

Examining the Trajectory of Early Professionals' use of Generative AI in the Game Development Process from 2023 to 2024

Josiah Boucher^{1,*}, Max Chen¹, Gillian Smith^{1,†} and Yunus Doğan Telliel^{1,†}

¹Worcester Polytechnic Institute (WPI), 100 Institute Road, Worcester MA, U.S.A.

Abstract

This paper describes an in-progress examination of the differences in observed perceptions and usability of generative AI (GAI) in MassDigi's Summer Innovation Program (SIP) from 2023 to 2024. SIP is a professional development program where teams of interns create mobile games in the Unity game engine over an 11-week period. Following a previous study using ethnographic methods to examine this topic in summer 2023, a similar study conducted in summer 2024 found dramatically different results. Where previously, interns broadly resisted the adoption of methods that incorporated GAI, the 2024 cohort was found to embrace the tools. This paper presents the differences in findings, explores possible explanations for these differences, and presents potential paths of research to further investigate the trajectory of GAI adoption amongst creative professionals. We also present four variables that may influence GAI adoption: experience, cultural context, proportion of artists within a community, and shifting societal paradigms.

Keywords

Generative AI, GAI Adoption, Games/Play, Qualitative Methods, Professional Communities, Future of GAI

1. Introduction

The continued adoption of generative AI (GAI) practices across a range of industries is resulting in increased need for research to better understand the contextual impact of this technology in specific workplaces. Particularly, workers in creative industries have been reported to be seeing disruption as companies seek to replace tasks traditionally held by artistic practitioners, or otherwise implement these tools into existing workflows [1, 2]. The authors of this paper have previously pursued threads of research studying the ongoing impact of GAI on the games industry. We value games as a site of study for the impact of GAI systems because they sit at the intersection of technological and design interests, media, and arts. In addition, many aspects of game development are vulnerable to potential changes caused by GAI, making it an ideal domain to think closely about GAI techniques [3].

This paper focuses on two studies of MassDigi's Summer Innovation Program (SIP)- one from the summer of 2023, and one work-in-progress study from the summer of 2024. SIP is a long-established professional development program where young professionals seeking to enter the games industry work in teams to develop games at a rapid pace. Our 2023 study examined the perceptions and usability of GAI in this program [4]. SIP was a fruitful ground to explore the adoption and reactions to GAI within the games industry- especially amongst its younger members- because of the program's exclusive focus on professional development. Over the summer of 2024, we conducted another study of this program, expanding on previous work seeking to understand professional development concerns and aspirations of this group [5]. Across these two years of studying this program's cohort, we observed a potential

shift in the trajectory of GAI adoption. While the 2023 SIP participants were largely skeptical about the use of GAI in their workflows, the 2024 cohort seemed to embrace it with minimum to zero resistance. This paper investigates the differences between these two studies and the cohorts they examined, exploring potential explanations for this change and potential paths of research to trace the trajectory of GAI adoption in the games industry and other creative spaces moving forward. Upon recognizing the uptick in GAI adoption, our 2024 study added additional interview questions to provide data for a more direct comparison, and this paper identifies variables that distinguish the studies. The purpose of this paper is to prepare for a more in-depth study in the future, identifying a foundation of inquiry that may be developed into a framework for studying GAI adoption among multiple cohorts.

2. Related Work

This paper compares experiences of game development interns in the SIP by using previous work of the authors. These studies examined the SIP interns' practices of adopting generative AI tools [4] and synthesized SIP postmortems to understand student development concerns [5]. We are interested in building a comprehensive framework for a study of GAI's impact and adoption within games industry environments, and therefore position our work relative to similar studies of collective sentiments (i.e., perceptions, attitudes, and aspirations) toward and adoption of GAI in creative industries. We are interested in both how creative practitioners feel about the presence of GAI in their spaces, as well as how GAI systems are impacting their day-to-day workflows.

The presence of GAI in creative work has prompted significant concern. Bender et al. acknowledge the potential social and environmental impact of LLMs, as well as concern regarding the underlying politics of AI design, implementation, and advocacy [6]. Fischer argues GAI's embedded systemic bias, risk of plagiarism and misinformation, and and its environmental costs pose a fundamental threat to design and development [7]. These concerns are amplified in the context of a creative industry, such as game devel-

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* Corresponding author.

† These authors contributed equally.

✉ jdboucher@wpi.edu (J. Boucher); mjchen@wpi.edu (M. Chen); gmsmith@wpi.edu (G. Smith); ydtelliel@wpi.edu (Y. D. Telliel)

🆔 0009-0002-6865-9031 (J. Boucher); 0000-0002-2738-6017 (M. Chen); 0000-0002-2765-7702 (G. Smith); 0000-0001-5651-7349 (Y. D. Telliel)



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opment. Artists, in particular, identify harms to individual reputation, intellectual property, and financial risk [8]. Our 2023 study shows similar concerns from rising games industry artists, manifesting as resistance to adoption of GAI practices in their workflows [4].

Despite all of the fear, concern, and potential for harm presented by GAI systems, many recognize its potential value for enhancing creative work. Vimpari et al. find that alongside feeling concerned and overwhelmed, games industry professionals are also excited about the prospect of introducing image synthesis into their workflows [9]. Our 2023 study showed similar excitement, with programmers warming to GAI tools such as Github Copilot [10] and artists displaying cautious optimism towards tools that augment their workflow, rather than replacing it. At the time of the study, Adobe Firefly [11] had not yet been released to the public, but artists of the cohort referenced its offered tools as the sort of thing they hoped to see from GAI [4]. Ultimately, exploration of the exact challenges, potential impact, and implications associated with GAI's presence in creative spaces is still ongoing [12, 13].

We recognize the historical role games have played in the development of harmful technologies. For example, Cook highlights the long history of games research's link to imperialism, war, and pressures from the interests of capitalism, calling for researchers to resist such connections [14]. We echo the sentiments of others that have warned about the role games may play in the development of AI and the urge to resist continuation of connections to harmful practices [15, 16]. We consider the resistance artists have displayed to GAI in our studies to be a critical layer of defense against unethical GAI futures.

3. Methodology

Our 2023 study sought to identify GAI's potential impact on games industry workflows and challenges of integrating GAI into creative processes. The study also focused on interns' general perspectives, especially regarding the ethical implications of GAI's presence in the industry. Our research questions investigated interns' assumptions about GAI, their general perspectives, if and how they were using GAI for their work in the program, and what impact incorporating GAI into workflow had.

This 2023 study collected qualitative data using a combination of semi-structured interviews and observation through fieldwork to answer these questions. Throughout the program, individuals from the program volunteered for a total of 20 short interviews with an average duration of about 10 minutes. Our embedded researcher was present for much of the programs duration, attending events, conversing with teams, and observing the working environment. Thematic coding was used to conduct qualitative data analysis on interviews and field notes.

Our 2024 study was a part of a separate research project focusing on assessing the situated learning experience. The curiosity towards the change in viewpoints of the adoption of GAI originated from researchers' observation: while the cohort was provided with the same level of guidance and encouragement on using or critiquing GAI, a significantly higher portion of the developers were using GAI. A portion of the interviews were dedicated to the same GAI-focused interview questions covered in the 2023 study.

Each of the 2024 teams participated in a 60-minute session

about game design decisions, team collaboration, and communication. Although GAI was not the main topic in the team interviews, they were prompted to talk about its use in the team. Each individual also took part in a 30-minute session, with 20 minutes focusing on the situated learning experience, and the final 10 minutes addressing their general perspectives and assumptions about GAI, if and how they were using GAI for their work in the program, ethical considerations regarding its adoption, and the impact of incorporating GAI into their workflow. Upon our researcher's observation of the disparity between GAI adoption rates from 2023 to 2024, the 2024 study incorporated the interview questions from 2023 into this process to provide a better point of comparison.

Interviews with research participants and field work were the most effective research methods for both studies due to the highly contextual nature of the working environment, and the games industry more generally. Workflows and practices vary greatly not only across workplaces, but across teams or individuals within a particular site. Because of the integrated nature of our researchers in these studies, as well as the shared program of study's consistent track record, we were able to gather valuable insights into the differences of these cohorts despite the distinct research paths of each study.

3.1. Difference in Cohorts

While SIP has a long-established record, showing its consistency for hiring interns and producing games, we have identified three primary variables that distinguish the 2023 and 2024 cohorts. First, the 2023 group was primarily pulled from applicants attending accredited colleges in the United States, while the 2024 group comes from students or recent graduates attending schools in the United Arab Emirates.

The second key difference was the number of artists in each group. While both cohorts had close to 25 members overall, the 2023 group had 2-3 artists per team (across 6 teams), while the 2024 group had 2-3 artists with sufficient professional training in the entire collective – meaning 2024 had about one-sixth as many artists.

Finally, our third observed distinction is that the program director claimed the 2024 interns were generally less experienced. They held fewer degrees, and did not have as much practice developing games. Our study revealed 46.2% had never developed a game before, and 61.5% had never used the Unity game engine before though we do not have similar metrics for the 2023 group.

Despite these differences, we consider these studies worthwhile to compare. The purpose of this paper is to identify a path towards a future research endeavor, rather than to produce conclusive results. Highlighting these differences allows us to identify variables that are worth investigating further as we consider the cause of potential increased or decreased adoption of GAI systems within populations.

3.2. Difference in GAI Perceptions and Adoption

The observation that incited our interest for this paper, which we view as the most interesting finding we present here, is the increased adoption of GAI amongst the 2024 SIP participants compared to the previous year's cohort. Every 2024 team made use of GAI for some aspect of the process

including brainstorming, programming assistance, grammar checking (most of the 2024 participants were not native English speakers), references for art, and searching for educational or development resources. Additionally, many of the artistic assets in the published versions of the games are sourced from AI-generated content. This was a stark contrast to the 2023 cohort, where none of the published games used AI-produced art in the final product in any capacity and integration of GAI practices in development workflows was both minimal and heavily resisted.

Despite the increased integration of GAI workflows, the artists of the 2024 program still reacted negatively to the technology, in a manner similar to our observations from 2023. This led to conflict amongst team members at times. For instance, towards the end of the 2024 program, an artist refused to make a requested change to some artistic assets, and the team's producer had to use an AI-generated placeholder until the day before the game launched, leading to negative impact for team relations. Both years, we also observed that SIP participants frequently had private conversations about GAI throughout the duration of the program where they were more willing to share strong opinions, both negative and positive, but were more reserved in team meetings.

4. Discussion

From our observations across these two years of this program, we identify four variables that may influence adoption and perceptions of GAI within communities of creative practitioners: 1) experience, knowledge, and technical training; 2) cultural context of communities; 3) proportion of artists within a community; and 4) shifting societal paradigms. These variables will serve as coordinates for a larger study, providing a starting point to establish a framework for analyzing GAI adoption across multiple cohorts.

Experience, Knowledge, and Technical Training

Through observation from our in-progress 2024 study of the SIP interns, as well as our previous 2023 study, we recognize the pressures of a professional games industry environment to produce quality content at a rapid pace. While the 2023 group found that generative tools did not meaningfully increase either quality or efficiency of their work, they also had a stronger foundation of knowledge to work from. Especially amongst artists, they had established artistic practices that allowed them to produce what they wanted, and they had the knowledge to evaluate specific places in the development pipeline where AI-generated content would cause issues. With fewer artists and less practice, the 2024 cohort did not have this benefit- especially for the production of art assets, and therefore may have had more to gain from the introduction of GAI into their practices than their 2023 counterparts. Supporting this possibility, Ling et al. highlight how creative practitioners without artistic backgrounds find more value in integrating generative systems into their workflows [17].

Cultural Context of Communities

We also recognize that the experience of these interns is situated in the context of culture. The 2024 SIP participants from the UAE were not only navigating a professional game development environment for the first time, but also

adjusting to life in a foreign country- obtaining kitchen supplies, commuting, and communicating are all examples of day-to-day tasks these interns were dealing with on top of their professional development concerns. While it is unclear the exact role this may have played regarding the interns' adoption of GAI practices in their workflows- such clarity is beyond the scope of this paper- we observed the members of the program did use generative tools to assist with this transition. This observation reiterates the value of investigating niche contexts of GAI application- not only across a variety of domains, but across a variety of populations within a domain, and even within an individual community. Avci identifies a correlation between demographic elements and acceptance of GAI technologies [18]- studies such as this one support the value of investigating a broad range of populations.

Proportion of Artists Within a Community

Our 2023 study- and others that consider the perceptions and reactions artists have to GAI in creative spaces [19, 20]- recognized artists as the primary force resisting GAI adoption. Because of this, we find the quantity of artists in each group particularly interesting, with the 2023 population including nearly six times as many interns with a role dedicated to art production compared to the 2024 group. While we cannot draw a clear point of connection between these numbers and the increased utilization of GAI in 2024, we see this as a fruitful ground for future research. Especially because our 2023 study found the available GAI tools ill-suited for integration in artistic workflow, we value the perceptions of creative practitioners whose work does not align with existing options. Watching how the proportion of artists in a community influences GAI adoption across different groups over time may provide an indication of how generative systems and their designers are adapting to the demands of users.

Shifting Societal Paradigms

We also recognize that the development of GAI technologies and systems is continuing to grow rapidly. Indeed, in the year that has passed from one study to the next, much has changed. The perception and adoption of GAI are situated not only within the culture of a community, but more broadly within global socio-technical paradigms. As GAI continues to grow- especially as many generative systems are advertised for use by the general public- exposure to generative systems becomes more likely, potentially influencing developers interest and willingness to make use of it.

These variables highlight the trajectory of GAI perception and adoption amongst a population over the course of time as a valuable site of future study. Therefore, we plan to conduct a follow-up study of the SIP in the summer of 2025, using these four variables to trace this trajectory over time.

5. Conclusions & Future Work

This comparison of our 2023 and 2024 studies of SIP reiterates the need for investigation of GAI's influence in a variety of niche domains of study, as well as the value of investigating a multitude of populations within a particular domain. Interviews with program participants across two years revealed a dramatic shift in willingness to intro-

duce generative systems into game development practices, highlighting the contextual influences of GAI adoption and perception.

The two studies we discuss in this paper both focus on the same program. However, these studies were neither designed to investigate the same research questions, nor to have their findings compared. The scope of this inquiry presents valuable insights from our observations regarding future research paths, but cannot provide clear correlation or rigorously informed analysis.

We plan to continue our investigation of SIP, focusing on the continued trajectory of GAI adoption. We hope to see future studies that highlight the influence of experience, culture, presence of artists, and social paradigms on the adoption and reception of generative systems.

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