Higher Education and Practice Vol. 3 No. 1, 2026

Analysis of the Gameplay Elements' Mechanism in Knowledge Sharing within University Student Entrepreneurship Teams

Kaiyue Hou*, Yiting Yang
Beijing City University, Beijing, China
**Corresponding Author*

Abstract: Integrating gamified learning concepts is one method to improve the internal knowledge-sharing difficulties within university student entrepreneurship teams. Although existing research has focused on the motivational role of gameplay elements in organizational management, the mechanism of gameplay elements in knowledge sharing within university student entrepreneurship teams is still in its preliminary stages. This paper analyzes the "Cultural Relic Cipher" university student innovation and entrepreneurship project, systematically reviewing the team's explored gamification practices during collaboration, including behavioral paths such as co-creation tasks, incentive feedback, and social interaction. Consequently, it constructs a "psychological-behavioral" dual-layer framework for how gamification promotes team knowledge sharing. The study finds that gameplay elements, through the aforementioned mechanisms and paths, help stimulate team members' willingness to share knowledge. At the behavioral level, paths like co-creation tasks and iterative review provide effective channels for the mutual transformation and integration of tacit and explicit knowledge, which is beneficial for enhancing the competitiveness of university student entrepreneurship projects.

Keywords: Gameplay Elements; Knowledge Sharing; University Student Entrepreneurship Teams; Innovation Performance

1. Introduction

With the continuous advancement of technology and the "Mass Entrepreneurship and Innovation" strategy [1], university student entrepreneurship teams have become an important force driving the release of national innovation vitality and promoting employment. However, as a relatively young demographic, current university student entrepreneurship teams commonly experience problems with inefficient knowledge sharing, specifically manifested in the following three aspects: (1) Some team members are unwilling to share their core skills and experiences. (2) Ineffective communication among members leads to knowledge disconnection and resource wastage;.(3) Tacit knowledge (such as design inspiration, communication skills, etc.) is difficult to transfer effectively, leading to slow overall innovation efficiency in projects. Solving these problems has become key to improving the success rate of university student entrepreneurship projects.

To this end, this study selects the "Cultural Relic Cipher" university student entrepreneurship project as a typical case for analysis. The project team, consisting of four university students, innovatively integrates gameplay elements into real-world puzzle clues by designing immersive puzzle-solving experiences that incorporate cultural relic knowledge for museums. The basic forms include spontaneous team formation, task incentives, and communication interaction. The team's use of gamification practices in collaboration provides a natural "laboratory" for observing the interaction between gamification and knowledge sharing. This study aims to analyze the specific mechanisms through which gameplay elements influence internal team knowledge sharing by dissecting this case, offering a new perspective for application in the field of university student entrepreneurship, and thereby providing insights for improving knowledge-sharing difficulties in such teams. It holds significant theoretical and practical value.

2. Conceptual Definition and Theoretical Foundation

2.1 Conceptual Definition

The concept of Gamification was proposed by N. Pelling in 2022, referring to the process of

transforming non-gaming activities into activities with gaming characteristics [2]. Gameplay elements enhance project participation by applying game elements to non-game contexts [3]. In educational scenarios, gameplay elements are the carriers for implementing gamified learning concepts and also concrete manifestations in practice. By utilizing elements such as points, badges, leaderboards, tasks, and narratives [4], they satisfy participants' internal needs. In contrast, university student entrepreneurship teams often face issues like loose management and limited resources. Under these circumstances, can introducing gamified thinking into such teams enable knowledge sharing to function more effectively and improve team innovation performance? Existing research focuses more on large enterprises or online communities, with relatively few in-depth explorations targeting the specific context of university student entrepreneurship.

The connotation of knowledge sharing is mainly explained from legal, economic, fluidity, and innovation perspectives. It is a key link in promoting and achieving knowledge innovation and value addition [5]. Knowledge sharing within university student entrepreneurship teams refers to the process of mutual exchange, integration, and application of knowledge among team members. Knowledge types are primarily divided into two categories: (1) Explicit knowledge, which refers to knowledge that can be codified and directly transmitted, such as self-made puzzle guide templates, online tool usage skills, etc. (2) Tacit knowledge, which refers to knowledge that is difficult to codify and relies on personal experience, such as design inspiration for puzzle guides, interpretation ideas for cultural relic stories, etc. The practical significance of knowledge sharing is to break down knowledge barriers among members, thereby synergistically utilizing knowledge to enhance the team's overall innovation capability and improve the project's overall progress.

In this paper, innovation performance mainly refers to the innovation situation and operational outcomes of the entrepreneurship project, specifically divided into the following three aspects: (1) Product innovation, e.g., updates to puzzle storylines, optimization of puzzle guides, etc. (2) Process innovation, e.g., improvements in team collaboration processes, project operation processes, etc. (3) Outcome innovation, e.g., the attractiveness to audiences during pilot operations, sales of cultural and creative products researched during the project, etc. These can all be considered as main indicators for measuring the results of knowledge sharing.

2.2 Theoretical Foundation

Knowledge translation theory refers to effectively, timely, and ethically applying integrated knowledge into practice [6]. Knowledge translation theory provides theoretical guidance for the specific paths of knowledge sharing. This study is based on this theory for analysis, aiming to specifically analyze how gameplay elements promote the mutual transformation between tacit and explicit knowledge [7]. For example, social interaction settings in gamification promote the socialization of knowledge; co-creation tasks drive the externalization of knowledge; structured sharing and review promote the combination and internalization of explicit and tacit knowledge. By building interactive communication platforms and setting co-creation tasks, gameplay elements can effectively promote the knowledge translation process, thereby achieving efficient knowledge circulation and application [8].

3. Research Design and Case Overview

This study adopts a single-case study method, conducting in-depth analysis and mechanism exploration of the project's practical process. The "Cultural Relic Cipher" university student entrepreneurship project aligns with theoretical sampling principles: Firstly, the project is a typical representative of university student entrepreneurship teams incorporating gameplay elements; secondly, the project's nature and collaboration process inherently contain gamification practices; finally, the knowledge-sharing needs and challenges faced by the team are common issues.

Research data was primarily collected through the following methods: (1) Observation: The researcher personally observed team meetings on-site multiple times and observed online meetings. (2) In-depth interviews: Semi-structured interviews were conducted face-to-face with all four core members, focusing on their feelings about gamification practices within the team, experiences with knowledge sharing, and changes in attitudes. (3) Document analysis: Analysis of the team's

project plans, meeting minutes, internal communication records (anonymized), and pilot public operation reports. Data analysis was conducted through inductive and comparative methods, gradually extracting norms and constructing logical relationships from the raw data.

The "Cultural Relic Cipher" team has four core members who are very interested in museum puzzle game projects and have already established a pilot public account for sharing. The project requires comprehensive knowledge from multiple fields, demanding high comprehensive abilities from the students. They need to master a vast amount of historical knowledge, possess good communication skills to interact with museum staff, and have certain puzzle clue design capabilities. In its initial stages, the team faced a "knowledge silo" problem. The main issues were as follows: unclear content planning, and designers not fully understanding the profound meaning behind cultural relics. These problems led to constant revisions of the product plan and low innovation efficiency.

Table 1. Interview Subjects Overview

Interviewee Code	Role in the Team	Main Responsibilities	Interview Duration	Interview Method	Main Interview Focus
A1	CEO	Project coordination, responsible for cultural relic knowledge organization, storyline and puzzle design	120mins	Face-to-face	Original Design Intent of the Team Collaboration Model, observation of members' sharing behaviors, evaluation of gamified task effectiveness
A2	Product Manager	Design of puzzle guides, promotional materials, etc.	100mins	Face-to-face	How to understand cultural relic connotations and translate them into design, experience participating in co-creation meetings, knowledge help received from other members
A3	Operations Manager	Mini-program development, system operation and maintenance, user feedback collection and analysis	90mins	Face-to-face	Methods for imparting technical knowledge within the team, experience with task-based teaching, value of review for personal learning
A4	Human Resources Manager	Museum communication, organization of offline testing, user relationship maintenance	110mins	Face-to-face	Sharing of communication skills and experience, influence of team atmosphere on willingness to express, knowledge acquisition in social interactions

To conduct a more in-depth analysis of the role of gamification elements in knowledge sharing within university student entrepreneurship teams, this study employed the interview method, engaging in thorough and detailed discussions with the four core members of the "Cultural Relic Cipher" team. Specific information regarding the interview process is presented in Table 1. The selection of these four members as interviewees was based on the fact that they were key participants throughout the entire project lifecycle—from initial planning and design to development, operational implementation, and promotion. As central agents of knowledge sharing within the team, they provide comprehensive and wide-ranging insights reflecting practical experiences from diverse functional perspectives. The interviews primarily focused on the following two themes: (1) the specific experiences, behavioral motivations, and evolution of attitudes among members regarding the acquisition and sharing of knowledge during collaborative project work; (2) the personal experiences, interpretations, and evaluations of the members regarding the team's gamification practices, such as the "Badge Task" system. By comparing and analyzing the interactions among members in different roles as well as their perceptions of the gamified practices, this study aims to uncover the complex mechanisms through which gamification elements influence both individual and collective knowledge-related behaviors.

4. Mechanism of Gameplay Elements in Promoting Knowledge Sharing

Through data analysis, this study finds that gameplay elements play a promoting role in the knowledge-sharing mechanism within the "Cultural Relic Cipher" team, systematically

acting on the knowledge-sharing process at both psychological and behavioral levels, and establishing a virtuous cycle of sharing ecology.

4.1 Psychological Level: Activating the Willingness to Share Knowledge

Gamification design first and foremost exerts its influence at the psychological level of team members, and by catering to the deep-seated psychological needs of individuals, it effectively removes the psychological barriers that hinder knowledge sharing—particularly the sharing of tacit knowledge [9].The team breaks down project goals into a series of clear "micro-badge tasks." Contributing three core cultural relic clue ideas or completing the visual sketches for one chapter is itself a challenge for team members. When members complete tasks and receive public recognition in team meetings, it gives them a strong sense of achievement [10]. This positive feedback motivates members to contribute their professional knowledge more proactively in subsequent tasks. In the design of puzzle storylines and interactive segments, team members encourage each other to make suggestions. This fair and harmonious atmosphere makes members feel a sense of "ownership" in the project, making them more willing to express fuzzy, unverified tacit knowledge for group discussion.

When facing external challenges like submitting proposals to museums, team members prepare together, conduct simulation drills, and "fight" side by side. The night before a proposal submission, they worked on the design plan together, encouraging each other. In this process, facing pressure and compensating for each other's roles together, deep friendships and a strong sense of team identity are formed. Simultaneously, when collectively facing external challenges, the team members' collective consciousness is significantly strengthened, markedly reducing the psychological risk of knowledge sharing—sharing unique personal insights or "unverified" tacit knowledge no longer means exposing weaknesses but contributing to the team collective.

In the knowledge-sharing sessions, team members are encouraged to express their views democratically. This democratic atmosphere empowers members to courageously raise questions about every issue they perceive in the process directly to the person who designed that part, while also encouraging everyone to contribute their own ideas. This institutionalized empowerment breaks down the knowledge-based authority constrained by functional roles, thereby granting each member both a "voice" and a "sense of participation in decision-making" on cross-disciplinary issues. Consequently, it fulfills each member's need for autonomy.

4.2 Behavioral Level: Providing Pathways for Knowledge Flow

Building on the positive willingness to share knowledge, the team provides structured paths for knowledge transformation [11]. The "co-creation" path from tacit to explicit knowledge: The team regularly holds "clue co-creation meetings." First, they conduct "brainstorming" together, then categorize and integrate all ideas, finally debating and selecting. In each meeting process, tacit historical knowledge is stimulated into specific explicit story clues. Through active participation and unremitting effort, executable plans are ultimately formed. Participants, each representing different roles, engage in debates—for instance, questioning from a user's perspective whether a certain step is redundant—allowing diverse viewpoints to collide and interact with one another. Through continuous questioning, revision, and refinement, individual insights are gradually transformed into a tangible, actionable plan that gains collective recognition from the entire team. This process vividly illustrates the stage in knowledge conversion where tacit knowledge is externalized and articulated into explicit knowledge.

The "task-based" mutual exchange path for explicit knowledge involves transmitting already-explicit knowledge through "task-based teaching." For example, after the member responsible for public account maintenance masters a new user feedback collection tool (explicit knowledge), they actively initiate a small skill-teaching task to other team members, demonstrating the operation within the team. This is more effective than simply sharing documents. By transforming the learning process into a low-threshold team task, knowledge sharing is promoted. The team conducts reviews after each task, analyzing which designs were well-received and which had problems. Through this review process, a "knowledge

application-feedback-knowledge revision" learning loop is formed, continuously improving the quality of the team's knowledge sharing. The team treats each project pilot as a "game-level test," regarding the collected data and user feedback as a "level report card." The subsequent review meeting is viewed as a reflective session on this game-like challenge process. During the review, the team rigorously analyzes the following questions: (1) Review of Knowledge Application: On what knowledge or assumptions did we base this design? (2) Effect Feedback: What does the user feedback indicate or verify regarding our applied knowledge? (3) Refinement and Improvement: What have we learned from the testing process, and how should we adjust our design to better perfect the solution? This review process not only leads to the optimization of the solution and the product but also provides a powerful mechanism for collective learning and knowledge internalization.

Through concrete case analysis, it is possible to gain a deeper understanding of the underlying principles and applicability boundaries embedded within knowledge-sharing mechanisms. Once these principles and boundaries are comprehended, members can better address similar problems in the future by relying on personal intuitive judgment. Through the demonstration and review of the entire process, a learning loop of "knowledge application → practical feedback → collective reflection → knowledge refinement and internalization" is formed. Consequently, the quality of team knowledge sharing is elevated from simple information exchange to the mutual growth of collective wisdom.

5. Research Conclusion

Through in-depth analysis of the "Cultural Relic Cipher" project process, this study verifies that gameplay elements can effectively promote knowledge sharing within university student entrepreneurship teams. The measures taken by the project do not directly manage knowledge but continuously adjust the collaboration atmosphere and interaction modes among team members, thereby solving the motivational problem of knowledge sharing.

In summary, gameplay elements are an effective method to overcome knowledge-sharing difficulties in university student entrepreneurship teams. Faced with problems like loose team structure, limited resources, and difficulties in tacit knowledge transfer, integrating gamified thinking and elements into teamwork can increase student participation and effectively improve inefficient knowledge circulation.

Practical Implications: For university student entrepreneurship teams, team managers should proactively learn to integrate gamified thinking into daily management, design "knowledge contribution points," incorporate tacit knowledge sharing into the gamification system, encourage the sharing of both tacit and explicit knowledge among members through online and offline communication methods, and create a relaxed, positive knowledge-sharing atmosphere. For creative projects like "Cultural Relic Cipher," gamification elements should be designed in combination with their specific business characteristics. Core project knowledge (such as cultural relic knowledge, cultural connotations) should be integrated into gamified tasks. The development of each new content module should be designed as a "themed co-creation task," clarifying roles, rules, and rewards, making knowledge sharing an integral part of the task. For university entrepreneurship education, team process management education should be introduced into the curriculum, especially how to use gameplay elements to enhance team collaboration capabilities, addressing the current educational shortcoming of neglecting team operations.

6. Research Limitations and Future Prospects

The main limitation of this study is that it is a single-case study, and the generalizability of the conclusions needs further verification. Future research could select multiple university student entrepreneurship teams from different industries and development stages for multi-case comparison to explore the boundary conditions under which gamification mechanisms are effective. Furthermore, this study did not track the dynamic evolution of gamification strategy effects over the team's lifecycle. Subsequent research could conduct more in-depth studies to explore how gamification design should better adapt and adjust at different stages and under varying environments to continuously promote knowledge sharing.

Acknowledgements

This work was supported by the Beijing City

University College Students' Innovation and Entrepreneurship Training Program.

References

[1] Liu Yanyan. Construction and Open Sharing Mechanism Analysis of the National Laboratory Comprehensive Management System. Science and Technology Management Research, 2025, 45(03): 91-100.
[2] Jiang Juan, Chen Jiachun. Exploration and Practice of Gamified Teaching in Enterprise Simulation Business Training Courses. Heilongjiang Education (Theory & Practice), 2026, (03): 92-95.
[3] Wang Chunli, Li Dongge, Zhang Yanna, et al. Research on Learners' Preferences for Gameplay Elements in Online Learning. e-Education Research, 2021, 42(04): 68-75.
[4] Werbach K, Hunter D. For the win: how game thinking can revolutionize your business. Philadelphia: Wharton Digital Press, 2012.
[5] Zheng Zhan, Zheng Kang, Zhu Zimeng, et al. Collaborative Innovation Knowledge Sharing: Connotation, Influencing Factors, and Implications. Times of Economy & Trade, 2026, 23(02): 111-114.
[6] Tetroe J. Knowledge translation at the Canadian Institutes of Health Research: a primer. Focus Technical Brief, 2007, 18:1-8.
[7] Cai Qiaoyan. Apprenticeship with Chinese Characteristics: A "Bridge" for Knowledge Transfer and Transformation. Journal of Jiangsu Vocational and Technical Institute of Economics and Commerce, 2024, (1): 41-44.
[8] Xie Wenting, & Deng Sihan. Gamified Experience Design in Museums Based on User Motivation. Art Education Research, 2026, (5): 86-88.
[9] Zhang Jianshuang, & Wang Yu. Innovative Pathways and Strategies for Academic Atmosphere Construction in Higher Education Driven by Self-Determination Theory. University Education, 2025, (11): 25-29.
[10] Huang Xueli, & Zhang Yeping. Research on Cultivating University Students' Knowledge Innovation Ability in the Era of Big Data: Based on the Mediating Effect of Knowledge Sharing. Journal of Zhenjiang College, 2026, 39(1): 113-120.
[11] Cao Zhuolin. A Study on the Relationship Among Absorptive Capacity, Knowledge Sharing, and University Students' Innovative Behavior. Journal of Higher Education, 2017, (15): 37-39.