

Exploring Gamification Approaches in Accounting Courses: A Systematic Review

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This systematic review synthesizes recent research about gamification in accounting education, where student disengagement and motivational obstacles frequently hinder learning. This analysis synthesizes empirical research demonstrating how gamified elements can improve student motivation, engagement, and, in numerous instances, learning results. Self-Determination Theory and Problem-Based Learning frameworks explain gamification's ability to meet students' demands for autonomy, competence, and relatedness within accounting contexts. Although most research indicates favorable effects on exam scores, problem-solving abilities, and enjoyment, conflicting results highlight the necessity for meticulous design and alignment with learning objectives. Additionally, resource limitations, technical obstacles, and student diversity present tangible impediments to the efficient implementation of gamification. This paper outlines the primary advantages of gamified accounting education, specifies circumstances in which gamification may not enhance performance, and offers suggestions to implement or improve game-based methodologies. This study identifies critical deficiencies, providing a framework to direct future research and improve the educational efficacy of gamification in accounting instruction.

Keywords: gamification, accounting education, active learning, student engagement, digital pedagogy

INTRODUCTION

Gamification, the application of game design features in non-game settings, has gained popularity in educational settings to improve student engagement. Instructors hope to inspire students and make studying more interesting by including points, challenges, leaderboards, and interactive game-based tasks in their coursework. Gamification in higher education has been shown to increase student engagement and motivation. Gamification is a viable technique for addressing student disengagement and difficulties understanding core accounting education concepts, typically seen as technical and demanding. Accounting curricula should include active learning and innovative technology to improve student motivation and understanding of basic ideas. Traditional lecture-based accounting instruction can leave some students unmotivated and struggling with core principles (Anwar, 2023, Sercemeli & Onlu, 2023), prompting calls from bodies like the Accounting Education Change Commission and the American Institute of Certified Public Accountants to incorporate more active learning and innovative use of technology in accounting curricula.

Given this background, an increasing number of accounting instructors are experimenting with gamified learning interventions, which range from in-class quizzes and competitive activities to full-fledged educational games. Early research suggests that gamification can make accounting classes more engaging and learner-centered. However, the literature on gamification in accounting education is still emerging and fragmented. While some studies show significant benefits (e.g., greater exam performance or increased student happiness), others show challenges or mixed results. There is no general agreement on best practices or the long-term success of gamification in the accounting domain. This suggests a comprehensive and integrated review to consolidate data, identify what is well understood, and expose gaps that require future exploration.

This systematic review attempts to thoroughly analyze the peer-reviewed literature on gamification in accounting education to date. By aggregating findings from previous studies, we hope to discover research gaps in current understanding, such as unexplored concerns or conflicting outcomes across studies. This systematic review offers research contribution by consolidating evidence from diverse studies into a coherent synthesis, identifying clear research gaps, and proposing an integrative perspective that links theoretical frameworks with application. Updating the knowledge base with the latest findings and providing a roadmap for future research guides researchers and practitioners toward more rigorous, context-aware investigations of gamification in accounting education. Moreover, it translates research insights into practical lessons, such as the value of immediate feedback and the alignment of game design with learning outcomes, thus informing educators on how best to implement gamified approaches while avoiding potential pitfalls.

To achieve these objectives and contributions, we utilized a structured methodology of systematic and integrative reviews. The following sections detail the prior literature on gamified accounting education, the methods used to collect and analyze relevant studies, thematic findings and discussion (including identified gaps and proposed research questions), and conclusions summarizing the implications for researchers and educators. This work provides a unified narrative and critical analysis, making it a timely resource for academics seeking to expand their gamification and accounting pedagogy knowledge.

LITERATURE REVIEW

Gamification and Student Engagement in Accounting Education

Recent studies show a significant shift in accounting education, with instructors and researchers increasingly incorporating technological innovations, active learning methodologies, and inclusive pedagogies to boost student engagement and performance. Apostolou, Dorminey, and Hassell's (2021, 2022) evaluations show that research in accounting education now includes curricular innovation, digital learning aids, and student-centered approaches, in addition to traditional lecture methods. Ade-Ibijola, Sukhari, and Oyelere (2025) use augmented reality and AI-generated language translations to break down language barriers in South African accounting classrooms, emphasizing the need for more accessible and inclusive accounting education globally. Handoyo (2024) confirms that information technology is reshaping accounting educational paradigms by promoting online, blended, and digitally enriched learning experiences.

Gamification is becoming increasingly popular in accounting education to motivate and engage students. Beatson et al. (2020) investigate a mobile gamification intervention and show that students' engagement greatly enhanced their academic performance in introductory accounting courses. Similarly, Carens, Moyá, and Perramón (2017) assess the efficacy of simulations against video games in accounting instruction. Their findings show that, while both instructional techniques result in similar levels of knowledge acquisition, videogames have better motivational effects, implying that including game components can improve students' learning experiences. Much research also confirms that introducing game-like aspects into accounting classes can improve student engagement, motivation, and even performance (Sercemeli & Onlu, 2023). Gamification may make accounting education more engaging and fun, especially for students who struggle with an abstract or daunting subject. They found that gamified learning improves academic success, increases motivation, involvement, and interest in the subject.

Kao, Yuan, and Wang (2023) extend these concepts by creating a gamified mobile learning approach. A quasi-experimental study indicated that introducing game-based features into accounting instruction boosted teaching effectiveness and positively influenced student happiness and engagement. Krath, Schürmann, and von Korflesch (2021) provide a theoretical foundation for these empirical findings by conducting a systematic review and identifying core principles, such as immediate feedback, goal clarity, user autonomy, and social gamification elements, that underpin the success of gamified interventions in a variety of contexts, including accounting education.

In addition to these studies, Lee, Shifflett, and Downen (2019) provide a practical example by detailing a classroom session that teaches Excel shortcuts through a game and periodic table representation. Their approach teaches accounting students key software skills in an engaging way that encourages active learning. Ortiz-Martínez, Santos-Jaén, and Palacios-Manzano (2022) show that using digital game platforms (e.g., Kahoot!) in financial accounting classes leads to higher continuous assessment and final exam marks. This provides empirical support for the positive impact of gamification on academic performance.

Along with gamification, research shows that active learning practices improve student outcomes. Kassim, Marfo, and Abu (2025) assess five student-centered teaching methodologies used in Ghanaian financial accounting classrooms: case studies, group projects, role-playing, technological integration, and cooperative learning. Their quasi-experimental study found that tactics including role-playing, technology integration, and cooperative learning greatly improve students' academic performance. These findings are consistent with the broader accounting education literature reviewed by Apostolou et al. (2021, 2022), which emphasizes the need for interactive, student-centered approaches to overcoming the constraints of traditional, instructor-centered learning.

Rossouw and Steenkamp (2025) demonstrate the importance of active learning by executing an intervention to improve first-year accounting students' critical thinking capabilities. They use flipped classroom techniques, simulations, reflection tasks, and real-life examples to show that students' critical thinking abilities improved statistically significantly following the intervention. Diez-Busto, Palazuelos, San-Martín, and Montoya del Corte (2023) validated a self-administered questionnaire to assess professional competencies, such as critical thinking, soft skills, and student satisfaction, through active learning experiences in accounting. These studies demonstrate that including active learning exercises in the accounting curriculum might have cognitive and non-cognitive effects, improving overall student performance.

Impact on Learning Outcomes

Beyond motivation and engagement, researchers investigated if gamification actually enhances learning outcomes in accounting education. Several studies have assessed knowledge gains or course performance and discovered benefits related to gamified learning. Malaquias et al. (2018) found a relationship between game participation and improved course performance. In another study, Carens et al. (2017) compared a traditional accounting simulation exercise with a fully gamified video game approach; they discovered that while both methods achieved learning objectives, the video game format led to equal or better learning outcomes and significantly higher student motivation.

This implies that game components can be added upon instructional information without compromising (and sometimes even improving) knowledge of that content. Furthermore, games can promote higher-order thinking. For example, games in accounting (commonly referred to as serious games) demand students to apply principles in realistic circumstances, potentially boosting their analytical and decision-making abilities. According to several qualitative surveys, students believe that gamified activities help them comprehend real-world applications of accounting theory in a risk-free situation (Bhavani, Mehta, & Dubey, 2020).

However, literature also emphasizes that gamification-induced learning benefits are not automatic; they are determined by the intervention's design and environment. Silva, Rodrigues, & Leal (2021), in a study involving 816 accounting undergraduates using a gamified quiz application, found a nuanced outcome: the gamification significantly increased students' motivation and positive attitude toward learning, which in

turn improved their perceived learning; however, the state of flow (deep absorption in the game) had no statistically significant effect on learning outcomes. In other words, strong enjoyment of the game did not always result in better knowledge of the topic unless it was accompanied by motivation and effort to study. This research challenges the notion that more immersive gameplay is necessarily better for learning, emphasizing the need for educational alignment of game aspects. If a game is overly engaging without reinforcing academic content, players may experience flow but not remember knowledge, a possible problem recognized in the research.

Theoretical Frameworks in Gamified Learning

Effective gamification design in education is based on robust theoretical frameworks. Researchers have progressively utilized psychological and pedagogical theories to explain gamification's efficacy and enhance its optimization (Hsia et al., 2025). Research on accounting education references many fundamental frameworks: Self-Determination Theory (SDT), and the principles of Problem-Based Learning (PBL) and Experiential Learning. The following frameworks and their function in gamified accounting education are briefly described.

Self-Determination Theory (SDT)

Self-Determination Theory (SDT) is a motivational framework asserting that individuals possess fundamental psychological needs, namely autonomy, competence, and relatedness, that, when fulfilled, augment intrinsic drive and engagement (Hsia et al., 2025). SDT posits that students exhibit heightened intrinsic motivation when they see autonomy in their learning, possess a sense of competence in mastering the content, and get support from others. Gamification can serve as an effective means to fulfill these requirements. Numerous gamified learning environments are intentionally crafted with SDT in consideration—such as providing students with significant choices (enhancing autonomy), incrementally challenging levels or prompt feedback to foster mastery (enhancing competence), and incorporating collaborative or competitive features like leaderboards (enhancing social relatedness). In accounting education, which students frequently regard as monotonous or challenging, integrating SDT principles through gamification may substantially enhance motivation. Numerous studies highlight that aligning game components with Self-Determination Theory enhances the efficacy of gamified training. Grabner-Hagen and Kingsley (2023) used need-supporting game mechanisms, such as accomplishment badges linked to skill mastery and collaborative quests, in an accounting fundamentals program, resulting in elevated student engagement compared to non-gamified sections. More generally, SDT is among gamification research's most frequently referenced ideas, highlighting the significance of motivational design. By deliberately addressing students' autonomy, competence, and relatedness requirements through game learning challenges, instructors can foster more inclusive and stimulating accounting learning experiences (Xia et al., 2022).

Problem-Based Learning (PBL) and Experiential Learning

Gamification is fundamentally activity-oriented and aligns with pedagogies such as Problem-Based Learning (PBL) and Experiential Learning. In PBL, students acquire knowledge by actively addressing contextualized issues, frequently within a collaborative environment. This method has demonstrated the capacity to cultivate advanced cognitive abilities and practical capabilities. Numerous gamified initiatives in accounting education transform problems or cases into a game format, converting case studies or accounting scenarios into interactive challenges. Gamification may enhance PBL by offering continual feedback and motivation through game aspects as students engage with the topic. Sugahara and Lau (2018) employed a Management Game as an experiential learning instrument within a business accounting training framework. In their research, students operated a virtual enterprise via a simulation, making accounting decisions to address business challenges. The gamified simulation enhanced student engagement and significantly improved knowledge and skill development relative to traditional methods. This suggests that gamification can function as experiential learning, consistent with PBL principles, by engaging students in authentic problem-solving activities within an encouraging gaming context.

Carenys et al. (2017) compared a conventional accounting simulation exercise with a video game approach and discovered that both strategies increased motivation; however, the video game resulted in greater enjoyment and marginally improved learning outcomes. This is attributed to the interactive character of gameplay, wherein students receive quick feedback on their decisions and may promptly observe the repercussions, thereby reinforcing learning through experience. Accounting education literature emphasizes the significance of experiential learning; Gittings, Taplin, & Kerr (2020) identified various active learning activities (simulations, games, and cases) that enhance student abilities and attitudes in accounting courses. Gamification, whether structured as problem-based or experiential learning, enhances the enjoyment of learning and facilitates the practical application of accounting ideas by students. In conclusion, PBL offers a pedagogical justification for gamification: by presenting accounting education as a sequence of compelling problems or "missions" to resolve, gamified training can enhance comprehension and skill acquisition in ways that conventional lecture techniques may not achieve.

RESEARCH METHODOLOGY

This research utilized a systematic and integrative review process to offer a thorough and unbiased synthesis of the literature on gamification in accounting education. The process combined structured database searching (systematic element) with an integrative strategy that allowed for integrating various studies (quantitative and qualitative) and older foundational articles. The review methodology included multiple steps.

Search Strategy

We conducted a thorough literature search in reputable scholarly databases. The primary search phrases were "gamification," and "active learning," along with "accounting education" and "accounting." Boolean operators and wildcard variations were utilized to identify a wide range of relevant papers. We searched abstracts, keywords, and article titles to locate studies in which gamification was used as part of an accounting education experiment or discussion. For example, similar to Cavalcante, Reinaldi, & Giordani (2022), we utilized queries such as "gamification" AND "accounting education" on Web of Science and ScienceDirect.

Inclusion and Exclusion Criteria

We used specified inclusion criteria to filter the results. We considered peer-reviewed journal papers and conference proceedings that provided research on gamification (also known as game-based learning) in accounting education and training. Given the focus, we included articles dealing mostly with university-level accounting courses and those covering vocational or high school accounting education if gamification was important. Studies from 2017 onward were investigated.

Screening and Selection

The initial search generated a significant number of results. We began by screening titles and abstracts to eliminate clearly irrelevant works. We then collected the complete texts of the remaining potentially relevant studies for a thorough review. Each publication was examined to ensure that it included gamification in an accounting education environment. Through this screening method, we were able to narrow down the final selection of studies to investigate. These comprised empirical research studies (experimental or survey-based), literature reviews focusing on accounting education games, and a few theoretical papers that examined gamification frameworks in education using accounting examples.

Using these systematic procedures, our systematic review approach was designed to be thorough and reproducible. The combination of database searches, defined inclusion criteria, and thematic synthesis ensures that conclusions are based on the field's collective evidence. In the following section, we present the Results and Discussion, which integrates the literature findings and discusses how they inform the identification of gaps, the formulation of new research topics, and the overall contribution of this review.

RESULTS AND DISCUSSION

Our systematic review of gamification in accounting education identifies several significant patterns. The prevailing agreement indicates that gamification generally positively affects student attitudes and, in numerous instances, learning outcomes. Nonetheless, the literature also reveals certain paradoxes and limitations. We outline the principal findings, prevalent tendencies, and disparate outcomes reported in several investigations.

Predominantly Positive Impacts

Nearly all research indicates that the incorporation of gamified features into accounting courses enhances student motivation and engagement. Typically perceived as tedious or complex, accounting subjects are becoming more engaging and pleasant through gamification (Bhavani et al., 2020). For instance, after introducing a gamified module in an accounting course (incorporating points and leaderboards), Bhavani et al. (2020) observed that students exhibited increased engagement and enhanced comprehension of the subject matter. Frequently employed game features encompass quizzes, tournaments, and narrative scenarios. A study conducted in the U.S. utilized the quiz platform Quizizz to introduce a playful, competitive aspect to an accounting course, resulting in a notable enhancement in student engagement and class participation relative to previous semesters (Zhao, 2019). Unlike conventional homework, students characterized the gamified tests as enjoyable and expressed anticipation for the accounting activities. This increase in involvement is essential, as engagement is closely associated with improved learning outcomes in higher education.

Most studies indicate enhancements in learning outcomes, including test scores, assignment performance, or skill acquisition, through gamification, but the changes are occasionally moderate. In a quasi-experimental study, accounting undergraduates who learned introductory concepts via a serious game scored higher on a post-test than those who learned through traditional lectures (Almuntsr et al., 2024). On the experiment conducted by Malaquias et al. (2018), students engaged with a serious accounting game exhibited superior comprehension of financial statement analysis and surpassed a control group on related examination questions, with the game group achieving an average score around one letter grade higher. In addition to examinations, gamification seems to cultivate practical competencies. Selamat and Ngalim (2021) created a bookkeeping board game for first-year accounting students, demonstrating that it enhanced students' understanding of the conceptual framework of accounting through practical application. Students might derive lessons from errors in the game within a low-risk environment, resulting in enhanced confidence and precision in actual bookkeeping responsibilities. These examples demonstrate that gamification transcends mere enjoyment in learning; it also enhances retention by offering ongoing feedback and chances for idea application, resulting in quantifiable performance improvements. It is essential to acknowledge that enhancements in academic performance are not universally applicable; yet, the prevailing tendency indicates that gamified training either equals or surpasses the efficacy of traditional instruction in accounting.

A result of gamification is the enhancement of student enjoyment, engagement, and general favorable disposition towards the subject matter. Research often indicates enhanced course evaluations or self-reported satisfaction when games are used. For instance, Carenys et al. (2017) found that students rated their accounting class as more interesting and were more likely to recommend it to peers when a video game component was included, compared to a traditional section. Enjoyment is a significant effect; it can alleviate anxiety, particularly in subjects such as accounting that many students perceive as daunting, and foster perseverance. Zhao (2019) observed that using gamified online quizzes in accounting classes kept students engaged and reduced their fear of being wrong; students described the learning process as playing rather than studying, which helped build a more positive learning environment. Increased enjoyment and interest can translate into students spending more time with course material voluntarily, thus indirectly boosting learning. The evidence robustly indicates that gamification enhances the appeal of accounting education for students, a significant effect in fostering active learning.

A more nuanced tendency is that certain gamified methodologies promote more peer learning and collaboration. Several implementations use team-based games or leaderboards that spur discussion and teamwork. For example, a study by Szegeidine Lengyel (2020) had students in a virtual classroom compete in accounting challenges in teams; this created healthy competition and encouraged students to discuss accounting problems among themselves to win the game. Such social interaction can enhance learning via peer instruction and by building a learning community. While not all gamification involves teamwork, the social dimension (multiplayer games, class-wide challenges, etc.) is a common feature and is reported to improve relatedness (an SDT need) and class dynamics.

Contradictions and Mixed Results

Notwithstanding the predominantly favorable tendencies, the literature has paradoxes and subtleties. Not all studies demonstrate unequivocal advantages of gamification. Some reports indicate no substantial difference in learning results, with advances in certain areas but decreases in others. Acknowledging these diverse outcomes is essential for a comprehensive, methodical perspective.

A domain of inconsistent results is learning performance. Although several researchers identified performance enhancements, a minority did not. Segura-Robles et al. (2020) discovered that integrating flipped learning with an escape-room game in a secondary education setting enhanced students' feelings of autonomy and relatedness; however, it did not improve student competence. Similarly, Silva et al. (2021) saw improvements in motivation and perceived learning; however, there was no substantial alteration in the flow state experienced by students. These examples illustrate that the impacts of gamification are inconsistent; enhancements in engagement or motivation do not invariably result in instant increases in evaluated learning outcomes.

A further paradox emerges in student concentration and conduct. Gamification aims to inspire motivation; nevertheless, some critics express concern that it may encourage pupils to prioritize gaming accomplishments over actual learning. Several studies have noted occurrences such as students becoming excessively competitive or preoccupied with obtaining badges, occasionally to the disadvantage of collaboration or comprehensive learning. Nevertheless, proof of such adverse impacts in accounting education is scarce. A study warned that excessive focus on the gaming element can cause students to regard learning as secondary. Consequently, although gamification typically enhances engagement, educators must equilibrate competition and prioritize the learning objectives. There are also inconsistent data concerning which facets of motivation or learning exhibit the greatest enhancement.

In the study by Silva et al. (2021), it was shown that students' enthusiasm and attitude towards accounting were enhanced by gamification; nevertheless, their perception of competence (self-efficacy) did not exhibit significant change. Conversely, Sugahara & Dellaportas (2018) indicated that their game-based methodology in an accounting course significantly enhanced students' confidence in the subject matter (a facet of competence) but had a lesser impact on enjoyment. These inconsistencies may arise from variations in game design: certain gamified interventions may excel in rewarding competence through explicit progress mechanisms, while others predominantly enhance fun or social interaction. It emphasizes that the results of gamification may vary based on the specific game features employed.

In accounting education, a gamified tool primarily aimed at enhancing enjoyment may achieve its objective without necessarily improving test scores; conversely, a tool focused on repetitive skill practice may enhance mastery but lack in entertainment value.

Research Gaps

The research on gamification in accounting education, being a very nascent field, exhibits several gaps, limits, and unanswered questions. Analyzing patterns in the literature allows us to identify areas requiring more investigation and the obstacles educators face in implementing gamified learning. The following are the gaps and challenges identified in our systematic review.

From the instructor's perspective, the integration of gamification in accounting courses presents several obstacles. Numerous studies and reviews examine practical impediments that may obstruct the efficacy of

gamified learning. Common challenges include limitations of resources and time, technical issues, alignment with curriculum, and assessment integration.

Earlier, we discussed the theoretical frameworks like SDT and PBL being used to inform gamification design. Krath et al. (2021) noted that many gamification studies (in general education literature) lack a strong theoretical foundation or fail to test theory-driven hypotheses. In accounting education, several studies are either descriptive or exploratory, lacking a theoretical foundation. A research gap exists that systematically investigates the efficacy of a gamified method using a theoretical framework. For instance, if a study employs SDT as a framework, it might assess autonomy, competence, and relatedness satisfaction to determine whether gamification effectively influenced those mediators; however, few studies have undertaken this approach. Addressing this gap might augment our comprehension of the underlying mechanics. It would also allow us to refine gamification designs: e.g., if evidence shows that relatedness (social connection) is often low in accounting games, designers could incorporate more collaborative features.

Some research did not observe enhancements resulting from gamification. Published research often prioritizes achievements; yet, comprehending failures or neutral outcomes is also vital. However, only a handful of papers explicitly discuss the limitations or when gamification might not be beneficial. To enhance systematic knowledge, researchers must transparently discuss the obstacles encountered and strive to ascertain the conditions under which gamification becomes less effective. For instance, does gamification yield diminishing returns if overused across many courses? Such inquiries remain unanswered. Further investigation is required regarding potential minor adverse effects, such as heightened competition undermining collaboration or discouragement among less proficient students during gameplay. These issues were not prominently noted in existing studies, yet a detailed exploration of student experiences, possibly through qualitative methods, could provide valuable insights.

In summary, while the current literature supports using gamification in accounting education, it is clear that more empirical work is needed to address these gaps. Researchers should aim to conduct more extensive and diverse studies, use robust theoretical frameworks, and openly tackle the practical challenges. By doing so, future work can provide clearer guidance on best practices for gamification and how to overcome its limitations.

CONCLUSION

In recent years, gamification in accounting education has transitioned from an innovative concept to a research-supported pedagogical approach. This comprehensive research analysis substantiates that gamification can enhance participation and involvement in accounting courses. The majority of examined studies indicate enhancements in student motivation, engagement, and occasionally academic performance when gaming components are judiciously integrated. Theoretical frameworks like SDT and PBL explain these advantages, since gamified activities can satisfy students' psychological requirements and foster joyful, immersive learning experiences. The findings are not uniform. Significant complexities and contradictions exist: gamification does not consistently enhance exam scores or learning outcomes, and its efficacy is contingent upon alignment with pedagogy and learner requirements. Furthermore, the implementation of gamification in practice presents obstacles concerning resources, design, and the assurance of educational value.

The field remains in its early stages, and this assessment underscores multiple pathways for further investigation. Researchers ought to expand the scope of their study by exploring diverse accounting subjects, various student demographics, and enduring impacts to cultivate generalizable knowledge. Integrating more robust experimental designs, such as longitudinal research, increased sample sizes, and theory-driven metrics, will be very beneficial. Future research should also document ineffective strategies alongside successful ones to refine gamification methodologies. The amassed evidence provides measured optimism for educators: gamification is a viable instrument for engaging contemporary accounting students and may be effectively incorporated through quizzes, simulations, and instructional games. Nonetheless, it must be employed with intention. Instructors are encouraged to explicitly connect game activities to

learning objectives, to observe student responses, and to be ready to offer assistance should technical or motivational deficiencies occur.

In conclusion, gamification signifies a progressive advancement toward more engaging and learner-centric teaching in accounting. A study revealed that while gamification positively impacts accounting education, significant effort is still necessary to achieve its full potential. Educators and researchers can collaboratively leverage gamification effectively by addressing the recognized research deficiencies and implementing insights gained from existing studies. Implementing this approach may enhance academic performance and foster a deeper passion for learning among future accountants, transforming a rather dry subject into an engaging experience that students are eager to participate in and learn from.

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