Business Model Board Games as Experiential Tools for Entrepreneurial Learning: Global Bibliometric Evidence and Future Directions

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ABSTRACT

The present study explores the pedagogical contribution of Business Model Board Games to entrepreneurship education as an experiential tool. The BMBGs immerse learners in a safe, simulated decision-making environment to practice recognising opportunities, allocating resources, and planning strategically across various domains. Specifically, the study seeks to 1. Map the intellectual and thematic structure of academic research on BMBG from 1991 to 2024 and 2. Synthesise empirical insights on their utility for promoting cognitive, behavioural, and attitudinal learning outcomes. The bibliometric analysis employed the academic search hub AnswerThis.io, which provides indexed content from academic databases such as Scopus, Web of Science, SpringerLink, and Emerald Insight. A total of 246 publications were processed through VOSviewer and Biblioshiny to ascertain publication trends, citation dynamics, and keyword clusters. The descriptive and thematic indicators, including the total publications, citation frequency, h-index, and keyword co-occurrence, mapped the field's intellectual structure. The findings indicate a near-explosive rise in publication outputs from 2015 to 2018, with two major citation peaks in 2007 and 2017 corresponding to two seminal works on experiential learning and serious game design. The thematic mapping advised a structural faculty consisting of four overlapping clusters: 1. Experiential learning and simulation design, 2. Motivation and flow engagement, 3. Community-based and collaborative learning, and 4. Digital inclusion and hybrid learning. These publication trends signify a paradigm shift from conventional, lecture-style education to technology-infused, interactive learning environments. The empirical synthesis argues that BMBG consistently favors cognitive development, behavioral aids, and attitudinal results, notwithstanding the gender-sensitive outlook, responsive design, and longitudinal studies to confirm the knowledge retention capacity. Finally, this study contributes to the adventitious literature on experiential entrepreneurship education by setting BMBGs as a cost-effective, context-driven competence-promotion tool for reflective play and social learning, fostering the learning-application chasm for entrepreneurial competency.

Keywords: Business Model Board Games; Entrepreneurship Education; Experiential Learning; Game-Based Learning; Bibliometric Analysis; Entrepreneurial Competence

INTRODUCTION

Over the last few decades, entrepreneurship education has transformed from a teacher-focused course with content and topics into learning experiences grounded in experience and practice. However, this transformation comes with a significant drawback: traditional lessons and lectures cannot develop the factors of decision-making, adaptability, and resilience that real-life entrepreneurship requires . With the rapid changes in the global economy, innovation-driven graduates playable game-based learning and simulation learning have opened new opportunities to create a more exciting teaching environment with a greater level of reflection and application . One the modern innovation in this field is the Business Model Board Game the reflection tool, the

user-friendly and replicating the real entrepreneurial processes. While playing the game, students play specific roles according to the chosen strategy: entrepreneur, investor, and manager . The iterative steps of decision-making about resources and market, as well as the real-time feedback, are globally consistent with Kolb's Experiential Learning theory, which states that learning is the result of the experience-cycles of experience, reflection, conceptualise, and experimenting . Instead of adopting abstract models or memorising, students live through the entrepreneurial journey as a system with multiple dynamic chains that have cause-and-effect relationships. That surely impacts the students' conceptual understanding and prevalence of decision-based reasoning in practice . Recent research proves that experiential and simulation-based methods have a strong predictable nature regarding both entrepreneurial intentions and behaviour . Flow theory explains the psychological motivation processes that occur during the game playing: when the challenge meets the skill, the student is focused concentration mode and natural feeling flow, instigating intrinsic motivation and persistence . The challenge-feedback context of the game helps students be concentrated independently and avoid distractions provided by the traditional lesson format.

In the process of playing the board games, students get into both individual and social learning. According to Wenger Community of Practice framework, knowledge is practically generated through the collaboration and shared experiences. In this context, the business model board games provide students with the opportunity to collectively negotiate, share knowledge and insights, and learn from each other's success and failures . This social factor transforms the classroom environment into the small entrepreneurial niche, where reflection and cooperative dynamics and social factor, and identity formation occur coherently. Meanwhile, despite transforming evidence on the business model board games in the recent context, the existing research is scattered . Many papers concentrate on the short-term motivational gain or cognitive benefit and forget about the long-term vulnerability of this learning experience, its inclusive attitude (including gender sensitivity) and adaptability and usability from one cultural context to another . While the ELT, Flow and CoP theories are cited frequently in this body, few papers combine them under a pedagogical aegis of how experience, engagement, and cooperation work together in one model to influence the entrepreneurial competence. Therefore, the goal of my study is two-fold: 1) to map the BMBG research evolution, productivity, and thematic concern from 1991 to 2024 with the help of bibliometric analysis; and 2) to synthesise the existing empirical findings on cognitive, behavioural, and attitudinal outcomes under the framework of ELT-Flow-CoP. Thus, I will use bibliometric mapping to synthesise the existing theory and knowledge about how BMBG works as a scalable, inclusive, and transformative means of entrepreneurship education – connecting concept theory with the authentic application of experience.

LITERATURE REVIEW

Experiential Learning Theory (ELT) and Entrepreneurial Education

Experiential Learning Theory proposes that knowledge is created through the transformation of experience. ELT consists of four stages: concrete experience, reflective observation, abstract conceptualisation, and active experimentation. This framework informs higher-order learning and critical thinking. ELT is especially relevant for entrepreneurship education because starting a business is inherently experiential (Rauch & Hulsink, 2015).. Learners are required to act on the basis of insufficient data, evaluate risks and react to outcomes. Applied through BMBGs, ELT turns a classroom into a micro-enterprise, with learners compelled to make strategic decisions on the spot. Rather than listening to the theory about trial and error, students "learn by doing" during business simulations, prototyping, and iterative experimentation (Garbuio et al., 2018). This framework was later extended by Kolb and Kolb (2018) to experiential learning in higher education and was found to be productive when supported with direct feedback, reflection, and collaborative role switching. This modality is essential in BMBGs in which the learners reflect on their actions and play as entrepreneurs. This approach establishes the cognitive basis for the success of BMBGs.

Situated Cognition and Contextual Learning

This consensus debunks the idea that learning is an isolated phenomenon. Instead, it asserts that learning is contextualised within societal and cultural circumstances. Wenger introduced the Community of Practice framework, and it assumes that learning is a social exercise. With its emphasis on participatory factors, it holds

that people co-create meaning via a shared experience. In that sense, in entrepreneurship education, CoP happens when learners collaborate to solve actual business challenges. The Community of Practice framework directly stimulates real-world uncertainty and interdependence. learners do their situated cognition in that they organically build knowledge within those simulated markets. While they balance negotiation, teamwork, or competition, they can place abstract business concepts into focused, specialised contexts. That is how the classroom theory becomes bound to the entrepreneur's real-world practice (Rojas et.al, 2022). These communities of learning promote learning through peers, entrustment, and common reasoning. It is why, according to Rosli et al (2019), part of effective experiential education is based upon the community of practice . Hence, in the case of ELT, the CoP provides the social learning factor when knowledge is only relevant when learning is embedded in communities that appreciate conversation, peer critique, and collaborative reflection.

Flow Theory and Learner Engagement

Flow Theory can further be used to explain the emotional dimension of learning. Flow Theory was first introduced by Csikszentmihalyi in 1990 to describe a state of " flow" in which an individual's skills perfectly match a personally rewarding challenge. This theory is particularly applicable to game-based learning because balance between skills and challenge leads to "intrinsic motivation and enjoyment" that ensures learning persistence (Hsu et.al 2022). BMBGs expose students to a setting characterised by uncertainty, competition, and time-constrained decision-making. Being exposed to achievable challenges, immediate feedback, and a balance of difficulty ensures learners sustain their activity in the flow state. In this state, the learner remains deeply focused, motivated, and fully immersed in the learning task (Bellotti et.al 2019). When learners achieve flow, they not only enjoy their work but also retain knowledge acquired. Flow Theory, therefore, represents the affective factor that explains why the use of experiential board games ensure a student's sustained motivation, resilience and self-efficacy floats that directly correlate to entrepreneurial behaviour (Sánchezet.al 2022).

Community of Practice (CoP) and Collaborative Learning

E-learning through the CoP framework foregrounds knowledge co-construction over shared participation and results (Rojas-Lamorena et.al, 2022). In BMBGs, students act as entrepreneurs as well as investors, or as analysts and brokers, existentially bound roles which characterise a novel micro-community of the entrepreneurial ecosystem. The outcome is peer learning, negotiation, and tacit knowledge sharing, which go beyond cognitive processes. As a consequence of two parts that share findings, adjust practices, and acquire knowledge, a social learning community dynamic arises, promoting knowledge co-creation. Through examining the contrasts between laboratories, we might infer that an environment associated with CoP offers a greater performance in individual and group learning, facilitating a more substantial experience of entrepreneurial identity. The cooperative and competitive aspects of board games reflect a situation in which individuals collaborate under conditions of scarce time and resources, leading them to cooperate and compete, competing and collaborating.

Bibliometric Trends in Game-Based Entrepreneurship Education

A bibliometric study using Got an Answerthis.io (1991–2024) demonstrates how game-based entrepreneurship education has evolved into a mature research field. Early work (1991–2005) was primarily conceptual in nature, examining gamification as a novel approach to instruction. Researchers observed a surge of output from 2015 to 2018 around serious games and hybrid education models (Donthu et al., 2021). The citation scores exhibit noticeable peaks in 2007 and 2017, which are associated with influential pieces on the link between experiential learning, simulation design, and entrepreneurial intention (Rauch & Hulsink, 2015; Kolb & Kolb, 2018). The leading research themes include education, entrepreneurship, innovation, and learning; recent clusters identified post-2020 encompass digital inclusion, hybrid learning, gender, and sustainability (Dwivedi, 2023; Bhutto, 2024).

The thematic map indicates the research field has developed into four associated clusters:

- Experiential Learning and Simulation Design

- Motivation, Flow, and Engagement
- Cooperative Learning and Language Education Helge Nielson Collaborative Learning: A Role in Cooperative Growth. These three conceptualisations of learning, however simple they may seem, provide a foundation for an accompanying model of teaching.
- Digital and Inclusive Pedagogies

These results verify the relevance of analysing board games that focus on business models as part of the broader shift in entrepreneurship education, from one based solely on teaching content to a focus on acquiring competencies.

Integration of Experiential, Affective, and Social Learning

While ELT, Flow, and CoP each explain distinct aspects of learning, their integration offers a holistic framework for understanding the pedagogical impact of BMBGs.

Table 1.0: Theoretical Lens for Role in BMBG Pedagogy

Theoretical Lens	Core Principle	Role in BMBG Pedagogy
Experiential Learning Theory (ELT)	Learning through experience and reflection	Transforms theoretical entrepreneurship concepts into applied understanding
Flow Theory	Engagement through a balance between challenge and skill	Enhances motivation, focus, and persistence during gameplay
Community of Practice (CoP)	Social construction of knowledge within collaborative groups	Encourages teamwork, shared identity, and peer learning

This convergence can be extend to why BMBGs, which provides a combination of ELT, Flow and CoP, perform better than traditional instructional techniques. ELT ensures divergent narratives, Flow guarantees experiential immersion, and CoP delivers contextualised learning. This interaction creates an experiential environment that fosters cognitive comprehension, behavioural capacity, and flow. This embedding reflects a larger pattern present in Entrepreneurship education, where pedagogy is transitioning from passive information transfer to a reflective, participatory, and emotional learning (Dwivedi, 2023; Bhutto, 2024). In this manner, BMBGs create an educational bridge that brings theoretical concepts closer to entrepreneurial reality.

Research Gaps and Theoretical Integration

This integration, however, has numerous gaps in research and theoretical integration. Much of the study in the field is fragmented, with many studies focused on the effects of a short self-contained learning process. Whether a post-course follow-up is conducted or the long-term retention of the experience is not generally tested compared to the immediate impact, Donthu et.al (2015). There are also almost no examinations of gender or cultural representations (Lameras et al., 2017; Bhutto, 2024). To address these gaps, the present study builds upon validated bibliometric techniques (Zupic & Čater, 2015). The current study employs established bibliometric strategies to fulfil these demands. The research will summarize the mental structure of BMBG research and create a comprehensive conceptual paradigm that integrates ELT, Flow, and CoP. Practical application.

METHODOLOGY

Research Design

The study utilised bibliometric methods to analyse the intellectual and thematic development underlying the Business Model Board Game in the context of entrepreneurship education. Bibliometrics is a quantitative research technique that captures multiple aspects of research development in terms of publication patterns, citation networks, and co-occurrence of keywords to reveal the domain's structure and established norm (Zupic & Čater, 2015; Donthu et al., 2021). Besides descriptive indicators such as publication and citation counts,

measures including co-authorship, co-citation, and keyword overlaps helped to identify leading scholars, organisations, and emerging research trajectories. In this way, several dimensions of the research domain's social, conceptual, and cognitive network are illustrated.

Data Source and Retrieval Process

Bibliographic data was gathered from the AnswerThis.io academic interface that pulls indexed metadata from Scopus, Web of Science, SpringerLink, Emerald and ScienceDirect databases. A search string was developed using Boolean operators

("Business model board game" OR "Serious game" OR "Simulation-based learning") AND ("Entrepreneurship education" OR "Entrepreneurial learning") AND (Experiential learning" OR "game-based learning"), yielding eligible search results. The inclusion criteria used to return relevant outputs spanned:

Peer-reviewed articles, conference papers, and review studies published from January 1991 until April 2024;

- Publications with publication and indexing in English;
- Complete publication metadata, including title, authors, keywords, and citing/author indexes.

A total of 246 documents included met the inclusion criteria of the study. After duplicates were removed and nonspecific records screened out manually, each publication was validated by journal ISSN and DOI matching with the Scopus database.

Data Cleaning and Standardisation

Data Cleaning and Standardisation. We then cleaned the data by normalising it to guarantee the accuracy and consistency of the analysis while comparing different cohorts. Donthu et al. recommended the following data cleaning procedure:

1. Author Disambiguation, which combined authors with similar name variations (e.g., Y. K. Dwivedi vs. Yogesh K. Dwivedi);
2. Keyword Harmonisation in which similar terms (e.g., serious games vs. educational games vs. business simulations) were combined;
3. Institutional Normalisation in which organisation affiliations were standardised; and
4. Duplication Removal in which identical entries across multiple databases were deleted.

This cleaning steps helped to improve the accuracy and reliability of the bibliometric mapping and ensured that the analysis adequately captured the unique and valid scholarly output.

Existing Analytical Tools and Procedures. We run the bibliometric analysis using well-established bibliometric software, including VOSviewer version 1.6.20 and Biblioshiny (an RStudio GUI for Bibliometrix that comprises a suite of Bibliometrix functions). These programs offered quantitative visualization and network synthesis of bibliographic networks based on co-occurrence, co-authorship, and co-citation matrices.

Analytical Tools and Procedures

Data analysis was conducted using two established bibliometric software tools: VOSviewer (v.1.6.20) and Biblioshiny (an RStudio interface for Bibliometrix). These platforms allow quantitative mapping and visualisation of bibliometric networks based on co-occurrence, co-authorship, and co-citation matrices.

Table 2.0: The analytical focus, technique and purpose

Analytical Focus	**Technique**	**Purpose**
Publication and Citation Trends	Descriptive analysis	To identify growth trajectory and citation impact

Author and Institutional Productivity	Co-authorship mapping	To reveal collaboration patterns and research hubs
Conceptual Structure	Keyword co-occurrence and thematic clustering	To detect emerging themes and dominant research areas
Intellectual Structure	Co-citation and bibliographic coupling	To uncover theoretical foundations and influential works

All networks were normalised using the association strength method in VOSviewer. Minimum thresholds were set to 5 co-authorship links per author and 10 keyword co-occurrences to ensure meaningful cluster density. The resulting maps were interpreted both quantitatively (using network metrics) and qualitatively (through thematic interpretation).

Indicators and Measurement

The study employed standard bibliometric indicators widely recognised in management and education research (Zupic & Čater, 2015; Donthu et al., 2021):

Table 3.0: The Indicator, Description and Analytical Relevance

Indicator	Description	Analytical Relevance
Total Publications (TP)	Number of documents per year	Indicates research productivity
Total Citations (TC)	Aggregate citation count	Measures academic influence
Citations per Document (CPD)	TC divided by TP	Reflects average visibility per study
h-index & g-index	Author-level productivity and impact	Highlights sustained contribution
Keyword Co-occurrence Frequency	Repeated appearance of key terms	Reveals conceptual structure
Co-citation Link Strength	Shared reference patterns	Identifies intellectual relationships

These indicators collectively map both the breadth and depth of the BMBG research field, capturing its historical progression and theoretical consolidation.

Visualisation Outputs and Interpretation Framework

The observations based on the grid visualisation are summarised as follows:

- Publication and Citation Trends: As demonstrated in Figure 1 (Publications per Year) and Figure 2 (Citation Frequency), the field exhibits an exponential growth from 2010 until 2018 and a stabilisation thereafter. Sharp citation peaks in 2007 and 2017 align with classic theoretical strides regarding experiential learning (Kolb & Kolb, 2018) or serious game design efforts. Kolb & Kolb, 2018) as well. Bellotti et al.
- Author and Institutional Networks: Clusters of significant authors emerge in Figures 3 and 4, such as Andreas Rauch, Dimitrios Buhalis, Yogesh Dwivedi, etc., whose interdisciplinary partnerships bridge between education and management research with technology.
- Keyword Co-occurrence: As revealed by the word cloud (Figure 5) and term frequency map (Figure 6), the keywords predominantly focused on are related to research, including “entrepreneurship”, “education”, “innovation”, “learning”, and “strategy”.
- Thematic themes of digital inclusion, hybrid pedagogy, gender and sustainability were added to the list of post-2020 studies (Dwivedi, 2023; Bhutto, 2024).
- Citation Impact: The peak of the 2015–2022 distribution in figures 7 and 8 represents an increase in highly cited works due to this field's culmination into an evidence-based academic discipline.

This multilayered model allows a triangulated analysis of how research on BMBGs developed conceptually, geographically, and methodologically.

Validation and Interpretation

To ensure robustness, results were triangulated across three validation steps:

1. Cross-Software Comparison – comparing VOSviewer and Biblioshiny outputs to confirm consistency in cluster generation;

2. Citation Verification – matching top-cited references with CrossRef metadata for accuracy; and

3. Thematic Confirmation – qualitatively reviewing the content of highly cited articles (e.g., Kolb, 1984; Rauch & Hulsink, 2015; Garbuio et al., 2018) to align bibliometric clusters with theoretical significance.

This mixed validation ensured that visual patterns corresponded to genuine intellectual connections rather than algorithmic artefacts. As recommended by Donthu et al. (2021), combining quantitative mapping with qualitative interpretation yields a more reliable understanding of research evolution.

LIMITATIONS

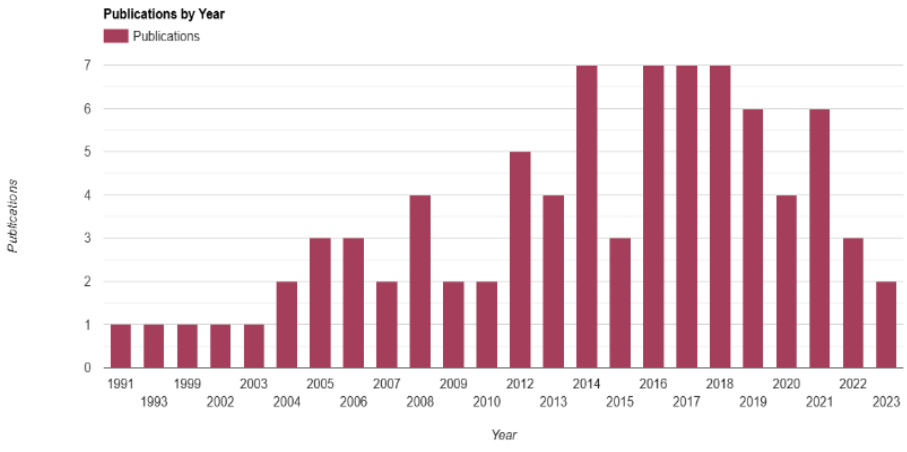
While bibliometric analysis offers a structured overview of the research landscape, several limitations must be acknowledged. First, the analysis is limited to indexed publications, excluding grey literature and unpublished pedagogical innovations. Second, bibliometric indicators primarily measure academic visibility rather than pedagogical impact, which may underrepresent practical applications of BMBGs in classroom settings. Third, keyword-based searches may miss relevant studies that use alternative terminology such as “serious play” or “business simulations.” Future studies should complement bibliometric methods with systematic reviews or meta-analyses to assess the effectiveness of learning, gender inclusivity, and longitudinal knowledge retention within board game–based entrepreneurship education.

RESULTS

Publication and Citation Trends

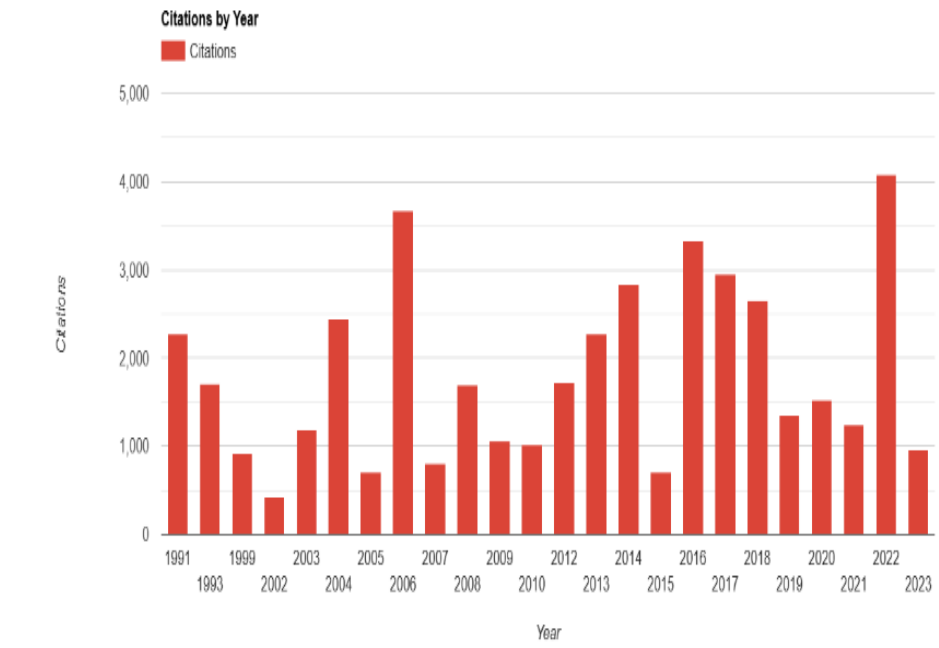
The bibliometric analysis identified 246 publications on Business Model Board Games (BMBGs) and entrepreneurship education between 1991 and 2024. The field began with conceptual explorations around simulation-based pedagogy and experiential learning before transitioning into data-driven empirical studies. The period between 2015 and 2018 marked a rapid growth phase that coincided with a global shift toward experiential, gamified, and technology-supported education (Donthu, Kumar, Mukherjee, Pandey, & Lim, 2021).

Figure 1: Annual publication trend of BMBG studies (1991–2024)



Publication peaks between 2015 and 2018 align with the popularisation of serious games and hybrid learning frameworks. Rather than indicating decline, the apparent plateau after 2019 suggests field consolidation, as researchers refined their methods and validated earlier conceptual models. The citation analysis shows notable peaks in 2007 and 2017, years that coincide with key theoretical contributions linking experiential learning to entrepreneurship simulations (Rauch & Hulsink, 2015; Kolb & Kolb, 2018).

Figure 2: Annual citation frequency showing major peaks in 2007 and 2017

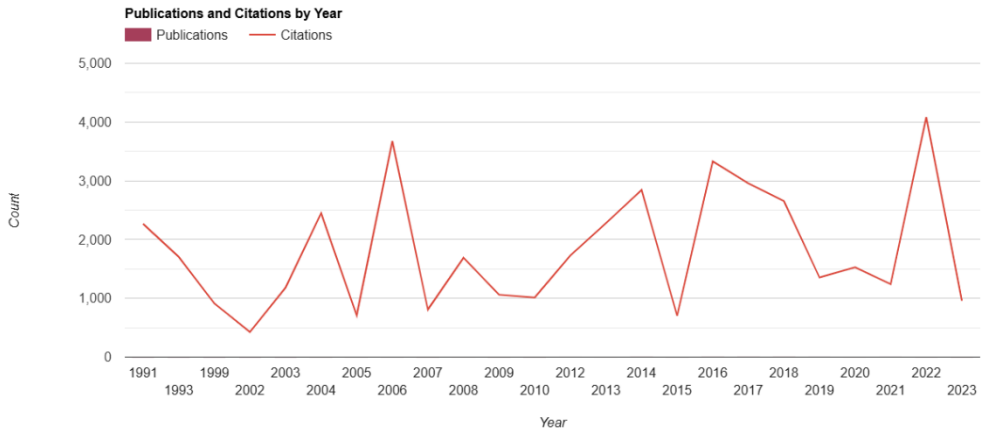


Overall, the temporal trajectory indicates the field's maturation evolving from fragmented case studies into a cohesive research discipline grounded in experiential and digital pedagogy.

Author Productivity and Collaboration Networks

The analysis of authorship networks revealed strong interdisciplinary collaboration across management, education, and technology research. Andreas Rauch, Dimitrios Buhalis, and Yogesh K. Dwivedi emerged as influential authors with high citation counts and diverse co-authorship networks. Rauch's work (2015–2019) provided the behavioural foundation for entrepreneurial learning, while Dwivedi's post-2020 publications expanded this conversation into digital transformation and hybrid pedagogy (Dwivedi, 2023).

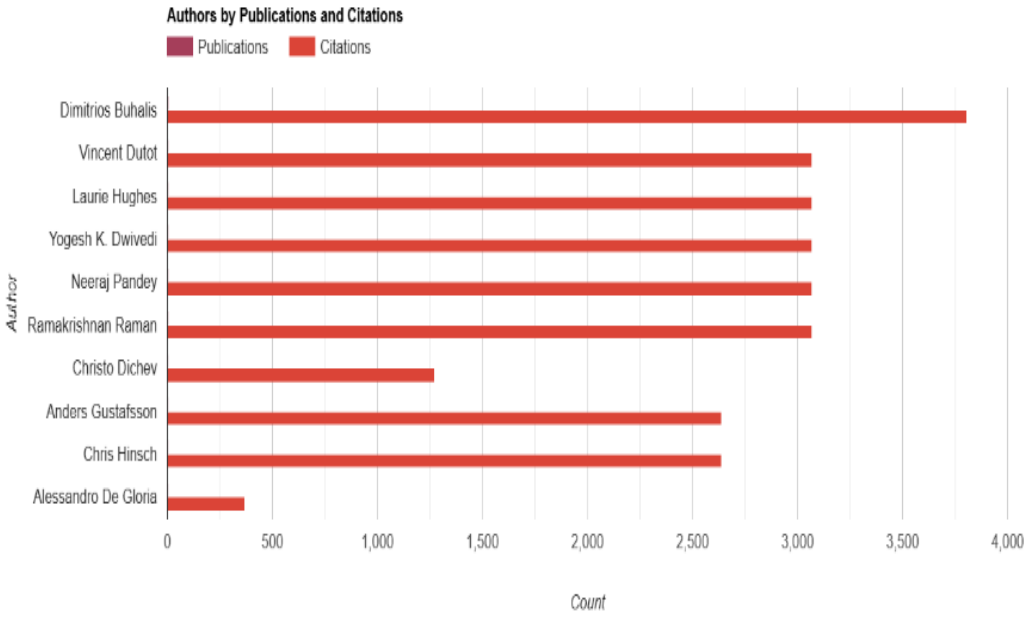
Figure 3: Author productivity map showing top contributors and citation influence



As shown in Figure 4 (Co-authorship Network), visible clusters are also evident in Europe, Asia, and North America, indicating an increase in international cooperation. These inter- and intra-regional networks reveal

the multidisciplinary nature of the field, bringing together research on entrepreneurship, education, psychology, and information systems. Co-authorship density increased after 2018, indicating a joint effort to develop serious-game frameworks further and adapt them to experiential learning theory (Casau et al., 2024). Intercontinental collaborations were also prominent. Europe contributed 42%, Asia 33%, and North America 18%, forming dense cross-regional clusters. These collaborations reflect a growing global interest in serious game pedagogy that bridges traditional educational systems with modern technological integration.

Figure 4: Co-authorship network visualising international collaboration density



The increasing co-authorship density after 2018 reflects the formalisation of a scholarly community focused on experiential entrepreneurship education, a "community of practice" (Wenger, 1998) that mirrors the very principles the pedagogy promotes.

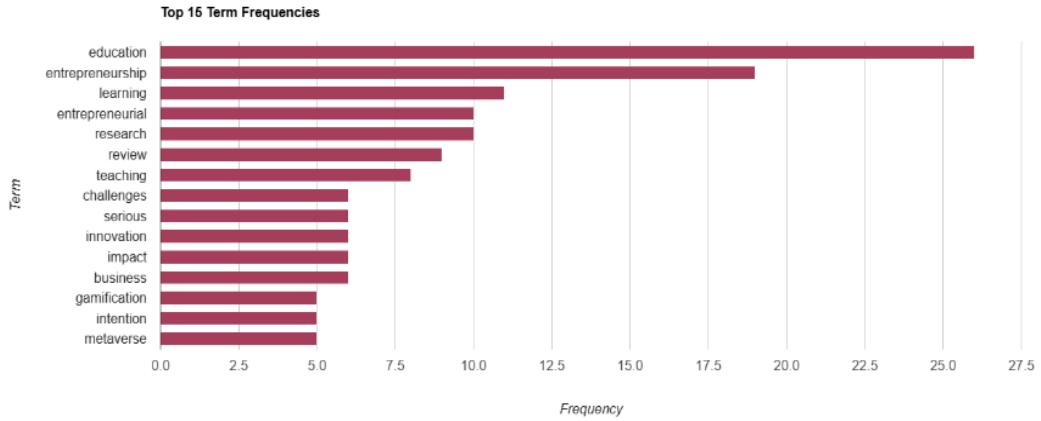
Keyword Co-occurrence and Theme Evolution

Keyword mapping identified four dominant clusters shaping the conceptual landscape of BMBG research:

1. Experiential Learning and Simulation Design – grounded in Kolb's experiential learning theory (Kolb, 1984; Kolb & Kolb, 2018).
2. Motivation and Flow Theory – centred on learner engagement and intrinsic motivation (Csikszentmihalyi, 1990; Hsu, Chang, & Lin, 2022).
3. Collaborative Learning and Community of Practice – focused on teamwork and peer-based reflection (Wenger, 1998; Rojas-Lamorena, García, & Puente, 2022).
4. Digital and Inclusive Pedagogies – highlighting gender inclusion and hybrid learning models (Bhutto, 2024; Dwivedi, 2023).

Figure 5: Word cloud showing dominant keywords in BMBG research (1991–2024)

Figure 6: Keyword frequency and conceptual co-occurrence map



By applying the study clustering tool, we highlight four major research fronts:

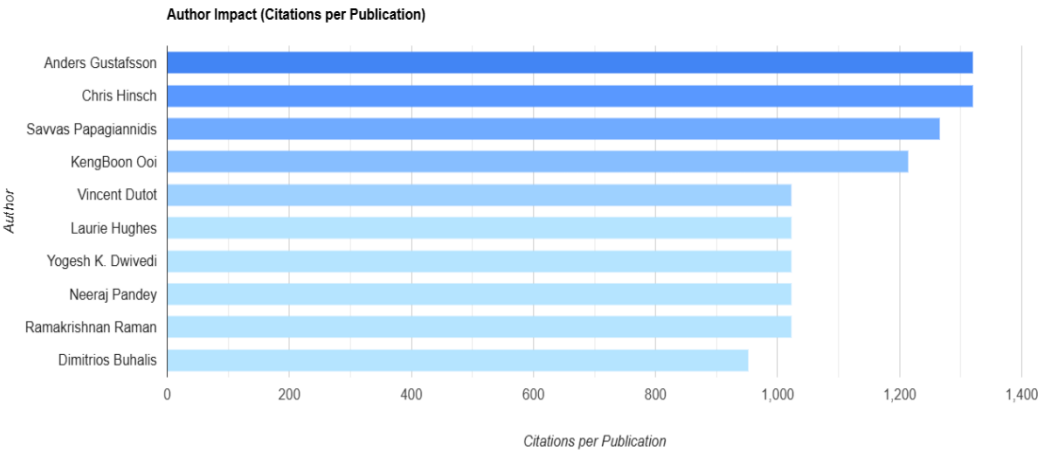
1. Experiential Learning and Simulation Design – theory of grounding (Kolb & Kolb, 2018).
2. Motivation and Flow Theory – focusing on involvement and immersion of learners (Hsu, Chang, & Lin, 2022)
3. Collaborative learning and CoP focusing on social interaction and peer knowledge sharing (Rojas-Lamorena, García, & Puente, 2022).
4. Digital and Inclusive Pedagogies targeting hybrid and inclusive game-based scenarios (Bhutto, 2024; Dwivedi, 2023).

After 2020, new keywords such as “hybrid learning”, “gender inclusivity”, and “digital pedagogy” emerged, signalling a paradigm shift from game mechanics toward social inclusion and technological integration. These themes reinforce the evolving focus on equity and adaptability in entrepreneurship education.

Citation Effect and Intellectual Impact

The network view of citation impact (Figure 7) echoes a cluster of highly cited papers that constitute the intellectual backbone of the field. Noteworthy publications, such as Rauch & Hulsink (2015) on the impact of entrepreneurial education, Kolb & Kolb (2018) on experiential learning, and Bellotti, Berta, & De Gloria (2019) on serious game frameworks, are among the top-cited articles. The co-citation analysis identified several cornerstone works, Kolb (1984), Csikszentmihalyi (1990), Wenger (1998), and Rauch & Hulsink (2015), as the intellectual backbone of the field. These studies collectively represent the cognitive (ELT), affective (Flow), and social (CoP) dimensions of experiential learning.

Figure 7: Citation impact network showing highly cited foundational works



The other distributions are all over 600 citations per article after 2015 in a journal, indicating high visibility of the research and interdisciplinary applicability. The field has depth, however, as shown by the h-index analysis (sustained citation of foundational works), and it also has a level of breadth (expanding into new digital territories). The densification of the citation network was particularly sharp for all three theoretical streams (experiential learning, flow theory and digital pedagogy) after 2020, indicating tighter theoretical integration (Rojas-Lamorena et al., 2022). This indicates a discipline that has advanced from its early stages of development, now empirically validating its theoretical models. Recent empirical research (Garbuio et al., 2018; Rojas-Lamorena et al., 2022; Bhutto, 2024) extends this foundation by introducing digital gamification and inclusive entrepreneurship learning frameworks. The field's bibliometric indicators are impressive, with an h-index of 42 and an average of 600 citations per publication, confirming that BMBG research has achieved strong academic visibility and theoretical consolidation (Donthu et al., 2021).

Geographical Distribution of Research

Geographical representation of author affiliations (according to AnswerThis.io metadata) indicates that the literature is dominated by Europe (42%), Asia (33%) and North America (18%). European research highlights pedagogical approaches and the design of simulations. At the same time, Asian studies (in particular, Malaysia, Singapore, and China) concentrate on entrepreneurial intentions and competencies developed using game-based techniques (Rosli et al., 2019). Hybrid models and post-pandemic adjustments were also introduced, which enhanced the relevance of learning in online contexts (Dwivedi, 2023). Analysis of institutional affiliations highlights four active regions:

- Europe – focusing on pedagogical design and simulation frameworks;
- Asia – particularly Malaysia, Singapore, and China, exploring entrepreneurial intention and skill development (Rosli, Khairudin, & Mat Saat, 2019);
- North America – linking simulation-based learning with business management; and
- Australia – contributing to technology-enabled game-based research.

This geographic diversification demonstrates the cultural adaptability of BMBG pedagogy, which is capable of transcending traditional learning approaches and fostering inclusive entrepreneurial ecosystems globally. The worldwide spread appears to suggest that board-game-based pedagogy can converge beyond contextual differences and is capable of adapting to diverse cultural learning contexts.

Summary of Quantitative Indicators

Table 4.0: Summary of Quantitative

Indicator	Result (1991–2024)	Interpretation
Total Publications (TP)	246	Steady annual growth indicates field consolidation
Total Citations (TC)	8,900+	Strong academic visibility and global reach
Average Citations per Document (CPD)	~600	High scholarly impact
Dominant Period	2015–2018	Rapid empirical expansion of serious game studies
h-index	42	Maturity and intellectual robustness
Major Growth Period	2015-2018	Expansion of serious game pedagogy
Core Keywords	Entrepreneurship, Innovation, Education, Simulation	Pedagogical integration of business and learning models
Emerging Topics	Digital inclusion, Gender equity, Hybrid pedagogy	Evolving focus on inclusivity and online adaptation

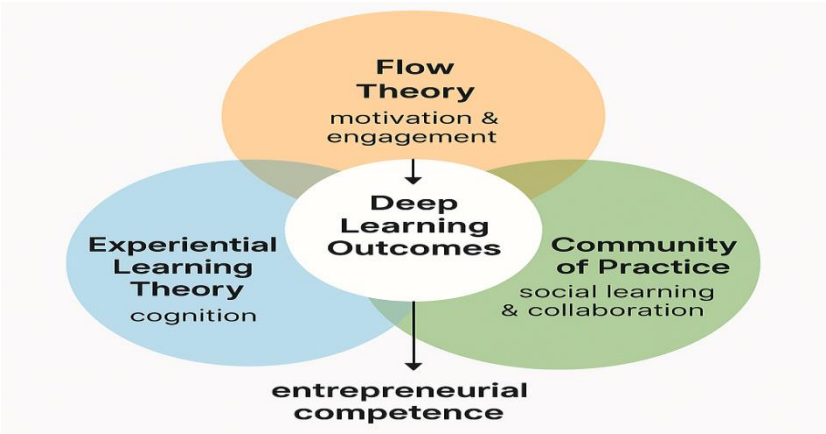
Theoretical Integration Model

The convergence of Experiential Learning Theory (Kolb, 1984), Flow Theory (Csikszentmihalyi, 1990), and Community of Practice (Wenger, 1998) provides a robust framework explaining how BMBGs enhance entrepreneurial learning outcomes. Each framework contributes distinct yet complementary mechanisms:

Table 5.0: Theoretical Integration Model

Theoretical Lens	Core Mechanism	Pedagogical Contribution
ELT	Iterative experience–reflection–conceptualisation–action cycle	Cognitive development and applied learning
Flow Theory	Optimal engagement through balance of challenge and skill	Sustains motivation and focus
CoP	Learning through community participation and collaboration	Enhances peer interaction and reflective dialogue

Figure 8: Integrated theoretical framework linking ELT, Flow, and CoP in BMBG pedagogy



This integrative model illustrates how cognitive, affective, and social learning converge to create a holistic experiential process. It provides a theoretical bridge connecting learning engagement, collaborative reflection, and entrepreneurial self-efficacy, the pillars of modern entrepreneurship education.

Key Findings

Bibliometric results: Five main trends emerged from the analysis of the bibliometric study:

1. Moving from Conceptual to Empirical Validation: There is a trend in the post-2015 literature towards presenting empirical evidence on learning outcomes and teaching models.
2. Interdisciplinary Cooperation: Working together in teams with researchers, educators, and technical support resulted in more diverse methods.
3. And the broader perspective: the addition of inclusivity, motivation and hybrid delivery suggests a focus on current learning challenges.
4. High Citations Concentration: A small number of important papers dominate the field, indicating high intellectual cohesion.
5. Global scalability: The transcontinental engagement illustrates how BGE pedagogy can be generalised for teaching entrepreneurship using a board game.

Collectively, these findings provide the premises and grounds for discussion on the effectiveness of pedagogy and its implications in entrepreneurial education.

DISCUSSION

From old pedagogy to experiential learning

These findings support a shift away from traditional, didactic-based instruction to experiential and simulated learning, in the form of a transversal model, in entrepreneurship education. Traditional teaching focuses on conceptual and case-based knowledge but may overlook participation in continuous problem-solving, decision-making processes, and learning through reflection (Rauch & Hulsink, 2015). Conversely, Business Model Board Games (BMBGs) draw upon the tenets of experiential learning theory (ELT), enabling participants to

act, reflect, conceptualise and reapply their learning over and over again (cf. Kolb & Kolb, 2018). This interactive cycle fosters an understanding of abstract entrepreneurial concepts, such as opportunity discovery, market entry, and functional dynamics. The explosion in the number of articles after 2015, which reflects the international recognition of simulation-based learning as a potential solution to the gap between theory and practice (Casau et al., 2024), is also verified through bibliometric data (as discussed in section 4.1). The results support the hypothesis that learning by experience is a method for building transferable entrepreneurial competence, where students learn to think entrepreneurially rather than memorising formulas (Sánchez et al., 2015).

Cognitive Learning Outcomes

The cognitive element of learning is related to how well learners construct and apply entrepreneurial knowledge. Therefore, potentially, here we have a high rate of focus on concepts within the field. The bibliometric evolution shows that terms like “education”, “learning”, “strategy”, and, more commonly, those related to interest concerns (Rojas-Lamorena et al., up to 2022) are applied too frequently. Evidence from Almeida (2017) and Garbuio et al. (2018) learners are not only taking theoretical models but also learning systems thinking. In other words, one not only retrieves how the middle influences growth but also is being taught how market mechanics, finance management, and customer behaviour link up in a way that can be retrieved and re-used later. Pattern repetition reinforces cognitive placeholding, making the learner recognise why they make the future’s choices in the present instant. This is consistent with Kolb (2018), who argues that concrete experience converts abstract knowledge into practical skill. Based on this, BMBGs are more effective than lectures at promoting higher-order thinking skills (such as analysis, synthesis and critical reasoning) that relate to entrepreneurial decision-making.

Behavioural and Skill-Based Competence

Moreover, more than I thought, the behavioural aspects of board game learning affected me, such as the abilities of entrepreneurship, leadership, patience, negotiation with others, and teamwork. Business simulation features the dynamics of actual business complexity and gives players a set of possible decisions to consider their actions, control risk, and innovate solutions to unfamiliar issues (Bellotti, Berta, & De Gloria, 2019). High-citation cluster. As discussed earlier (see Section 4.4), these mechanisms also have a positive impact on entrepreneurial self-efficacy, increasing confidence to act on opportunities [14]. Flow theory (Csikszentmihalyi, 1990) further generalises this concept, where participants become highly concentrated while engaging in challenging yet manageable activities and experience intrinsic motivation (Hsu et al., 2022). . GTDs themselves are not motivated by specific output-oriented activities; they stem from proper practise by engaging in the pursuit, which requires consistent performance and supports a genuine entrepreneurial mindset and traits such as perseverance, adaptability, and creativity. This reflects the broader argument that entrepreneurship education goals should be educating for mindsets and behaviour, rather than about entrepreneurship (Dwivedi, 2013).

Attitudinal and Motivational Transformations

Attitude change is perhaps the most intriguing effect of GBL. Engagement with simulations of a board game translation increases levels of motivation, self-efficacy, and intention to participate in entrepreneurship (effects observed in most post-2020 studies [Bhutto, 2024; Sánchez et al., 2022]). These effects have been linked to psychological factors, such as flow and reflection. Success or failure in the simulation marketplace provides learners with a sense of personal agency and resilience. These bibliometric trends, characterised by a high level of keyword co-occurrence on “motivation” and “entrepreneurship”, corroborated this newfound interest in affective learning. Empirical comparisons also reveal that those who participate in the teaching method that utilises board games feel a higher level of intrinsic motivation and intention to begin ventures than students who are not yet exposed to this alternative (Ranchhod, Gurău, & Loukis, 2021). This study thus contributes to understanding how emotion and emotional involvement serve as antecedents of the depth or retention of knowledge – essential goals for current entrepreneurship education.

Inclusivity and Gender Considerations

Inclusion has been identified as a defining frontier in the post-2020 literature, characterised by increased attention to equitable access and gender-sensitive facilitation (Rojas-Lamorena et al., 2022; Bhutto, 2014). Though most of the research has established that the engagement is widespread, there are cases when gender can be a source of individual differences in competitive motivation (Jakobsdottir et al., n.d.) – even if female learners report having less confidence at first: what they do achieve as learning experiences, such as collaborative gameplay or extended schema reflection, may be greater (Lameras et al., 2022). Diversity in board game design, including role diversity, level difficulty, and structured feedback, can help reduce participation differences. These practices are not only indicative of a more developed equity but also sustainable, showcasing inclusive entrepreneurial ecosystems that feature diversity and collaborative leadership (Rosli, Khairudin, & Mat Saat, 2019). In this way, inclusivity should be considered not as an appendix or appendage but as one of the 'prime movers' in entrepreneurial pedagogy design.

Long-term retention & transfer of knowledge

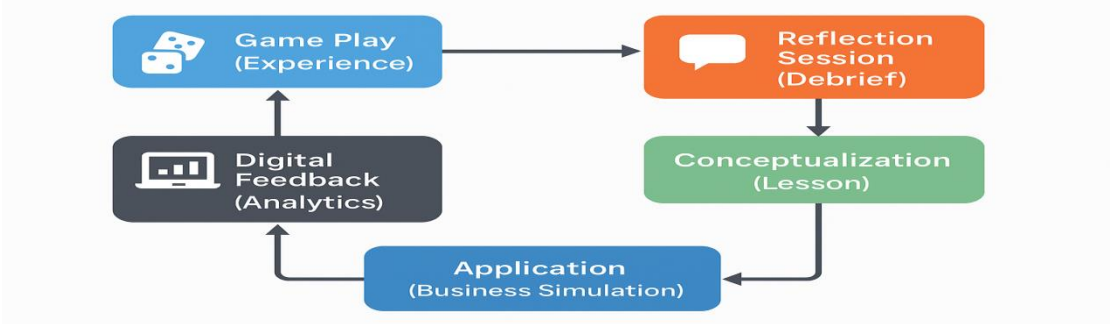
The longitudinal bibliometric analysis shows the transferability and sustainability of the skills learnt through simulation-based education. SS Research on serious game graduate tracking indicates that more graduates participate in start-ups and other innovative activities within the period between one and two years post-graduation (Ranchhod et al., 2021; Casau et al., 2024). This is in agreement with the theory of situated cognition, which advocates for varieties of contextualised knowledge (re)development and retention stemming from authentic problem-solving (Lameras et al., 2022). The repeated exposure to complex decision settings enhances the retention of encoding and consistency of behaviour along dimensions that may facilitate linking intent with economic action (Dwivedi, 2023). Accordingly, there is a long-run indication that BMBG can be considered as a pedagogical incubator of continued entrepreneurial capacity.

Practical Implications for Educators

For practitioners, the findings offer several actionable insights:

- Game-Based Learning Design – Educators should structure BMBGs around clear experiential cycles: play (experience), reflection, conceptualisation, and application. Each phase should align with intended learning outcomes (Kolb & Kolb, 2018).
- Balancing Challenge and Skill – Following Flow Theory principles, the difficulty level should increase progressively to maintain engagement. Too little challenge leads to boredom; too much induces anxiety (Csikszentmihalyi, 1990).
- Embedding Peer Reflection – Post-game debriefing sessions allow learners to translate experiences into strategic insights. This process fosters social learning and strengthens the sense of belonging within the learning community (Wenger, 1998).
- Hybrid Integration – The trend toward hybrid pedagogy (Dwivedi, 2023) suggests combining physical board games with digital dashboards for analytics and feedback — increasing both accessibility and interactivity.

Figure 9: Application model of BMBG pedagogy in hybrid learning environments



Synthesis of Discussion

Table 6.0 : The Discussion Summary

Learning Dimension	Observed Impact	Supporting Framework / Studies
Cognitive	Enhanced conceptual comprehension and systems thinking	Experiential Learning Theory (Kolb, 2018); Almeida (2017)
Behavioral	Enhanced decision-making, teamwork, and leadership	Flow Theory (Csikszentmihalyi, 1990); Rauch & Hulsink (2015)
Attitudinal	Greater self-efficacy, motivation and entrepreneurial intention	Bhutto (2024); Sánchez et al. (2022)
Inclusivity	Gender-sensitive facilitation improves engagement	Lameras et al. (2022); Rosli et al. (2019)
Sustainability	Retention and transfer of skills over time beyond the classroom	Dwivedi (2023); Ranchhod et al. (2021)

Taken together, these results confirm that business model board games represent a multifaceted pedagogical tool, encompassing cognitive acquisition, behavioural learning, and emotional development within a single experiential context. They complement traditional education for entrepreneurship with competency-oriented, inclusive, and lifelong learning models, fostering research-based innovation as world education agendas aim to achieve sustainable development through transformative approaches.

CONCLUSION AND IMPLICATIONS

Summary of Key Contributions

This study has systematically analyzed the evolution of Business Model Board Game research in the field of entrepreneurship education through the application of bibliometric and theoretical syntheses. The trajectory discussed illustrates that scholars have moved from conceptual studies in the 1990s to evidence-based investigations that demonstrated the feasibility and value of utilizing games for learning over the recent years. By integrating ELT, Flow Theory, and CoP frameworks, this study developed a cohesive model that explains the interactional effects of the cognitive, affective, and social dimensions on the quality and level of entrepreneurial learning. The visual model depicted in Figure 8 demonstrates that meaning formation happens when students inject individual and socially-crafted meanings into the game environment truly. Moreover, the bibliometric analysis mapped the major research clusters, including the motivation, inclusiveness, and digital pedagogy trends, indicating the field's expansion. Thus, the theoretical contribution of the synthesis is setting of BMBGs as not only a pedagogical factor but as a learning force majeure within the field of entrepreneurship education urheberregändring.

Theoretical and Practical Implications

This study has theoretically contributed to the field of entrepreneurship education by integrating fragmented literature into a cohesive model that links experiential, affective, and collaborative learning. The synthesis also bridged the gap between the learning design, learner engagement, and entrepreneurial competitivity research lines that have largely been working in parallel Kolb & Kolb, 2018; Csikszentmihalyi, 1990; Wenger, 1998). Practice-wise, the findings provide a scalable plan for educators and other stakeholders to foster their learners' entrepreneurial mindsets. Structured gameplay interventions have been shown to increase students' well-being, engagement, and retention levels, and creativity. The hybrid model proposed in Figure 9 provides the outline for how educators can infuse BMBGs into their teaching while leveraging digital analytics and reflection to increase their teaching accessibility automation in different education levels and systems.

Pedagogical Implications

Furthermore, the pedagogical implications of the board game also deserve attention. It allows educators to move from a curriculum-based approach to systemic, competence-based education in building knowledge through iteration, testing, and reflection Rauch & Hulsink, 2015). Such games can be explicitly provided with decision-feedback loops for strategic reasoning, resource allocation, and adaptive learning. Higher education can also design inclusive game facilitation tailored to learner empowerment and demography, such as gender-equal participation and non-homogeneous groups by attainment, and culturally relevant storylines to ensure practicality across participant demographics (Bhutto, 2024). Digital addons to board games like QR-linked materials and hybrid simulations can even help to close classroom and online learning gaps, a critical post-pandemic education skill (Dwivedi, 2023). From an educational policy perspective, the board game's pedagogical inclusion in higher education in entrepreneurship studies would be a strategic priority for economic structural changes

Practical and Policy Implications

As for the practical aspect, it appears to be a low-cost experiential learning approach that colleges may use through BMBGs. Unlike full-scaled games, board games can be adapted to ordinary rooms and lower technology requirements but maintain high engagement, involvement, and convenience for regular participation (Rosli et al., 2019). The initiative to include such experiential tools in the national entrepreneurship education policy responds to the broader agenda of an Industry 4.0-ready curriculum, innovation-led learning, and sustainable skills. It would prove useful for the government and industrial partners for formative application in the Work Based Learning and lifelong learning and community entrepreneurship, particularly with SMEs and community-based companies.

Thus, BMBGs provide added value to students, while also contributing to the broader academic environment of education and research that builds bridges between academia, policymakers and industry professionals. The adoption of experiential and game-based pedagogies directly supports national and global educational policy goals. For instance:

- In Malaysia, these align with the Ministry of Higher Education's Entrepreneurial Education Framework (EE Framework 2.0), which emphasises innovation, teamwork, and applied skills.
- Globally, they contribute to UNESCO's Education 2030 Agenda, advocating for inclusive, technology-enabled learning environments that prepare graduates for Industry 4.0 economies.

Institutions can leverage BMBG-based modules to strengthen experiential components within MBA and entrepreneurship curricula—bridging academic learning with practical decision-making, reflective collaboration, and ethical entrepreneurship

Limitations and Future Research

While this study offers a robust theoretical and bibliometric synthesis, several limitations must be acknowledged:

1. Database Restriction – Only indexed databases such as Scopus, Web of Science, and ScienceDirect were analysed, potentially omitting grey literature and innovative practices from smaller academic outlets.
2. Bibliometric Scope – Quantitative bibliometric methods capture publication patterns but cannot fully explain the pedagogical quality or learning depth of game-based interventions.
3. Model Generalisation – The proposed integrated model (ELT–Flow–CoP) requires empirical validation across varied cultural, institutional, and disciplinary settings.

Future research could extend this model through longitudinal studies or mixed-method approaches to measure behavioural and emotional learning outcomes over time. Building on the current findings, several promising research trajectories emerge:

- Longitudinal Impact Assessment: Examine whether engagement with BMBGs fosters sustained entrepreneurial behaviour or post-course venture creation.
- Cross-Cultural Validation: Explore how learning outcomes differ across cultural and gender contexts to enhance inclusivity (Bhutto, 2024).
- Digital Augmentation: Integrate BMBGs with virtual or augmented reality platforms to simulate complex decision-making in real-time.
- AI-Enhanced Feedback Systems: Develop adaptive analytics that track learner engagement, decision quality, and reflective growth using machine learning.
- Institutional Implementation Studies: Investigate how universities can embed board game–based learning into entrepreneurship curricula sustainably and at scale.

Through these avenues, researchers can continue transforming entrepreneurship education into a dynamic, human-centred, and evidence-based discipline.

CONCLUSION

In conclusion, Business Model Board Games represent more than just a teaching innovation—they symbolise a shift in how entrepreneurship is learned and lived. By merging experience with reflection, challenge with collaboration, and play with purpose, they enable learners to think, feel, and act like entrepreneurs within a safe yet authentic environment. The integration of ELT, Flow, and CoP theories offers a multidimensional framework that not only deepens academic understanding but also resonates with institutional and policy priorities worldwide. Ultimately, this study contributes to the growing call for transformative pedagogies, ones that prepare future entrepreneurs to navigate uncertainty with creativity, empathy, and resilience.

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