International Journal of Advanced Research in Education and Society
e-ISSN: 2682-8138 | Vol. 7, No. 6, 149-155, 2025
https://asianscholarsnetwork.com/asnet-journals

Factors Influencing the Application of the Creative Learning Ecosystem Model in Lower Secondary Schools in Hanoi

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Received: 30 September 2025 | Accepted: 15 November 2025 | Published: 1 December 2025

DOI: https://doi.org/10.55057/ijares.2025.7.6.13

Abstract: *The creative learning ecosystem consists of components such as learning subjects, learning knowledge, learning technologies, learning contexts, culture, and strategies. Building a creative learning ecosystem in lower secondary schools has become an essential requirement today. Researching subjective and objective factors helps schools gain better orientation in applying the creative learning ecosystem model. The authors used interviews and surveys with administrators, teachers, and parents to identify the impacts of influencing factors.*

Keywords: Creative learning ecosystem, students, teachers, influencing factors, lower secondary schools

1. Research Context

In the context of digital transformation and the Fourth Industrial Revolution taking place strongly worldwide, global education is undergoing profound changes in teaching methods, curriculum content, and the organization of learning environments. Education is no longer a one-way process of knowledge transmission but is shifting toward emphasizing personalization, creativity, and learners' adaptability.

The innovation trends in Vietnam's education system require an educational model that is systematic and flexible — one in which students learn through multidimensional interactions, real-world exploration, the use of technology, and connections with social resources. The "creative learning ecosystem" model has emerged as an inevitable trend, aiming to create an open and multi-centered educational environment that supports learners in developing comprehensively in terms of knowledge, skills, and attitudes.

A creative learning ecosystem is a system composed of components such as creative learning subjects, creative learning content, creative learning technologies, and internal and external environmental factors that promote the operation of educational, teaching, and training activities to achieve the highest quality outcomes. Within this ecosystem, each component demonstrates its own role and function, yet they are closely interconnected to form the unity and superiority of an educational or learning organization.

Evaluating the level of influence of factors affecting the application of the creative learning ecosystem model in lower secondary schools in Hanoi (Vietnam) helps schools develop appropriate strategies and directions for sustainable growth.

2. Theoretical Framework

2.1 Concept of the Creative Learning Ecosystem

The idea of building a learning ecosystem model in the world originates from *Connectivist Theory*, which considers that all factors contributing to effective learning and quality education are interconnected. The structure and development model of the creative learning ecosystem at the lower secondary level include the following components: (1) Learning subjects (People); (2) Learning knowledge (Content); (3) Learning technologies (Technology); (4) Learning contexts; and (5) Culture, strategies, and the capacity to connect knowledge among internal components and with external, larger ecosystems (Cuong et al., 2022). Specifically:

- **Learning subjects (People):** include learners, teachers, teaching assistants, mentors, administrators, alumni, business networks, internal and external partners, families, and communities.

- **Learning knowledge (Content):** includes formal training content such as curricula, lectures, textbooks, library materials, online courses, user manuals, reference materials, email exchanges, SMS, social networks, tests, and assessment documents; informal content such as conversations with peers, teachers, administrators, family, and consultations; as well as external content from seminars, workshops, books, and YouTube videos.

- **Learning technologies (Technology):** include software connecting the components of the learning ecosystem, digitized lesson plans, e-learning systems, online counseling systems for students and parents, parent networks, alumni associations, scientific and technical clubs, and innovation programs in schools.

- **Learning context:** includes local cultural settings, heritage sites, traditional craft villages, scientific and technological applications, business linkages, socio-political and community organizations, families, and other ecosystem actors. It also involves diverse forms of learning such as learning through play, experiential learning, problem-based learning, and project-based learning.

- **Culture and strategy:** refer to the school's development culture, strategic direction, quality philosophy, and core values that are publicly shared with society.

2.2 Factors Influencing the Application of the Creative Learning Ecosystem Model in Lower Secondary Schools

Implementing the creative learning ecosystem model in lower secondary schools is a complex process that requires multi-dimensional participation and interaction among educational stakeholders. The success of this model depends not only on its theoretical design but also on various contextual factors in practice. These influencing factors can be analyzed at multiple levels — individual, school, community, and the broader education system.

2.2.1 Subjective Factors

a) Teachers' Awareness and Competence

Teachers are the key actors in designing, organizing, and facilitating creative learning activities. Therefore, their understanding, pedagogical beliefs, teaching skills, and technological competence directly affect their ability to apply the creative learning ecosystem model (Craft, 2005). If teachers are not adequately trained in active learning, interdisciplinary

instruction, and technology integration, or if they maintain traditional teaching perspectives, the implementation of the model will face limitations.

b) School Administrators' Awareness and Competence

The awareness and competence of school administrators play a central role in forming and developing the creative learning ecosystem within schools. Administrators not only direct strategic orientations and organize educational activities but also drive changes in thinking, management approaches, and creative culture. Their understanding of the ecosystem model, combined with leadership capacity, technological proficiency, and the ability to mobilize social resources, determines the feasibility and effectiveness of implementation. If administrators have an open vision, understand digital transformation, and value creativity in learning, they can foster a flexible learning environment that encourages teachers and students to engage actively. Conversely, limited awareness and managerial competence may reduce the system's efficiency and sustainability. Therefore, developing leadership capacity, technological literacy, and systems thinking for school administrators is a prerequisite for ensuring the effective operation and growth of the creative learning ecosystem in general education institutions.

c) Students' Competence and Age Characteristics

Lower secondary students are in early adolescence a stage of rapid cognitive and emotional development but also one characterized by psychological instability and a lack of persistence and learning experience. The level of readiness to engage in creative learning activities, collaboration skills, self-learning ability, and critical thinking are decisive factors for the model's success (Vygotsky, 1978). In addition, differences in individual abilities and learning conditions can either facilitate or hinder implementation.

2.2.2 Objective Factors

a) Facilities, Equipment, and Technological Infrastructure

A creative learning ecosystem requires flexible learning spaces, diverse teaching equipment, and supporting technologies such as internet access, projectors, STEM laboratories, and digital libraries. In many lower secondary schools in Vietnam, the lack of facilities and technological infrastructure remains a major barrier to designing creative learning environments (UNICEF Vietnam, 2021). Therefore, synchronized investment and effective utilization of facilities are essential conditions for operating the ecosystem.

b) Local Socio-Cultural Environment

The local socio-cultural environment provides the contextual foundation for developing a creative learning ecosystem. Hanoi, as the nation's cultural, scientific, and educational center, offers students advantages through a rich cultural heritage and faster access to international integration trends. Many schools have integrated cultural activities in the Old Quarter, craft villages, historical sites, and museums into creative experiential learning programs that combine education with cultural preservation. However, the intersection between traditional and modern cultures also poses challenges for value orientation, requiring close collaboration between schools and communities to maintain a healthy and balanced creative learning ecosystem.

Hence, the creative learning ecosystem in schools results from the multi-dimensional influence of both internal and external factors. When these factors are harmoniously developed, they create a comprehensive learning environment that fosters students' physical, intellectual, linguistic, social-emotional, and aesthetic development.

c) Educational Policies and Support from Managing Authorities

Policies for developing creative learning ecosystems are vital in building educational environments that foster creativity and innovation. These policies include measures and regulations designed to encourage and support creative learning processes within the community. One key element of such policies is to create opportunities and favorable conditions for individuals and organizations to express and develop their creative ideas. The implementation of the creative learning ecosystem model must be supported by macro-level educational policies, such as professional guidelines, teacher competency frameworks, updated assessment regulations, and flexible financial mechanisms. Without consistent direction from higher authorities, school-level innovations may lack sustainability and fail to scale up. The absence of specific guidance, limited funding, or rigid quality control mechanisms can discourage schools from innovation (Hung, 2023).

d) Family

Family education forms an integral part of the overall educational mission. Coordination between schools and families ensures consistency in educational goals, methods, and outcomes. Principals are responsible for organizing collaboration with families and parent associations to align educational perspectives and methods, mobilize community support for education, and contribute to building healthy learning environments and school facilities. Parents also provide material and financial support for extracurricular and experiential activities such as field trips, festivals, and STEM events. In Hanoi, many parents actively participate in such initiatives, strengthening school–family connections. However, differences in economic status and educational background among parents can lead to disparities in how children are supported. Parents and communities play companion roles in promoting and spreading learning values. They help establish learning-oriented cultures in families and society by motivating, guiding, and supervising their children's learning routines and discipline. Families are also key sources of financial and moral support for socialized educational activities. In this sense, the family serves as "the first school," an indispensable component of the creative learning ecosystem.

Within this ecosystem, students learn not only in school but also through real-world experiences. Therefore, collaboration between schools, parents, enterprises, social organizations, and research institutes forms the foundation of the system. At the lower secondary level, if parents still prioritize grades, hesitate toward new learning approaches, or cannot accompany their children, creative learning activities will be limited in effectiveness (Thomas & Brown, 2011).

e) Networks of Internal and External Educational Forces

Education has a fundamentally social nature—it serves as a cohesive force within communities and a driver of socio-economic development. Conversely, educational development cannot be separated from the broader growth of the community and economy. Educational socialization means making education fully social by ensuring organic connections between education and society. In practice, socializing education means engaging the whole community in the educational process—mobilizing broad participation from citizens and organizations in building an inclusive and equitable learning environment. Diversify forms of educational and training activities, and expand opportunities for all social classes to participate actively and equally in these activities. Expand investment sources and make full use of the potential in human, material, and financial resources within society.

3. Research Results

3.1 Research Methods

We applied both quantitative and qualitative methods to investigate the degree of influence of different factors on the creative learning ecosystem. Interviews were conducted with five teachers and school administrators, while surveys were administered to 148 administrators and teachers from lower secondary schools in Hanoi between June and August 2025.

3.2 Survey Findings

3.2.1 Subjective Factors

Table 1: Statistics on the current status of subjective factors influencing the creative learning ecosystem

No	Subjective Factors	Degree of Influence (%)					Mean	Rank
		No impact	Little impact	Impact	High impact	Very high impact		
1.	Administrators' awareness and competence	3	16	38	54	37	3,72	1
2.	Teachers' awareness and competence	21	23	41	43	20	3,13	3
3.	Students' competence and age characteristics	19	24	49	32	25	3,14	2

The results in Table 1 show that among the surveyed subjective factors, "administrators' awareness and competence" had the highest mean score (3.72), rated as having a strong or very strong influence on the application of the creative learning ecosystem model. This finding highlights the critical role of administrators in guiding, organizing, and sustaining educational innovation. In the creative learning ecosystem at the lower secondary level, administrators act as the "connecting axis" among stakeholders teachers, students, parents, and external partners. They not only perform administrative management functions but also serve as environment builders and catalysts of creative thinking throughout the school. When administrators have an innovative vision, understand the essence of the ecosystem, apply technology, mobilize community resources, and encourage creativity, they can build an open and dynamic learning environment where all participants grow together.

Innovation does not only involve changes in teaching methods but also a shift in management thinking—accepting experimentation and creating space for teachers to innovate. Without administrators' belief in and understanding of the model, teachers may struggle to implement creative practices due to the lack of clear direction and supportive mechanisms.

Therefore, the success of ecosystem construction is inseparable from the administrators' leadership capacity and strategic vision. They are responsible for resource allocation, digital transformation planning, experiential learning design, and maintaining connections between schools and society. This explains why this factor obtained the highest influence score.

The second and third most influential factors were "students' competence and age characteristics" (3.14 points) and "teachers' awareness and competence" (3.13 points), both related to the capacities of core actors in the ecosystem. Lower secondary students are at a stage of strong psycho-physiological development and are easily influenced by their surroundings; thus, proper guidance and support from teachers and schools are essential to foster their

creativity. However, teachers' abilities in designing interdisciplinary learning activities, applying technology, and stimulating creative thinking remain limited.

A teacher shared: "We have received training in active learning and building a creative learning ecosystem, but the time and physical conditions are still insufficient for effective implementation.". Hence, although teachers and students are central to creative learning activities, the system's effectiveness largely depends on the administrators' organizational capacity and strategic direction. Without proper leadership, coordination, or incentive mechanisms, innovation efforts may not achieve the desired results.

3.2.2 Objective Factors

Table 2: Statistics on the current status of objective factors influencing the creative learning ecosystem

No	Subjective Factors	Degree of Influence (%)					Mean	Rank
		No impact	Little impact	Impact	High impact	Very high impact		
1.	Facilities, equipment, and technological infrastructure	11	20	56	42	20	3,28	2
2.	Local socio-cultural environment	21	23	41	43	20	3,12	4
3.	Family	14	24	38	44	28	3,31	1
4.	Educational policies and support from authorities	13	34	48	34	19	3,07	5
5.	Networks of internal and external educational forces	8	32	46	39	20	3,21	3

The results indicate that the **family factor** had the highest mean score (3.31), followed by **facilities, equipment, and technological infrastructure** (3.28), showing that these two are foundational elements providing environmental and resource support for the creative learning ecosystem. The family is seen as part of an open learning ecosystem - the place where students' attitudes, motivations, and learning habits are shaped. When parents hold positive perceptions and encourage participation in experiential and creative activities, students demonstrate greater engagement and enthusiasm in learning. A school administrator shared: "*Parental involvement is the most important condition. Many STEM, experiential, or project-based learning activities only succeed when supported by parents.*"

However, differences in parents' educational backgrounds, economic conditions, and beliefs about education create notable disparities. In many cases, parents still prioritize academic performance and grades over creativity or experiential learning. This issue needs to be addressed by raising parental and community awareness of the creative learning ecosystem model. The factor **"***facilities, equipment, and technological infrastructure***"** reflects the capacity to materialize creative ideas in learning environments. Such ecosystems require flexible spaces (STEM rooms, open libraries, digital classrooms) and technological infrastructure like the Internet, interactive boards, and educational software. Interviews revealed that: "Some schools have modern equipment but rarely use it due to a lack of personnel and operational skills, while others have innovative teams but face difficulties because of insufficient facilities."

This demonstrates that investment in facilities is only effective when accompanied by managerial capacity and clear usage strategies from school leaders. The remaining factors

networks of internal and external educational forces (3.21), local socio-cultural environment (3.12), and educational policy support (3.07) also significantly affect the system's sustainability. While policies act as catalysts for innovation, if they remain formalistic or lack specific guidelines, school initiatives cannot be maintained long term.

A principal observed: "We are eager to strengthen connections with enterprises and social organizations, but the cooperation, financial, and quality assurance mechanisms are still too rigid."

4. Conclusion

In the current educational context, developing a creative learning ecosystem at the lower secondary level is crucial to meeting the needs of society. The influencing factors — including administrators' awareness and competence, teachers' awareness and competence, students' competence and developmental characteristics, facilities, equipment and technological infrastructure, local socio-cultural environment, family, educational policies and governmental support, and networks of internal and external educational forces — have significant impacts on this process. Therefore, schools must pay close attention to these factors to create optimal conditions for developing creative learning ecosystems.

Acknowledgement
The authors would like to express sincere gratitude to everyone who contributed, both directly and indirectly, to the completion of this study.

Conflict of Interest Statement
The authors declare that there is no conflict of interest regarding the publication of this study.

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