
Future-Proofing Learning: Innovative Assessment Redesign in the Era of AI

Abstract

GenerativeAI's adoption by students and the industry has surpassed the ability of faculty members and institutions to adopt and deeply understand this technology. This presents noteworthy challenges, especially to the integrity of assessment, as the use of GenerativeAI has the potential to dilute assessments' ability to determine if learning objectives are achieved. This research presents results on an ongoing project funded by a large university in the U.S., focused on redesigning assessments to make them resilient to inappropriate use of GenerativeAI in hospitality. While the project is ongoing, findings so far indicate that although students are enthusiastic about using GenerativeAI and appropriate guardrails can be implemented, resulting in higher-order learning. Additionally, assessments need to be redesigned, particularly in situations where they include reflective or creative components. Several theoretical implications and strategies for instructors are presented.

Track: Educational Innovation


Focus of Paper: Industry/Educational

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Graphic Abstract

FUTURE-PROOFING LEARNING

INNOVATIVE ASSESSMENT REDESIGN IN THE ERA OF AI

<p>Goal</p> <ul style="list-style-type: none">- Redesign vulnerable assessments to be resilient to AI	<p>Background</p> <ul style="list-style-type: none">- AI challenges assessment- Adoption: high for students, low for instructors- Gap: no research on assessment vulnerability to AI in hospitality	<p>Theoretical implications</p> <ul style="list-style-type: none">- Students' use guided by social norms- Vulnerability determined by task-technology fit
<p>Methods</p> <ul style="list-style-type: none">- Ongoing funded project- Course in innovation (U.S.)- 143 students in 5 sections- Testing assessments for vulnerability using AI		<p>Strategies for instructors</p> <ul style="list-style-type: none">- Focus on specific knowledge- Emphasize deeper critical thinking- Use examples from less-known companies- Create a hybrid model for assessment- Design unique course content- Use advanced prompting
<p>Results</p> <ul style="list-style-type: none">- Students use GenerativeAI for ideation, research, finding examples, knowledge check, spelling/flow- Assessments are vulnerable when: low-level learning, broad task and topic, popular brands, no scaffolding, no rules on the use of AI		

Introduction

From inception, GenerativeAI has posed significant challenges to the higher education system, particularly to assessment. While various types of assessments are popular in hospitality education, most assessments involve students answering questions or completing projects. Essays, reflective questions, and projects are particularly useful for their ability to stimulate critical thinking and guide students through higher levels of learning. However, utilization of GenerativeAI to assist students in assessments have caused significant challenges to the ability of these types of assessments to really determine students learning. The lower rate of adoption of AI detection tools among faculty, combined with the inability of technology vendors to create reliable tools for detecting AI-generated content in student work (Weber-Wulff et al., 2023), has exacerbated this issue. Moreover, many universities lack clear policies on how to address the use of GenerativeAI within student assignments. This ambiguity creates confusion and unnecessary tension between instructors and students, potentially undermining the overall purpose of higher education.

While research on GenerativeAI has been extremely abundant in studies examining its use in the hospitality industry (Wong et al., 2023), studies specifically focused on the application of GenerativeAI in hospitality higher education have been relatively scarce, marking a significant research gap. Notably, very limited attention has been given to impact of GenerativeAI on assessment within hospitality education, exacerbating this gap. This gap is further compounded by the rapidly expanding body of literature on GenerativeAI in education outside of hospitality, which places hospitality instructors at a disadvantage due to the unique characteristics of hospitality education (e.g., pragmatic, applied). Finally, this gap is further exacerbated by the fact that industry recruiters are increasingly seeking hospitality graduates with a strong mastery of GenerativeAI, as these skills are considered essential. This demand enhances students' motivation to adopt Generative AI during their formative college years.

Leaving this gap unaddressed can place hospitality instructors in a situation where their assessments are not only unable to accurately determine whether learning objectives have been met but also contribute to an unfair classroom environment. In such an environment, some students may use GenerativeAI to obtain higher scores, while others rely solely on their own knowledge. Addressing this gap is particularly crucial given the context where many instructors struggle to cope with the widespread adoption of GenerativeAI tools by students, unclear guidance by universities, and continuous development of GenerativeAI applications. Within this context, the goal of this research is to address the aforementioned gap by examining how assessments vulnerable to Generative AI use can be redesigned to mitigate the challenges posed by GenerativeAI in hospitality higher education.

This exploratory research addresses the need to create assessments resilient to GenerativeAI in hospitality by examining current patterns and practices in how students use AI tools. Based on data gathered from an ongoing project funded by a large public university in the U.S., this research offers insights into how students interact with AI tools, informing the redesign of assessment strategies that can ensure academic integrity. To this end, this research pursues three main objectives. First, to understand how students use GenerativeAI. Second, to understand the vulnerabilities of hospitality assessments to GenerativeAI. Third, to illustrate how hospitality assessments can be redesigned to be more resilient to the inappropriate use of GenerativeAI by students. Ultimately, this research seeks to provide valuable insights to instructors as they need to adjust their assessments to enhance their resilience against the inappropriate use of GenerativeAI.

Review of Literature

Generative AI in higher education

GenerativeAI has been enthusiastically adopted by students and some instructors due to several significant benefits. When used properly, it can enhance teaching, educational administration, and ultimately, learning (Chiu et al., 2023). Students can access discipline-specific knowledge more easily (Chaundry et al., 2023), especially in popular content areas, such as business administration. Within the wide range of applications of GenerativeAI in higher education, one area of high impact is assessment. Prior to GenerativeAI, assessment was typically characterized as being manual, time-intensive, and aligned with teaching philosophies centered around the instructor (Knight & Drysdale, 2020). GenerativeAI has compelled instructors to reassess existing limitations and confront new challenges (Moorhouse et al., 2023).

Scholars have generally explored various aspects of the impact of GenerativeAI on assessment (Ventayen, 2023). However, these explorations are limited by the fact that the technology evolves more rapidly than scholars can effectively explore, aggregate, and publish insights (Xia et al., 2024). Two aspects are particularly important: (1) the ability of Generative AI to assist students in answering assessment questions or generating content for essays (Chiu et al., 2023), and (2) its potential to aid instructors in creating assessments and provide feedback (Cheung et al., 2023).

To date, the literature documents multiple studies converging toward several key themes regarding the impact of GenerativeAI on assessment. First, GenerativeAI can have a positive impact on learning (Xia et al., 2023), as it can provide immediate, rich and deeper feedback, and self-assessment tools for students. Moreover, it can explain concepts to students and remedy misunderstanding by facilitating self-learning. Second, GenerativeAI is characterized by unprecedented ease of generating essays and providing answers to complex questions, which has increased concerns about its ability to undermine traditional assessment methods (Chiu et al., 2023). Third, there is a need for instructors to adapt and enhance their assessment literacy to effectively integrate AI tools (Xia et al., 2023). Fourth, there is an unclear institutional policy framework regarding AI, which may create confusion among instructors and provide a blurry foundation for addressing academic integrity issues arising from the inappropriate use of Generative AI (Xia et al., 2023). Unfortunately, apart from sporadic research articles that address AI in higher education in hospitality (Wang et al., 2024), the hospitality community lacks the systematic insight into this major problem.

Background of the project

The objectives of this research have been pursued within the framework of a project funded by a major university in the U.S. This project was designed to (1) create engaging course content, and (2) develop assessments that are resilient to GenerativeAI. The locus of the project was an undergraduate-level senior class on the topic of innovation in hospitality. The format of the course varied across multiple sections between face-to-face, online synchronous, online asynchronous, and hybrid, providing students with flexibility and accommodating diverse learning styles. The course is mandatory for all students and represents a critical milestone for those nearing graduation. Typically, students take this course in their final year. The course enrolls over 150 students per year.

The course is designed to stimulate students' creativity while building on knowledge acquired from previous courses. Specifically, students are tasked with proposing an innovation that addresses one of the hospitality industry's pressing challenges. They follow the typical design thinking process, progressing through multiple phases of a semester-long "innovation project" where they tackle topics related to ideation, due diligence, and developing a plan to commercialize their innovation. Additionally, students are required to participate in "reflective discussion forums" and navigate interactions with their peers to achieve learning goals. Due to the highly creative and innovative nature of the course, as well as its focus on current data, trends, and the outcomes of class discussions, no textbook is used. Instead, Open Educational Resources (OER) are provided to supplement class instruction. Because this course is at the forefront of innovation, there is a clear focus on technology, particularly AI. Instructors believe it is their responsibility to teach about these emerging tools to lay the groundwork for their students' long-term success, therefore the use GenerativeAI is permitted for learning-enhancement tasks.

This current project required a redesign of the course and especially its assessments. The redesigned course integrated AI tools like ChatGPT to enhance content, activities, and assessments. Students were encouraged to utilize GenerativeAI as a starting point to identify hospitality industry challenges and develop innovative solutions for their innovation projects. However, while GenerativeAI assisted in generating ideas, students had to apply their own industry knowledge and skills to create specific, feasible solutions. The course structure emphasized continuous interaction between students and instructor, where the instructor guided and refined student ideas through regular feedback.

Instructors assessed student work through various checkpoints, providing feedback at each stage to ensure genuine learning. This interactive, feedback-driven approach helped students develop critical thinking and creativity while ensuring AI was a supplementary tool rather than a shortcut for producing solutions. The multiple formats of the course accommodated diverse learning styles through in-person, synchronous, and asynchronous

online sections. Ultimately, the instructors wanted to create more diverse and innovative assessments that promote critical thinking, creativity, and problem-solving, which AI cannot easily replicate. The project is currently ongoing, and the instructors are continuously learning from its implementation. Despite the rapid evolution of GenerativeAI technology, adjustments must be made incrementally, semester by semester, to ensure the course remains effective and relevant.

Methods

The project began in the summer semester of 2023 (n=28 students) and continued through the fall of 2023 (n=39 students), as well as the spring (n=24 students), summer (n=11 students), and fall of 2024 (n=41 students), and is currently ongoing. The primary source of data was students' assessments and their direct feedback. There were two types of assessments: (1) a semester-long innovation project and (2) responses to reflective question forums. The innovation project required each student to envision developing an innovation that addresses a problem within the hospitality industry. The reflective questions addressed concepts covered within the course, which were reflected within actual hospitality scenarios. The university has provided an AI detection feature embedded within the typical Turnitin plagiarism tool, which is available to all instructors through the Canvas learning management system. The AI detection tool can examine each student's assignment, determine the percentage of the assignment allegedly generated by GenerativeAI, and highlight the locations within the assignment where AI-generated text appears.

Despite the absence of an official policy from the university regarding the use of GenerativeAI in the classroom, the instructors established their own guidelines for its use. Specifically, students were encouraged to use GenerativeAI for ideation, research, and content verification, but they were not allowed to copy and paste generated content and claim ownership of it. Given the overall goal of the research project, it was important to follow a structured procedure comprising three steps. First, to understand how students use GenerativeAI tools to complete assignments. Second, to examine the current assessments' vulnerability to the inappropriate use of GenerativeAI. Third, to redesign and test new assessments that are resilient to GenerativeAI, aligned with the course's broader objectives of assessing learning within this evolving environment. The instructors took a comprehensive approach to understanding all possible information that could provide insight, including evaluation of assignments, face-to-face discussions with students, and student feedback.

Results and Discussion

Regarding student adoption and use within the course, during the initial semesters of the project's implementation, the instructors observed only sporadic use of GenerativeAI. This period coincided with the technology's rising popularity, but not many students had actually used it. Some students may have concealed their use of GenerativeAI, as it was unclear whether instructors generally accepted the use of AI. As the technology became more popular and the semesters progressed, more students began using it, to the point where almost everyone was using this technology by the fall of 2024. This behavior aligns with theories such as the Unified Theory of Adoption and Use of Technology (UTAUT) (Venkatesh et al., 2003), which highlights the important role of social norms in technology adoption. The most common tasks completed with GenerativeAI included ideation and research, finding examples from the industry that illustrate concepts, checking knowledge, learning professional jargon, and correcting spelling and flow errors.

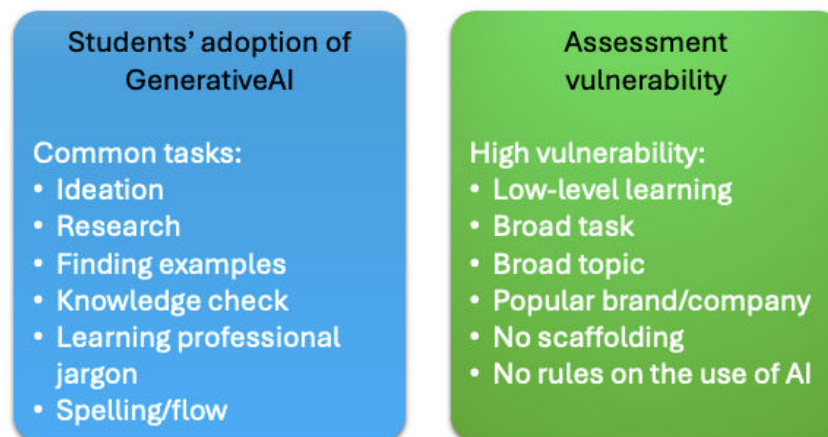
An important aspect of this project is testing the vulnerability of assessments. Thus, the instructors used GenerativeAI from multiple providers (e.g., OpenAI, Google, Microsoft) to complete assessments. It was found that the most vulnerable assessments were those characterized by a strong task-technology fit, which conformed with the task-technology fit theories in information systems (Goodhue & Thompson, 1956). Specifically, when the task required by the assessment was broad and aligned with lower-level Bloom's Taxonomy learning (Bloom, 1956), Generative AI was able to provide correct and complete answers. Assessments especially vulnerable were those testing knowledge of general concepts (e.g., market positioning, ideation) and those related to popular companies with abundant information available online (e.g., Marriott, Disney).

In contrast, assessments related to narrower-scope content and addressing higher-level learning (e.g., evaluation) were more challenging for GenerativeAI to answer correctly. Moreover, GenerativeAI was generally

weak in correctly completing assessments about relatively obscure companies or topics discussed using the specific jargon of the course. Complex assessments, including scaffolded assessments, had a higher rate of errors generated by GenerativeAI. It was unable to detect that the initial output provided in response to an assessment prompt contained partially incorrect answers. However, when re-prompting or when advanced prompting techniques were used, those answers quickly transformed into correct, well-written responses. Inappropriate use of GenerativeAI was generally found when addressing reflective questions and providing more refined answers to the different sections of the innovation project. Upon understanding the circumstances that make the assessments vulnerable to GenerativeAI, the instructors began the process of redesigning the assessments.

The process of redesigning the assessments presented challenges due to the continuous advancements and democratization of GenerativeAI. Significant advancements include its ability to provide increasingly human-like responses, reliance on real-time data, reduction in error rates, and a restructuring of the business models making this technology increasingly affordable. A critical aspect of redesigning assessments is understanding and exploiting the vulnerabilities of GenerativeAI. While it is designed to always produce responses, it does not always generate accurate content. This presents both an opportunity and a challenge for assessment design. First, this limitation allowed instructors to identify gaps in students' knowledge, as students may fail to recognize incorrect content generated by AI if they lack the proper understanding. Second, the instructors redesigned assessments by providing students with AI-generated answers to the questions from assessments, followed by asking students to identify errors in the AI-generated output. Only students with appropriate knowledge would be able to correctly detect these errors. Other GenerativeAI vulnerabilities considered in redesigning assessments were generalization and context understanding limitations, fabrication of sources, convergence of output toward general themes/concepts, and a general lack of knowledge in advanced prompt engineering among users. The redesigned assessments were tested by the instructors using the same GenerativeAI tools and have been used in actual class settings. It was found that, upon redesign, these assessments were more resilient to inappropriate use of GenerativeAI and allowed for a more accurate assessment of students' knowledge. A summary of the findings is represented in Figure 1.

Figure 1. Student adoption and assessment vulnerability



Implications

Theoretical Implications

While this is an ongoing project, it provides critical insights into how instructors can overcome the challenges posed by AI in assessment. Some of the student behaviors observed in this project align with well-established theories (e.g., UTAUT), but at the same time, they reveal previously unknown patterns in how students utilize these platforms for learning. Moreover, the project builds upon to the broader theoretical framework of constructivist learning (Piaget, 1972) and emphasizes the role of GenerativeAI as a mediating tool in knowledge construction. From a theoretical standpoint, these findings advance our understanding of how students learn and promote a broader theoretical discussion about the new foundational knowledge students need.

This research also initiates a deeper discussion within hospitality higher education about what constitutes essential knowledge in an era where AI can produce content on demand. Although this research draws insights from a single course conducted over multiple semesters, it offers a fresh perspective on the level of knowledge students need to bring to the classroom and the evolving role of assessment in evaluating that knowledge. Moreover, it encourages scholars to revisit and potentially redefine learning outcomes and assessment standards by considering the immediate accessibility of AI tools.

Given the immediate access to GenerativeAI, which can assist in creating reports, analyzing data, and performing essential tasks required by graduating hospitality students, the nature of learning and assessment must be reconsidered. This highlights the need for more nuanced assessment theories that account for technology-mediated learning environments.

Ultimately, the project reevaluates traditional theories of assessment (e.g., validity, reliability) by introducing the concept of AI-resilient assessments. The design of assessments that require higher-order thinking, contextual understanding, and application-based knowledge promoted by this research calls for the development of new theoretical frameworks that integrate technological advancements that are grounded within pedagogical best practices.

Practical Implications

This research has also identified several strategies that could enhance the resilience of assessments and enhance academic rigor in an era challenged by GenerativeAI. First, instructors should avoid focusing on general knowledge and instead emphasize deeper, critical thinking. Second, while discussing well-established companies can be valuable, focusing on lesser-known, local companies with limited online information can add resilience to assessments. Third, instructors could create a hybrid assessment model that combines human evaluation with technology-based detection of inappropriate GenerativeAI use. This approach allows instructors to deepen discussions and provide teaching opportunities rather than simply penalizing students for improper AI use. Fourth, it is crucial to design specific course content, which is aligned with the instructor's unique expertise and experience, which renders any AI-generated content irrelevant within the course's context. Finally, if feasible, utilization of advanced prompt engineering could be helpful in uncovering unique aspects of course content and ultimately evaluating the resilience of an assessment.

These strategies offer instructors opportunities to leverage Generative AI to enhance learning and establish a fair assessment environment. Most importantly, this project equips students with critical in-demand skills in utilizing emerging technologies like GenerativeAI. By engaging with real-world scenarios within the reflective questions forum and innovative projects and using GenerativeAI to help complete them ethically, students are better prepared to meet future industry challenges with creativity, critical thinking, and practical knowledge.

Conclusion

This study provides unique insights into the challenges that GenerativeAI continuously poses to hospitality education. Through a structured, ongoing project, the instructors examined how students interact with GenerativeAI tools and how instructors should adapt traditional, vulnerable assessment methodologies to withstand the challenges of Generative AI.

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