Innovative Workflow for AI-Generated Video: Addressing Limitations, Impact and Implications

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Navigating the Future of Applied Media: Integrating AI in Higher Education Curriculum at the Higher Colleges of Technology

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Abstract In response to the rapidly evolving landscape of media technology, this study undertakes a comprehensive analysis of the Applied Media Program at the Higher Colleges of Technology to identify existing gaps where AI integration can enhance educational outcomes. Through a thorough literature review, focusing on various types of generative AI, the research aims to pinpoint specific areas within each course where AI can be strategically deployed. By proposing tailored solutions for integrating AI into the curriculum, this study seeks to foster creativity, efficiency, and adaptability in media education. This research serves as a proactive step towards ensuring the Applied Media Program remains at the forefront of innovation in an AI-augmented era, preparing students for the challenges and opportunities of tomorrow's media landscape.

1 Introduction

In recent years, the integration of Artificial Intelligence (AI) into contemporary media studies has emerged as a critical and transformative area of academic inquiry, reshaping how content is created, distributed, and consumed. However, the readiness of educational programs to equip future media professionals with the skills and knowledge necessary to navigate this evolving landscape remains a pressing concern. This literature review focuses on the curriculum of the Applied Media program at Higher Colleges of Technology (HCT), UAE, as a case study to examine the current state of media education in the region. A profound gap exists in the educational landscape as the rapid advancements in AI, especially generative AI, outpace the documentation and integration within media education. This disparity leaves

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students ill-prepared for the dynamic industry landscape, lacking essential knowledge of AI tools, functionalities, and their application in media contexts. While the Applied Media program at HCT has undoubtedly played a pivotal role in preparing students for careers in media, it is essential to critically evaluate whether the program adequately addresses the growing importance of AI in media production, analysis, and dissemination. The main topic of this research addresses the lack of AI implementation in the current curriculum and considers expertise, exposure, and rapid development as main issues. The significance of this research lies in leveraging the rapid changes in AI to prepare students for future challenges and industry readiness. Several critical gaps in the integration of generative AI in academic settings have been identified in the existing literature, including disruptions to teaching and learning, lack of institutional policies, undermining teacher authority, challenges in equity and access, and ethical considerations such as bias and transparency. Furthermore, there is a need to balance automation with human interaction in educational settings. By delving into the intersection of AI and media studies and scrutinizing the Applied Media program's curriculum at HCT, this literature review seeks to contribute valuable insights into how educational institutions can adapt to the transformative impact of AI on the field of media studies. This investigation is paramount not only for the advancement of media education but also for empowering the future generation of media professionals to excel in a rapidly changing and AI-infused media landscape.

2 Literature Review

2.1 AI in Media Studies

The integration of Artificial Intelligence (AI) into media studies has revolution- ized content creation, distribution, and consumption processes. AI technologies, including neural networks, machine learning, expert systems, and fuzzy logics, effectively create intelligent machines capable of solving complex problems and reacting like humans [1]. In this context, learning with media is understood as a complementary process wherein representations are constructed and procedures performed, either by the learner or the medium itself. This process encompasses various media platforms such as books, television, computers, and multimedia environments [2]. Research in this domain investigates how the characteristics of these media interact with learner and task characteristics to influence mental representations and cognitive processes, including the formation and modification of mental models. Notably, AI-driven tools such as natural language processing and machine learning algorithms play a crucial role in analyzing data and engaging audiences effectively within media contexts. Artificial Intelligence (AI) has revolutionized the landscape of media studies, reshaping content creation, distribution, and consumption processes. AI technologies, ranging from natural language processing to machine learning algorithms, are increasingly employed in media production, analysis, and audience engagement

strategies including various tools available like text to image, text to video, and so on [3]. This transformative impact extends across various media domains, including journalism, advertising, filmmaking, and social media platforms [4–6]. AI-driven innovations such as personalized content recommendations, automated news generation, and sentiment analysis algorithms have become integral components of modern media ecosystems [7, 8]. Moreover, the ethical implications of AI in media, such as algorithmic bias and privacy concerns, necessitate critical examination and regulation within academic and professional spheres [9].

2.2 Current State of Media Education

The media sector increasingly employs artificial intelligence, transforming content creation and advertising approaches. AI enhances audience engagement, content management, and operational efficiency despite challenges, reflecting industry innovation [10, 11]. Academic readiness must mirror industry standards to meet the demands of the evolving landscape. Incorporating AI into educational curricula presents various challenges, as highlighted in research articles. One significant challenge is the need for technical expertise among educators, who may struggle to integrate AI technologies into teaching practices without adequate training and support [12, 13]. Additionally, the cost of AI tools and applications poses a barrier, as many educational institutions lack the resources to acquire and maintain the necessary technology, requiring external funding or partnerships for support [14]. Ethical concerns surrounding AI in education, such as privacy, security, and potential impacts on the job market, also present challenges that educators must address when integrating AI into curricula. These hurdles underscore the complexity of integrating AI-related content into media education curricula amidst rapid technological advancements in the field. While some institutions have begun to offer specialized courses or modules on AI in media [15–17], the overall landscape remains fragmented and inconsistent. There is a notable discrepancy between the rapid pace of technological change and the adaptability of media education programs to incorporate AI competencies effectively. Additionally, the traditional disciplinary boundaries within media education pose obstacles to interdisciplinary collaboration and knowledge exchange, hindering the holistic integration of AI concepts and applications. As a result, graduates often lack the requisite skills and fluency in AI technologies demanded by contemporary media industries.

2.3 Gaps in AI Integration

A critical assessment of existing media education curricula reveals significant gaps in AI integration across courses and programs. Many institutions prioritize theoretical frameworks over practical training, resulting in limited exposure to AI tools

and methodologies among students [18, 19]. Moreover, the lack of standardized guidelines or benchmarks for AI competencies worsens discrepancies in educational outcomes and industry readiness. In education, significant gaps persist in integrating and using AI technologies due to limited infrastructure, unequal access, and the absence of clear pedagogical frameworks. Many institutions lack the resources to implement AI tools effectively, and access to AI education is uneven, especially in underserved areas. Additionally, there's a need for comprehensive guidelines on integrating AI into teaching practices. To bridge these gaps, efforts are needed to improve infrastructure, broaden AI education access, and develop effective pedagogical strategies leveraging AI's potential to improve learning outcomes. In conclusion, bridging the gap between AI innovation and media education requires concerted efforts from educators, policymakers, and industry stakeholders. By fostering interdisciplinary collaboration, promoting experiential learning opportunities, and embedding ethical considerations into curricular frameworks, media education programs can better prepare students for the complexities of AI-infused media landscapes.

3   Methodology

The methodology begins with an extensive review of existing tools on generative AI technologies, focusing on their applications in educational settings. Various types of generative AI, such as text-to-image, text-to-text, and text-to-video models, are identified and analyzed in depth to understand their capabilities and limitations. Next, a list of courses from the existing curriculum is compiled and these courses are categorized based on their nature, such as practical, theoretical, or elective, to better understand their educational objectives and content. Subsequently, each course category is analyzed to identify potential areas for integrating generative AI technologies effectively. The identified types of generative AI are then mapped to corresponding course categories based on their applicability and relevance, considering factors like course objectives and content complexity. The discussion delves into the implementation particularly on the potential drawbacks and challenges of AI integration, including ethical considerations and technical constraints, while also exploring the anticipated impact on teaching methodologies and student learning experiences. Proposed solutions include implementing robust ethical guidelines, providing comprehensive training for educators, and fostering innovation in pedagogical approaches. Recommendations emphasize interdisciplinary collaborations and ongoing research to optimize AI integration strategies and improve educational practices. Through this methodology, we aim to comprehensively analyze the potential integration of generative AI into the curriculum, identify suitable courses, and propose solutions to address associated challenges while maximizing educational benefits.

4 Findings

4.1 Identified Generative AI Tools

Text-to-Text Generation: This category encompasses tools capable of producing narratives, scripts, poems, and other creative text formats based on user input. These tools hold potential for personalized learning materials, language translation, and even automated essay grading and feedback. This includes Chatgpt [20], Gemini [21], Copilot [22] and more.

Text-to-Image Generation: Tools in this category can generate images, infographics, and visual aids based on text descriptions. They offer possibilities for creating engaging visualization tools, interactive learning environments, and accessibility solutions for visually impaired learners. Some noteworthy examples include Midjourney [23], Bing Image Creator [24], Leonardo, and Dall-E 2 [25].

Text-to-Video Generation: This evolving technology allows for the automatic creation of educational videos and tutorials based on text scripts. Further applications include interactive simulations and games for complex concepts, as well as personalized video feedback for students. These tools are RunwayML [26], OpenAI Sora [27], Heygen [28] and few to name.

Other Generative AI Tools: The field extends beyond the aforementioned categories, with tools capable of generating code, composing music, and even producing synthetic data for machine learning applications in education.

This review demonstrates the diverse landscape of generative AI tools that hold promise for educational settings. Each category offers unique functionalities and potential applications tailored to specific needs and goals. While this list is not exhaustive, it highlights the growing potential of generative AI to enhance and personalize learning experiences.

4.2 Compiled Courses

In our analysis of the newly developed program, we identified three overarching categories encompassing a total of 44 courses. These categories include theoret- ical courses, covering fundamental principles and concepts; Practical and skill based courses, focusing on practical techniques and methodologies; and elective courses which covers both practical and theoretical. Following this categorization, we proceeded to map the identified types of generative AI to corresponding course categories, considering factors such as course objectives and content complexity. This mapping ensures the integration of generative AI technologies in areas where they are most applicable and relevant, thereby enhancing the educational experience

Table 1 List of category and recommended generative AI tools

Category	Courses	Type of generative AI
Practical & theoretical	Foundational skills	Text-to-text, text-to-image
Practical & theoretical	Design and Production skills	Text-to-image, text-to-video, text-to-text
Theoretical	Legal and ethical considerations	Text-to-text
Practical & theoretical	Sustainability and innovation	Text-to-image, text-to-video, text-to-text
Practical & theoretical	Industry projects	Text-to-text
Practical & theoretical	Design trends	Text-to-image, text-to-video, text-to-text
Practical & theoretical	Electives	Text-to-text, text-to-image
Practical & theoretical	Media branding and marketing	Text-to-image, text-to-video, text-to-text
Practical & theoretical	Design thinking and innovation	Text-to-image, text-to-text
Practical & theoretical	Advanced post-production	Text-to-image, text-to-video, text-to-text
Practical & theoretical	Capstone projects	Text-to-image, text-to-video, text-to-text
Theoretical	Media management	Text-to-text
Theoretical	Professional development	Text-to-text
Practical & theoretical	Entrepreneurship	Text-to-text, text-to-image

and preparing students for future challenges in the media industry. Table 1 shows some of the selected courses, category and its recommended generative AI tools.

4.3 The Implementation

The integration of generative AI technologies into the curriculum presents complex challenges, necessitating thoughtful consideration and proactive solutions. Proposed strategies to address these challenges include implementing robust ethical guidelines to govern AI usage, ensuring fairness, transparency, and accountability in AI-driven decision-making processes. Comprehensive training programs for educators are essential to equip them with the necessary knowledge and skills to effectively integrate AI into their teaching practices while fostering innovation in pedagogical approaches to leverage the potential of AI for enhancing student learning experiences. Additionally, recommendations highlight the importance of interdisciplinary collaborations among educators, researchers, and industry experts to develop and implement AI integration strategies that align with educational objectives and promote innovation. Ongoing research and evaluation are crucial to optimize AI integra- tion strategies, identify best practices, and address emerging challenges, thereby

continuously improving educational practices in the rapidly evolving landscape of AI-enabled education.

5   Discussion

The advent of generative AI technologies in educational spheres marks a pivotal shift, introducing both challenges and opportunities. This integration, while promising, necessitates careful consideration of ethical implications and pedagogical adaptations.

5.1   Discussion on Educators

Challenges Faced by Educators: Educators are encountering an unprecedented paradigm shift. The primary challenge lies in redefining their roles in an AI-augmented environment. Traditional pedagogical methods are being questioned, as AI technologies offer alternative avenues for content delivery and student engagement. Educators must grapple with maintaining the relevance of their instruction while integrating AI tools effectively. There's a risk that an over-reliance on AI could undermine the educator's role, leading to a depersonalized learning environment.

Opportunities for Educators: Conversely, generative AI presents substantial opportunities for educators. It can act as a catalyst for pedagogical innovation, prompting educators to explore blended learning models that combine traditional teaching with AI-assisted methods. This integration can lead to more personalized and adaptive learning experiences, catering to diverse student needs. Furthermore, AI can aid in administrative tasks, allowing educators more time to focus on creative and critical teaching aspects. The potential for interdisciplinary collaboration, driven by AI, can lead to a richer, more holistic educational experience.

5.2   Discussion on Students

Impact on Student Learning: For students, the inclusion of AI in education holds immense potential. It can provide tailored learning experiences, adapting to individual learning styles and paces. However, this personalized approach raises ethical concerns. There's a risk of AI perpetuating existing biases or creating new forms of inequality in learning outcomes. Students might also become overly reliant on AI, potentially hindering the development of critical thinking and problem-solving skills.

Ethical and Practical Considerations for Students: Students must be educated not only in the use of AI but also in its ethical implications. Developing a critical understanding of AI's limitations and potential biases is crucial. It's imperative to foster an environment where AI is seen as a tool for learning enhancement rather than a replacement for human intellect and creativity. This balance is essential to prepare students for a future where AI is ubiquitous but not omnipotent.

Incorporating generative AI into academia is a complex yet rewarding endeavor. It presents educators and students with a unique set of challenges and opportunities. By navigating ethical considerations and embracing new pedagogical approaches, the educational sector can utilize AI to its fullest potential, empowering learners and educators alike in the digital age.

6 Conclusion and Recommendations for Future Research

This study has explored the integration of generative AI in the Applied Media Program at the Higher Colleges of Technology, uncovering significant gaps in AI integration within media education. We have identified challenges such as the need for technical expertise among educators, ethical considerations, and the rapid pace of AI advancements outstripping curriculum updates. Despite these challenges, opportunities abound in fostering creativity, efficiency, and adaptability in media education through AI.

6.1 Conclusion

The integration of generative AI into media education represents a transformative step, yet it comes with complex challenges. Educators must navigate the balance between AI's potential and the ethical, pedagogical implications it carries. This journey is not just about incorporating new tools but also about evolving the educational landscape to prepare students for an AI-infused future.

6.2 Recommendations for Future Research

Pedagogical Strategies: Investigate effective pedagogical strategies for integrating AI in media studies, focusing on blended learning models that combine traditional and AI-assisted methods.

Ethical Frameworks: Develop comprehensive ethical frameworks for AI use in educational settings, addressing issues like bias, privacy, and digital literacy.

Longitudinal Studies: Conduct longitudinal studies to assess the impact of AI integration on student outcomes and educator effectiveness over time.

Industry-Education Collaboration: Explore the potential of collaborations between academia and the media industry to ensure curriculum relevance and industry readiness.

Global Perspectives: Examine the integration of AI in media education from a global perspective, considering the diverse educational, cultural, and technological contexts.

In conclusion, while the integration of AI in media education at HCT heralds a new era of learning and innovation, it requires ongoing research, adaptation, and collaboration to fully realize its transformative potential.

References

1. Coleman, J.P.H.: AI and Our Understanding of Intelligence. Springer International Publishing, Cham (2021)
2. Kozma, R.B.: Learning with media. Rev. Educ. Res. **61**(2), 179–211 (1991)
3. Mukhamediev, R.I., et al.: Review of artificial intelligence and machine learning technologies: classification, restrictions, opportunities and challenges. Mathematics **10**(15), 2552 (2022)
4. Boscardin, C.K., et al.: ChatGPT and generative artificial intelligence for medical education: potential impact and opportunity. Acad. Med. **99**(1), 22–27 (2024)
5. Karnouskos, S.: Artificial intelligence in digital media: the era of deepfakes. IEEE Trans. Technol. Soc. **1**(3), 138–147 (2020)
6. Al Adwan, M.N., et al.: The impact of artificial intelligence applications on media industries: a prospective study. J. Namibian Stud. Hist. Polit. Cult. **33**, 721–734 (2023)
7. Trattner, C., et al.: Responsible media technology and AI: challenges and research directions. AI and Ethics **2** (2021)
8. Wu, C., et al.: Personalized news recommendation: methods and challenges. ACM Trans. Inf. Syst. **41**(1), Article 24 (2023)
9. Trattner, C., et al.: Responsible media technology and AI: challenges and research directions. AI and Ethics **2**(4), 585–594 (2022)
10. Chan-Olmsted, S.M.: A review of artificial intelligence adoptions in the media industry. Int. J. Media Manag. **21**(3–4), 193–215 (2019)
11. Chen, L., Chen, P., Lin, Z.: Artificial intelligence in education: a review. IEEE Access **8**, 75264–75278 (2020)
12. Pedro, F., et al.: Artificial intelligence in education: challenges and opportunities for sustainable development (2019)
13. Lee, I., Perret, B.: Preparing high school teachers to integrate AI methods into STEM classrooms. In: Proceedings of the AAAI Conference on Artificial Intelligence (2022)
14. Luckin, R., Holmes, W.: Intelligence unleashed: an argument for AI in education (2016)
15. D'Amario, V.: Leveraging AI to Engage High School Students in Research and Education: A Case Study and Beyond (2023)
16. Chaudhry, M.A., Kazim, E.: Artificial intelligence in education (AIEd): a high-level academic and industry note. AI and Ethics **2022**, 1–9 (2021)
17. Jia, F., Sun, D., Looi, C.-k.: Artificial intelligence in science education (2013–2023): research trends in ten years. J. Sci. Educ. Technol., 1–24 (2023)
18. Crompton, H., Burke, D.: Artificial intelligence in higher education: the state of the field. Int. J. Educ. Technol. High. Educ. **20**(1), 22 (2023)

19. Chan, C.K.Y.: A comprehensive AI policy education framework for university teaching and learning. Int. J. Educ. Technol. High. Educ. **20**(1), 38 (2023)
20. Adeshola, I., Adepoju, A.P.: The opportunities and challenges of ChatGPT in education. Interact. Learn. Environ., 1–14 (2023)
21. Perera, P., Lankathilake, M.: Preparing to revolutionize education with the multi-model GenAI tool Google Gemini? A journey towards effective policy making. J. Adv. Educ. Philos **7**, 246–253 (2023)
22. Semeraro, F., et al., Clinical questions on advanced life support answered by artificial intelligence. A comparison between ChatGPT, Google Bard and Microsoft Copilot. Resuscitation **195** (2024)
23. Mansour, S.: Intelligent graphic design: the effectiveness of Midjourney as a participant in a creative brainstorming session. Int. Des. J. **13**(5), 501–512 (2023)
24. McGee, R.W., Using ChatGPT and Bing image creator to create images of martial artists: an application of artificial intelligence to create art (2023). Available at SSRN 4665226
25. Marcus, G., Davis, E., Aaronson, S.: A very preliminary analysis of DALL-E 2 (2022). arXiv preprint arXiv:2204.13807
26. Runway: Runway ML: Machine Learning for Creators (2018)
27. Gözükara, F.: SORA: Unbelieve New Text to Video AI Model by OpenAI-37 Demo Videos-Still Can't Believe Real
28. Morales-Chan, M., Amado-Salvatierra, H.R., Hernández-Rizzardini, R.: Optimizing the design, pedagogical decision-making and development of MOOCs through the use of AI-based tools. EMOOCs **2023**, 95 (2023)