

ORIGINAL PAPER

Middle Level Classrooms: An Integral Threshold to GenAI**Authors:** Karen S. Kopitsky, Tracy Rock**Abstract:**

Technology in schools is rapidly changing. Questions of the how, when, and why of using new technologies like generative artificial intelligence (GenAI) require careful consideration by teachers, especially middle-level educators. Integrating GenAI in powerful and transformative ways is essential to transition middle school students from AI awareness in elementary school to AI knowledge in high school. This article will explore the guidelines and support provided by the North Carolina Department of Public Instruction to assist teachers within the state.

Keywords: *generative artificial intelligence (GenAI), AI literacy, Middle Level Educators, AI Integration*

“Public education stands at the threshold of a new era defined by artificial intelligence (AI), demanding urgent action from educators and policymakers to prepare students for a future transformed by rapidly evolving AI technologies” (North Carolina Department of Public Instruction [NCDPI], 2024, p. 6).

Engaging with middle-level learners means recognizing the unique assets and perspectives they bring to the classroom (Bishop & Harrison, 2021). This same distinctive lens must be considered when discussing their engagement with Generative Artificial Intelligence (GenAI) (Association for Middle Level Education [AMLE], 2025). GenAI is identified as the most widespread application of AI currently impacting educational environments (Mack & Stockton, 2026). It is defined as a

transformative technology that generates various forms of content, including text, images, videos, and audio, by responding to human-engineered prompts (Wang et al., 2024). AMLE, in its position paper on artificial intelligence, offers guidance at three different levels within middle-level education: district, building, and the individual classroom. The focus of this article will be on how the individual teacher can consider whether, when, and how to employ GenAI in the middle level classroom.

The introduction and growth of GenAI require educators to contemplate how this tool can be used to enhance learning (Berson & Berson, 2023). Heafner and Maxwell (2025) suggest that GenAI be viewed as a collaborator and not a replacer of students’ own critical thinking. “This requires a re-envisioning of the assessment process to accommodate AI and a shift in focus to authentic and process-focused assessment” (Berson & Berson, 2023, p. 115). This shift to both authenticity and

process aligns with the emphasis Bishop and Harrison (2021) place on the role of asking authentic questions that are meaningful for middle-level learners. GenAI could be utilized by teachers to support instructional planning and curriculum development, centering students as they reconsider how they will assess student learning. However, before engaging with GenAI, there are several considerations that teachers must reflect on.

AI Considerations

When considering using AI tools, it is important that educators ensure they comply with any state, district, or school policies concerning GenAI use in the classroom. AI usage can implicate laws at the state and federal level (North Carolina Department of Public Instruction [NCDPI], 2024). “Most Large Language Models such as ChatGPT, Microsoft CoPilot, and Perplexity are currently prohibited for ages under 13 per their terms of service, but are allowed for ages 13 and over with varying parental/guardian permission requirements” (NCDPI, 2026, p. 17). Additionally, teachers must be aware of how the various GenAI tools will use the data that is entered into them. Many tools that are targeted to teachers have pages that explain their data and security policies (*see, for example*, Diffit, Magic School). NCDPI provides support to schools and districts as they contemplate parent permission and AI usage (*see* a sample permission document linked in the NCDPI AI Guidebook (NCDPI, 2026, p. 17).

It is possible that responses from GenAI could include bias (OpenAI, 2023). Bowen and Watson (2024) explain, “this same design feature that allows LLMs [Large Language Models] to provide new and different answers to the same prompt, also causes unpredictability and a lack of

reliability. AI is also generative of misinformation” (Bowen & Watson, 2024, p. 19). Amplification of bias that exists within the information the AI model has been trained on can occur (Stanford University IT, 2024). Both teachers and students must keep this possibility in mind.

NCDPI Guidelines

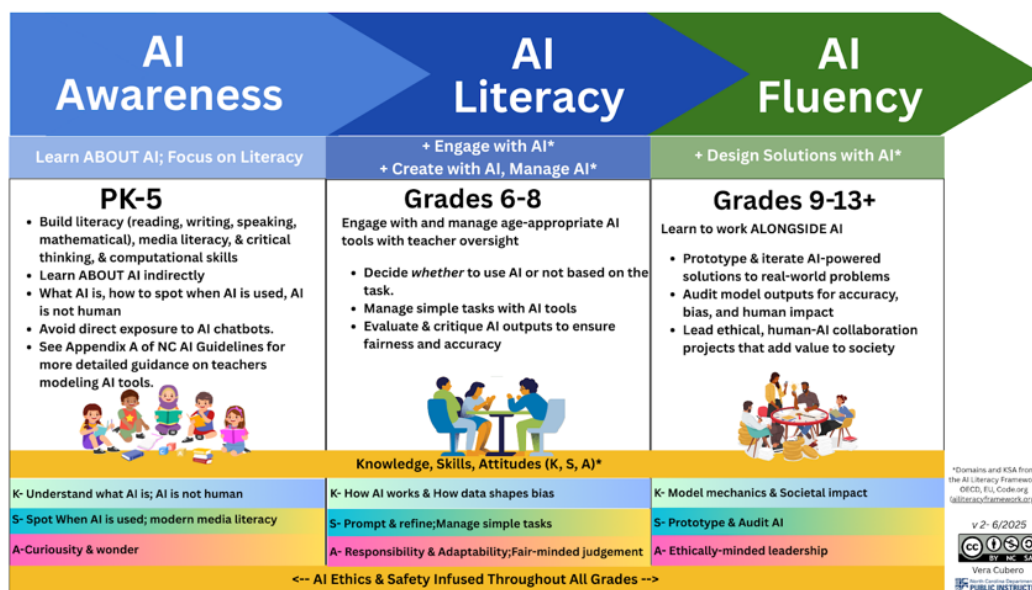
In North Carolina, NCDPI provides guidelines around GenAI use for both teachers and students through its guidebook - *North Carolina Generative AI Implementation Recommendations and Considerations for PK-13 Public Schools* (NCDPI, 2026). The guidebook is updated often to respond to technology updates and to include new guidelines to reflect the current state of technology. NCDPI (2024) suggests that personally identifiable student information is not put into any AI tools. Such information could be “...names, birthdays, voice clips, facial images, student work, or ID numbers...” (p. 35).

As middle-level educators, it is important to consider what AI knowledge and literacy skills students bring into the classroom. NCDPI (2024) recommends that elementary students learn about the existence of artificial intelligence, but do not engage in it. Therefore, it is especially important to consider how to help support sixth-grade students as they move from upper elementary into middle school classrooms. Figure 1 shows how students move from an awareness of the technology to a fluency in its use as they go from PK to 13+. For elementary students, interactions with AI should be teacher-led and teacher-facilitated. Students should not utilize or have contact with chatbots. Instead, as NCDPI (2024) explains, “the focus is on developing the literacy, curiosity, and critical thinking skills needed to understand how AI exists in the world

around them” (p. 24). Educators need to include discussions of the ethics implicated by using AI tools and how to engage in

responsible and ethical usage of the tools (Bowen & Watson, 2024).

Figure 1 *AI Literacy Timeline*



Note. From *NCDPI AI literacy timeline PK–13 and educators: v. 2.0* [Infographic], by NCDPI, 2026, *North Carolina Generative AI Implementation Recommendations and Considerations for PK-13 Public Schools*, p. 24 (ncdpi.gov). In the public domain.

In the sixth through eighth grade, NCDPI recommends that students begin engaging with GenAI, but with educator oversight and in ways that are developmentally appropriate. AMLE (2025), in their position paper, explains “at this level, GenAI should be introduced not only as a tool for efficiency or differentiation, but as a catalyst for critical thinking, creativity, and reflection building empathy, critical inquiry, and self-awareness” (para. 24). Where there is engagement, there should also be criticality.

AI Literacy

According to 15 U.S. Code § 9401(3), “the term ‘artificial intelligence’ means a machine-based system that can, for a given

set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments.” There is both a human and a machine component to AI. The United States Department of Labor released its AI Literacy Framework in February (Mack & Stockton, 2026). The Department of Labor definition for AI literacy is that it is “...a foundational set of competencies that enable individuals to use *and* evaluate AI technologies responsibly, with a primary focus on generative AI, which is increasingly central to the modern workplace” (*emphasis in the original*, p. I-1). NCDPI’s guidebook emphasizes that AI literacy is not just focused on knowledge of the technology but is also connected to civic literacy, as it should include

knowledge of cyber citizenship, internet security, ethics, and comprehension of the effects of AI on society (NCDPI, 2026). Students must be able to consider content created by AI and recognize incorrect information or bias within the output (Berson & Berson, 2023). The question then is: how do classroom teachers help their students engage with GenAI in such developmentally appropriate ways that build the necessary AI literacy?

Incorporating GenAI into the Middle Level Classroom

GenAI can be utilized as an efficient means of personalizing instruction for students within the middle level classroom (Dack et al., 2025). However, there are both strengths and limitations to the various tools available to teachers (*see* Dack et al., 2025 for an in-depth discussion of multiple tools that can be leveraged to support differentiation). It is important that the teacher, as the content expert, reviews the AI output. Whenever using GenAI tools, it is necessary for the teacher to review the responses for accuracy, hallucinations, bias, and whether suggested strategies or instructional practices are developmentally appropriate for their students. Additionally, prompt crafting can

impact the outcome provided by GenAI. GenAI's ability to provide accurate and meaningful results often depends on the effectiveness of these prompts and the instructions or questions provided by the user (Guan et al., 2025). To support teachers in using GenAI to increase student cognitive demand, not reduce it, and center human judgment and criticality within learning tasks, NCDPI has created a Google Gem that teachers can use (NCDPI, 2026). Google Gems allow for customization to increase task efficiency (Google, n.d.). NCDPI's Gem is called the Human Agency & Judgement Gem (NCDPI, 2026). NCDPI has created a link that provides direct access to the gem. To locate and try out the Human Agency & Judgement Gem, go to NCDPI's AI Guidebook at https://go.ncdpi.gov/AI_Guidelines (NCDPI, n.d.). In the "document tabs" to the left within the Google Document, click on Appendix F. The Human Agency & Judgement Gem provides support to teachers as they craft prompts and chat with the Human Agency & Judgement architect. On March 15, 2026, the authors prompted the NCDPI Human Agency & Judgement Gem to explain what it would like teachers to know. The Gem responded:

My goal is to ensure that as AI becomes a standard tool, your students don't lose their voice, their critical thinking, or their sense of agency. Instead of worrying about whether a student used AI to skip the work, we're going to design tasks where the AI is a collaborator—and the student is the **Chief Decision Maker** (emphasis in original; see Appendix for documentation of the authors' interactions with the NCDPI Human Agency & Judgement Gem).

During the same interaction, the Gem architect suggests beginning by providing specific information:

To get started, please provide the following details, or simply **upload an existing assignment** you'd like to "AI-proof" and enhance:

1. **Grade Level:**
2. **Subject Area:**
3. **Standard(s) to be Mastered:**
4. **Location (City, State):** (This helps me pull in local data, history, or community issues for alignment). (emphasis in original; see Appendix).

Utilizing the suggested template above, a teacher can provide information from which the NCDPI Gem can create an AI-infused lesson. On March 17, 2026, the authors prompted the NCDPI Human Agency & Judgement Gem using this template. The resulting AI-generated lesson is reproduced in the Appendix. In exploring the Human Agency & Judgement Gem, the authors found that providing standards at the indicator level produced a more focused output. These resources should provide valuable insights to support exploration and use of the NCDPI Gem for effective integration of GenAI in middle school classrooms. An important note for teachers of sixth-grade students is remembering the AI Literacy timeline (NCDPI, 2026) and the need to help students transitioning to middle school build the skills necessary to engage directly with GenAI in a manner that is age-appropriate and with the oversight and support of their teacher. The suggested lesson activities would require developing technological and AI literacy skills and knowledge. AMLE provides a helpful protocol that teachers can use to reflect upon their classrooms, their students' needs, and the classroom routines and practices they can institute to help their students build their AI literacy skills (AMLE, 2025). Teacher agency is vital, as knowing your students

and the skills they bring into the classroom is imperative in the age of AI.

Specific to the social studies instruction that is used in the sample conversation with the NCDPI Judgement and Agency Google Gem found in the Appendix, Berson and Berson (2023) suggest multiple ways that AI tools could be leveraged in the social studies classroom to support scaffolding of primary sources, including: transcribing, condensing, or translating historical writings, or crafting captions for use with primary source images. They note that "social studies educators play a critical role in fostering critical analysis and interpretation of the information provided by AI enhancements, which is essential to ensure that the historical primary sources are presented accurately and in context" (p. 118). The appendix provides additional commentary to support teachers as they consider how to assist their students as they interact with GenAI in the middle school classroom.

Conclusion

The middle school years represent a pivotal threshold where students transition from basic AI awareness to active, responsible engagement. To navigate this transition effectively, educators should develop a vision for how GenAI can be used as a

collaborative tool that supports authentic, process-focused learning, rather than as a replacement for student thought. When educators consider using AI tools, the importance of ensuring compliance with any state, district, or school policies is emphasized. The authors recommend that educators regularly review their local policies and guidance, as these are being rapidly developed to address this emerging technology. This article provides important considerations from the *North Carolina Generative AI Implementation Recommendations and Considerations for PK-13 Public Schools* (NCDPI, 2026) guidebook for how individual teachers can determine when, how, and to what extent to employ GenAI in the middle-level classroom. It asserts that teachers should equip students with the skills to critically

evaluate outputs, recognize inherent biases, and understand the ethical implications of the technology. The successful integration of GenAI also depends on keeping human agency and judgment at the center of instruction. The Human Judgement & Agency Gem is a tool developed by NCDPI to support educators in moving beyond a focus on policing and start redesigning tasks so that while AI may generate options, simulations, or challenges to be solved, students retain the agency to evaluate, justify, and defend their decisions. With the guidance and tools highlighted in this article, it is possible to leverage the power of GenAI to engage our learners in active and deep learning experiences in our middle school classrooms.

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Appendix

NCDPI Google Gem Creating a New Assignment Template

1. **Grade Level:** _____
2. **Subject Area:** _____
3. **Standard(s) to be Mastered:** _____
4. **Location (City, State):** _____

Example used with the NCDPI Human Agency and Judgement Google Gem

Note. The following example documents an interaction with the NCDPI Human Agency & Judgement Gem in Google Gemini on March 17, 2026. The authors supplied the grade level, subject area, standard, and location shown below. The Gem-generated response is reproduced as generated, followed by the authors' commentary.

1. **Grade Level:** 6th grade
2. **Subject Area:** Social Studies
3. **Standard(s) to be Mastered:** 6.B.1 Understand ways in which culture influences civilizations.
4. **Location (City, State):** Charlotte, North Carolina

NCDPI Human Agency and
Judgement Gem Response

*Authors' commentary is in green in this column

The Task: The "Charlotte-Global" Curatorial Challenge

Since your 6th graders are in the transition zone for AI literacy, this task moves them from consumers of AI to critics. We will focus on the artistic expressions of the Kingdom of Benin (Africa) and the Maya Civilization (the Americas), while drawing a local connection to the mural culture right here in Charlotte (like those in NoDa or Uptown).

← Consider what skills your students will need to build in order to become AI critics

The "Judgment & Agency" Shift

Instead of asking students to "write a report" (which AI can do in seconds), we are asking them to audit an AI's ability to represent cultural values through art.

← This is a shift away from teachers assessing a product and instead to assessing students' thinking

Phase 1: Local Connection & Human Observation

- The Hook: Students examine images of Charlotte's local murals.
- The Prompt: "What values do these murals show about Charlotte today? (e.g., diversity, growth, nature)."
- Human Agency: Students must first define "value-based art" in their own words based on their own city before ever touching a screen.

← Teachers would have to gather these local examples in advance

← Consider what academic vocabulary students will need to understand and know prior to engaging in this activity

Phase 2: AI Generation & The "Cultural Audit"

- The AI Task: In small groups, students will use a prompt (provided by you or co-created) to ask an AI: "Describe how the bronze reliefs of the Kingdom of Benin and the limestone carvings of the Maya reflected the specific religious and political values of those civilizations."
- The Constraint: Students are told that AI often uses "generalized" language and might miss the nuance of *why* certain materials (like Bronze or Jade) were used.

← The teacher will have to determine what AI tools their school and district support and what, if any, permission or parent notification is required

← This knowledge about potential limitations of AI will need to be discussed with students prior to their engaging in Phase 2

← Consider what skills your students will need to build in order to become AI critics

Phase 3: The Redesign (Human Judgment)

- The Assignment: Students act as Museum Curators. They must "fact-check" the AI's description using their textbook or vetted primary sources.
- The Deliverable: A "Corrected Catalog Entry."
 - Red Pen/Green Pen: Students must take the AI text and physically mark it up.

← This assumes students either have prior knowledge or have engaged with the content in class before engaging in this critique of AI output. The teacher might need to modify the AI prompt depending upon how the content aligns with their local curriculum

- Green: Information that is historically accurate and reflects a true value.
- Red: Information that is too vague or missing a key cultural detail.
- Agency Action: Students must add one "Human Insight" to the catalog entry that the AI missed—specifically connecting how a value from the ancient world (like ancestral honor) might look different or similar to a value they see in Charlotte's art.

Alignment & Durable Skills

- NC Standard 6.B.1.2: Directly addressed by analyzing the specific values (religion, power, lineage) reflected in African and American artifacts.
- NC AI Literacy (Grade 6): Students are learning that AI can hallucinate or oversimplify culture, requiring human oversight.
- Portrait of a Graduate: * Critical Thinking: Evaluating AI output for accuracy.
 - Global Awareness: Comparing ancient civilizations to their local community.

Teacher's Copy & Paste Section

Project Title: The Curatorial Audit: Ancient Values vs. AI Logic

Role: Lead Curator at the Charlotte Museum of History

The Goal: AI has drafted the descriptions for our new "Global Expressions" wing featuring Benin Bronzes and Maya Stele. Your job is to verify its work.

Step 1: The Prompt. Input this into the AI: "Explain the values represented in Benin Bronze plaques and Maya limestone carvings."

Step 2: The Audit. Compare the AI's response to our class readings. Did it mention the *Oba's* divine power in Benin? Did it explain the Maya connection to the underworld (*Xibalba*)?

Step 3: The Edit. Rewrite the description. You must include one 'Local Link'—how is the way these ancient people used art to show their values similar to how we use murals in Charlotte today?

Step 4: Reflection. Why was your human brain better at finding the 'meaning' in the art than the AI was?

Would you like me to create a specific rubric for this task that focuses on the "Human Judgment" aspect, or should we adjust the civilizations we are focusing on?

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