

How can Generative Artificial Intelligence (AI) be Effectively Incorporated into Middle School Art Students to Develop Creative Thinking and Enhance A Sense of Community?

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As a middle school educator, I engage students by enhancing creativity through visual expression, weaving colorful threads of ideas into the cultural tapestry of education using emerging technologies like generative Artificial Intelligence (AI). Research highlights that post-pandemic challenges center around connection and belonging. Expressing feelings through writing and art fosters connection, boosts creative confidence, and empowers self-efficacy. This study aims to identify emerging technologies that enhance creativity and revitalize instruction, inspiring student learning. This research uses qualitative content analysis to evaluate curriculum content, and looks at AI as a tool to scaffold knowledge based on Vygotsky's theory on Zone of Proximal Development (ZPD). The research targets art and language educators who utilize generative AI to help students express their thoughts through creative disposition, even if English is not their first language. Three issues within current educational practices and how AI might be used as a tool to help include the following: 1) Hesitation to begin work: students often hesitate to express their ideas due to perceived limitations. AI can help by providing tools for creative expression on platforms for visualizing their thoughts. 2) Readiness to learn: learning can be intimidating; and there is a perceived learning curve to make art and motivate language learning. AI can introduce novelty and engagement through collaborative AI-generated collaborative projects to make learning more enjoyable and accessible. 3) Increased student needs: Personalized learning environments are important. AI can adapt to individual student needs, offering insights to support diverse learners and paces. AI serves as a mediation tool to enhance learning efficiency in both language and artistic acquisition. It benefits English as a Second Language (ESL) students by facilitating prompt engineering, evaluating understanding, and fostering critical thinking. Uncovering the connection between prompts, creative thinking, and self-expression could help guide educators and AI developers in designing more effective teaching tools and pedagogy.

Key words: Art education, creativity, generative Artificial Intelligence (AI), English as a Second Language (ESL), prompt engineering

Jakobsen, J. (2025). How can generative artificial intelligence (AI) be effectively incorporated into middle school art students to develop creative thinking and enhance a sense of community? *Emerging Perspectives*.

Introduction

The impact of emerging technologies on education is pivotal in addressing the challenges posed by the pandemic, particularly in fostering connection and creativity. Integrating emerging technology can support students' development of personal skills within the "learning process seems to affect creativity positively" (Li et al., 2022, p. 7). Robinson (2020) detailed challenges encountered post-COVID, which included the normalization of stress, anxiety, and behavioural patterns. Success for students is defined as a state of fulfilment, where "individuals are recognized, and diversity of talent is celebrated" (p. 8). AI tools can help student learning by creating a collaborative space for self-expression and problem-solving by developing communication. Robinson (2020) goes on to say that "they boost creative confidence, self-efficacy, and a sense of belonging. Emerging technologies revitalize instruction, inspire learning, and foster connection, crucial for students' social and emotional well-being post-pandemic" (p. 8).

The research uses qualitative content analysis to evaluate curriculum content, and explores AI as a tool for constructivist knowledge scaffolding based on Zone of Proximal Development (Vygotsky, 1978). This aligns with knowledge scaffolding, where support is gradually reduced as students become more capable. AI helps: 1) Enhance language learning efficacy for ESL students (Wei, 2023), 2) mediate learning through prompt engineering (Walter, 2024), and 3) improve evaluative judgement to check for understanding and critical thinking (Temirgalieva, 2025). Belshaw (2014) says, "the way to learn hard skills is constant practice within a relevant context" (p. 34). Three issues in current education are: 1) Hesitation to start – students have but perceive inability to proceed. 2) Readiness to learn – there is a "learning curve" to make art, but meaningful goals help motivation. Research implies that an intrinsically motivated disposition has a highly positive effect on increasing creative potential and output (Amabile & Pratt, 2016, as cited in Kelly, 2020). 3) Increased student needs – 86% of teachers say social challenges among students have increased (Alberta Teachers' Association [ATA], 2021). These issues are prevalent in K-12 education, especially for middle school students negotiating their sense of identity and belonging. Technology helps navigate learning: 1) Creative expression – AI supports creative expression with prompts, reducing learning curves. 2) Novelty – AI engages students in creating and critiquing. The potential to foster creative engagement in design and collaboration further empowers students to generate innovative solutions (Bahroun et al., 2023, p. 7). 3) Personalized learning – assuming equitable access, AI can support divergent learning paths and paces.

Methods

The study adopts qualitative content analysis to evaluate curriculum content and explore how AI tools can mediate learning and scaffold student knowledge in the form of a "more capable other" (Vygotsky, 1978). The tools analyzed include Adobe Firefly, Canva, and Microsoft Co-Pilot – selected for their accessibility and widespread classroom use. AI acts as a coach (Mollick & Mollick, 2023) where its role is prompt metacognition that creates opportunities for reflection and can improve learning outcomes. To optimize interaction with the AI Coach, Mollick suggests to "share challenges with the AI Coach and ask directly for advice, give it context, and ask questions and seek clarification." (p. 22). Engaging with the group through generative AI allows educators to use AI as a mentoring tool, where the educator can mentor student ideation. By refining prompts iteratively, the study assesses the impact of

AI-generated art on students' creative confidence and language development, with teachers guiding and connecting concepts.

Data Collection

Art generated by three AI tools was analyzed. Table 1.1 (Appendix A) guides teachers in: (1) Transforming lesson plans and refining prompts; (2) Demonstrating tool usability through image analysis; and (3) Recommending practices for art educators. Project-based learning encourages creative expression through art. Refining prompts through feedback loops builds language and conceptualization skills.

Results

A Qualitative Content Analysis (QCA) of AI-generated outputs was conducted to assess creativity and expression, as QCA “addresses the content of texts, whether the texts are books, images, physical artifacts” (Drisko & Maschi, 2015, p. 85). Table 1.2 (Appendix B) shows how each prompt was coded based on theme, creativity, and technique. Prompts were modified through review and reflection. Table 1.3 (Appendix C) outlines the coding process: (1) Initial reaction—Did the image inspire? Match the prompt? Could it evolve? (2) Modified coding—refined prompts for alignment. Canva outputs required refinement when “Canadian identity” appeared too broad. CoPilot's Salvador Dali-style art with melting maple syrup symbols was an attempt at combining identity and integrity. Images that leaned on stereotypes were marked for revision.

Data Analysis

This comparative analysis revealed distinct styles from each AI, requiring prompt adjustments to clarify artistic direction. Table 1.5 (Appendix B) reflects on how outputs inspired ideation, feedback, and iteration. AI can help refine prompts and language use, enhancing creative expression. Teachers and students benefit as language develops naturally while searching for specific keywords.

Significance of Research

AI tools fulfill the role as a coach that supports Vygotsky's ZPD that builds knowledge gaps through creative expression. Students often spend time visualizing ideas or searching online. Generative AI may act as a “creative partner” (McCormack et al., 2019), but sometimes lacks cultural depth. Canva and Firefly produced less identity-rich outputs, reinforcing this limitation. Table 1.5 (Appendix D) connects findings to theory, suggesting that generative AI functions best when framed not as a replacement for human creativity, but as a scaffold—a tool that supports ideation, sparks dialogue, and encourages reflection (Sawyer, 2012). AI can serve as a tool to support learners envision what they may not see independently. It supports critical and deep thinking. Intentional prompt design and ongoing reflection can become an integral part of education practice. Positive feedback and early success help build belonging. AI also contributes to community and collaboration among students.

Implications

Bates (2023) reminds us that teaching is a human activity, not merely technical. They must always be a human element in learning. Eaton (2023) raises concerns that students who bypass critical thinking and creativity may struggle to apply knowledge meaningfully, emphasizing the need to prioritize creative practice over memorization and standardized responses. Students may misuse AI or submit AI-generated work as their own. To mitigate this, schools can set specific guidelines and age-appropriate frameworks for AI use. Ethical concerns in summative assessments are valid and may limit learning. AI can be a tool used to augment human creativity (Ivcevic & Grandinetti., 2024) and nurture human imagination. Seventy-one percent of Alberta teachers believe educational technology enhances inquiry-based learning (ATA, 2021). Training for educators can include AI integration into lesson design.

Conclusion

This study explores how generative AI promotes creativity and belonging. AI acts as a coach for students and teachers. Despite increasing AI integration, educators continue to actively monitor and guide learning. As Belshaw (2014) suggests “skills are not learned in isolation” (p. 33) as learning is not insular. Content analysis of prompt feedback supports ongoing refinement and helps non-native speakers express their ideas clearly. AI enhances imagination and supports ideation—not just outcomes. Each tool offered new creative methods and inspired new forms of artmaking. This research highlights AI's potential to spark creativity. Key findings include: 1. Generative AI boosts creative idea generation and learning in both language and art. 2. AI mediates learning through prompt engineering. 3. AI inspires learning, reflection, and critical thinking.

Recommendations

1. Monitor and Adapt: Adjust prompts regularly as outputs and student needs evolve.
2. Professional Development: Train teachers to coach students to use AI ethically and creatively.
3. Future research: Explore AI's long-term impact in Art Education through pilot programs or case studies. Weaving the connection between prompts, creative thinking, and self-expression could help in designing more effective teaching tools and pedagogy.

Acknowledgements

I thank Dr. Soroush Sabbaghan for his guidance and patience, Dr. Harrison Campbell for his humor and for challenging me to reach greater heights, and the Werklund School of Education for their resources and opportunities. I am also grateful for my family and friends for their support, and to my husband, my rock, whose unwavering belief makes all things possible.

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Appendix A*Table 1.1 Sample Lesson Plan*

Objective	Encourage creativity using AI for idea development.
Introduction	Review Elements of Art, discuss identity in art, and introduce three AI tools
Procedure	Students think-pair-share ideas combining art elements are identity themes. Refine prompt with AI (e.g., “Show me textural art that represents specific identity”).
Conclusion	Students begin artwork; teacher supports and celebrates progress.

Appendix B

Table 1.2 Prompt Categories and Tools Used in Creative Exploration of Identity through AI

Category	Description	# of prompts created
Artist-Based Prompts	Prompts in specific artists' styles (e.g., Picasso, Matisse, Dali, Warhol)	14
Technique-Based Prompts	Mixed-media collage, watercolor, pencil shading, perspective	14
Style-Based Prompts	Barbie, Graffiti, 8-bit pixel art, pop art	6
Theme-based Prompts	Self-portrait, Identity themes (e.g., Canadian)	28 total

Appendix C

Table 1.3 Criteria and Explanation of Prompt Outputs

Criteria	Explanation
Inspiration	Did the image inspire new ideas to create?
Clarity	Did the output articulate the category?
Evolve	How can the idea grow or develop further?


Table 1.4 Insights

		
CoPilot	Canva	Firefly
<p>Insight 1</p> <p><i>Does it inspire learning?</i></p>	<p>Prompt: "Show me pop art that conveys a particular identity"</p> <p><small>Inspires learning through play, engagement, novelty</small></p>	

		
CoPilot	Canva	Firefly
<p>Insight 2</p> <p><i>Could one of the generated examples lead to creating art?</i></p>	<ul style="list-style-type: none">• Show me self-portrait art that conveys a particular identity <p><small>Generated traditional media leads to creating art</small></p>	

Table 1.4 Insights (continued)

[illegible]

	
Firefly	
Insight 4 <i>Prompt Engineering</i>	<ul style="list-style-type: none">• Mediation tool• Critical thinking• Evaluative Judgement

Appendix D*Table 1.5 Summary of findings and theoretical connections*

Findings	Theoretical Connection
Specific prompts inspired deeper engagement	Constructivist theory: building knowledge
Vague prompts led to generic outputs	AI reflects limitations of training data
Refinement improves outcomes	ZPD Scaffolding theory (Vygotsky, 1978)
User experience depended on knowledge level	Creative development theory (Sawyer, 2012)