon & Walker, 2019). This is critical for AI because many of these tools require practice and trial and error before a teacher should feel confident about the results they will experience in a classroom full of students. In addition to practice and professional development, another critical strategy that helps prepare special educators to use AI is matching (or remixing) existing instructional practices with the addition of AI tools.

CONNECTING AI TO EXISTING PRACTICES IN SPECIAL EDUCATION

Special education teacher preparation programs are confronting two separate AI challenges. The first is AI misuse and cheating. These stories are unfortunately common and involve students who use an AI platform to write an entire essay or otherwise rely too heavily on AI use for composition (Riech, 2022). We hope such misuse is rare in teacher preparation programs. The much larger challenge for teacher preparation programs is adapting to the rapidly changing AI landscape to prepare special educators to use these tools effectively. To address this challenge, we turn our attention to ways special education instructional practices can be "remixed" using AI (McMahon & Walker, 2019).

Evidence-based practices (EBPs), high-leverage practices (HLPs), and UDL are all instructional practices that special educators frequently deploy in the classroom to support students with disabilities. While each of these domains is a large topic on its own, we will highlight a few examples for each. This list is not designed to be exhaustive and special education preservice teachers and their instructors can likely think of many more examples. Following are some practical ways that AI tools can support selected examples of existing research-supported practices.

Using AI to Support Universal Design for Learning

Universal Design for Learning (UDL)

is a framework designed to improve teaching and learning for all people based on scientific insights (Meyer et al., 2014). The *National Education Technology Plan* describes UDL as a way to provide multiple means of engagement, representation, and action and expression to accommodate a wide range of learners. UDL is based on the premise that learner variability is the norm, not the exception, and that curriculum should be designed to meet the needs of all learners from the outset (U.S. Department of Education, 2024). By proactively designing learning environments and experiences that are accessible and engaging for all, educators can reduce barriers and maximize learning opportunities (Meyer et al., 2014).

One long-term hope for special education is harnessing AI to enhance personalized learning, an instructional practice identified by the Institute of Education Sciences' What Works Clearinghouse (2016) as meeting its Tier 2 of evidence based on a study conducted by the Bill & Melinda Gates Foundations (2014). Personalized learning is tailored to each student's interests, strengths, and needs (Patrick et al., 2013). A goal for AI in the classroom is to build educators' skills and strategies for implementing personalized learning that supports specially designed instruction (SDI) for students with disabilities. Personalized learning supported by AI could address many issues of learner variability. Dedicated efforts are needed to effectively implement AI in a way that builds on the evidence-based practice of personalized learning and its related recommendations from the *National Educational Technology Plan* (U.S. Department of Education, 2024).

AI also provides educators with new technological capabilities that can make some of the design work of UDL easier and faster. Most of these capabilities are framed as time-saving teaching tools or ways to enhance student engagement (Hargrave et al., 2024). While enhancing engagement is laudable, much more can be done with AI. For instance, one of the three foundational principles of UDL, provide multiple means of representation, emphasizes creating curricula that provide options for perception, language and symbols, and comprehension (Meyer et al., 2014). The flexible nature of AI is particularly useful in providing options for perception within classroom contexts. Various AI programs can rapidly create new displays of educational content in science, mathematics, social studies, history, and art. For example, the AI tool Diffit (https://web.diffit.me) can quickly create a variety of text and associated images for hard-to-understand topics. When asked to create a fifth-grade-appropriate discussion about geological time, the website created a brief description of the concept, a graphical representation, and definitions at a 5th-grade reading level within five seconds. For students who have difficulty in understanding and decoding symbols and text, both Diffit and ChatGPT (https://chatgpt.com) are useful tools. Like Diffit, ChatGPT can easily rewrite text to match students' reading level. In addition, Canva's Magic Write (https://www.canva.com/magic-write/) enables students and teachers to add video and images to text to support better comprehension. For overall comprehension, both Khanmigo (https://www.khanmigo.ai/) and Cathoven (https://www.cathoven.com) provide K-12 content that can be adjusted to meet the needs and reading levels of students.

These tools can be a great boon to teachers as they promote differentiated instruction matched to the individual capabilities of students. For example, teachers often assign students to different reading groups depending upon their evaluated reading ability. These students may read different texts written at a level that is appropriate for the entire subgroup. Instead, a teacher could use the same text for the entire group but adjust its level for each student. The teacher may also periodically readjust the reading level for each individual student without reorganizing the subgroups within the class. This practice allows the class to stay together, read the same story or informational content, and discuss concepts and ideas as a whole. This not only provides students with a better experience but helps the teacher in terms of time and classroom management.

Furthermore, there are a variety of existing AI applications that can support options for recruiting student interest, one of the UDL guidelines aligned with the principle of providing multiple means of engagement (Almusaed et al., 2023). For example, Eduaide (https://www.eduaide.ai) can help teachers gamify lessons, create interactive lesson seeds, and develop message boards with support in both English and Spanish. When addressing the UDL guideline of sustaining effort and persistence, teachers may find Eduaide useful along with other platforms such as Brainly (https://brainly.com), which provides step-by-step instruction and encouragement for subjects such as mathematics, science, and reading. Brisk Teaching (https://www.briskteaching.com), while originally intended for teachers, has a targeted feedback generator that students can use to help them keep track of their own progress and develop skills for self-regulation, aligned with yet another UDL guideline.

The ability to provide step-by-step instructions and immediate feedback to students quickly and easily can be immensely helpful for teachers in a modern classroom. A teacher using these programs could readily create curricula for multiple groups of students who are working at various levels of understanding or ability. By using Brainly

TABLE 3: UDL Guidelines Enhanced with AI Strategies and Tools

UDL Guideline	AI-Enhanced Strategy	Relevant AI Tools
UDL Principle: Provide multiple means of engagement		
Recruiting interest	AI can help educators rapidly adapt materials to include additional high-interest elements personalized for a student. For example, a 5th grade student working on fraction problems could complete word problems created by their teacher with the assistance of AI that relate fractions to the student's favorite topic of horses by incorporating calculations of horse feed and paddock areas.	ChatGPT Eduaide Goblin Tools
Sustaining effort and persistence	By periodically providing encouragement along with a scaffolded learning environment, AI can foster students' persistence on what might be seen as difficult tasks and concepts to master (e.g., algebra).	Brainly
Self-regulation	AI can provide immediate feedback on student work which helps students with understanding and self-regulation.	Brisk Teaching Magic School
UDL Principle: Provide multiple means of representation		
Perception	Teachers can use AI image generation tools to create infographics that explain complex topics through an alternative to auditory information.	DALL-E Diffit Gemini
Language and symbols	In order to support their understanding and decoding of symbols and text, students can use AI to help explain complex plots, ideas, or subjects. For instance, AI could take a subject such as pre-algebra and explain the meaning of variables and equations.	Diffit Bard Canva's MagicWrite
Comprehension	For a student reading below grade level, AI can produce similar content at a lower reading level. For example, AI could take an 8th grade student's science passage on parts of the plant cell and reduce the reading level to 4th grade.	Khanmigo Cathoven
UDL Principle: Provide multiple means of action and expression		
Physical action	This guideline addresses physical action and assistive technology use. Special educators and families will need to determine in which situations AI qualifies to be used as an assistive technology.	likely to be determined on a case-by-case basis
Expression and Communication	Allowing students to demonstrate their learning using multiple forms of media provides additional opportunities and methods to be successful at school. Rather than writing a paper on a topic, students could use AI tools to help author infographics, presentations, and other media that demonstrate their understanding.	Canva Midjourney Parlay Goblin Tools
Executive functions	AI can help students make decisions, plan out projects, and self-monitor their responses to challenges within content and the classroom.	Siri Alexa Rabbit R1

in combination with Brisk Teaching, a teacher could have individuals or groups of students working on self-paced material that adjusts to their particular needs while the teacher interacts with specific students who need additional support. The teacher could also utilize these programs to aid with transition times in class or when class periods are shortened, lengthened, or canceled, a common occurrence in the modern classroom.

In terms of the third UDL principle, provide multiple means of action and expression, AI offers vast options. For assistance with communication, Parlay (https://parlayideas.com) not only helps monitor student communication but also supports continuing discussion and engagement by providing writing prompts, collaboration ideas, and student grouping based upon interest and ability. The ChatGPT suite of applications provides several ways for students to express their ideas. For instance, the Glibatree Art Designer uses optimized search coding to program the Midjourney image maker (https://www.midjourney.com) to provide artwork for any subject or question.

TABLE 4: Sample of EBPs in Special Education with AI Implementation Examples

EBP	AI Application	AI Tool
Social narratives	Use AI to craft personalized social narratives that are based on individual student data and can be used to help students understand and engage appropriately in social interactions.	Claude
Task analysis	Use AI to decompose complex tasks into simpler, step-by-step instructions that can aid students in performing tasks independently.	ChatGPT
Video modeling	Use AI to automate the creation and editing of instructional videos that model desired behaviors or academic procedures and can be tailored to the student's learning preferences.	InVideo's AI Video Maker
Technology-aided interventions and instruction	Use AI to adaptively modify educational content and problem difficulty based on real-time student performance to optimize learning outcomes.	ChatGPT's Math Tutor

Because of the built in restrictions of ChatGPT, students can create computer-generated artwork that is acceptable for the classroom. A teacher could have students utilize ChatGPT to express their ideas about science, mathematics, history, or language art content in ways that are both flexible and unique for the individual student. Of course, with ChatGPT or any other AI platform, the teacher must monitor the accuracy of any information generated and work with students to be aware of issues of plagiarism using these platforms.

Overall, the adaptability of AI complements the UDL principles by offering varied means of engagement, representation, and action and expression while accommodating learner variability. In addition, all of these resources easily fit within the context of inclusive classroom instruction and can bridge the gap between self-contained and general school environments and instruction. Table 3 presents several additional examples of how AI applications might be used in alignment with specific UDL principles and guidelines.

Example UDL and AI Activity for Special Education Preparation

In a preservice teacher education course, groups of students are assigned a specific topic and one of the nine UDL guidelines and instructed to transform traditional lesson content using AI tools. Each group focuses on a single UDL guideline, such as providing options for recruiting interest (aligned with the principle of engagement), perception (aligned with the principle of representation), or physical action (aligned with the principle of action and expression). For example, students assigned to the guideline on providing options for perception might use AI tools like text-to-speech, image generators, or Magic School (https://www.magicschool.ai/) to change a set of math word problems to include a student's preferred topic like dinosaurs or horses. This assignment allows preservice teachers to take a deep dive into UDL lesson planning and AI resources and helps them learn to create accessible and inclusive lessons.

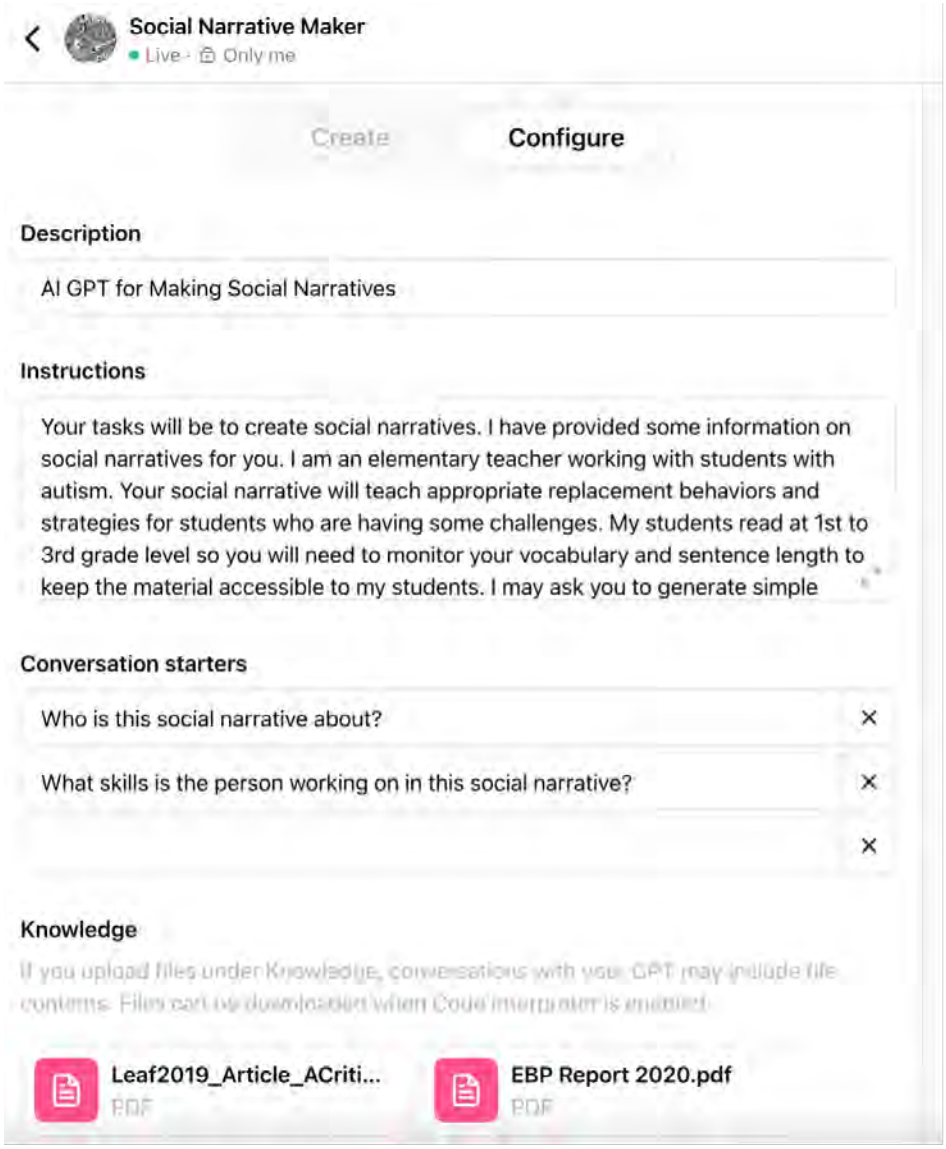
Using AI to Support Evidence-Based Practices

The field of special education continues to work to identify evidence-based practices (EBPs) that are effective when used with students with disabilities (Odom et al., 2005). While the process of identifying EBPs has been defined in the literature, there is comparatively less information on implementation strategies (Cook & Cook, 2013). As preservice teachers learn about EBPs in special education, they can also be directly taught how to utilize AI in the implementation process. Table 4 provides examples of EBPs identified by Steinbrenner et al. (2020) as effective for use with students with autism. This table highlights how AI tools can enhance the implementation of specific EBPs by providing tailored support and interactive experiences for students.

Special education teacher preparation programs can and should continue to equip preservice teachers with the skills to create task analyses, video models, social narratives, and other EBPs without the support of AI. However, similar to how using a calculator allows many people to solve known math problems faster or to double-check their work, AI can enhance the capabilities of professionally prepared special educators. One strategy for effective AI implementation is to support educators in developing their own AI digital literacy skills by customizing their own LLM or other AI tools to address specific classroom needs. These needs are often unique to the individual student, class, and community. Therefore, teachers can learn to tailor AI tools and LLMs to address the diverse demands of their pedagogical environments. The following vignette illustrates this process:

Imagine a first-year special education teacher named Amanda who is teaching Rebecca, a third grader

FIGURE 1: Example Educator-Created LLM



with autism. One morning, Rebecca suddenly starts to display a new attention-seeking behavior of throwing wood chips on the playground. Amanda has had success teaching replacement behaviors to Rebecca using social narratives and decides to use this strategy again. Amanda uses her planning time to work on this challenge, using AI to assist her. She uses the paid version of ChatGPT to create her own customized LLM called "Social Narrative Maker." She trains the LLM on social narrative research and examples and then gives it a test run. Amanda spent only five minutes creating her LLM and is fairly happy with the initial results. She continues to provide the LLM prompts to refine a narrative for Rebecca and within just a few minutes, she is happy with the results (see Figure 1). Amanda next asks the AI to generate a few pictures. She finds the first few examples to be less diverse than she would like and asks for some additional changes. Fairly quickly, she is able to generate an improved social narrative with accompanying visuals that will meet her needs and support Rebecca in learning appropriate replacement behaviors.

Example EBP and AI Activity for Special Education Preparation

In a special education course, preservice teachers individually select an EBP such as creating video models, making social narratives, or writing task analyses using AI. Students present their work to the class, share the positives and negatives of their experiences with AI, and learn about the range and quality of responses generated by AI. Preservice teachers might discover and discuss tips for writing better prompts or they might compare multiple AI tools (e.g., Microsoft Copilot, Gemini, Claude) in terms of supporting the implementation of a specific EBP. Notably, all AI responses will need to be reviewed in light of real-world classroom settings. This activity is likely to generate many examples of why educators must evaluate the content generated by AI.

Using AI to Support High-Leverage Practices

The Council for Exceptional Children has identified 22 high-leverage practices (HLPs) as essential educational strategies that promote effective teaching and better learning outcomes for all students, including those with disabilities (McLeskey et al., 2017). These practices are foundational, supported by research, and aimed at enhancing student engagement, learning, and achievement across various educational settings. HLPs encompass a wide range of techniques, from explicit instruction and collaborative learning to formative assessment and behavior management (McCray et al., 2017). They are divided into four primary aspects of practice: collaboration, assessment, social/emotional/behavioral practices, and instruction. The CEC emphasizes these practices as critical tools for special educators to ensure that their teaching is inclusive, effective, and responsive to the diverse needs of students with disabilities, thereby

TABLE 5: Sample In-Class Activity on HLP Implementation Supported by AI

Domain	HLP	Example of HLP Implementation with AI
Collaboration	HLP 2: Organize and facilitate effective IEP meetings with professionals and families	Transcripts and meeting notes generated by AI digital assistants such as Otter AI or the AI meeting companion feature of Zoom can help capture ideas and notes from IEP meetings.
Assessment	HLP 6: Use student assessment data to analyze instructional practices and make necessary adjustments	AI-powered tools such as Dreambox or other adaptive learning platforms can be used to support instructional adjustments based on student data.
Social/Emotional/ Behavioral	HLP 8: Provide positive and constructive feedback to guide students' learning and behavior	Students can be taught to use AI feedback tools such as Grammarly, Copilot, or similar writing supports that provide immediate, personalized feedback on students' written work, enhancing learning outcomes. A student recently said, "A red underline from your teacher feels worse than a red underline from my computer helping to catch an error".
Instructional	HLP 12: Systematically design instruction toward specific learning goals HLP 18: Use strategies to promote active student engagement	Tools from Magic School or other AI curriculum planners allow educators to design and tailor instruction based on specific learning objectives, student needs, and interest inventories. AI-based engagement platforms like Nearpod and Pear Deck can analyze student responses in real-time to adjust lessons and increase interaction.

fostering an equitable learning environment (McLeskey et al., 2017). As preservice educators learn about HLPs, they can simultaneously learn to use AI to support and potentially enhance their implementation. Because the recent HLP update includes an increased emphasis on cultural considerations in relation to HLP implementation (Aceves & Kennedy, 2024), preservice teachers must be aware of diversity, equity, and inclusion issues that can arise with AI use. Teacher preparation programs can teach HLPs and explore cultural considerations within the known issues of AI bias and limitations (Fesakis & Prantsoudi, 2021) through informative activities and vibrant class discussions.

Due to the rapidly developing nature of this technology, it would be incredibly difficult to maintain an up-to-date list of AI tools matched to the 22 HLPs. In a world where millions of people can create and share their own AI tools just like our teacher Amanda did in the vignette above, there is little chance that any special education preparation program could keep on top of them all. This introduces an opportunity for instructors in special education teacher preparation programs to adopt a "Guide on the Side" approach. Instructors could have preservice teachers work in groups to identify how different AI tools might support individual HLPs or other instructional practices. These could be designed as in-class group activities, perhaps dividing the class between the four HLP domains of Collaboration, Assessment, Social/Emotional/Behavioral, and Instructional practices. Table 5 displays how such an in-class activity in a special education course could explore ways of using AI to support HLP implementation. Ideally, this would provide the class with opportunities to reinforce both their HLP knowledge and their AI literacy skills. Again, these examples are not exhaustive.

Example HLP and AI Activity for Special Education Preparation

Teacher preparation programs can include assignments like an AI-Powered Lesson Planning Workshop designed to equip preservice special education teachers with the skills to effectively integrate AI tools into their lesson planning in alignment with the HLPs. In this workshop, participants begin with an introduction to various AI educational tools, such as AI lesson planners and adaptive learning software. They are then divided into small groups, with each group selecting a specific HLP, such as explicit instruction or providing constructive feedback. Using their chosen AI tool, each group collaboratively creates a detailed lesson plan that incorporates the selected HLP. The groups then present their lesson plans to the class, explaining the AI tool's role and how it supports the implementation of the HLP. The workshop concludes with a reflective discussion on the benefits and challenges of using AI in special education, fostering a deeper understanding of how technology can enhance instructional practices.

DISCUSSION

The rapid development of artificial intelligence technologies, especially

LLMs, is poised to significantly disrupt special education practices in the coming years. As Marino et al. (2023) discuss, AI has the potential to act as a "cognitive prosthesis" for students with disabilities, providing new opportunities to access learning, develop skills, and demonstrate knowledge. AI-powered tools can generate personalized learning experiences, provide instructional support, and even serve as artificial tutors or companions. AI is a potential game changer not only in special education, but in all educational spaces. As noted earlier, while there is very little research about AI use in special education, even less is known in general education environments (Hopcan et al., 2024; Sperling et al., 2024. This lack of research is leaving all education stakeholders flat-footed when it comes to AI's impact on classrooms today and its potential impact tomorrow.

However, the increasing use of AI in education also raises important ethical considerations around data privacy, bias, transparency, and the changing roles of educators (Marino et al., 2023; U.S. Department of Education, 2024). Special education teacher preparation programs must evolve to equip preservice teachers with the knowledge and skills to leverage AI effectively and responsibly. This includes understanding the affordances and limitations of AI tools, learning to evaluate them critically, and strategizing how to integrate them into evidence-based instructional practices.

The examples explored in this paper, such as using AI for writing support, personalized learning pathways, and accessibility accommodations, represent just a few of the many potential applications of AI in special education. These are intended to be a starting point to help special educators to explore, pilot, and evaluate AI capabilities. Additional research is needed to establish guidelines, evaluate impact, and define best practices for implementing AI to enhance learning outcomes for students with disabilities.

Although we mention some specific AI tools in this manuscript, we recognize that in this rapidly changing technology landscape, there is no guarantee that these companies will all be around in even a few years. The names and features of these AI platforms are likely to change over the coming years. However, we strongly believe that AI applications are only going to increase in availability and will rapidly expand in capabilities. Additionally, AI policies vary dramatically from one district to another and the tools and access to AI resources may be more regulated in some schools than others.

Ultimately, realizing the promise of this emerging technology in special education will require an ongoing assembly of and collaboration among educators, researchers, technology developers, policymakers, and most importantly, individuals with disabilities themselves (McMahon & Walker, 2019). The field of special education can harness the power of AI to design a more inclusive, effective, and empowering future for all students. Teacher preparation programs need to be leaders in AI implementation so we can design a more inclusive educational experience for all learners.

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