LEARNING CITIZENS IN THE ERA OF DIGITAL TRANSFORMATION:

THE PATH TOWARDS LIFELONG LEARNING AND NATIONAL INNOVATION

Hoang Van Binh[a]
Ngo Quang Son[b]
[a,b]Trung Vuong University
[a]Email: hoangbinh1961@gmail.com
[b]Email: ngoquangson2018@gmail.com

Article History
Received: 05/7/2025
Reviewed: 31/7/2025
Revised: 31/8/2025
Accepted: 22/9/2025
Released: 30/9/2025

DOI:
https://doi.org/10.64223/tvj.e2025.v1.i3.a39

[a]ORCID iD:
https://orcid.org/0009-0003-6810-931X
[b]ORCID iD:
https://orcid.org/0000-0003-3120-034X

This article explores the concept of "Learning Citizens in the Digital Transformation Era" as both a theoretical framework and a practical approach to national development. In the digital age, learning citizens are not only individuals who engage in continuous education but also active agents who contribute to building digital competencies, fostering knowledge creation, and sustaining a culture of lifelong learning. Positioned within the broader context of digital transformation, this concept highlights the critical relationship between personal learning capacity and the collective pursuit of innovation, digital governance and sustainable growth. Drawing on interdisciplinary perspectives, the paper examines how learning citizens serve as the foundation of a knowledge-based society, where education and digital literacy become essential drivers of social inclusion and economic competitiveness. Furthermore, by analyzing "pathways to lifelong learning and national innovation," the study emphasizes the need for comprehensive strategies that link education policies, digital infrastructure and community participation. The findings underline the dual significance of learning citizens: as a theoretical construct enriching global discourse on lifelong education and as a practical imperative guiding national strategies in the era of digital transformation.

Keywords: Learning citizens; Digital transformation; Lifelong learning; Knowledge-based society; Digital literacy; National innovation; Educational policy; Sustainable development.

1. Introduction

1.1. Global context

In the second half of the second decade of the 21st century, the world is undergoing a period of fundamental and interdisciplinary transformation, which many researchers and policymakers call the Fourth Industrial Revolution (Industry 4.0). The main difference between this period and previous revolutionary periods is the convergence, interaction and mutual impact of a set of advanced digital technologies, including artificial intelligence (AI), Big Data, Internet of Things (IoT), cloud computing, robotics, blockchain and virtual reality and augmented reality (VR/AR) platforms. These technologies do not only change production technology or business models; they restructure the mechanisms of knowledge creation, transmission and use and distort the traditional boundaries between "learning" and "doing", between "teaching" and "self-learning". In this context, the ability to transform data into actionable knowledge, the ability to adapt to technological innovation and the ability to solve complex problems become the decisive factors for the competitiveness of individuals and countries.

The spread of digital technology has led to a fundamental change in the way people learn: learning is continuous, distributed and more personalized; digital learning platforms and smart support tools enable "learning in the flow of work", on-demand learning and personalized learning paths. At the same time, the digitalization of education also facilitates the recognition and certification of non-formal and informal learning through micro-credentials,

digital badges or digital learning books. However, the datafication of all learning activities also poses major challenges in terms of digital ethics, privacy, algorithmic transparency and the risk of amplifying inequality if policies are not designed equitably.

In the face of this global trend, international organizations that have a role in guiding education and human development policies - typically UNESCO and OECD - have continuously emphasized lifelong learning as a prerequisite for achieving sustainable development and international integration. UNESCO affirms that lifelong learning is not only an education policy, but also a fundamental human right, directly related to the implementation of the Sustainable Development Goals (SDGs), especially SDG4 on inclusive, quality education and lifelong learning opportunities for all. OECD emphasizes the shift in educational goals from content delivery to capacity development: critical thinking, self-regulated learning, complex problem solving and cross-context collaboration. Both organizations promote systemic policy recommendations such as: building an intergenerational competency framework, recognizing and integrating non-formal learning outcomes into national certification systems, investing in equitable digital infrastructure and developing digital competencies for teachers and learners of all ages. These guidelines have become a reference standard for many countries in reshaping their education and vocational training systems to meet the requirements of the knowledge economy.

In the intersection of technological pressures and international policy orientations, the concept of "digital learning citizen" has emerged - a model of learning subject for the 21st century. Digital learning citizens are people who simultaneously integrate many qualities: the ability to use and master digital technology; the ability to learn for life and self-regulate (self-regulated learning); the ability to think critically, perceive data and evaluate information in the digital environment; the ability to create and innovate to convert knowledge into value; along with a sense of civic responsibility in the digital space (digital civic responsibility). Specifically, the competency framework of digital learning citizens can be divided into interdependent pillars:

- Digital competencies (operational skills, safety, data literacy).

- Meta-learning competencies (setting learning goals, self-assessment, adjusting strategies).

- Information and critical thinking competencies (authenticating sources, identifying algorithmic bias, combating conspiracy theories).

- Creativity and knowledge entrepreneurship competencies (designing cross-sectoral solutions, rapid experimentation).

- Collaboration and social engagement competencies (interacting collaboratively on digital platforms, participating in public decision-making).

When developed at a population scale, digital learning citizens will become a resource to promote the spread of open knowledge, enhance local innovation capabilities and enhance national competitiveness on the knowledge platform. However, shaping and popularizing the digital learning citizen model is both an opportunity and a challenge. On the one hand, it helps reduce training costs, increase learner autonomy and accelerate knowledge-based innovation. On the other hand, without policies for equitable distribution of digital infrastructure, mechanisms to protect individual rights and appropriate competency assessment tools, digitalization can deepen social inequalities and reinforce negative reactions such as technological unemployment or skills stratification. Therefore, the transition from an education system that relies heavily on fixed curriculums to an open learning ecosystem that recognizes all types of learning requires strong policy coordination, cross-sectoral collaboration between education, labor, technology and public administration, along with measures for ethical oversight, transparency and digital rights protection. From a research perspective, the above global context requires approaching the issue of learning citizens in the digital age with an interdisciplinary analytical framework, combining theories of lifelong learning, digital citizenship and national innovation systems.

The research must not only describe the phenomenon, but also propose criteria for assessing capacity, feasible policy interventions and empirical evidence on the effectiveness of training, certification and lifelong learning promotion models.

1.2. Vietnam context

Over the past decade, Vietnam has entered the digital transformation process as a strategic direction to enhance national competitiveness and international integration. One of the important milestones is the National Digital Transformation Program to 2025, with a vision to 2030 (Decision No.749/QD-TTg, dated June 3, 2020 of the Prime Minister). This program affirms that digital transformation is not limited to the technology sector, but is a comprehensive transformation process, covering all aspects of economic and social life, from public administration, production, trade to education and training. On the educational front, the Project emphasizes the goal of building a digital education ecosystem and developing digital citizens capable of learning, working and creating in an online environment. The program also sets specific indicators, such as 100% of educational institutions connected to high-speed Internet, at least 50% of

training programs deployed online and developing an open national digital learning repository. This is an important orientation to lay the foundation for the formation of a generation of digital learning citizens in Vietnam. In addition, Vietnam has identified a human resource development strategy associated with open education and lifelong learning as a pillar of sustainable development. The 2019 Education Law affirmed that lifelong learning is the right of citizens and the obligation of the State to ensure learning opportunities for everyone. Next, the Project "Building a learning society in the period of 2021 - 2030" (Decision No. 1373/QD-TTg dated July 30, 2021 of the Prime Minister) emphasized the need to develop diverse learning institutions: community learning centers, digital libraries, online open learning systems and continuing education programs for all ages. The Government also encourages open education models that combine formal - non-formal - informal training, creating conditions for citizens to accumulate and recognize learning outcomes through flexible competency standards and certificates. In the global context, these efforts demonstrate Vietnam's timely adaptation to the trend of lifelong learning as a driving force for national development. However, the implementation in Vietnam still reveals many systemic challenges. On the one hand, Vietnam possesses clear advantages: a young population with about 70% under 35 years old, a high rate of Internet access (over 78% of the population), widespread smartphone usage and the rapid development of domestic EdTech platforms. These factors create a potential foundation for forming a digital learning citizenry. On the other hand, the digital divide remains a significant barrier. This gap is reflected in the inequality between urban and rural areas, between the plains and mountainous areas, between the skilled and unskilled labor groups. Not only stopping at the infrastructure level, the digital divide also includes the gap in digital skills and self-learning capacity. A large number of people, especially the elderly, informal workers or residents in disadvantaged areas, still face limitations in accessing, exploiting and using digital tools to serve their learning and career development.

In that context, Vietnam is facing a strategic opportunity: to take advantage of digital transformation as a boost to both expand access to learning for all citizens and improve the country's competitiveness. But at the same time, it must also address the risk of new social stratification caused by digital inequality. Building a model of digital learning citizens in Vietnam is therefore not only an educational task, but also a national development strategy associated with the goals of social equity, innovation and international integration.

1.3. Research gap

Although the concept of digital learning citizens is increasingly appearing in academic discussions and education policies around the world, in Vietnam, this field is still quite new and has not been systematically researched. Currently, most research works only focus on a few discrete aspects, such as developing digital skills for learners, building information technology infrastructure in education, or applying online learning platforms in the context of formal education. Although these studies have certain practical value, they are not enough to outline a comprehensive picture of the dialectical relationship between three factors: digital learning citizens; lifelong learning; national innovation.

In theory, international studies on digital citizenship mainly focus on digital ethics, information security and social participation behavior in the online environment; meanwhile, research on lifelong learning is often associated with community education, continuing education and skills recognition policies. However, integrating these two research directions in the context of digital transformation to form a new theoretical framework - where "digital learning citizens" become a bridge between individual capacity and national innovation capacity is still limited. In Vietnam, this gap is even more evident when no work has built a conceptual framework, index or criteria to assess the level of development of digital learning citizens and its impact on the national innovation process.

In practice, Vietnam's current education and digital transformation policies still mainly stop at setting goals (such as increasing the rate of online training, developing open science resources, or promoting digital citizenship), but have not yet proposed an integrated policy roadmap to connect those goals with a national development model based on knowledge and innovation. The absence of a comprehensive analytical framework causes implementation programs to be scattered, lacking synchronization between formal and non-formal education, between vocational training and academia and between central and local levels. This not only slows down the process of forming a digital learning society, but also risks creating new inequalities in access to knowledge if disadvantaged groups are not fully supported. From the above analysis, it is clear that there is an urgent need to build an integrated theoretical framework and policy roadmap to explain and guide the development of digital learning citizens in Vietnam in the digital transformation era. This theoretical framework needs to point out the core characteristics of digital learning citizens, the mechanism linking lifelong learning with national innovation and at the same time propose feasible policies to narrow the digital gap, enhance social equity and encourage all citizens to participate in continuous learning. This is the important research gap that this article aims to fill,

contributing to supplementing academic knowledge and at the same time orienting policy practices for Vietnam in the coming period.

1.4. Research objectives

Based on the global context, the situation in Vietnam, as well as the research gaps analyzed above, this article sets out the research objectives to shape and explain the concept of learning citizens in the digital age, thereby proposing strategic directions for Vietnam in the process of lifelong learning and national innovation.

The specific objectives can be interpreted as follows:

First, identify the characteristics of learning citizens in the digital age.

One of the important theoretical challenges is to clarify the concept of "digital learning citizen" to distinguish it from similar concepts such as "digital citizen" or "lifelong learner". A digital learning citizen is not only a person who is able to use technology, but also an active, creative, self-adjusting and socially responsible learner in the digital environment. The paper aims to develop a multidimensional framework of characteristics, including:

- Digital competencies (digital literacy, data literacy, media literacy).

- Self-learning and lifelong learning capacity; innovation and complex problem - solving capacity.

- Digital citizenship and ethics.

Identifying these characteristics will help provide a scientific basis for measuring, evaluating and designing policies for developing learning citizens in the context of Vietnam.

Second, analyze the conditions and models that promote the formation of digital learning citizens. For digital learning citizens to become a reality, it is necessary to carefully study the conditions to ensure both institutions, infrastructure and learning culture.

Specifically, the paper will consider:

- Institutional conditions: open education policy, legal framework for recognizing non-formal and informal learning outcomes, digital human resource development strategy.

- Infrastructure conditions: telecommunications infrastructure and high-speed Internet, national digital learning platform, smart learning tools based on AI and big data.

- Cultural and social conditions: learning habits, personal motivation, participation of communities and businesses in supporting lifelong learning.

The article will also analyze some typical international models such as open learning systems in Korea, Singapore, or Finland, to draw lessons that can be applied in Vietnam. Thereby, the study will point out the core elements to form a digital learning ecosystem, in which citizens are empowered to be proactive, have continuous access to knowledge and have the ability to transform knowledge into innovation.

Third, propose a path for Vietnam towards lifelong learning and national innovation. This is the central objective of the article, linked to the requirements of national development strategies in the digital age.

Based on theoretical analysis and international experience, the paper proposes an integrated policy roadmap, including:

- Building and applying a digital learning citizen competency framework suitable for the Vietnamese context.

- Developing an open learning ecosystem based on digital platforms, connecting formal - non-formal - informal education.

- Promoting digital equity policies to narrow the digital gap between regions, generations and social groups.

- Encouraging the participation of businesses, social organizations and the international community in investing, supporting and expanding lifelong learning opportunities.

The ultimate goal of the study is not only to contribute to filling the theoretical gap, but also to provide evidence and scientific basis for policy making in Vietnam. By connecting the concept of digital learning citizenship with lifelong learning orientation and national innovation strategy, the article hopes to open a new approach, contributing to the construction of a digital learning society and enhancing national competitiveness in the digital transformation era.

2. Theoretical basis and research overview

2.1. Basic concepts

2.1.1. Learning citizen

The concept of "learning citizen" was formed in the context of knowledge globalization and the transition to a learning society. Learning citizens are not only those who participate in learning throughout their lives, but also proactive, creative subjects with a sense of responsibility to the community and the country. In the digital age, learning citizens are also digital citizens, that is, they have digital capacity, the ability to access - process - create information, as well as ethical and legal capacity in the network environment.

Characteristics of learning citizens include:

- Self-learning and adaptive capacity: knowing

how to exploit technology, digital platforms and open data for effective learning.

- Innovation and creativity capacity: learning to solve practical problems, contributing to community development.

- Social competence and civic responsibility: understanding rights and obligations in the digital learning environment, behaving responsibly towards society.

2.1.2. Lifelong learning

According to UNESCO, lifelong learning is a basic human right and is the foundation for building a fair, creative and sustainable society. Lifelong learning is not only limited to universities, but also extends to all spaces and times of an individual's life.

Characteristics of lifelong learning include:

- Continuity: takes place from birth to the end of the life cycle.

- Diversity: includes formal, informal and non-formal learning.

- Adaptability: reflects the rapid change of knowledge and skills in the context of globalization and digital technology.

- Humanity: lifelong learning aims at comprehensive human development, enhancing dignity, capacity and opportunities.

2.1.3. Digital transformation

Digital transformation is not just the application of technology, but also the process of comprehensively restructuring the education, economic, cultural and social systems based on data, artificial intelligence, the Internet of Things and digital platforms.

In education and learning, digital transformation changes:

- Learning methods: from passive to active, from traditional classrooms to blended learning and online learning.

- Knowledge resources: from traditional books and libraries to digital databases, open learning resources and personalized digital learning materials.

- Learner roles: from knowledge acquisition to knowledge creation through digital tools and online learning communities.

2.1.4. National innovation

National innovation is a comprehensive process of creating institutions, capacities and ecosystems to encourage innovation, increase competitiveness and sustainable development. Innovation is not limited to technology, but also includes institutional innovation, policies, governance models and creative culture.

In relation to lifelong learning and digital learning citizens, national innovation is based on:

- Institutions that encourage learning and innovation: creating conditions for all citizens to learn, research and innovate.

- Digital knowledge ecosystem: connecting universities, businesses, communities and governments on an open data platform.

- Creative human resources: digital learning citizens are the core to building an innovative nation.

Thus, these four fundamental concepts do not exist independently, but are closely linked together, forming an integrated theoretical framework: digital learning citizens are the subject; lifelong learning is the driving force; digital transformation is the tool; national innovation is the ultimate goal.

2.2. Theoretical framework

In the current context of globalization and digital transformation, research and development of learning models associated with digital competence and innovation need to be based on a solid theoretical foundation.

The theoretical framework of this study is built from three key approaches:

First, lifelong learning theory is considered the philosophical basis and long-term orientation for human development in a knowledge society. Jarvis (2004) believes that lifelong learning is not only a process of continuous knowledge accumulation, but also a comprehensive restructuring of life experiences to form new competencies, adapting to social change. Complementing this approach, the UNESCO Delors Report (1996) proposed four pillars of education for the 21st century, including: learning to know, learning to do, learning to live together and learning to be. These four pillars emphasize the comprehensiveness, continuity and humanity of learning, considering it as a driving force for sustainable development and a fundamental right of all citizens.

Second, in the context of the digital age, digital citizenship theory becomes an important pillar to form the necessary competencies for learners. According to Ribble (2011), digital citizenship not only includes the ability to use information and communication technology, but is also associated with a sense of responsibility, ethics and appropriate behavior in the online environment. The concept of digital literacy extends from technical ability to the ability to think critically, create content and actively participate in the digital space. From there, digital citizenship is defined as a socio-cultural entity, capable of applying knowledge and technology to study, work, create, and comply with digital legal

and ethical standards.

Third, the National Innovation System (NIS) theory provides a foundation for understanding the relationship between education, technology and social development. According to Lundvall (1992) and Nelson (1993), the national innovation system is formed from the interaction between subjects such as the state, educational and training institutions, enterprises, research organizations and the community. This is a dynamic network in which knowledge is created, disseminated and applied to promote national competitiveness. In the context of digital transformation, NIS emphasizes the role of learning and digital capacity as central factors for innovation to become a driving force for socio-economic development. Synthesizing the above three theoretical foundations, this research framework aims to link lifelong learning with digital citizenship in the national innovation system, thereby creating a model of human resource development that is adaptive, creative and sustainable in the digital age.

2.3. Overview of international research

In the context of globalization and digital transformation taking place strongly, many pioneering countries have considered the development of learning citizens as a strategic pillar to promote innovation and enhance national competitiveness. International research and practices show that Singapore, Finland and South Korea are three typical models, in which the formation of learning citizens is not only an educational orientation, but also becomes the core of national development policy.

In Singapore, the "Learning Nation, Learning City" strategy implemented since the end of the 20th century has laid the foundation for a learning society, in which every individual has the responsibility and opportunity to learn throughout life. The State not only focuses on formal education, but also builds a comprehensive learning ecosystem, encouraging people to regularly improve their skills and adapt to the rapid changes of the knowledge economy. The Singaporean government emphasizes that learning citizens are the key force in ensuring the country's sustainable competitiveness.

Finland stands out with its humanistic educational philosophy, considering learning as a process of comprehensively developing personal, social and global citizen capabilities. Finland's innovation policy focuses on building a flexible and creative educational environment, focusing on developing critical thinking, self-learning and collaboration skills. Finland has become a living proof that learning is not only limited to universities, but also extended to the whole society, where every citizen is an active learner, contributing to the creation of a culture of continuous innovation.

Meanwhile, Korea implements a strategy to develop learning citizens linked to the goals of industrialization - modernization and the digital economy. The Korean education system promotes discipline, perseverance in learning, and strongly integrates digital technology to build a dynamic learning society. The State encourages all citizens to continuously learn, thereby forming a high-quality human resource capable of quickly adapting to global fluctuations and promoting the country to become a leading technology and innovation center in Asia.

In parallel with national models, the Organization for Economic Cooperation and Development (OECD) has introduced a global standard orientation framework - "Learning Compass 2030". This competency framework emphasizes the importance of self-learning, creativity and collaboration as three core competencies that help 21st-century citizens navigate and adapt in an uncertain world. "Learning Compass 2030" not only considers learning as a process of acquiring knowledge, but also as a journey of autonomy, where learners develop the ability to design their own future, while participating in creating common values for the community and humanity. Thus, the international research review reveals an important meeting point: developing learning citizens is not only an educational policy, but also a national and global strategy to create a learning society, encourage innovation and ensure sustainable development in the knowledge and digital age.

2.4. Scientific Gaps

Although international studies have provided many models and rich experiences on developing learning citizens as a central driving force for innovation policy, there are still notable scientific gaps.

First of all, most of the works focus on developed countries such as Singapore, Finland or Korea - where the education, economic and social systems have reached a high level of maturity, creating favorable conditions for learning citizens to become the core of national innovation. On the contrary, in the context of developing countries, especially those with unsynchronized socio-economic infrastructure, research on learning citizens is still fragmented, lacking connections with broader theories on national innovation systems.

This gap shows that there are not many theoretical and empirical works that clearly analyze how learning citizens can be linked to the operating mechanisms of the national innovation system in conditions of many limitations in resources, technological infrastructure and support policies. The lack of this integrated research framework leads to the consequence that many programs to build a

learning society in developing countries only stop at the educational scope, not really promoting the role as a driving force for comprehensive innovation of the country. Therefore, there is a need for in-depth research to overcome this scientific gap, through connecting the theory of learning citizens with the theory of national innovation systems, thereby clarifying the mechanisms, conditions and feasible paths for developing countries to be able to take advantage of the learning citizen model as a lever to promote innovation and sustainable development.

3. Research method

This study is carried out on the basis of an interdisciplinary approach to ensure comprehensiveness and depth when analyzing the issue of developing learning citizens in relation to the national innovation system. The interdisciplinary approach not only relies on the foundation of education to examine the process of forming lifelong learning capacity, but also extends to social sciences to analyze the socio-cultural context and public policy to evaluate the institutional framework and innovation governance to clarify the operating mechanism in the national innovation system. This combination allows the study to not stop at describing the phenomenon, but also aim to build an analytical framework capable of linking theory and practice, and at the same time provide appropriate policy suggestions.

In terms of research methods, the article uses many complementary tools:

- National policy analysis: focusing on documents, programs, and action plans related to building a learning society and developing learning citizens in Vietnam, while also referencing typical policies in typical countries such as Singapore, Finland, and Korea.

- Synthesis of academic documents and international reports: collecting and analyzing scientific research and official reports from prestigious organizations such as UNESCO, OECD and World Bank to compare global practices and draw a theoretical reference framework for Vietnam.

- Case studies: selecting typical international cases to analyze how to implement learning citizens as the core of innovation, thereby identifying valuable lessons for the Vietnamese context.

- SWOT analysis framework: used to assess the current status of building learning citizens in Vietnam, pointing out strengths, weaknesses, opportunities and challenges, thereby identifying gaps that need to be overcome as well as feasible development directions.

- To ensure reliability, the study prioritizes the use of secondary data from official sources, including legal documents, resolutions, national reports and scientific works published in prestigious, internationally peer-reviewed journals. The selection of data sources is carried out according to the principles of transparency and cross-reference to limit bias in the analysis process. At the same time, the study also uses the conceptual model as an integrative tool, thereby connecting theories on learning citizens, national innovation and lifelong education, thereby forming a solid theoretical framework to explain practices and shape policy recommendations.

- Thanks to the close combination of interdisciplinary approach, diverse methods and reliability assurance mechanism, the study not only provides a comprehensive view of the development of learning citizens in Vietnam, but also places this issue in international relation, thereby clarifying the characteristics and directions of innovation in the coming period.

4. Results and Discussion

4.1. Characteristics of Learning Citizens in the Digital Age

In the context of the digital age with the explosion of knowledge, data and technology, the image of learning citizens is no longer limited to the role of an individual actively learning throughout life, but has become a dynamic, creative subject, capable of creating the future for themselves and the community.

The outstanding characteristics of learning citizens in this period can be identified through the following four core competency groups:

First of all, it is digital competency, including the ability to use technology as a tool to expand intelligence and life skills. Learning citizens in the digital age are not only proficient in software, applications or smart devices, but also know how to exploit data, analyze and evaluate information scientifically and have a deep awareness of personal information security and digital safety. More importantly, they need to practice critical thinking to be able to distinguish between authentic information and fake news and know how to use technology responsibly and effectively.

Second, the ability to self-study and adapt is an indispensable foundation. Today's learning citizens have the ability to learn anytime, anywhere, taking advantage of the support of digital platforms, online courses and open resources to continuously enrich their knowledge. They also know how to manage personal knowledge, build learning plans that suit their own needs and goals and maintain flexibility to quickly adapt to changes in the working environment and society.

Third, learning citizens in the digital age need to have the ability to be creative and innovative,

demonstrated in the ability to apply knowledge in practice to solve complex problems. Not only stopping at acquiring knowledge, they know how to restructure, connect and transform knowledge into new ideas, new products, or creative solutions that are valuable to the community. This capacity helps learning citizens not to be swept away by the pace of change of the times, but to become agents of innovation, contributing to promoting the development of society.

Fourth, learning citizens in the digital age must have social and global responsibility. They do not learn simply for personal gain, but also participate in learning communities, share knowledge and experience and together create common values. They are clearly aware that learning must be linked to sustainable development goals, from protecting the environment, promoting equality to building a more just and humane society. At the same time, they also carry within them the spirit of global citizenship, with the ability to connect, cooperate and contribute to issues of global significance. In short, learning citizens in the digital age are shaped by the combination of digital capacity, self-learning and adaptability, creativity, innovation and social and global responsibility. That is the ideal human model for the new era: knowing how to exploit technology, master knowledge, foster the spirit of innovation and link learning with the sustainable development of the community and humanity.

4.2. Conditions to promote learning citizens in the digital age

To form and develop learning citizens in the digital age, there must be systematic fundamental conditions, from national policies to social and technological resources. These conditions not only create a favorable environment, but also act as a driving force to promote participation, maintenance and development of the lifelong learning process of each individual.

They can be summarized into four basic groups of conditions:

First of all, policies and institutions play a role in guiding and legally ensuring the development of learning citizens. The Law on Education, resolutions, strategies and national programs on lifelong learning create an institutional framework to encourage, support and coordinate learning activities for all subjects. These policies not only identify lifelong learning as a basic right of citizens, but also affirm it as a social responsibility and a key driving force of national innovation.

Second, the development of an open learning ecosystem is a key factor in helping learning citizens access knowledge flexibly, diversely and equally. MOOC (Massive Open Online Courses) platforms, learning assistants (AI tutors), virtual reality and augmented reality (VR/AR) technology, along with mobile learning applications, have been creating a learning space that is unlimited in time, space and method. This ecosystem helps each individual learn according to their own needs, speed and interests, while enhancing personalization in the learning process.

Third, the recognition of informal and non-traditional learning outcomes has become an important condition to encourage citizens to continuously learn. Forms such as micro-credentials or digital badges not only confirm specific learning outcomes, but also motivate learners to gradually accumulate competencies and skills for work and life. This breaks the rigid boundaries between formal and informal education, and contributes to building a multidimensional learning capacity recognition system, suitable for the characteristics of a knowledge society.

Fourth, a community learning culture is a socio-cultural condition to maintain cohesion and spread the spirit of learning. The development of digital libraries, community learning centers, or movements to build a learning society has contributed to forming an environment where learning is not only an individual activity, but also a common value that is shared, encouraged and honored. A community learning culture creates a strong social motivation, helping learning become a part of daily life, while nurturing a sense of social responsibility in each learning citizen. In short, the synchronous combination of policies and institutions, open learning ecosystem, recognition mechanism of informal learning outcomes and community learning culture are the four important pillars to promote the formation and development of learning citizens in the digital age. These are not only conditions to support individual learning, but also the foundation for creating a dynamic, creative and sustainable learning society.

4.3. International experience

International experience shows that developing learning citizens in the digital age is not a single individual effort, but the result of an ecosystem with close coordination between the state, businesses, educational and technological organizations and the community itself. Typical models in Singapore, Korea and Finland have brought many valuable lessons for Vietnam in policy making and practical implementation.

In Singapore, the Smart Nation initiative has turned the country into a smart learning society, where digital technology is comprehensively applied in administration, production and life. In particular, the Skills Future Credit program provides each citizen with a State-sponsored learning budget, which can be used to participate in courses and

improve skills at any stage of life. This policy has encouraged people to actively engage in lifelong learning, while creating a connection between individual learning needs and the national human resource development strategy.

In Korea, the Government has invested heavily in the national E-learning system, building open digital learning platforms for all ages, from general education, university to adult education. This system not only provides rich online learning resources, but also integrates learning management and assessment tools. Thanks to that, people can easily access learning opportunities regardless of age, social status or geographical location. Meanwhile, Finland stands out with its open and connected learning model, creating a close link between schools - businesses - communities. Finland's educational philosophy considers learning as a shared responsibility of the whole society, without separating learning in school and learning in life. Learners are encouraged to participate in community projects, internship programs at enterprises and cross-disciplinary learning activities, thereby forming comprehensive competencies and adaptability to changing contexts.

From these international experiences, some important lessons can be drawn:

- The State plays a role in policy creation, building legal frameworks and creating incentives through financial support mechanisms, recognizing learning outcomes and promoting innovation.

- Enterprises and EdTech companies are the force providing technology platforms, digital learning solutions and linking training with practical needs of the labor market.

- People are identified as the center of the learning process, with the right to initiative and responsibility in building their own lifelong learning path. In summary, the experiences of Singapore, South Korea and Finland confirm. That the success in developing learning citizens comes from the multi-dimensional coordination between national policies, technology platforms, and the learning spirit of each individual. These are important suggestions for Vietnam in the process of building a learning society in the context of digital transformation.

4.4. Current situation and challenges in Vietnam

In recent years, Vietnam has achieved many remarkable achievements in building learning citizens and a learning society in the context of the digital age. The rapidly developing digital infrastructure system, along with the advantage of a young and dynamic population, has created an important foundation for promoting lifelong learning. National digital transformation policies have been issued synchronously, especially the National Digital Transformation Program to 2025, with a vision to 2030, emphasizing the role of digital education and digital citizenship. At the same time, the EdTech ecosystem in Vietnam has developed strongly with the emergence of many online learning platforms, MOOC courses, digital library systems and community learning centers, contributing to expanding learning opportunities for many groups in society.

However, Vietnam is also facing many challenges. First of all, the digital gap between urban and rural areas, between the rich and the poor is still large, making access to online learning opportunities not truly equitable. In addition, a large number of learners still lack self-study skills as well as basic digital competencies, leading to a situation of formal learning, not effectively exploiting open resources. On the other hand, the policy of recognizing non-formal learning outcomes in Vietnam is still incomplete, limiting the motivation to learn outside the formal system and hindering the process of building a comprehensive learning society.

However, the current context also opens up many opportunities for Vietnam to make a breakthrough. Combining digital transformation strategy with the goal of developing a learning society can create a synergistic effect, promoting digital education and spreading the spirit of lifelong learning. Modern technologies such as artificial intelligence (AI), big data and blockchain can be applied in managing and demonstrating learning outcomes, helping to increase transparency, flexibility and recognition of individual abilities. This is the premise for Vietnam to develop a learning citizen ecosystem that is both inclusive and connected to global trends.

In summary, the current situation in Vietnam shows that, in addition to outstanding achievements, there are still many challenges to be solved. However, with opportunities from digital technology and innovation policies, Vietnam is facing an important moment to promote the formation of learning citizens in the digital age, towards a sustainable, creative and internationally integrated learning society.

4.5. Relationship with national innovation

The formation of digital learning citizens does not stop at improving personal knowledge and skills, but also plays a key role in creating an innovation ecosystem at the national level. At the individual level, digital learning citizens possess digital capabilities, self-learning skills and the ability to quickly adapt to technology, thereby becoming a high-quality human resource serving innovation. When connected in the community, these individuals contribute to the formation of a creative learning culture where knowledge is shared, spread and resonated, creating the social power of lifelong learning. At the national level, the development of a

digital learning citizen community becomes a solid foundation for building a comprehensive innovation ecosystem in which education, technology and public policy operate together in a sustainable direction.

To illustrate this organic relationship, we can propose the conceptual model "Citizen Learning 4.0 – Innovation Nexus".

This model is based on three pillars:

(i) Digital competencies such as skills in using AI, big data and cyber security

(ii) Learning culture including the spirit of lifelong learning, knowledge sharing and encouraging creativity;

(iii) Innovation ecosystem, connecting education, business, policy and technology. The relationship in this model is two-way: on the one hand, digital learning citizens nurture and promote national innovation capacity; on the other hand, a country with strong innovation policies will create a favorable environment, rich resources and open opportunities for citizens to develop learning capacity. This is the circle of sustainable development, where digital citizens and innovative countries co-create each other in the digital transformation era.

5. Conclusion and recommendations

5.1. Conclusion

In the context of globalization and digital transformation, the formation and development of learning citizens is considered the key to realizing the goal of lifelong learning and promoting national innovation. Digital transformation not only brings unprecedented opportunities in accessing knowledge, personalizing learning and expanding global connectivity, but also poses urgent requirements on policies, infrastructure and individual capacity. Vietnam is in a "golden window" with a rapidly developing digital infrastructure, a young population, and strong political determination in the national digital transformation strategy. However, the digital gap, limitations in self-learning skills and basic digital competencies, as well as incomplete learning outcomes recognition policies, are still challenges that need to be addressed to ensure fairness and sustainability.

5.2. Recommendations

- Regarding policy: It is necessary to build a comprehensive digital learning citizen competency framework, serving as a reference standard for the education, training and fostering system. At the same time, soon complete the micro-credential recognition mechanism and other flexible forms of certification to encourage open and lifelong learning.

- Regarding technology: Promote the integration of advanced technologies such as AI, Big, Data and Blockchain into the open learning ecosystem, not only to optimize personalized learning, but also to ensure transparency and reliability in the assessment and recognition of learning outcomes.

- Social: It is necessary to nurture and promote a culture of lifelong learning as a core value of a learning society, while implementing solutions to reduce digital inequality between regions, social groups and generations.

- International: Vietnam should proactively learn from successful models of Singapore, South Korea, Finland, as well as actively participate in global initiatives on digital citizenship and open learning to improve integration and adaptation capacity.

5.3. Academic contributions

This paper contributes to the academic discourse by integrating the concept of digital learning citizenship with the theory of national innovation systems, thereby clarifying the role of individuals in creating innovation ecosystems. In particular, the proposal of the "Citizen Learning 4.0 – Innovation Nexus" model has opened a new analytical framework, emphasizing the two-way relationship between the development of digital learning citizenship and the country's innovation capacity. This can become an important theoretical foundation for further research on education, innovation and digital transformation in the Vietnamese and international context.

Tài liệu tham khảo

Antonelli, C., & Feder, C. (2021). *The Schumpeterian creative response: export and innovation: evidence for OECD countries 1995–2015.* Economia Politica, 38(3), 803-821. DOI: 10.1007/s40888-021-00239-3

Cirera, X., et al. (2020). *The Innovation Paradox*. World Bank Publications. URL: https://documents1.worldbank.org/curated/en/322521507638821474/pdf/120336-PUB-PUBLIC.pdf World Bank

Do, T. T., et al. (2021). *Research on lifelong learning in Southeast Asia: A bibliometrics review between 1972 and 2019.* Cogent Education, 8(1), Article 1994361. DOI: 10.1080/2331186X.2021.1994361

Friz, K., et al. (2021). *Innovation and economic crisis in transition economies. Economic Change & Restructuring.*

Godin, B. (2009). National Innovation System. *Science, Technology & Human Values.*

Hakansson Lindqvist, M. (2024). Higher education

transformation towards lifelong learning. *Studies in Higher Education*.

Huang, R., Liu, D., Kanwar, A., Zhan, T., Yang, J., Zhuang, R., & Li, Z. (2024). *Global Understanding of Smart Education in the Context of Digital Transformation.* Open Praxis, 16(4), 761-676. DOI: 10.55982/openpraxis.16.4.761

Innovation and Growth (OECD & World Bank, 2009). URL: https://www.oecd.org/content/dam/oecd/en/publications/reports/2009/11/innovation-and-growth_g1ghb67b/9789264073975-en.pdf

OECD *Innovation, Firm Size and Market Structure: Schumpeterian Hypotheses and Some New Themes* (OECD, 1996). URL: https://www.oecd.org/content/dam/oecd/en/publications/reports/1996/01/innovation-firm-size-and-market-structure_g17a13c7/603802238336.pdf OECD

Johannessen, J. A., Dolva, J. O., & Olsen, B. (1997). *Systems of Innovation*. Trong: Stowell, F. A., Ison, R. L., Armson, R., Holloway, J., Jackson, S., McRobb, S. (Chủ biên), Systems for Sustainability. Springer, Boston, MA. DOI: 10.1007/978-1-4899-0265-8_110

Khuc, P.T.T (2019). Critical theory and the implementation of lifelong learning in Vietnam. *Ho Chi Minh City Open University Journal of Science – Social Sciences*, 9(2), 17-30. DOI: 10.46223/HCMCOUJS.soci.en.9.2.258.2019

Lundvall, B.-A. (2007). *National Innovation Systems — Analytical Concept and Development Tool*. Industry and Innovation, 14(1), 95-119. DOI: 10.1080/13662710601130863

Liu, H., et al. (2019). Examining self-directedness and its relationships with lifelong learning. *Journal of Adult and Continuing Education*.

Lopez-Rubio, P., et al. (2021). Assessing the Origins, Evolution and Prospects of National Innovation Systems (NIS) using bibliometric techniques. *Research Policy.*

McCarthy, A. M., et al. (2023). *Digital transformation in education: Critical components for success.* Computers and Education: Digital Learning.

National Innovation Systems — Analytical Concept and Development Tool. Lundvall, B.-A. (2007). DOI: 10.1080/13662710601130863

Nelson, R. R. (2002). *Technology, institutions, and innovation systems.* Research Policy, 31(2), 265-272.

Phuoc, K. H. (2023). *Lifelong Learning in the Digital Age* (SEAMEO CELLL report). PDF report

Pham, L. T. (2024). Lifelong learning intention of adults in business sector. *Adult Education Quarterly. Report on National Digital Transformation (June 2024) – Vietnam*. URL: https://beta-en.mic.gov.vn/report-on-national-digital-transformation-june-2024-19724100315352008.htm beta-en.mic.gov.vn

Schumpeter, J. A. (2008). *Capitalism, Socialism and Democracy*."creative destruction"

Thao, P. T. K. (2023). Revisiting Lifelong Learning and Its Practices in Vietnam. *International Journal of Teaching & Education.* DOI: 10.54855/ijte.23314

UNESCO. The Digital Transformation of Education: Connecting Schools, ECE-Teachers and Learners. UNESCO. URL: https://unesdoc.unesco.org/ark%3A/48223/pf0000374309

UNESCO. *Documents Vietnam Forum Lifelong Learning – Building a Learning Society in the Period 2012-2020.* UNESCO UIL & Vietnam. National documents. URL: https://www.uil.unesco.org/sites/default/files/medias/fichiers/2023/06/viet-nam-framework-on-building-a-learning-society-in-the-period-2012_2020.pdf

Yang, X., & Wu, W. (2024). *Advancing digital transformation in TVET through international cooperation: Approaches by the UNESCO Chair on Digitalization in TVET.* Vocational & Technical Education, 1(2). DOI: 10.54844/vte.2024.0585

CÔNG DÂN HỌC TẬP TRONG KỶ NGUYÊN CHUYỂN ĐỔI SỐ: CON ĐƯỜNG HƯỚNG TỚI HỌC TẬP SUỐT ĐỜI VÀ ĐỔI MỚI QUỐC GIA

Hoàng Văn Bình[a]
Ngô Quang Sơn[b]

[a,b]Trường Đại học Trưng Vương
[a]Email: hoangbinh1961@gmail.com
[b]Email: ngoquangson2018@gmail.com

Ngày nhận bài: 05/7/2025
Ngày phản biện: 31/7/2025
Ngày tác giả sửa: 31/8/2025
Ngày duyệt đăng: 22/9/2025
Ngày phát hành: 30/9/2025

DOI:
https://doi.org/10.64223/tvj.e2025.v1.i3.a39

[a]ORCID iD:
https://orcid.org/0009-0003-6810-931X
[b]ORCID iD:
https://orcid.org/0000-0003-3120-034X

Tóm tắt:

Bài báo này khám phá khái niệm "Công dân học tập trong kỷ nguyên chuyển đổi số" như một khung lý thuyết, đồng thời là một cách tiếp cận thực tiễn cho sự phát triển quốc gia. Trong thời đại số, công dân học tập không chỉ là những cá nhân tham gia học tập liên tục, mà còn là những chủ thể tích cực đóng góp vào việc xây dựng năng lực số, thúc đẩy kiến tạo tri thức và duy trì văn hóa học tập suốt đời. Đặt trong bối cảnh chuyển đổi số rộng lớn, khái niệm này làm nổi bật mối quan hệ thiết yếu giữa năng lực học tập cá nhân với nỗ lực tập thể hướng tới đổi mới sáng tạo, quản trị số và tăng trưởng bền vững. Dựa trên các góc nhìn liên ngành, bài báo phân tích cách thức công dân học tập trở thành nền tảng của xã hội tri thức, nơi giáo dục và năng lực số là động lực cốt lõi thúc đẩy hòa nhập xã hội và năng lực cạnh tranh kinh tế. Hơn nữa, thông qua việc phân tích "con đường hướng tới học tập suốt đời và đổi mới quốc gia", nghiên cứu nhấn mạnh sự cần thiết của các chiến lược toàn diện gắn kết chính sách giáo dục, hạ tầng số và sự tham gia cộng đồng. Kết quả cho thấy ý nghĩa kép của công dân học tập: vừa là một cấu trúc lý luận làm giàu thêm diễn ngôn toàn cầu về giáo dục suốt đời, vừa là một yêu cầu thực tiễn định hướng chiến lược quốc gia trong kỷ nguyên chuyển đổi số.

Từ khóa: Công dân học tập; Chuyển đổi số; Học tập suốt đời; Xã hội tri thức; Năng lực số; Đổi mới quốc gia; Chính sách giáo dục; Phát triển bền vững.