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Navigating Uncharted Waters: Using Generative Artificial Intelligence for Differentiation and Individualization in Middle Schools

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Abstract: Generative AI (GenAI) can provide middle grades educators with tools that streamline instructional planning and save volumes of time. Among their broad offerings, GenAI tools afford many potential ways to support teachers' responsive instruction, or instruction that proactively anticipates and responds to learners' varied strengths, preferences, and growth areas. Differentiated and individualized instruction are two forms of responsive instruction commonly used by middle school educators, which can be time-consuming to plan. In this article, we explain how teachers of young adolescents can use three popular GenAI tools - MagicSchool, Diffit, and ChatGPT - to make planning for both types of responsive instruction more efficient. We describe each tool's key features, strengths, and limitations and offer concrete guidelines for using each effectively. We also share recommendations for middle level educators' ethical, safe, and accurate use of all GenAI tools.

Keywords: differentiated instruction, differentiation, individualization, artificial intelligence, generative AI, GenAI

Impactful learning experiences are often hard to create. Crafting learning experiences responsive to differences among individual students in your classroom takes time, and time is one of middle school educators' most limited resources. With diverse learner needs, instructional design, ongoing assessment, and numerous other requirements chipping away at every planning hour, teachers are often left scrambling to balance responsibilities. Differentiating and individualizing instruction to meet varied student needs are essential to fostering student growth (Dack et al., 2022; Tomlinson, 2017), but they can also be particularly demanding. The challenge of providing tailored support to each student while managing the rapid pace of life in the classroom places significant pressure on teachers, necessitating the efficient use of time.

Generative Artificial Intelligence (GenAI), the technologies that power many popular tools like ChatGPT, MagicSchool, Gemini, and CoPilot, present a potential solution to these challenges. Rather than adding further tasks to a teacher's workload, GenAI tools offer practical ways to streamline time-consuming elements of lesson planning, content creation, and assessment, including elements necessary for meaningful, differentiated, and individualized instruction (Maxwell, 2023; United Nations Educational, Scientific and Cultural Organization, 2023). By automating and supporting many tasks related to responsive instruction, GenAI can empower educators to maintain high standards for all learners while maintaining efficiency.

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Any exploration of GenAI's capacity to revolutionize planning for instruction should first be rooted in understanding the definitions of GenAI and artificial intelligence (AI) more broadly. AI is not a single tool but a broader concept that may describe various technologies "that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions" (National Artificial Intelligence Initiative Act of 2020, H.R. 6216, 116th Cong., 2020, Sec. 3. Definitions). AI tools like search engine algorithms, graphing calculators, language translation software, and predictive text have been used in classrooms for decades (Trust et al., 2023). However, the recent innovation of GenAI—tools capable of recalling, learning from, and improving multi-modal output quality over time—exploded in popularity following the public release of OpenAI's ChatGPT in November 2022, sparking essential questions about the role AI should play in the classroom (Cooper, 2023; Hardesty, 2017; Sier, 2022). Much attention has been paid to student use of these technologies, including concerns regarding plagiarism and ethical use (Haque et al., 2024; Hays et al., 2023; Rahimi & Talebi Bezmin Abadi, 2023; Tlili et al., 2023). However, the topic of teacher use of GenAI for instructional planning has been addressed less frequently to date. Our focus in this article is on the latter.

How can this emerging technology help middle grade educators optimize their time while improving students' educational experiences? The following sections explore the answer to this and other questions about GenAI tools' potential to transform differentiated and individualized instruction for young adolescents. We evaluate the strengths and limitations of three popular GenAI tools for these purposes and conclude with practical recommendations for responsibly and ethically using these tools.

Defining Differentiation and Individualization

In the sections below, we examine the use of GenAI technologies to support differentiation and individualization in middle level classrooms. Both instructional approaches reflect responsive instruction, or instruction that proactively anticipates and responds to learners' varied strengths, preferences, and growth areas. Each approach also has distinct differences.

Differentiation

To differentiate instruction, a teacher typically uses assessment data, student input, and other observations to identify patterns across a class and adjust instruction based on those patterns. Differentiation's emphasis is often on modifying instruction for groups of learners rather than for one individual learner. These modifications are usually based on three categories of differences among students that may affect learning: 1) readiness, 2) interest, or 3) learning profile (Tomlinson, 2017).

Readiness refers to a student's current level of proficiency with specific knowledge or skills (Tomlinson, 2017). If a learning objective represents a lesson's destination, then a student's readiness level reflects how near or far—based on assessment data—a student is from that destination at a particular moment in time. The teacher then assigns each group a different "tiered" task designed to move that group's proficiency a step closer to the objective (Tomlinson, 2017). Each task aligns with what that group is "ready" to learn next.

For example, imagine a social studies teacher is teaching two consecutive lessons targeting the learning objective: *Students will be able to evaluate a primary source's trustworthiness based on its audience and purpose* (Dack et al., 2022). An exit ticket at the end of the first lesson shows that some students correctly identify the source's audience and purpose but do not reach a logical conclusion

about its trustworthiness, while others do not correctly identify the source's audience or purpose and therefore do not reach a logical conclusion about its trustworthiness (Dack et al., 2022). Since students will begin the second lesson at different starting points, the teacher will group students with similar proficiency. Then, they will work with other primary sources, and the questions they answer about those sources will vary based on what they are ready to practice (Dack et al., 2022).

Interest refers to a student's affinity for particular topics that motivate learning, and a learning profile refers to a student's personal preferences for approaches that make learning more efficient (Tomlinson, 2017). Learning profiles might include preferred working configurations, such as with a partner or independently, preferred learning modes, or an analytical, practical, or creative intelligence preference (Sternberg, 1985). Students usually choose among varied options when a lesson is differentiated by interest or learning profile (Tomlinson, 2017).

A math teacher uses interest-based differentiation when they offer students a choice among three sets of word problems—one about professional sports, one about Broadway shows, and one about popular video games—that all involve the multiplication of fractions. A science teacher uses learning profile-based differentiation when providing students with different options to express what they learned about local ecosystems by designing a blog, creating a podcast, writing an op-ed, or developing a presentation for the fish and wildlife department.

The three categories of learner differences often targeted by differentiation—readiness, interest, and learning profile—apply to every learner in a middle school classroom. In any given lesson, all students will have a particular level of proficiency with the targeted knowledge or skill, varying degrees of interest in the topics explored, and varied preferences regarding which learning approaches would feel most efficient that day.

Individualization

While differentiated instruction focuses mainly on identifying patterns across a class and responding to those patterns by modifying learning experiences in different ways for different groups, individualized instruction targets the learning needs of individual students. Through this approach, teachers customize lesson elements to accommodate one student or a handful of students with similar needs (Bray & McClaskey, 2015).

The types of learner differences targeted by individualization often do not apply to every learner in a general education classroom. Instead, they reflect the unique circumstances of learners that merit the teacher's instructional attention. Examples of the types of needs teachers often address through individualization include accommodations for students with IEPs and 504s, linguistic supports for multilingual learners, scaffolds for students reading below grade level, or extension options for students with advanced proficiency.

Although we sought to clarify key differences between differentiation and individualization in this section, the line between these approaches is sometimes blurred in practice. For example, if an educator teaches a class in which half the students are multilingual newcomers and half the students are not multilingual, a lesson that builds in an additional scaffold for all multilingual learners might be logically classified as differentiation rather than individualization since it involves identifying a pattern of needs across a broader group of learners in the classroom. Nevertheless, these two instructional approaches—differentiation and individualization—offer useful conceptual categories a teacher can use to determine whether or how to use a GenAI tool to enhance responsive instruction.

Using GenAI Tools for Differentiation or Individualization

There are many GenAI tools middle school teachers can leverage to support responsive instruction. Some of these tools have been designed for use by educators, while others are built for broader audiences (Diffit, 2024b; MagicSchool AI, 2024a; OpenAI, 2024). We view GenAI tools used by educators as serving two primary purposes. First, GenAI can provide new ideas or inspiration for teaching. Nieves (2023) offers an example by suggesting a teacher could input the prompt "What are three different approaches to teaching the central idea of a text?" into ChatGPT. The tool's output might include several broad instructional approaches, such as graphic organizers, guided reading, close reading, and visual representations, which can provide a helpful starting point for lesson design (Nieves, 2023). We refer to this as GenAI's "**Brainstorming Buddy**" function. However, it can also be used to create the instructional materials used during a lesson, including choice boards, multiple text versions, or tiered worksheets. We refer to this as GenAI's "**Resource Generator**" function.

In the following sections, we discuss three GenAI tools that can be used to support instructional planning for differentiation and individualization: MagicSchool, Diffit, and ChatGPT. We selected these tools based on their potential utility for middle grades educators, the variety of options they offer, and the fact that they all currently offer a free version or trial. For each tool, we address what it offers teachers, as well as its strengths and limitations. We also identify which student differences can be addressed with the tool's support (e.g., readiness, multilingual learners) and how it can be used for Brainstorming Buddy versus Resource Generator functions. Table 1 offers an overview of key aspects of each tool.

Table 1 *Selected GenAI Tools for Middle Level Education*

GenAI Tool	Web Address	Target Audience	Versions Offered	Account Required	Responsive Instruction Supported
Magic School	magicschool.ai	K-12 educators K-12 students	free version paid "plus" version	yes	differentiation individualization
Diffit	web.diffit.me	K-12 educators	free version paid "premium" version	yes	differentiation individualization
ChatGPT	chatgpt.com	general public	free version paid "plus" version	yes	differentiation individualization

MagicSchool

Once logged in to MagicSchool (MagicSchool AI, 2024a), the user can access one set of resources for educators called "MagicSchool" and a second set for students called "Magic Student." As previously noted, this article addresses tools for educators rather than student use. However, we encourage middle level teachers to explore the MagicStudent resources, as young adolescent learners may benefit from what they offer. The MagicSchool resources for teachers are divided into two main categories: "Raina" and "Magic Tools."

Raina

Raina is the name of MagicSchool's GenAI chatbot feature. MagicSchool introduces this feature to the user through the following text:

> Hello! My name is Raina, your AI instructional coach. You can ask any questions related to best practices in teaching or your work in a school building. Feel free to ask me for ideas for your classroom, research on best practices in pedagogy, behavior management strategies, or any general advice! The more specific your questions, the better my responses will be. How can I help you today? (MagicSchool AI, 2024b).

This introduction demonstrates that Raina allows users to seek information about any educational topic. This is underscored by MagicSchool's framing of Raina as an "AI instructional coach." In addition to specific inquiries, users can make broad, open-ended ones as well. For example, the first time we used Raina, we asked, "What are best practices for differentiated instruction in a middle school classroom?" and received a list of eight research-based practices. Users can engage in a back-and-forth discussion with Raina where they input an initial prompt, review Raina's output, input a second prompt (such as a follow-up question about the output), review the output, and continue in a back-and-forth conversation. We view Raina's primary function as a Brainstorming Buddy. However, it is also possible for Raina to serve a Resource Generator function if the user asks Raina to create instructional materials.

Magic Tools

Unique to MagicSchool is its Magic Tools feature. When we wrote this article, MagicSchool offered 83 of these tools, though new ones are added frequently (MagicSchool AI, 2024a). Each tool has a particular educational purpose and a narrowly focused structure to help teachers input the specific information needed to generate a targeted response. For example, the "lesson plan tool" asks the user to specify grade level, lesson topic or objective, any additional criteria the lesson should reflect (e.g., unit topic, previous lesson topics, preferences for structures like group work), and standards to which the lesson should be aligned (e.g., NCDPI 7th-grade ELA) (MagicSchool AI, 2024a). In contrast to using a chatbot like Raina, using Magic Tools relieves teachers of the responsibility of thinking through everything to include in the prompt to create the desired product. Instead, it prompts the teacher to incorporate those elements.

Many of Magic Tools have been designed to support differentiation or individualization. Table 2 lists key Magic Tools that target these areas. Although we have classified each tool based on one potential way it might be used for effective, responsive instruction, many of these tools can be used responsively in numerous additional ways. For example, although we have classified the Sentence Stem tool's potential responsive use as readiness-based differentiation to support the development of tiered tasks for students with limited proficiency with the objective, teachers might also use this tool to support multilingual learners, those with learning differences, or many other learners with unique needs. Each middle level educator should use discretion when determining the most beneficial role for each tool in their classroom in light of the particular students they teach.

Table 2 *Selected Magic Tools that Support Responsive Instruction*

Tool Name	Description from MagicSchool AI (2024a)	Brainstorming Buddy or Resource Generator	Responsive Instruction Supported	Potential Learner Difference Supported	Tips for Responsive Use
Accommo-dation Suggestions	*"Generate a list of accommodations for a student who needs support."*	Brainstorming Buddy	Individualization	Exceptional children	Be as specific as possible when describing student behaviors and needs.
IEP Generator	*"Generate a draft of an individualized education program (IEP) customized to a students' needs."*	Resource Generator	Individualization	Exceptional children	Input student strengths, not just growth areas.
504 Plan Generator	*"Generate draft of a 504 plan to support a student."*	Resource Generator	Individualization	Exceptional children	Input student strengths, not just growth areas.
Advanced Learning Plan	*"Generate draft of an Advanced Learning Plan (ALP) for a student."*	Resource Generator	Individualization	Advanced proficiency	Input student passions and/or socio-emotional needs, not just proficiencies.
Text Translator	*"Take any text and translate it into any language instantly."*	Resource Generator	Individualization	Multi-lingual learners	Ensure original text is free of errors.
Text Leveler	*"Take any text and adapt it for any grade level to fit a student's reading level/skills."*	Resource Generator	Individualization	Reading below grade level	Ensure you input accurate info about student's current reading level.
Text Scaffolder	*"Take any text and scaffold it for readers who are behind grade level or need extra support."*	Resource Generator	Individualization	Reading below grade level	Produces questions that draw reader's attention to key points in text and list of key vocab words from text with definitions.
Text Rewriter	*"Take any text and rewrite it with custom criteria*	Resource Generator	Individualization	Reading below grade level	Use it to reduce text length or to include/exclude

	however you'd like!"				particular details.
Assignment Scaffolder	*"Take any assignment and empower students by breaking it down into manageable steps, fostering stronger understanding and enabling greater independence."*	Resource Generator	Differentiation	Readiness	Use it to develop tiered tasks for students with limited proficiency who would benefit from step-by-step breakdown.
Sentence Starters	*"Provide sentence starters for any topic, assignment, standard, or objective."*	Resource Generator	Differentiation	Readiness	Use it to develop tiered tasks for students with limited proficiency who would benefit from support of sentence starters.
Make it Relevant	*"Generate several ideas that make what you're teaching relevant to your class based on their interests and background."*	Brainstorming Buddy	Differentiation	Interest	Describe what you are teaching and your students' interests with as much detail as possible.
Math Story Word Problems	*"Write a custom math word/story problem based on the concept you're teaching and a story topic."*	Resource Generator	Differentiation	Interest	Use it to create problems about topics that interest your students.
Choice Board (UDL)	*"Create a choice board for a student assignment based on the principles of UDL."*	Resource Generator	Differentiation	Interest Learning Profile	Consider inputting both different topics and different modalities.

Note: Tool names and descriptions are drawn directly from MagicSchool AI (2024a). All other information is provided by the authors.

Strengths and Limitations

We view Magic School as having two particularly noteworthy strengths:

- It features a user-friendly design. Within each Magic Tool, the simple instructions for using it include specific suggestions for what to input. They also include an "exemplar," or an example of what a teacher might use as an initial input, which provides a model and clarifies the level of detail needed.
- It includes recommendations for potential follow-up prompts that appear after the chatbot responds to an initial question. For example, when we asked Raina, "What are best practices for differentiated instruction in a middle school classroom?" and received a list of research-based practices in response, Raina suggested follow-up questions we might ask, such as, "What resources do you recommend for implementing these practices?" These potential follow-ups help teachers consider helpful next steps in a back-and-forth conversation with a chatbot.

Most of MagicSchool's limitations apply to all GenAI tools; we discuss those broad limitations toward the end of this paper. However, we do note some as specific to this tool:

- As previously mentioned, MagicSchool has chosen to give their chatbot a human name and refer to it as an "instructional coach." They have also decorated the page on which Raina is accessed with a cartoon icon of an appealing human figure.
- Experts advise caution when AI has been imbued with endearing human-like features (Mollick, 2024), as this may reduce a teacher's caution surrounding protecting student privacy when inputting information about their students.
- As further described below, we urge teachers to remain vigilant of possible ethical issues when using MagicSchool and all GenAI.

Diffit

While the scope of MagicSchool's and ChatGPT's offerings is broad, Diffit's (Diffit, 2024a) offerings are more narrowly focused. Designed for K-12 educators, Diffit is a text creator and modifier. We, therefore, view this tool as a Resource Generator rather than a Brainstorming Buddy. Diffit generates a 1-2 page text about any topic. It can generate this new text from scratch or based on another resource the user provides. These inputs can include an uploaded document, video, or website link; if provided, Diffit will incorporate content from the additional resource into the text it creates. The text's content can also be aligned to user-identified standards for ELA, social studies, or science (Diffit, 2024a). Once the text is generated, Diffit can 1) adapt the level of detail to make it shorter or longer, 2) change its reading level, or 3) translate it into a different language. A teacher can, therefore create multiple versions of any text to accommodate varied student needs.

For each text, Diffit automatically generates a series of corresponding resources, including a bulleted summary, a list of key vocabulary words with definitions, multiple choice, short answer, and open-ended questions. Diffit can also create instructional materials for student activities by pulling the previously generated vocabulary words or questions into templates (e.g., Frayer Models, claim-evidence-reasoning structures), which can then be exported as Google Docs, Google Slides, Google Form quizzes, PowerPoint slides, Word documents, or PDFs. These templates are sorted by category based on a teacher's goal for an activity, such as vocabulary practice, summarizing, reading strategies, text analysis, and more (Diffit, 2024d).

Strengths

Diffit's creators distinguish their product from other GenAI by emphasizing the quality of the initial text, the automatically generated text-based resources, and the user-selected activity materials (Diffit, 2024b). For example, Diffit only draws upon sources its developers have deemed reliable rather than pulling information from the open internet. This limitation on sources is intended to increase the accuracy and credibility of the text Diffit generates. If requested, Diffit will cite each statement within the text and include an accurate reference list for the citations. If a teacher does not want the text to draw from a particular source, they can edit the reference list to remove it and regenerate the text so that the information from the source no longer appears. Additionally, Diffit (2024b) touts the quality of its textual translation. While other GenAI offers this feature, Diffit's translation may be more accurate, which is critical if the teacher does not speak the language and cannot proofread the text independently.

Diffit is especially effective if the teacher wants to use GenAI for text modification to support responsive instruction. Different versions of a text might be created for students who are not yet reading on grade level, multilingual learners, or those with learning differences that affect reading. For example, a 7th-grade social studies teacher has a class with four newcomer multilingual students and two other students reading on a 4th-grade level. He imports a video about the bombing of Pearl Harbor into Diffit to create an initial text about the event at a 7th-grade reading level. After reviewing the automatically generated resources, he creates a cause-and-effect graphic organizer. He then generates two other versions of the text - one at a 4th-grade reading level and one in Spanish. Diffit creates new automatically generated resources and graphic organizers to correspond with these two new text versions.

While the previous example focused on individualizing materials, Diffit also offers some differentiation options. The student activity options include a Topic Choice Board, Poetry Choice Board, and Vocabulary Choice Board, which are differentiated based on learning profile since they give students choices in how to demonstrate their learning. A teacher could also use Diffit to support interest-based differentiation by creating texts about different topics for different students or to support readiness-based differentiation by creating texts for some students who lack background knowledge about a given topic (Diffit, 2024c).

Limitations

Because Diffit is a text generator and modifier, its use is focused on a reading passage. This may lend itself better to ELA, social studies, science, and world language instruction than math. Although some math teachers may occasionally find Diffit helpful in generating a reading passage about a particular math concept, Diffit cannot generate math problems yet, and none of the student activity options focus on strategies specific to math.

We also reiterate that Diffit's offerings are more narrowly focused than other GenAI options. Diffit does not include a chatbot, so asking open-ended questions and having back-and-forth conversations are not possible. As a result, Diffit is not an effective Brainstorming Buddy. Similarly, if a teacher wants to use GenAI as a Resource Generator to develop instructional resources that are not directly tied to a textual passage or are based on a strategy that is not reflected in any of Diffit's templates, this tool would not be an option.

ChatGPT

ChatGPT (OpenAI, 2024) is the least structured of the GenAI tools we have reviewed in this paper. It is designed for a broad public audience, not just educators. Like Raina from MagicSchool, ChatGPT is a chatbot; its

interface allows a back-and-forth conversation with the tool. The conversation begins with the user inputting an initial prompt, often a question (e.g., Which instructional strategies could be effective for...?) or a demand (e.g., Create a rubric with four criteria including...). After reviewing the initial output, the user can input additional prompts to cause revisions to the chatbot's initial response, narrow down the focus of the conversation to a particular aspect of the response, or raise a new question or topic. ChatGPT can serve as an effective and efficient Brainstorming Buddy or a Resource Generator since it can offer ideas or create new instructional resources. We also note that it can level a text by lexile level, while MagicSchool's Magic Tools and Diffit can only level a text by grade level.

The degree to which teachers find ChatGPT's output helpful heavily depends on how effectively the educator prompts the tool. Based on our use of ChatGPT, we have found the guidelines listed in Table 3 helpful when writing chatbot prompts.

Table 3 *Guidelines for Effective Prompting of ChatGPT and Other Chatbots*

Topic	Guideline
Clarity	Write in a clear and concise manner.
Specificity	Include all important details, and exclude anything irrelevant to your goal.
Context	Offer context for your request (e.g., students have already learned about X but not yet about Y).
Length	Specify how long (e.g, word count) the result should be.
Role	Assign the chatbot a role for the output (e.g., You are a sixth-grade science teacher.), if applicable.
Audience	Clarify the audience for the output (e.g., for 6th graders), if applicable.
Style	Indicate the style of language that should be used in the output (e.g., formal, informal, using words a 6th grader could understand), if applicable.
Formatting	Specify how the product should be formatted, if applicable.

For instance, we followed the guidelines when crafting a prompt to generate a tiered task:

> You're a 6th-grade English language arts teacher. You're teaching a unit on writer's voice. You've already taught students that a writer's voice can be communicated through tone, diction, and syntax. Now, it's time for the class to practice writing a short piece with a clear writer's voice. However, the students have different levels of proficiency in this skill. One group has advanced proficiency, one has moderate proficiency, and one has emerging proficiency. Write a description of a tiered activity that allows the three groups of students to practice this skill at different levels. The explanations of every group's task should be 100-150 words each. The audience for the explanations is 6th-grade students who will complete the assignment, so use

words 6th-graders can understand.

This prompt successfully led ChatGPT to develop three tiered tasks that responded to varied proficiency levels by using tone, diction, and syntax to establish a writer's voice. It is important to remember that since ChatGPT's intended uses are not limited to education, teachers must often specify an educational context within their prompt. Middle level educators should ensure they specify a middle grades context to increase the likelihood that results will be developmentally responsive for young adolescents.

Strengths and Limitations.

We view ChatGPT's main strength and limitation as one and the same: its open-endedness. First, we address this trait as a strength. ChatGPT can accomplish many of the same tasks as Diffit and MagicSchool's Magic Tools. But because of its expansiveness, it can achieve many functions outside the bounds of those other resources. For instance, it can write complete lesson plans differentiated by readiness, interest, or learning profile. It can generate suggestions for how to help a multilingual learner feel more included in the learning environment. It can list multiple strategies to support a dyslexic student's writing and specify resources to help the teacher enact them. Or it can share best practices for differentiation and individualization in a particular content area in middle school.

However, because of ChatGPT's open-endedness, the teacher is responsible for following guidelines for effective prompting and including all information necessary to generate useful outputs. ChatGPT lacks structured, narrowly focused input frameworks like Magic Tools, so it does not provide suggestions for inputs for specific teaching approaches or exemplar inputs to serve as models. There are also no suggested follow-up prompts like those offered by Raina. Instead, the onus is squarely on the teacher to consider all aspects of what must be included in the prompt to yield a successful result.

Suggestions for Navigating Uncharted GenAI Waters

GenAI tools create numerous opportunities for educators to meet the unique needs of their students. However, these tools are still early in their development. Although guidance about their use in education is beginning to emerge, their novelty and a lack of research into their long-term impacts means we are left to navigate uncharted waters. Below are key principles educators can use to safely, ethically, and accurately leverage these tools' benefits.

Handle with Care

Teachers must remain ever-present with concerns about the responsible use of these tools (Darics & Poppel, 2023). For instance, OpenAI explicitly states that since ChatGPT is most heavily trained in English, it functions best in that language and often perpetuates Western perspectives in its outputs (OpenAI, 2023). Therefore, educators must approach these tools with caution to ensure they do not inadvertently perpetuate potential biases in the data used to train GenAI tools.

Additionally, educators should carefully consider the terms of use of the tools they intend to use, especially if and when students utilize them for classroom purposes. For example, ChatGPT’s terms of use state that users must be at least 13 years of age, and any user under the age of 18 must obtain parent or guardian permission before using the tool (OpenAI, 2023). Additionally, teachers should never input

personally identifiable information, especially confidential student information, into a GenAI system. An effective rule of thumb is to assume that anything prompted to a GenAI tool will eventually become publicly available.

Provide Intentional Oversight

AI and GenAI are tools for teachers, not replacements for teachers. No matter how capable education technology may be, there is simply no substitute for the power of human connection and strong teacher-student relationships. Additionally, although GenAI tools are impressive, their use still requires intentional human oversight. For instance, MagicSchool (2024c) explains that its tools should “by no means replace your professional skills and judgment” (“Your responsibilities” section). Instead, MagicSchool promotes a helpful “80-20” approach to using AI-generated content during the planning process. The tool is viewed as a starting point to get a user 80% of the way to their goal. The teacher's expertise guides the remaining 20% of planning through critical evaluation and revision of AI-generated content before it is used with students. Do not count on GenAI to deliver entirely accurate and reliable output in terms of both content and pedagogy.

Evaluate GenAI Resources for Responsive Instruction

Drawing upon our experiences with GenAI, we conclude by sharing three suggestions for critically evaluating outputs related to responsive instruction. First, when developing tasks with scaffolds for students with emerging proficiency, ensure that scaffolded options still reflect rigor. We have found that scaffolded tiers created by GenAI often water down learning opportunities rather than "teach up" to high expectations (Tomlinson, 2024). Second, when reviewing GenAI-generated task options differentiated by readiness, interest, or learning profile, ensure that all options are aligned with the same learning objective. We have noticed that, even when we have provided the objective and specified the need for all tasks to be aligned to it, GenAI often creates differentiated tasks aligned to entirely different objectives. Last, look for recommendations from GenAI to differentiate based on learning styles, which have been debunked by cognitive psychologists (e.g., Reiner & Willingham, 2010). We have found odd disparities in GenAI's treatment of this topic. When asked directly about learning styles' validity, chatbots have informed us of their debunked status. But chatbots have often referenced learning styles in outputs when asked in separate conversations for principles of effective differentiation or examples of effective differentiated tasks.

GenAI tools can complete diverse tasks in remarkably effective and efficient ways, saving middle grades educators time and freeing up their energy for other purposes. The wise and intentional use of these tools has great potential to benefit teachers responsive to the varied proficiencies, interests, needs, and learning preferences of students in their classrooms.

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