ENHANCING ARTISTIC EDUCATION WITH AI: THE HAMLET WORKSHOP

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ABSTRACT

This paper presents a methodology for exploring the potential of artificial intelligence in supporting divergent thinking within academic arts education. Thirteen students from Rome Fine Arts Academy engaged with excerpts from Shakespeare's "Hamlet," using artificial intelligence (AI) tools such as °'°Kobi, Chat GPT, and Midjourney to develop interpretations and derivative artworks through a structured yet flexible exploration process. Preliminary findings highlight positive participant engagement, with evidence pointing to the emergence of divergent thinking. Participants' feedback revealed a significant distinction between their experiences with AI tools like Chat GPT and the features of °'°Kobi, suggesting that interactions with °'°Kobi facilitate easier creative exploration and engagement. The workshop's methodology provides a comprehensive framework for integrating AI-assisted tools with focus groups and collaborative educational work through artistic expression.

KEYWORDS

AI, Art Education, Workshop, Creativity, Divergent Thinking

1. INTRODUCTION

The workshop was designed as an activity with research and educational objectives within a structured academic framework. Thirteen students from diverse artistic backgrounds—including Multimedia Arts, Set Design, and Painting—engaged in the analytical and creative interpretation of selected scenes from Shakespeare's "Hamlet."

The process was enhanced by the AI tool °'°Kobi (°'°Kobi, 2024), a web-based AI tool designed to facilitate creative thinking catalysing the emergence of collective intelligence in communities of practice. Participants could also use other AI tools such as Chat GPT. Creative outputs, including artworks and individual documentation of the related artistic process were published on the Research Catalogue, an online repository for artistic research (Research Catalogue, 2024)

From a research perspective, the workshop served as a live study to identify and observe divergent thinking in artistic processes. We particularly focused on gathering data to understand how participants analysed, drew inspiration, and developed thematic elements of literary texts into novel creative outputs while being supported by AI tools. By examining the interactions between students and the AI, we aim to study divergent thinking, as inferred from their chat interactions with the AI.

The educational component of the workshop was designed to provide students with experience in artistic creation and interpretation. Students engaged with excerpts from "Hamlet" through a structured yet open-ended task that encouraged them to develop personal artistic responses to the text. This approach aimed to challenge individual creativity while stimulating students' collaborative skills, as participants shared and developed their analysis of the proposed text and their creative outputs collectively.

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2. ENHANCING LEARNING IN ARTISTIC EDUCATION

The integration of Artificial Intelligence (AI) into educational paradigms has increasingly gained interest over recent years, providing innovative pathways for enhancing learning experiences across various disciplines. This literature review examines the current role of AI in education, particularly in creative and artistic fields, exploring the opportunities, challenges, and implications of such integration. The review also delves into further foundational aspects of the workshop such as collaborative and experiential learning.

2.1 Opportunities and Challenges for AI in Artistic Education

AI serves as a foundational aspect of the workshop proposed in this research, assisting participants in the ideation phase and creating the conditions to observe divergent thinking in their creative activities.

Ouyang and Jiao (2021) proposed three paradigms of AI in education: AI-directed, AI-supported, and AI-empowered learning. Their research emphasises how AI can shift educational practices from traditional teacher-centred models to more experiential and student-centred approaches, thereby fostering greater student agency and creativity. Similarly, Liang et al. (2020) highlighted various applications of AI in educational settings, such as intelligent tutoring systems, adaptive learning environments, and collaborative creative writing platforms. These AI applications have been shown to enhance student engagement, provide personalised learning experiences, and support the development of critical thinking.

AI tools can act as co-creators, generating ideas and suggestions that students can refine, thereby supporting creativity and expanding imaginative capacities (Berns & Colton, 2020). Chen (2020) explores how AI tools can support art education by providing methods for artistic exploration and creation. They highlight the potential of AI to act as a co-creator, offering suggestions and generating ideas that students can refine and build upon. This perspective aligns with findings from other scholars, such as Berns and Colton (2020), who discuss the bridging of generative deep learning and computational creativity, emphasising AI's capability to generate novel ideas and facilitate creative processes. Moreover, studies by Giretti et al. (2023) have discussed the incorporation of large language models (LLMs) like CHAT GPT into the educational methodologies used in art and design education to support creative thinking. AI tools can act as co-creators, generating ideas and suggestions that students can refine, thereby supporting creativity and expanding imaginative capacities (Berns & Colton, 2020). Furthermore, Habib et al. (2017) examined the role of AI in supporting various teaching and learning. They found that AI tools could provide substantial support for creative tasks, facilitating a deeper understanding of artistic concepts and creating a more interactive learning environment. Goksel and Bozkurt (2019) provide a comprehensive overview of AI applications in education, focusing on art education. They discuss how AI can support personalised learning and creative exploration, but also highlight significant barriers, including the complexity of developing AI tools that effectively replicate human artistic processes, and the ethical concerns related to AI's role in creative fields.

Significant challenges arise, including the ethical implications of AI-generated art and the necessity for teachers to adapt to new technologies while maintaining artistic integrity and originality in students' work. Rudolph et al. (2023) examines the disruptive impact of AI assistants like ChatGPT in higher education, including art education. They note improvements in AI-generated content quality and its potential to change teaching methodologies, while also addressing challenges such as the need for a robust conceptual structure to guide AI integration and the regulatory implications for educational institutions. Greenhalgh (2023) explores the practical applications of generative AI tools in higher education classrooms, providing insights into how these tools can assist in the ideation and brainstorming phases of creative projects. He also discusses the challenges of integrating these technologies effectively into curricula, ensuring they enhance rather than detract from the educational experience. Cetnic and She (2021) discuss the technical and creative challenges of using AI in visual arts. They highlight the limitations of current AI systems in fully understanding the nuanced aspects of art, such as style and context, and call for more sophisticated models to better mimic human creativity and interpretation.

2.2 Experiential Learning and Divergent Thinking

The practical nature of the workshop as well as the interaction with the AI were designed to facilitate experiential learning. Connecting Experiential Learning and Project-Based Learning, as discussed by Eisner

(2002), encourages students to engage deeply with their work through practical, real-world projects, emphasising active learning and collaboration, making it effective in art and design education. Kolb's Experiential Learning Theory proposes that learning is a cyclical process involving concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 1984). Greene (1995) emphasises how hands-on experiences and reflective practice drive meaningful engagement through art-based inquiry promoting creativity, critical thinking, and cultural appreciation.

Focus groups occurring in the workshop were conceived to facilitate collaborative learning. Collaborative learning in art education involves students working together, sharing their creative processes, and critiquing each other's work. This approach is meant to facilitate a deeper understanding of artistic concepts and broader cultural and social contexts. Scager et al. (2016) highlight the benefits of collaborative learning, noting that it promotes higher engagement, motivation, and the development of interpersonal and cognitive skills. Experiential learning can effectively occur through collaborative activities, as they allow learners to engage in meaningful dialogue, share diverse perspectives, and collaboratively solve problems, thereby enhancing their learning experience (Smith & MacGregor, 1992).

By engaging students in creative tasks, we aimed to stimulate their creativity and create the conditions to observe the dynamics of divergent thinking. Divergent thinking, a component of creativity (Runco, 2014; Torrance, 1966), involves generating multiple, unique solutions to open-ended problems. According to Runco (2012), divergent thinking is an indicator of creative potential and encompasses key dimensions such as fluency, flexibility, originality, and elaboration. In the context of art and design education, experiential learning models play a significant role in supporting creativity. The integration of AI, particularly Large Language Models (LLMs), in education holds potential for enhancing divergent thinking. Berns and Colton (2020) suggest that AI can act as a catalyst for expanding imaginative capacities and creative practice by providing diverse perspectives.

3. °'°KOBI

The Hamlet Workshop incorporated a variety of tools designed to enhance participants' engagement and individual and collaborative activities. Among the AI tools available to participants was the °'°Kobi system. The °'°Kobi system is a knowledge system (Giretti et al. 2022) designed to facilitate creative exploration and deep engagement with artistic content by leveraging AI to interpret queries and recontextualize results. Results are based on a database of qualified artistic research publications from Research Catalogue constituting its system knowledge base. °'°Kobi uses large language models to organise such knowledge into relational structures that encompass multiple semantic contexts (Giretti et al. 2023).

From the user's point of view, the AI's responses are displayed through a graphic user interface, which includes a text and a vocal interface built upon the browser's speech API. This dual-mode interface allows users to engage in accessible terminological searches, expanding the modes of interactions with the system and enriching the user interactive experience.

Figure 1. The °'°Kobi chat interface. Users can type their queries in the top-left chat box. Responses are displayed below the chat box and pronounced by a synthetic voice through text-to-speech. They can include related media such as images

Users initiate dialogue by proposing topics of discussion, such as 'search for ...' or 'tell me about ...'. The system then searches the semantic latent space of the knowledge base to receive information semantically close to the search topic. Such contents form the basis for generating the context of the discussion with the AI. By crafting narratives and providing explanations based on the user's semantic position, this approach ensures that the AI provides relevant and contextually enriched information grounded on qualified artistic references. As shown in Fig.1, the system provides text responses to user queries (a text-to-speech functionality is also available). Additionally, it retrieves and displays relevant media from the knowledge base. This media includes text and images related to the user's query. The system is designed to open new interpretative horizons to the topics proposed by the user to the AI. This, of course, is not guaranteed, and depends to a great degree on the kind of knowledge that builds °'°Kobi's knowledge base. Its current knowledge is based on artistic publications, enabling it to generate contexts that offer critical interpretations and novel content. Artistic research publications have proven to likely trigger divergent conversations, as the system tends to interpret the subject's query with greater flexibility. For example, research on the topic of ghosts and music may return a reply contextualised on spectralism, a late 20th-century approach to musical composition that focuses on the analysis of sound spectra.

4. PARTICIPANTS & DATA COLLECTION

The study involved thirteen participants, mostly from Italy (eleven individuals), with one participant each from China and Persia. The average age among the participants was 25 years old, with an even gender distribution of approximately half female and half male. Students participating in the workshop earned educational credits akin to those of a standard academic course.

Detailed chat logs between participants and the Kobi AI conversational agent captured interactions that provided insights into how the AI facilitated creative thinking and guided participants toward new ideas. This data is the subject of quantitative analysis evaluating the divergence of themes and topics in the participants' interactions with the AI. This involved observing the shifts in dialogue trajectories as participants explored various themes in "Hamlet" or related these themes to other texts and ideas through AI prompts. A forthcoming analysis will measure how each interaction with the AI led to potentially new lines of inquiry.

Data collected for qualitative analysis includes recordings of all focus group sessions, which provided a source of data on how participants' thoughts evolved through interaction and collaboration. In addition to the discussions, the study monitored the number and types of artistic outputs, including photographs, drawings, and digital art. These outputs served as a visual representation of how the themes of "Hamlet" were interpreted and expressed artistically by each participant. Collectively, this qualitative data aims to offer a detailed view of the creative dynamics within the workshop, revealing both the individual and collective learning outcomes facilitated by the structured activities and interactions.

At the conclusion of the activities, participants filled out anonymous structured questionnaires evaluating the workshop.

5. THE AMLETH WORKSHOP

The workshop began on March 8th. Participants were introduced to the goals, tasks, and assessed their familiarity with "Hamlet." They identified and discussed features of the text and were assigned to represent their interpretations through various forms, including written pieces, multimedia elements, or visual arts. All creations had to maintain a clear connection to the original text's themes. By the second session on March 15th, they refined their projects with feedback and discussed the role of AI tools they used in sparking ideas. By March 22nd, they prepared for final presentations of their work.

5.1 First Session

The initial meeting was set in a classroom setting where participants were oriented about the workshop goals, confirmed their understanding via consent forms, and assessed their familiarity with "Hamlet" through a

baseline questionnaire. This questionnaire explored their exposure to the play, live performances, and related artistic works.

Researchers clarified the nature of the workshop's tasks. It was emphasised that the first session was meant to focus on extracting and discussing themes within the text. Researchers leading the activity highlighted several examples of such themes, including the dynamics of the father/son relationship, the existential contrast between ghosts and humans, and the complex layers of communication evident within the play. These examples helped to illustrate the depth and variety of elements that participants could consider.

The workshop activities started with a curated exploration of Shakespeare's "Hamlet," focusing on Act One, scenes 4 and 5—the central dialogue between Hamlet and the Ghost. These scenes were selected to emphasise the fundamental relationships and scenarios of the literature work, rather than the intricate details of the plot, facilitating a focused analysis by the participants. Participants were expected to connect intuitively with the mythical aspects of the characters, particularly Hamlet, regardless of their familiarity with the overall play. This approach aimed to provoke deeper thought about character motivation and thematic significance rather than plot mechanics.

For the reading session, each participant received the text printed in both English and a highly regarded Italian translation by Cesare Garboli, ensuring accessibility and comprehension. To enhance the classroom setting for discussions and group activities, tables were reorganised from the traditional row distribution into a more collaborative configuration. Instead of rows, researchers arranged the tables in a circle shape layout. This setup enhanced visibility and interaction, supporting group dynamics and fostering an inclusive environment for discussion and idea sharing.

The reading session was designed to establish a common baseline of concepts, observations, and details drawn from the text of "Hamlet." Initially, participants were invited to identify and share a particular theme from the text that resonated with them. They had complete autonomy in their choices, which could range from a specific word or phrase, a character relationship, or a broader thematic concept. This exercise encouraged participants to engage with the material on a personal level, sparking a diverse range of perspectives right from the beginning. In a subsequent round of discussion, participants contributed their own insights, building on the initial features identified by the researchers. This iterative dialogue allowed the group to integrate their interpretations. The session continued with a concise tutorial on the °'°Kobi chat interface and Research Catalogue editor interface.

5.2 Second and Third Sessions

Subsequent sessions on March 15th and 22nd revolved around the development and presentation of artistic projects.

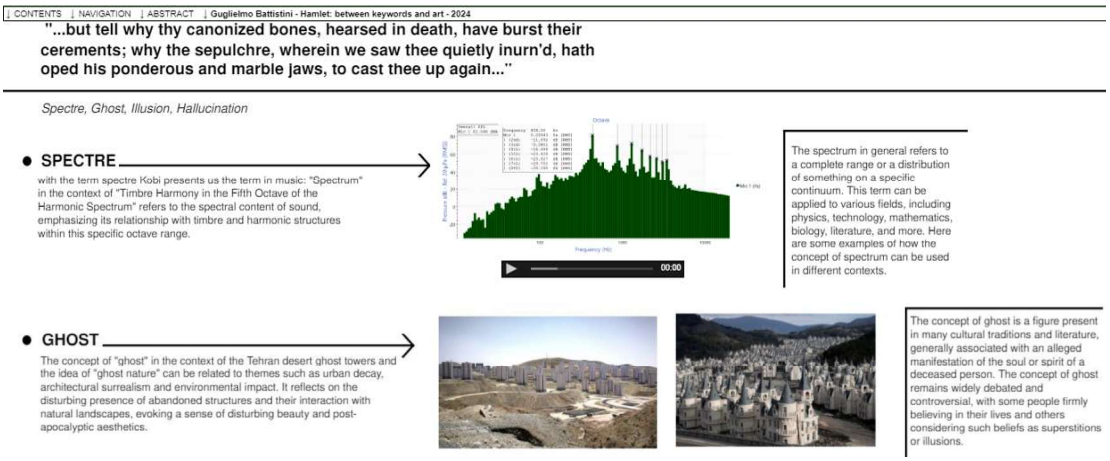

Figure 2. Screenshot of a participant's brainstorming document from the ideation phase using °'°Kobi

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During the second session, participants were asked to report on their ideation and craft activities over the past week and discuss the progress of their tasks. The feedback shared was particularly insightful, highlighting the value of °'°Kobi in facilitating participant interactions and enhancing their creative processes (see Figure 2 for a screenshot of a participant's brainstorming document from the ideation phase using °'°Kobi). Participants discussed °'°Kobi's agency in sparking new ideas, connections and unexpected insights, thereby enriching their initial creative concepts.

It was also agreed that the Research Catalogue publications should not only showcase original artistic material but also document the creative process participants underwent, using various tools, including but not limited to °'°Kobi. This approach aimed to provide a comprehensive view of both the final outputs and the developmental journey of each participant, capturing the evolution of their ideas and the influences of their interactions with the AI.

During the third session, participants presented their final creative work. Some examples of these creative outputs are shown in Figure 3. Several examples were shared during the session, as well as material documenting the ways in which participants engaged with the text excerpts from Amleth and AI tools. The session closed with an informal review of °'°Kobi's system usability, where participants provided feedback on their experiences using °'°Kobi. This feedback highlighted various user requests and insights.

Figure 3. Examples of creative outputs from the workshop. © Anonymous. Used with permission under CC BY-NC-ND.

6. INITIAL INSIGHTS AND LIMITATIONS

Feedback from participants indicated a high level of satisfaction with the structure of the workshops and technology's role in enhancing their creative explorations. The ability of AI tools such as °'°Kobi to suggest novel associations and ideas was particularly valued.

Participants declared in the anonymous questionnaire that their engagement with the workshop topics was notably high, with 50% expressing the highest interest and 40% a high level of interest; only 10% reported no interest. Similarly, 60% felt highly engaged by the workshop, 30% moderately so, and only 10% found it not engaging. The workshop was considered significantly enriching to their educational journey by most participants, with 70% affirming it absolutely provided useful tools, information, and stimuli, and 30% agreeing generally. Overall, the workshop was evaluated as very stimulating and engaging by 80% of the participants, 10% found it stimulating, and 10% considered it boring and unappealing.

During focus groups, when asked to describe their experience in the AI-assisted sessions, students highlighted the supportive role of AI, particularly °'°Kobi, in their creative processes. Such feedback has significant implications for the context of this paper. Firstly, it supports the premise that AI could be integrated into educational settings to enhance learning experiences in an art educational context. Students' positive perceptions indicate that AI is seen as a beneficial tool in their creative processes. The feedback provides evidence that aligns with theoretical concepts discussed in the paper, such as the benefits of experiential learning and the role of AI in supporting artistic education. Their experience suggests that °'°Kobi supported creativity, offering perspectives and insights during students' creative work.

Participants' feedback highlights a clear distinction between their experiences with AI tools, such as Chat GPT, and °'°Kobi, framing a comparative discussion that underscores the advantages of °'°Kobi approach to AI in supporting creativity in art education. Participants noted that while Chat GPT provided precise responses, it lacked the flexibility and creativity needed for artistic exploration. °'°Kobi was appreciated for

its ability to support creative processes by offering the re-contextualisation of concepts. Participant 7 provided a specific example to illustrate their point. They mentioned that when using the word 'hallucination', "°'°Kobi gave a philosophical context, whereas Chat GPT provided a more psychological interpretation". Participant 1 stated that many of the results from Chat GPT were not of interest as the responses were "much more scientific and targeted to the exact query". Furthermore, Participant 1 mentioned that the precision of Chat GPT felt "anti-creative," a sentiment echoed by Participant 7, who found Chat GPT more suitable for "strictly academic use." Participant 2 found °'°Kobi extremely functional as "it responded to the need for using artificial intelligence in an artistic way".

Participant 10 compared their experiences with °'°Kobi and Midjourney. They found Midjourney more disappointing and less immediate compared to °'°Kobi, which had "its own style" and "offered more variation due to the different contents from various artists". The textual parts in °'°Kobi were found to be much more stimulating. They elaborated on their workflow, noting that in both Midjourney and °'°Kobi, they worked in cycles where the output informed the next input. It was more common for °'°Kobi to inspire a prompt for Midjourney rather than the other way around.

This distinction is important in the context of the paper because it validates the hypothesis that °'°Kobi's design and functionality are suited for supporting creativity in art education. The feedback from participants aligns with the theoretical framework presented in the paper, which emphasises a possible role for AI tools in supporting divergent thinking and creativity in art education.

Despite the positive outcomes, there are limitations that must be critically reflected upon. One significant limitation is the relatively small sample size of the workshop, which consisted of only thirteen participants. While the feedback is insightful, it may not be fully representative of the broader population of art students. This limitation calls for caution in generalizing the findings to larger educational contexts or different cultural backgrounds. To address this point, current research efforts are actively engaged in conducting similar workshops with a more diverse and larger group of participants to validate and extend the findings.

A further limitation relates to the nature of the data presented. Much of the current data is based on self-assessments provided by participants through structured questionnaires and focus group discussions. While these self-assessments offer valuable insights into participants' experiences and perceptions, they are inherently subjective and may not fully capture the nuances of how AI tools like °'°Kobi influence the creative process. We are currently conducting both quantitative and qualitative analyses to further validate and deepen the understanding of the data. Detailed chat logs between participants and the °'°Kobi AI, recordings of focus group sessions, and analyses of artistic outputs are being reviewed to evaluate the semantic divergence of themes, the evolution of ideas, and the overall impact of AI on the participants' creative processes. This ongoing analysis is expected to support the objective understanding of the workshop's outcomes.

7. CONCLUSIONS

In this paper we presented a workshop-based approach that integrates AI tools in enhancing artistic education at Rome Fine Arts Academy. By combining individual AI-assisted activities with collaborative discussions, participants engaged with Shakespeare's "Hamlet" and produced creative outputs published in the Research Catalogue. Participants benefited from a structured yet flexible framework that encouraged personal artistic responses to the text while facilitating collaborative exploration. The °'°Kobi system played a crucial role in this process, providing a platform for semantic exploration and creative idea generation to stimulate students' divergent thinking. The Research Catalogue served as an essential tool for documenting and publishing the creative outputs, ensuring that the developmental journey was comprehensively recorded and accessible for further academic inquiry.

Data from participants' feedback reinforces the argument for innovative methodologies in art education. It suggests that incorporating AI tools like °'°Kobi can lead to more engaging and stimulating educational experiences, potentially setting a precedent for future use of the tool in pedagogical approaches. The positive students feedback highlights the possibility of developing AI tools that are user-friendly and tailored to the needs of learners, underscoring the potential for AI assistants to be learning partners in art settings.

Future research will focus on a detailed quantitative and qualitative analysis of the data collected to evaluate the full impact of AI during students' activities in the workshop. This includes examining the role of AI in facilitating and observing divergent thinking and understanding how AI tools like °'°Kobi can be

optimised to support artistic processes in academic settings. The insights gained from this study will contribute to the ongoing development of AI-assisted educational frameworks, aiming to enrich the learning experiences of students in the arts. Subsequent research may involve rigorous, controlled experiments across a broader range of educational environments including art, design and architecture. These studies may incorporate structured questionnaires aligned with cognitive theories to gain a deeper understanding of how generative AI impacts artistic learning outcomes. These experiments will aim to refine the application of AI in education, ensuring that the tools enhance creativity and learning outcomes and are adaptable to different educational contexts and student demographics.

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