



Gamification in Education: Enhancing Leadership Skills among Entrepreneurship Students

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Abstract

In the rapidly changing world of entrepreneurship, where innovation and adaptability are paramount, traditional paradigms of education increasingly fail to equip students with the necessary leadership skills to navigate and succeed in complex business environments. This paper examines the impact of gamification on enhancing leadership skills among entrepreneurship students by employing a systematic literature review to sift through 5612 articles, ultimately focusing on 78 that met stringent criteria for relevance and quality. The methodology highlighted an extensive analysis across various educational and professional settings, illustrating gamification's effectiveness in boosting engagement, motivation, learning outcomes, and the acquisition of leadership competencies. Studies within the scope from 2019 to 2024 demonstrated gamification's role in transcending traditional educational methods, thereby enriching the learning experience and preparing students for practical leadership challenges in entrepreneurship. The findings suggest that gamification not only enhances educational engagement and outcomes but also plays a crucial role in skill development, particularly those pertinent to leadership in an entrepreneurial context. Themes such as user experience, social and behavioral change, technology integration, and contextual adaptation have emerged as critical to the success of gamified learning approaches. By linking theoretical knowledge with practical application, gamification presents a promising avenue for developing the next generation of entrepreneurial leaders. This study significantly contributes to the theoretical framework on educational gamification by empirically demonstrating how ramified elements can effectively bridge the gap between theoretical leadership concepts and their practical application in real-world entrepreneurial scenarios, thereby providing a robust foundation for future research and practice in educational design and leadership development.

Keywords: *Gamification; Education; Skill Development; Engagement; Professional Development*

INTRODUCTION

Education is fundamentally an effort to harness and maximize human potential, a crucial factor in a country's economic growth and development. Al-Roubaie (2018) highlights the significance of developing human capital to enhance a nation's competitiveness and improve quality of life. This is particularly relevant for Indonesia, which is anticipating a young adult workforce of 65 million by 2035. In response, the nation is focusing on education reform to ensure that its citizens are equipped to thrive in an increasingly competitive global economy (Badan Pusat Statistik Indonesia, 2019). The United Nations Development Program Report (2018) places Indonesia at a medium development level with a Human Development Index (HDI) of 0.689, ranking it 113th out of 188 countries. This ranking is reflective of the average of 12.9 years of schooling for Indonesian citizens, indicating a significant investment in education as a means to enhance the quality of human capital.

The correlation between a country's HDI and its Gross Domestic Product (GDP) is well established, with human capital playing a pivotal role in economic performance. Indonesia's commitment to education is exemplified by its 2002 constitutional amendment mandating a minimum annual budgetary allocation of 20% for education—a target consistently met since 2009. This investment in education aligns with the global trend of prioritizing human capital development as a key economic driver. In today's rapidly evolving economic landscape, leadership skills are increasingly essential. The ever-changing demands of the modern world require

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individuals to adapt and lead effectively. Formal education, particularly at the higher education level, is expected to cultivate strong leadership qualities in students, preparing them for future uncertainties and societal contributions (Malihah, 2015).

The evolution of educational paradigms has increasingly focused on fostering a comprehensive array of soft skills, such as communication, problem-solving, teamwork, lifelong learning, entrepreneurship, ethics, and leadership. This shift is echoed in the Act of The Republic of Indonesia No. 20 (2003) on the National Education System, which advocates for an education system that nurtures the holistic development of individuals, integrating academic, moral, and ethical dimensions. This holistic approach is paramount for fostering well-rounded student development, extending beyond mere academic prowess to include moral and ethical growth. Therefore, educators are urged to familiarize themselves with a broad spectrum of learning theories to ensure that their teaching methodologies are responsive to students' needs and the challenges of the modern world. Theories such as behaviorism, cognitivism, constructivism, experiential learning, humanism, and social-situational learning serve as the bedrock for crafting effective learning styles and pedagogical strategies (Pereira et al., 2021; Sultan & Suhail, 2019).

Among these evolving educational demands, Kulkarni et al. (2022) championed a multifaceted pedagogical framework that emphasizes learner engagement, mutual respect, curriculum relevance, and skill development. Such pedagogical innovation is further augmented by emerging teaching methodologies like gamification, as illustrated by the work of Cespón and Lage (2022), which underscores the significant impact of gamification on enhancing student engagement and learning. By integrating game mechanics into educational content, gamification cultivates a dynamic and interactive learning atmosphere that accommodates the diverse learning preferences and requirements of generations X, Y, and Z. As the educational landscape continues to transform, there is a pressing need for teaching methodologies that are adaptable, promote inclusive learning environments, and prioritize the holistic development of students to adeptly meet the multifaceted needs of contemporary society (Gerdenitsch et al., 2020).

Gamification proves to be an apt strategy for postgraduate students as it fosters motivation and engagement through game elements like point systems, badges, and leaderboards, promoting self-directed and continuous learning by providing instant feedback and enabling progress tracking. This approach enhances critical thinking and problem-solving skills through specially designed tasks and challenges, prepares students for the modern workforce that increasingly adopts gamification for employee motivation, and supports collaborative learning by encouraging interaction and teamwork among students. Thus, gamification has become a valuable tool in higher education, particularly at the postgraduate level, to navigate academic challenges while preparing for a dynamic professional environment (Raju et al., 2021; Rozman & Donath, 2019).

Despite the promising potential of gamification in educational contexts—as evidenced by empirical research spanning software engineering to science and medical education—a notable research gap persists. While studies have established gamification's efficacy in motivating students and enhancing engagement across various educational domains, there is a lack of comprehensive understanding regarding the long-term impacts of gamification on learning outcomes and skill development. In addition, the empirical evidence points to the necessity for a more nuanced application of gamification, tailored to align with specific learning objectives and the unique needs of diverse learner populations. Addressing this gap requires further investigation into how gamification strategies can be optimized for different educational contexts, ensuring that they contribute effectively to the holistic development of students and prepare them to navigate the complexities of the modern world. This calls for an expanded body of research that not only explores the immediate benefits of gamification but also its sustained impact on educational achievement and the development of critical soft skills essential for success in the 21st century.

LITERATURE REVIEW

Gamification Theory

Gamification theory, a concept that integrates game design elements such as points, badges, leaderboards, and challenges into non-game environments, posits that individuals are more engaged and retain learning more effectively when such game-like elements are present. This approach has been applied across various settings, including education, business, and organizational productivity, demonstrating significant improvements in affect and motivation. By leveraging the intrinsic motivation and engagement associated with gaming, gamification seeks to enhance user experiences and outcomes in non-game contexts (Kulkarni et al., 2022; Cespón & Lage, 2022).

The philosophical underpinnings of gamification can be traced back to classical theories of learning, which offer diverse perspectives on how learning occurs, drawing from the insights of ancient and modern thinkers like Plato and John Locke. Plato (428 BC-347 BC) presented the Theory of Recollection, arguing that learning is an act of recalling pre-existing knowledge within the soul. This perspective suggests that true education awakens this innate knowledge, transitioning individuals from tangible experiences to abstract understanding (Cespón & Lage, 2022; Yadav & Dixit, 2023). Conversely, John Locke, a 17th-century philosopher, introduced the concept of "tabula rasa" or blank slate, proposing that the mind at birth is devoid of knowledge and that learning is derived from sensory experiences and environmental interactions. This empirical viewpoint shifted the focus from innate knowledge to experiential learning, establishing a foundation for subsequent educational methodologies (Bagheri et al., 2020).

Expanding on these classical foundations, the Learning Paradigm, as described by theorists like Siemens and Driscoll, introduces contemporary frameworks for understanding learning: objectivism, pragmatism, and interpretivism. Objectivism perceives knowledge as external and acquirable through experience, pragmatism emphasizes the dynamic relationship between experience and reflection, and interpretivism views knowledge as a construct influenced by social and cultural contexts. Siemens' theory of connectivism adds a modern dimension, positing that knowledge is distributed across networks and that learning is facilitated by engaging with and within these networks. This paradigm accentuates the significance of collaboration and the dynamic nature of knowledge exchange in learning, resonating with the principles of gamification, which utilizes interactive and collaborative elements to enhance learning experiences. By integrating classical and contemporary learning theories, gamification has emerged as a sophisticated strategy for motivating and engaging learners. It reflects a deep-rooted understanding of human cognition and motivation, leveraging the appeal of games to foster a more interactive, enjoyable, and effective learning environment (Bauer et al., 2020; Spanellis & Harviainen, 2021).

Gamification Mechanism

Gamification Mechanism pertains to incorporating elements of game design into non-game contexts, aiming to encourage specific behaviors, notably in educational settings (Figure 1). This approach has generated interest because of its potential to enhance engagement and motivation. However, its effectiveness has been subject to debate, with varying outcomes reported in empirical studies. To gain insights into this matter, researchers have conducted analyses to explore the efficacy, measurement techniques, and factors influencing outcomes of gamification in education (Rajesh et al., 2023). Through this investigation, a distinction emerged between tangible "game elements" and the underlying "gamification mechanisms" that cater to psychological needs. A framework was subsequently developed, outlining essential components for engaging in gamified experiences, including goal setting, visual representation of progress, immediate feedback, adaptive

challenges, competitive elements, rewards, and embracing failure as part of the learning process. Such insights contribute to understanding how gamification can be effectively harnessed to promote learning and engagement, despite inherent limitations and areas for further research (Jayawardena et al., 2022).



Figure 1. Gamification Mechanism (Luo, 2022)

RESEARCH METHOD

In this study, a systematic literature review methodology was employed to achieve a dual objective. The primary goal is to consolidate existing research on telework, delineating prevalent research patterns. The secondary goal is to pinpoint significant research voids within the literature and propose directions for future studies. This method is notably beneficial for its structured, explicit, and exhaustive aggregation of current insights and identification of knowledge gaps pertaining to telework or telecommuting—a flexible working arrangement—and its implications for employees, adopting organizations, and the broader society (Needleman, 2002).

Systematic literature reviews are increasingly utilized in management research as they foster theoretical and methodological rigor by integrating cross-references among journals and researchers, conducting meticulous database searches, and employing specific inclusion/exclusion criteria. Such reviews equip scholars and practitioners with a robust foundation for informed decision-making and subsequent action (Niazi, 2015). An overview of the methodology employed in the study is depicted in Figure 2.

The flowchart provides a detailed depiction of the electronic literature search conducted within the Scopus database, centered on publications related to "gamification" and "education." The initial query returned 5612 articles. Refinement using a publication year filter for 2019 to 2024 decreased the count to 3907. The delineation of the time frame from 2019 to 2024 was strategically chosen to capture the most recent and relevant developments in the field of gamification in education. This period marks significant advancements in digital technology and educational methodologies, making it a pivotal window for examining the latest research and innovations in gamification practices. The choice to focus on this range ensures that the review is both contemporary and applicable to current educational contexts, providing insights into the latest trends, tools, and outcomes associated with gamification (Carrera-Rivera et al., 2022; Paul et al., 2021).

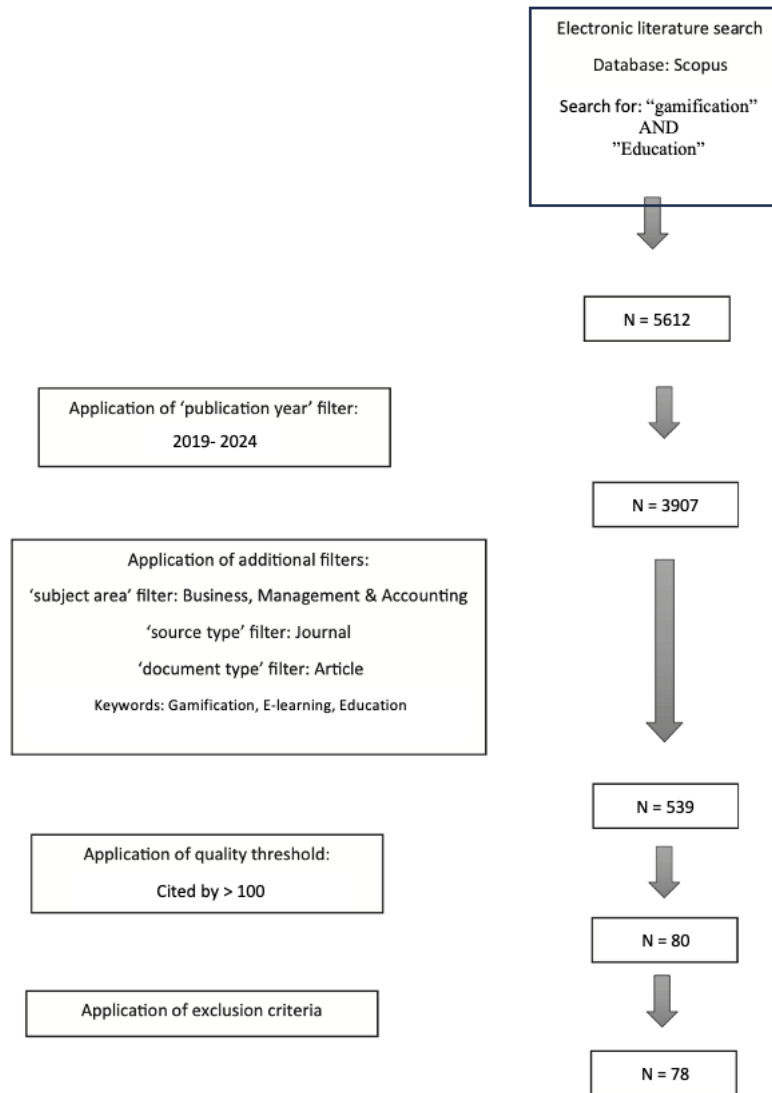


Figure 2. Systematic Literature Review Methodology (adopted from [Athanasiadou and Theriou \(2021\)](#))

Further refinement involved applying filters for subject area (Business, Management & Accounting), source type (Journal), and document type (Article), along with keywords like Gamification, E-learning, and Education, resulting in 539 articles. A quality threshold was then applied, selecting articles cited over 100 times, which narrowed the field to 80. The application of a quality threshold, whereby only articles cited more than 100 times were selected, was implemented to ensure the inclusion of highly impactful and acknowledged works in the field. This criterion serves as a proxy for the scholarly relevance and influence of the research, under the premise that higher citation counts reflect wider recognition and validation by the academic community. By setting this threshold, the review aims to concentrate on studies that have significantly contributed to the knowledge base, influenced pedagogical practices, or spurred further research in the domain of gamification in education ([Pedrini & Ferri, 2019](#)). The final application of exclusion criteria, not explicated in the flowchart, led to a conclusive set of 78 articles. This meticulous procedure is designed to assure the relevance and quality of the selected articles, enabling an exhaustive analysis of the research landscape.

FINDINGS AND DISCUSSION

Based on an extensive exploration of literature, the systematic classification of literatures into two primary dimensions, namely the gamification model and variables, emerges as a result of identifying recurring themes and critical areas of impact within the field of gamification. This classification provides an organized framework for understanding the multifaceted nature of gamification studies.

The Gamification Model dimension, comprising (1) Educational Gamification and (2) Corporate and Professional Development Gamification, reflects the primary contexts in which gamification strategies are applied. This differentiation is important in order to acknowledge the distinct objectives, target audiences, and outcomes sought in these environments. Meanwhile, The Gamification Variables dimension, including (1) Engagement and Motivation, (2) Performance and Learning Outcomes, (3) Skill Development and Application, and (4) User Experience and Interaction, identifies the key outcomes and areas of influence that gamification aims to impact. These variables were selected through the literature exploration process, highlighting them as critical indicators of gamification's effectiveness and areas of significant interest within the research community.

Findings

The systematic literature review (SLR) conducted across a diverse range of studies reveals a broad spectrum of variables investigated in the context of gamification and its impact on various educational and organizational outcomes. This comprehensive examination has identified critical areas where gamification has been applied, ranging from enhancing e-commerce competencies and performance to fostering engagement and improving learning outcomes in educational settings. The SLR highlights the significant attention gamification has received in recent years, underscoring its potential as a transformative tool in education, business, and beyond (Table 2).

Table 2. SLR Result

Author	Year	Variables	Future Research
Ho and Chen	2023	E-commerce competencies, performance	Explore further applications in different economic sectors
Bal	2019	Writing skills, student engagement	Assess long-term effects on students' writing skills
Hanafiah et al.	2019	User motivation, engagement, academic performance	Evaluate effectiveness in other cultural or educational contexts
Camuñas-García et al.	2023	Game-based learning, cultural heritage education	Expand research to other forms of cultural education
Koivisto & Hamari	2019	Gamification effectiveness, contexts of implementation	Develop coherent research models and theoretical foundations
Silva et al.	2019	Game characteristics, student learning flow	Investigate other psychological theories in educational gamification
Spanellis and Harviainen	2021	Gamification application, social change, sustainability	Apply gamification in various social change contexts
Ciuchita et al.	2023	Gamification in services, customer participation, loyalty	Explore gamification in diverse service industries and contexts

Author	Year	Variables	Future Research
Lyons and Buckley	2021	Industry collaboration, student assessment	Examine impacts on various business disciplines
Borissova et al.	2020	Test complexity, educational game elements	Test in different educational settings and subjects
Aguiar-Castillo et al.	2021	Application features, deep learning strategies	Study the impact on different learning styles and environments
Kauppinen and Choudhary	2021	Student motivation, recall information	Assess impact on various educational outcomes
Martina and Göksen	2022	Experiential learning, design elements of EERs	Evaluate in different educational settings
Yen et al.	2019	Gameful design, travel behavior change	Apply framework in various transport and mobility contexts
Loureiro et al.	2021	VR in education, student engagement	Investigate in different disciplines and educational levels
Bernik	2021	Gamification elements, e-course design	Test and refine the model in diverse educational environments
Ortiz-Martínez et al.	2022	Academic performance, gamified learning	Compare effectiveness with other gamified learning tools
Karagiannis et al.	2020	Security and privacy learning, game-based methods	Expand to other aspects of cybersecurity education
McIlwraith	2021	Corporate culture, information security awareness	Explore in various organizational contexts and industries
Newcomb et al.	2019	Employee development, gamified activities	Test effectiveness in different professional fields
Ocampo et al.	2021	Active learning methodologies, Social Sciences	Expand to other disciplines and educational levels
Karagiannis et al.	2020	Cybersecurity skills, CTF challenges	Assess in different educational contexts and formats
Tews et al.	2020	Serious games, project management learning	Explore effectiveness in real-world project management situations
Indriasari et al.	2021	Peer code review, review accuracy	Investigate in other areas of computer science education
Singh and Pathania	2022	Mathematical learning, game effectiveness	Assess effectiveness in different age groups and mathematical topics
Malhotra et al.	2020	Project-Based Learning, software engineering	Explore integration with traditional education patterns
Nair	2022	Student engagement, vocational learning	Evaluate in different vocational disciplines
Zhang et al.	2020	Methodology, devices, research issues	Expand scope to other educational fields
Bovermann and Bastiaens	2020	Online learning activities, user motivation	Investigate in various learning environments
Bzhalava et al.	2022	Industry trends, digitalization in education	Explore strategic applications in other sectors
Durrani et al.	2022	Student engagement, learning outcomes	Compare with other blended learning approaches
Grijalvo et al.	2022	Student motivation, skills development	Evaluate long-term impact on professional skills

Author	Year	Variables	Future Research
Thomas and Baral	2023	Learning engagement, behavioral and emotional pathways	Investigate in different management courses
Dincelli and Chengalur-Smith	2020	Online self-disclosure, security training outcomes	Test in various organizational settings
Gatti et al.	2019	Cognitive and affective learning outcomes	Assess impact on sustainability practices
Ilbeigi et al.	2023	Pedagogical strategies, game-based education	Develop new solutions for other engineering fields
Yanfi et al.	2020	Usability, learning engagement	Adapt for other disabilities and learning environments
Arifin and Setiawan	2022	Online teaching effectiveness, teacher engagement	Investigate post-pandemic online education strategies
Beatson et al.	2020	Behavioral engagement, academic performance	Explore in other academic disciplines
Almeida and Simoes	2019	Adoption of serious games, skill development	Extend research to other industrial sectors
Domínguez et al.	2020	Student test performance, learning	Compare with traditional learning methods
Wannapiroon and Petsangsri	2020	Creative thinking, innovation quality	Explore in different educational settings
Marin et al.	2021	Student outcomes, social impact	Focus on different social issues
Memar et al.	2021	Business behaviors, student interaction	Assess in varied business education contexts
da Silva et al.	2019	Teaching quality, student motivation	Explore different teaching methodologies
Silic and Lowry	2020	Employee security behaviors, training outcomes	Implement in various corporate environments
Oconnor and Stricklan	2021	Student knowledge synthesis, cybersecurity skills	Test in diverse cybersecurity courses
Robson	2019	Student engagement, personal branding	Investigate in other marketing courses
Nguyen and Meixner	2020	User engagement, performance outcomes	Apply in different industrial training contexts
Liuta et al.	2019	Student motivation, creativity	Expand to other technical subjects
Prasad et al.	2022	Gamification mechanics, employee engagement	Implement in various business scenarios
Kasahara et al.	2019	Code quality, student engagement	Apply in different programming courses
Gómez et al.	2023	Learning effectiveness, student engagement	Test in different social science disciplines
Mendez et al.	2021	Energy consumption, smart city integration	Explore in other smart city aspects
Kačerauskas et al.	2022	Gamification effects, industry applications	Investigate long-term societal impacts
Bechkoff	2019	Academic effectiveness,	Test in other subject areas

Author	Year	Variables	Future Research
		student engagement	
Pereira et al.	2022	Trust theory, contract theory	Explore in other digital workforce settings
Al Shehhi and Almarri	2022	Engagement, document security	Implement in various e-learning platforms
Schöbel et al.	2023	Problem-solving skills, emotional engagement	Test in other management training programs
Yfantis and Ntalianis	2022	Corruption prevention, data transparency	Apply in other public sectors
Suvajdzic et al.	2020	Interactive learning, participant engagement	Explore in other educational contexts
Gupta and Goyal	2022	Learning outcomes, student engagement	Implement in diverse business courses
da Silva et al.	2021	Learning motivation, perceived learning	Explore in other accounting courses
Mazarakis	2021	Gamification applications, future trends	Investigate emerging applications in gamification
Martínez-Hita et al.	2021	Historical thinking, learning improvement	Test in other humanities subjects
Patterson et al.	2019	User experience, scientific data engagement	Expand to other scientific fields
Bagheri et al.	2020	Learning outcomes, gamification techniques	Develop new gamification methods for entrepreneurship
Chtouka et al.	2019	Learner and player profiles, learning paths	Customize for diverse learning styles
Bautista-Montesano et al.	2020	Student interest in STEM, skill development	Apply in other STEM education programs
Cespón and Lage	2022	Student participation, online teaching effectiveness	Explore in various online learning environments
Arifianto and Izzudin	2021	User engagement, learning atmosphere	Investigate in different online learning tools
Thomas et al.	2022	Employee learning, task performance	Apply in various HRD contexts
Buckley et al.	2019	Component utilization, contextual sensitivity	Test in different social and business activities
Elmira et al.	2022	Teacher and student perspectives, technology use	Evaluate in various educational levels
Almousa et al.	2019	User experience, training effectiveness	Implement in other emergency training scenarios
Tóth et al.	2019	Long-term learning effect, student engagement	Test in other quiz-based learning tools
da Silva et al.	2019	Teaching process quality, student motivation	Explore in different management disciplines

Gamification Model

Educational Gamification

In the educational sector, the works of [Ho and Chen \(2023\)](#) on e-commerce competencies and [Bal \(2019\)](#) on enhancing writing skills demonstrate a targeted approach where gamification is used to develop specific skill sets. These models underscore the potential of gamification in making

complex subjects more accessible and engaging for students. The incorporation of gamification in broader educational settings, as explored by [Hanafiah et al. \(2019\)](#) in the Malaysian education system and by [Camuñas-García et al. \(2023\)](#) in cultural heritage education, shows its versatility in enhancing the learning experience across various disciplines. These studies highlight that gamification can transcend traditional teaching methods, providing a more interactive and immersive learning experience that can cater to diverse learning styles and preferences.

On the professional development front, the application of gamification in service fields by [Ciuchita et al. \(2023\)](#) and in business education by [Lyons and Buckley \(2021\)](#) reflects a strategic utilization of gamification to bridge theoretical knowledge with practical application. These models demonstrate how gamification can simulate real-world scenarios, thereby enhancing skill acquisition and application in a professional context. [Borissova et al. \(2020\)](#)'s study on test generation in gamified environments further emphasizes the role of gamification in assessment and evaluation, showcasing its potential in reinforcing learning outcomes in a more engaging manner.

The analysis of these various models reveals that gamification is more than a tool for engagement; it is a comprehensive educational strategy that can enhance both the depth and breadth of learning. By making learning interactive and reflective of real-world challenges, gamification not only improves engagement but also fosters the development of critical thinking and practical skills. Whether in academic or professional settings, gamification stands out as a versatile and effective approach to education and skill development, adapting to the needs of diverse learners and professionals.

Corporate and Professional Development Gamification

The array of studies in Corporate and Professional Development Gamification highlights the dynamic application of gamification strategies across various professional fields. [Silva et al. \(2019\)](#) emphasize the psychological engagement through flow theory in educational games, illustrating how immersive learning experiences can enhance professional training. [Spanellis and Harviainen \(2021\)](#) expand the scope of gamification beyond traditional education, suggesting its potential in driving societal change and aligning with UN goals. In the service sector, [Ciuchita et al. \(2023\)](#) demonstrate how gamification can augment customer service skills, thereby linking game mechanics with practical business applications.

[Lyons and Buckley \(2021\)](#) focus on the intersection of academia and industry, showcasing how gamification can effectively bridge theoretical knowledge with real-world industry needs. Similarly, [Borissova et al. \(2020\)](#) investigate the role of gamification in creating engaging and effective assessment methods, indicating its relevance in educational evaluations. [Yen et al. \(2019\)](#) present an interesting application of gamification in influencing transport behavior, underlining its efficacy in modifying real-world behaviors. Incorporating advanced technologies, [Loureiro et al. \(2021\)](#) explore the integration of VR and gamification in marketing education within higher education, highlighting the growing trend of immersive technology in learning environments. These diverse studies collectively demonstrate how gamification transcends conventional educational methods, offering innovative solutions to train and develop skills in various professional settings, thereby preparing individuals for the complex challenges of the modern workforce.

Variables

Engagement and Motivation

A prevalent theme observed in numerous studies, including those by [Bal \(2019\)](#), [Hanafiah et al. \(2019\)](#), and [Bovermann and Bastiaens \(2020\)](#), is the emphasis on boosting student engagement and motivation through gamification. This theme emerges as a core element in assessing the

effectiveness of gamification within educational settings. Whether it involves enhancing writing skills, as seen in the study of [Bal \(2019\)](#), or fostering greater student participation and intrinsic motivation in learning environments, as explored by [Hanafiah et al. \(2019\)](#) and [Bovermann and Bastiaens \(2020\)](#), the consistent focus is on leveraging gamification techniques to create more engaging and motivating learning experiences. These studies collectively underline the critical role that engagement and motivation play in the success of gamification strategies, highlighting how these elements can significantly transform and enhance the educational process.

Performance and Learning Outcomes

Several studies, such as those by [Ho and Chen \(2023\)](#), [Ortiz-Martínez et al. \(2022\)](#), and [Durrani et al. \(2022\)](#), place significant emphasis on the impact of gamification on academic performance and learning outcomes. These studies highlight the tangible benefits of integrating gamification into educational frameworks. By focusing on these variables, they provide evidence of how gamification can enhance educational effectiveness. Whether it's through improved grades, enhanced understanding of complex subjects, or more effective retention of information, these studies demonstrate that gamification is not just an engaging tool, but it also contributes substantially to the achievement of concrete academic goals. This body of research underscores the potential of gamification as a transformative approach in educational settings, offering measurable improvements in student performance and learning outcomes.

Skill Development and Application

The theme of developing specific skills and their application, particularly evident in professional and vocational training contexts, is a focal point in studies like those conducted by [Malhotra et al. \(2020\)](#) and [Almeida and Simoes \(2019\)](#). These studies delve into how gamification can be strategically used to enhance specific skill sets, ensuring that learners are not only engaged but also gain practical skills that can be directly applied in their professional lives. [Malhotra et al. \(2020\)](#) focus on the integration of gamification in software engineering education, illustrating how it can be employed to enhance problem-solving and coding skills. Meanwhile, [Almeida and Simoes \(2019\)](#) explore the adoption of serious games in the context of Education 4.0, demonstrating the effectiveness of gamification in developing skills relevant to modern industries. Both studies underscore the value of gamification as a tool that goes beyond mere engagement, playing a crucial role in equipping learners with the competencies required in today's rapidly evolving professional landscape.

User Experience and Interaction

In the realm of gamified education, studies like those by [Silva et al. \(2019\)](#) and [Nguyen and Meixner \(2020\)](#) have taken a deep dive into understanding the role of user experience and interaction within gamified environments. These studies meticulously explore the various characteristics of games, such as their design, mechanics, and narrative elements, and how these aspects significantly influence the learning flow and user engagement. Silva R. et al. focus on how specific game features can enhance the learning flow, making the educational experience not only more engaging but also more intuitive and effective. Meanwhile, Nguyen & Meixner examine the impact of user interaction in augmented reality settings, demonstrating how immersive technologies can be leveraged to deepen user engagement and learning efficacy. Both studies contribute crucial insights into the gamification field, highlighting the importance of well-designed user experiences and interactive elements in maximizing the educational potential of gamified learning environments.

Social and Behavioral Change

The potential of gamification extends far beyond the confines of traditional educational settings, as highlighted by studies conducted by [Spanellis and Harviainen \(2021\)](#) and [Yen et al. \(2019\)](#). These studies venture into uncharted territory by exploring the application of gamification for broader social change and behavioral modification. [Spanellis and Harviainen \(2021\)](#) investigates how gamification can be harnessed to address critical societal issues and align with United Nations sustainability goals. Their work emphasizes the power of gamification as a tool for encouraging positive behavioral shifts at a global scale, demonstrating its capacity to motivate individuals and communities towards socially responsible actions. In a similar vein, [Yen et al. \(2019\)](#) delve into the realm of transport behavior change through gamification, illustrating how gamified approaches can influence individuals' choices and behaviors in areas as diverse as commuting and transportation. These studies collectively underscore the transformative potential of gamification in shaping not only educational outcomes but also broader societal and behavioral changes, marking a significant evolution in the field's scope and impact.

Technology Integration and Innovation

The realm of gamification is evolving rapidly, with studies like that of [Loureiro et al. \(2021\)](#) and [Yfantis and Ntalianis \(2022\)](#) shedding light on the incorporation of cutting-edge technologies. Loureiro and her colleagues in 2021 explore the integration of Virtual Reality (VR) into educational gamification, exemplifying the transformation of traditional learning experiences into immersive and engaging virtual environments. Their research underscores the potential of VR to enhance student engagement and interaction, offering a glimpse into the future of education. On the other hand, [Yfantis and Ntalianis \(2022\)](#) delve into the application of blockchain technology within gamification, highlighting its role in ensuring transparency and integrity in educational systems. Their work signifies the importance of staying at the forefront of technological advancements to harness the full potential of gamification as an innovative educational tool. Together, these studies underscore the dynamic and forward-thinking nature of gamification, showcasing its adaptability to embrace modern technologies for enhanced learning experiences.

Evaluation and Assessment

Gamification's versatility in education is exemplified by the work of [Borissova et al. \(2020\)](#), who delve into its application in evaluation and assessment processes. Their research underscores the multifaceted role of gamification, extending beyond traditional classroom activities to encompass testing and feedback mechanisms. By introducing game elements into assessment procedures, [Borissova et al. \(2020\)](#) illuminate the potential for more engaging and interactive evaluation methods. This not only paves the way for more immersive learning experiences but also offers educators innovative tools to gauge student performance effectively. Thus, their study underscores gamification's capacity to revamp not only teaching but also the evaluation and assessment aspects of education, making it a valuable asset in contemporary pedagogical practices.

Contextual Sensitivity and Adaptation

[Buckley et al. \(2019\)](#) and [Chtouka et al. \(2019\)](#) shed light on the significance of contextual sensitivity in the realm of gamification in education. Their research underscores the need to tailor gamification strategies to individual learner profiles and the specific educational and cultural contexts in which they operate. These studies emphasize that a one-size-fits-all approach to gamification may not be as effective as adapting strategies to suit the diverse needs and backgrounds of learners. By advocating for customization and contextualization, they provide

valuable insights into how gamification can be optimized to ensure its relevance and effectiveness in various educational settings. This focus on contextual sensitivity underscores the importance of a nuanced and adaptable approach to gamification in education.

Discussion

Online gamification distinguishes itself from traditional education by harnessing digital tools to create dynamic and engaging learning environments (see Table 2). It surpasses the spatial and resource limitations of traditional settings by offering personalized, adaptive learning experiences and immediate feedback, enhancing both engagement and learning outcomes. Through simulations, gamification excels in bridging the gap between theoretical knowledge and practical application, preparing learners for real-life challenges in a way that traditional methods often cannot. VR and other immersive technologies in gamification deepen user engagement and interaction far beyond what is typically achievable with physical tools in a conventional classroom. Furthermore, the global reach and adaptability of online gamification foster social and behavioral change across wider audiences, leveraging online communities for a broader impact. This approach also benefits from continuous innovation, integrating the latest technologies to keep the learning experience relevant and captivating.

Contrastingly, traditional education tends to focus on direct interaction and established methodologies, relying on uniform assessment strategies and often struggling with the integration of technological advancements due to infrastructural limitations. While it provides a solid theoretical foundation, it may fall short in offering the immediate feedback and practical application facilitated by gamification.

Table 2. Differentiation between Gamification and Traditional Education

Variable	Online Gamification	Traditional Education
Engagement and Motivation	Utilizes digital tools and environments to create highly engaging scenarios for learners (Bal, 2019; Hanafiah et al., 2019).	Relies on physical presence to motivate learners, which can be limited by resources and space (Bovermann & Bastiaens, 2020).
Performance and Learning Outcomes	Improves learning outcomes through adaptive learning and personalized feedback (Ho & Chen, 2023; Ortiz-Martínez et al., 2022).	Depends on traditional assessment methods, which may not provide immediate feedback (Durrani et al., 2022).
Skill Development and Application	Offers simulations for practical skill application, closely mimicking real-world tasks (Ciuchita et al., 2023; Lyons and Buckley, 2021).	Focuses on theoretical knowledge with limited real-world application scenarios (Malhotra et al., 2020; Almeida & Simoes, 2019).
User Experience and Interaction	Provides immersive experiences through VR, enhancing user engagement (Silva et al., 2019; Nguyen & Meixner, 2020).	Interaction is restricted to physical tools, limiting immersive experiences (Silva et al., 2019).
Social and Behavioral Change	Can reach a wider audience for societal impact, leveraging online communities (Spanellis & Harviainen, 2021; Yen et al., 2019).	Impact is often localized, limiting scope for large-scale change (Spanellis & Harviainen, 2021).
Technology Integration and Innovation	Evolves with technological advancements, integrating innovative tools (Loureiro et al., 2021; Yfantis & Ntalianis, 2022).	Limited by the availability and integration of technology in the physical environment (Loureiro et al., 2021).
Evaluation and Assessment	Facilitates interactive assessment methods, offering immediate	Relies on conventional testing methods, which may not fully

Variable	Online Gamification	Traditional Education
	feedback (Borissova et al., 2020).	capture engagement (Borissova et al., 2020).
Contextual Sensitivity and Adaptation	Allows for global reach with adaptable content to meet diverse needs (Buckley et al., 2019; Chtouka et al., 2019).	Adaptations are often constrained by local resources (Buckley et al., 2019; Chtouka et al., 2019).

The gamification learning journey unfolds through a five-stage process designed to enhance skill application (see Figure 3). It begins with introducing learners to basic concepts in an engaging way, utilizing storytelling and introductory challenges to explain the 'why' behind the knowledge. As learners advance, they apply these concepts in increasingly challenging scenarios, such as simulation games that mimic real-world business management. The next phase focuses on developing critical thinking and problem-solving skills, where immediate feedback from rewards and penalties encourages experimentation and learning from mistakes in a safe environment.

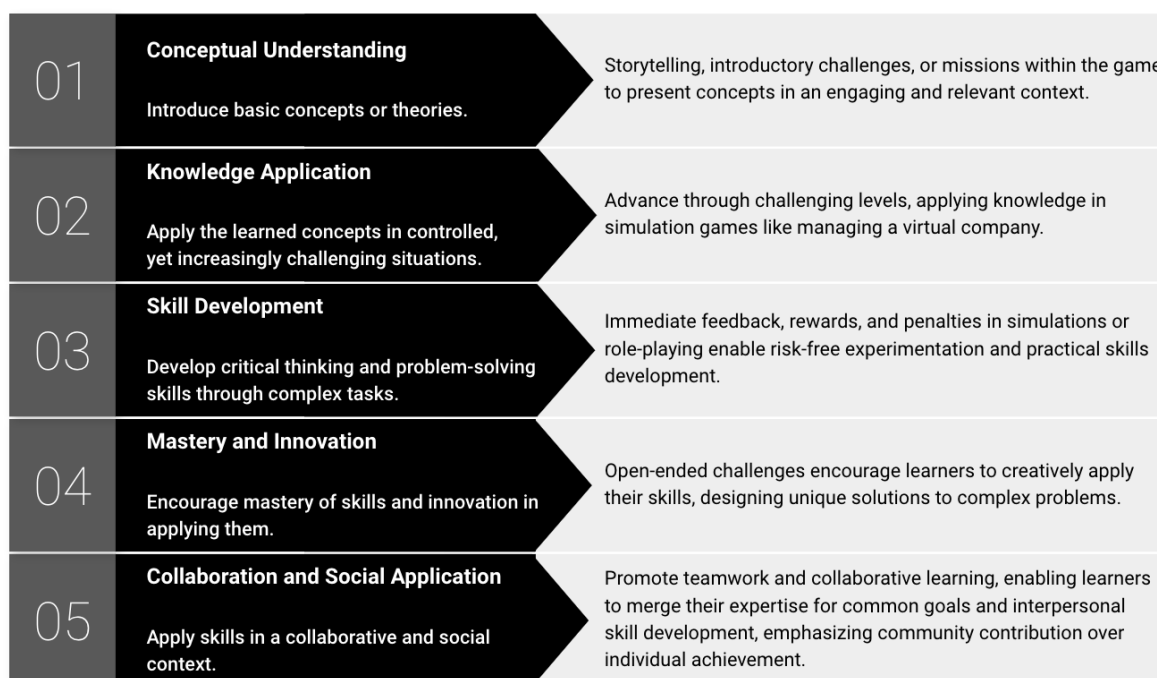


Figure 3. The Gamification Journey for Skill Development (Adopted from Dochie et al. (2017) and Metzger et al. (2016))

The journey progresses to mastery and innovation, where learners are encouraged to apply their skills creatively, facing open-ended challenges that reward innovative solutions. Finally, the process culminates in collaboration and social application, promoting teamwork and collective problem-solving. This stage emphasizes the importance of community and teamwork, going beyond individual achievements to include contributions to collective goals. This concise, phased approach ensures a comprehensive learning experience, balancing theoretical knowledge with practical application and fostering both individual and collaborative skills.

CONCLUSIONS

In conclusion, our study specifically aimed to explore the impact of gamification on enhancing leadership skills among postgraduate entrepreneurship students, and the findings have shed

significant light on this area. Through the systematic literature review, we have determined that gamification significantly contributes to the development of crucial leadership skills, including decision-making, problem-solving, team collaboration, and communication. These skills are vital for entrepreneurship students who aspire to lead in dynamic and competitive business environments.

Our research highlights that gamification, by incorporating elements such as points, badges, and leaderboards into educational settings, not only increases student engagement and motivation but also fosters an environment conducive to the development of leadership competencies. The interactive and competitive aspects of gamified learning stimulate students to take initiative, engage in collaborative problem-solving, and practice decision-making in risk-free scenarios—activities that are essential for leadership in the real world. Moreover, the feedback mechanisms inherent in gamified systems provide students with immediate insights into their performance and decision-making processes, further enhancing their ability to reflect on and improve their leadership skills.

Thus, the impact of gamification on postgraduate entrepreneurship students is profound and multifaceted, extending beyond mere engagement to significantly influence the acquisition and refinement of leadership abilities. These findings not only validate the importance of integrating gamification into educational programs targeted at developing future leaders but also suggest avenues for further research into optimizing game-based learning environments for leadership development. As such, gamification emerges not just as a tool for enhancing educational engagement, but as a critical component in preparing the next generation of entrepreneurial leaders equipped with the skills to navigate the complexities of the modern business world.

LIMITATION & FURTHER RESEARCH

Gamification in education has emerged as a significant area of research, with studies spanning various aspects of its application and impact. One recurring theme in this body of research is the emphasis on enhancing student engagement and motivation, a concept explored in numerous studies such as those by [Bal \(2019\)](#), [Hanafiah et al. \(2019\)](#), and [Bovermann and Bastiaens \(2020\)](#). These studies collectively highlight the central role of engagement and motivation in the efficacy of gamification across diverse educational contexts. Whether the focus is on improving writing skills, increasing student participation, or enhancing motivation in learning environments, the importance of these factors remains a consistent finding.

Another crucial variable explored in gamification research is its impact on academic performance and learning outcomes. Studies by [Ho and Chen \(2023\)](#), [Ortiz-Martínez et al. \(2022\)](#), and [Durrani et al. \(2022\)](#) have shed light on the significant influence of gamification in improving students' academic performance. This body of research underscores the tangible benefits of gamification in enhancing educational effectiveness, making it a valuable tool for educators seeking to elevate their students' achievements.

Furthermore, gamification extends its reach beyond traditional academic boundaries, as seen in studies by [Malhotra et al. \(2020\)](#) and [Almeida and Simoes \(2019\)](#). These studies emphasize the development of specific skills and their practical application, particularly in professional and vocational training contexts. Gamification, in this context, serves as a means of honing skills and enhancing their real-world application, making it a valuable resource for skill development in various professional fields.

User experience and interaction within gamified environments constitute another critical area of investigation, as explored in studies such as those by [Silva et al. \(2019\)](#) and [Nguyen and Meixner \(2020\)](#). These studies delve into the role of game characteristics and their influence on the learning flow and user engagement. By understanding how the user experience is shaped within

gamified settings, researchers gain insights into optimizing the design and implementation of gamified educational tools. In conclusion, gamification in education represents a multifaceted field of study with numerous variables and dimensions. The research conducted in this domain sheds light on the significance of student engagement, academic performance, skill development, user experience, and the broader societal impact of gamification. These findings collectively contribute to the evolving landscape of educational strategies, demonstrating the potential for gamification to reshape and enhance learning experiences across various educational contexts.

Lastly, the exploration of technology integration within gamification, exemplified by studies such as Loureiro et al. (2021) and Yfantis and Ntalianis (2022), offers a rich terrain for future research. Future research within the gamification and education sphere should pivot towards the broader integration of emerging technologies and address the accompanying online challenges. This includes investigating the impacts of technological advancements on learner engagement and outcomes, alongside tackling issues such as the digital divide, accessibility, and institutional readiness for tech adoption. Focusing on these areas will enable the development of inclusive, equitable educational models that fully harness the potential of gamification as a transformative tool.

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