Developing Learning Innovation of Digital Open Badge in Social Studies to Enhance Citizenship Characteristics of Secondary School Students

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Abstract

This study aims to synthesize theories and concepts related to educational management, personality traits, and citizenship characteristics evident in the education systems of the United Kingdom, Canada, the United States, Singapore, and Thailand; to develop an innovative model of open-badge digital social education to enhance the cultivation of citizenship characteristics among high school students in Chiang Mai; and to study the results of developing digital badge innovations to enhance the development of students' personality traits and citizenship characteristics in the educational innovation area of Chiang Mai province. A mixed-method approach is employed in order to synthesize the universal core values that ensure societal peace within diverse communities from the curricula of the five countries. When comparing the results with the Thai context, it becomes apparent that the Thai curriculum still lacks precise definitions of "universal core values" and activities that instill these core values. Through purposive sampling, this study extracts the necessary values from the opinions of involved personnel and pilot schools in the Education Sandbox program in Chiang Mai. The results suggest that ten core values need to be addressed firmly in the Digital Open Badge learning innovation and guidelines for both in-class and out-of-class activities. The citizenship characteristics platform and guidelines in social studies are designed based on the 5Ts Action Learning model with 40 hours of observation. The outcomes demonstrate that overall satisfaction with the curriculum is high. Notable changes from interviews and observations indicate that responsibility and cooperation are the most significant changes in students' character traits. These traits are expressed mostly at the individual level (35.02%), followed by the family level (29.39%), the community level (22.62%), and lastly, the global level (12.97%).

Keywords: character and citizenship education, open badge, core values, social studies, learning innovation

1. Introduction

The changes brought about by the Fourth Industrial Revolution, coupled with the establishment of global frameworks by the United Nations, have led to the adoption of Sustainable Development Goals (SDGs) for the period from 2015 to 2030. These goals encompass 17 objectives, with Goal 4 specifically emphasizing education to prepare people for the digital age. Bridging boundaries necessitates a collective global citizenship approach, as outlined in SDG 4.7, which focuses on knowledge, literacy, skills, values, and attitudes. Research conducted by the Office of the Secretary-General's Education Council in 2018 examined the readiness of five countries – the United States, the United Kingdom, Australia, the People's Republic of China (Hong Kong SAR), and Singapore – to address the challenges of education within the SDG 4.7 framework.

In the present day, classrooms embody social diversity, though citizenship often lacks in terms of cohabitation and civic education. With an enhanced understanding of citizenship, its original concept has broadened beyond solely producing an upright, disciplined citizen who strictly adheres to civic duties. The dynamics of citizenship now encompass global issues such as human rights, languages, patriotism, equality, cross-culture interactions, and

diversity. Consequently, civic education becomes a crucial factor in fostering educational equality. Cultivating critical thinking skills to address issues leading to active citizen participation affirms citizens' comprehension of their rights and responsibilities, while also fostering respect for diversity and identity. However, citizenship must also uphold virtues and values at individual and interpersonal levels.

This raises several questions: What should be taught in Character and Citizenship Education? What moral values should be included? What skills require improvement? Which aspects should be considered? And which values are the priorities? Given citizenship's relevance to increased participation in communities and on the international level, what exactly is the meaning of "good characteristics?"

Character and Citizenship Education concentrates on enhancing essential traits in citizens, encompassing moral traits like respect and responsibility, emotional traits like compassion, social traits like conflict management and efficient communication, and behavioral traits like hospitality or helpfulness. It also includes cognitive traits like belief in equality or strategic problem-solving skills. These are imperative characteristics that schools, teachers, families, and communities must collectively establish to improve the curricula. In addition, these characteristics promote various improvements in individuals and motivate social and economic potential. Therefore, Character and Citizenship Education is a crucial part of advocating one's good conscience as a member of society and a responsible citizen. It aligns with schools' characteristic citizenship objectives, playing a pivotal role in shaping everyday life concepts for schools and communities to mold future curricula.

The synthesis of the curricula from the five sample countries – the United States, Canada, the United Kingdom, Singapore, and Thailand – illustrates that they manage their learning approach through Character and Citizenship Education, incorporating both similar and distinctive core values within the global citizen framework. This comparison highlights that the Thai Citizenship learning approach still focuses on producing honest, disciplined citizens who adhere to civic duties according to Thainess and patriotism, whereas the other four countries have expanded their citizenship characteristics to encompass individual, community, societal, and global levels. The Basic Education Core Curriculum B.E. 2551 mentions the need to urge students to become global citizens through the school curriculum, transitioning Thai citizenship identity to global citizenship. Additionally, the Department of Social Studies, Religion, and Culture has added learning units on Civic Duty to the curriculum after the Thai political crisis in 2014 due to the National Education Plan. This has resulted in changes and adjustments in domestic and global views of Thailand's role on the international stage, leading to education reform within the 12-core values framework. This framework is designed to preserve Thai identity and its original citizenship concept. Thus, "Thainess" is considered mainstream in cultivating Thai citizenship identity through curricula and textbooks.

At present, citizenship characteristics learning approaches face several challenges, especially in the analysis that delves into the roots of learning management. This suggests that traditional learning methods, where teachers and instructors pass down their knowledge through presentations and assignments, no longer align with students' learning methods. Therefore, disruptive innovations developing through online learning, where teachers and instructors can incorporate their creativity into projects or innovations for students, have become an essential method in the 21st century. Especially during the COVID-19 breakout, designing characteristic citizenship learning approaches has been greatly challenged through the online learning approach.

Digital constructivism and connectivism must correspond to the characteristic citizenship and concepts of Digital Badges and the 3.0 learning innovation platform. In the current context, including the Fourth Industrial Revolution, society faces disruptions that significantly affect online learning management. Whereas the nature of creating characteristic citizenship still needs correlation between individuals, communities, and society to significantly adjust its traits, this correlation must accommodate the global context and the development of learning innovations within the digital framework. This offers learners both physical and online interactions. Additionally, the currents of change will always lead to new philosophies of learning and new approaches corresponding to the National Education Plan B.E. 2560-2579 and Education Sandbox B.E. 2562, which have been implemented in six pilot provinces: Kanchanaburi, Sisaket, Chiang Mai, Satun, Rayong, and the three southern border provinces. These provinces serve as pilots for the Education Sandbox program. The goals aim to; (1) increase students' educational results in three aspects – attitude, skills, and knowledge; (2) decrease educational inequality; (3) develop provincial learning innovations; (4) enhance learning innovations in both theoretical and practical usage to apply them in national educational policies; and (5) manage the cooperation between government, local government organizations, private organizations, and civil society in learning management.

In the end, the development and enhancement of learning innovations must address the basic needs of creating active communities and global citizens. To build characteristic citizenship, a learning approach should be based on concrete

experience, participation, and support from involved organizations in determining characteristics and identity at the individual, family, school, community, national, and global levels. Thus, this citizenship learning approach in the digital era will essentially benefit future employment, social opportunities, and capabilities.

1.1 Aims of the Study

This study aims to synthesize concepts related to personality traits and citizenship characteristics within the educational systems of the United Kingdom, Canada, the United States, Singapore, and Thailand. It seeks to develop an innovative open-badge digital learning model for social studies and to assess its impact on the personality traits and citizenship characteristics of secondary school students in Chiang Mai province. The following research questions need to be addressed:

1. What are the core elements of Character and Citizenship Education evident in the educational systems of the United Kingdom, Canada, the United States, Singapore, and Thailand?

2. What needs to be addressed in Digital Open Badge learning innovation to effectively improve secondary school students' character traits, and what will the platform look like?

3. How will the Digital Open Badge learning innovation improve students' citizenship characteristics?

2. Literature Review

The theory utilized in this study is primarily based on Piaget's and Kohlberg's theories of moral development. According to the field of Morality and Moral Development Education, character development cannot be viewed separately from moral development. The term "morality" has an almost identical meaning to "value," implying that beliefs are a personal matter and that deciding whether something is good or bad is entirely based on one's conscience and actions. Furthermore, "morality" is similar to "virtue" as it encompasses traits believed to be beneficial for future well-being, such as honesty and discipline. In the Thai social context, this includes traits like gratitude.

It can be concluded that morality is at the heart of individuals' characters and actions. In this study, Piaget's (1948) *The Moral Judgment of the Child* is employed as a guideline to develop secondary school students' morality. After analyzing various stages of children's moral development, it is concluded that there are three stages:

- Egocentric Stage: At this stage, children neither understand nor care for other's opposing perspectives on some matters; in other words, they are not open to other's opinions.

- Transcendental Stage: Children see rules and regulations as an abuse of power, applying this view to teachers and instructors, parents, or prominent peers in their groups.

- Final Autonomous Stage: At this stage, children finally comprehend that rules can change and that rules are essential for ensuring individuals' peace in living in society (Withers, 1982: 163).

In Larence Kohlberg's studies, he developed Piaget's theory by focusing on individual fairness, equality, and equity. He examined the thought process of children at various ages as they navigate concepts of right and wrong, beginning with close institutions like parents, teachers, and friends, and extending to broader contexts like rules and regulations in global and societal settings (Vessels & Huitt, 2005: 7-8). Kohlberg's theory of moral development, which has been widely accepted and implemented in U.S. education since the 1970s, outlines moral development in three levels and six stages (Kohlberg, 1963) as follows:

Level 1. Preconventional Morality

Stage 1. Punishment and Punishment Orientation: In this stage, children, typically aged 2-7, avoid actions that would lead to punishment.

Stage 2. Naïve Instrumental Hedonism: Children, aged 7-10, make choices based on their self-interests, often motivated by external rewards or stimuli.

Level 2. Conventional Morality (Morality of Conventional Role-Conformity)

Stage 3. Good Interpersonal Relationships: In this stage, children, between 10-13, maintain good relations with others by adhering to societal expectations to gain approval as "good" boys or girls.

Stage 4. Law and Order Morality: Adolescents, aged 13-16, conform to societal norms and respect laws to maintain social order.

Level 3. Postconventional Morality (Morality of Self-Accepted Moral Principles)

Stage 5. Social Contract and Individual Rights: Individuals aged 16 years old and above understand the importance of social contracts and democratically accepted laws that benefit societal peace.

Stage 6. Universal Principles of Conscience: Individuals act according to universal principles, such as fairness, equality, and human rights, and feel guilty when they do something wrong. At this stage, their actions are guided by their conscience and principles that help maintain societal peace.

Piaget's and Kohlberg's theories have outlined the necessary stages of children's moral development. However, they primarily focus on developing character traits through interactions with teachers and parents, as well as through students' cognition and psychology. Although students only spend one-third of their day at school, this period compels them to interact with various social structures, such as social institutions or social beliefs, to understand how society functions (Vessels & Huitt, 2005: 13). Individuals in society are engaged in certain activities or rituals that influence their behavior patterns, which are referred to as the "social system" (Parsons, 1970: 18).

3. Methodology

3.1 Research Model

This study employs a mixed-method approach for documentary data collection, incorporating both qualitative and quantitative research methods. Data sources include documents, research papers, and primary and secondary documentary research related to Character and Citizenship Education within the educational systems of the United Kingdom, Canada, the United States, Singapore, and Thailand. The analysis is conducted using both statistical and descriptive techniques. The study also utilizes a needs assessment questionnaire, in-depth interviews, observation forms, Digital Open Badge learning innovation guidelines, and an online platform to enhance students' characteristic citizenship.

3.2 Participants

The participants include three experts on Character and Citizenship Education, three experts on digital educational innovation design, 48 involved personnel, and 38 Matthayom 4 students (Grade 10) of Sanpatong Wittayakom School, Sanpatong, Chiang Mai, Thailand. The criteria for sampling are as follows: (1) schools that are part of the Education Sandbox program; (2) schools that have incorporated Character and Citizenship Education into their curriculum; and (3) students who enrolled in subject S31211 Character and Citizenship Education in 2023.

4. Findings

According to a needs assessment questionnaire on developing innovation of Digital Open Badge in Social Studies to enhance citizenship characteristics of secondary school students, there are overall 19 core values evident in the curricula of the five sample countries. The priorities, as judged by involved personnel, are:

4.1 The Prioritized Characteristics Deemed Necessary or Essential by Involved Personnel

Table 1. Average Percentage of Involved Personnel on Necessary or Essential Characteristics (n=48)

Characters	Percentage
1. Responsibility	90.6
2. Honesty	87.5
3. Good Citizenship	87.5
4. Self-discipline	87.5
5. Cooperation	84.4
6. Respect	81.3
7. Empathy	81.3
8. Integrity	81.3
9. Perseverance	81.3
10. Optimism	71.9
11. Fairness	71.9

According to Table 1, 90.6% of involved personnel expressed their desire to improve their sense of responsibility, followed by 87.5% seeking improvement in honesty, good citizenship, and self-discipline, and 84.4% aiming to enhance cooperation.

4.2 Results of Digital Open Badge Learning Innovation Development

A needs assessment questionnaire has been analyzed with The Basic Education Core Curriculum in designing a course curriculum, which is Character and Citizenship Education for secondary school students for 40 hours. The material for the course is a Digital Open Badge guideline, with the index of item objective congruence (IOC) evaluated by experts at 0.80.

Figure 1. Digital Open Badge Guideline

4.3 Results of Digital Open Badge Learning Platform

Once the desirable characteristics are observed and a learning management system is established, this study employs ten character traits to create the Digital Open Badge coinciding with a task-based learning approach for the population. These ten character traits are divided into four levels; individual level, family level, community level, and international level, to motivate, measure, and evaluate the results of the online platform. The experts suggest the IOC be set at 0.80.

Figure 2. Manuals for Digital Open Badge Platform

4.4 Results of Digital Open Badge Approach

4.4.1 Evaluation of Digital Open Badge

Table 2. Average Satisfaction Levels towards Digital Open Badge Learning Innovation

Evaluation	$\bar{x}$	S. D.	Meaning
Course Syllabus and Teaching Quality			
Clear course syllabus, learning approaches, and evaluation criteria	4.13	0.69	satisfied
Teacher's expertise in the field	4.68	0.52	very satisfied
Teacher preparation and planning	4.39	0.49	very satisfied
Material design	4.18	0.82	satisfied
Total	4.35	0.63	very satisfied
Materials			
Interesting and up-to-date materials	4.37	0.67	very satisfied
Correspond to objectives	4.32	0.76	very satisfied
Correspond to student's needs and abilities	4.16	0.78	satisfied
Can be applied to other situations or subjects	4.42	0.63	very satisfied
Correspond to students' daily life	4.13	0.92	satisfied
Properly build characteristic citizenship	4.42	0.75	very satisfied
Total	4.30	0.75	very satisfied
Educational Activities			
Positive learning atmosphere and class participation	3.87	0.66	satisfied
Support students' self-study and suggest more learning sources and materials	4.11	0.75	satisfied
Improve students' analytic, synthetic, and creative skills	4.16	0.71	satisfied
Student-based learning activities	4.21	0.80	very satisfied
Integrative teaching and learning activities	4.24	0.70	very satisfied
Total	4.12	0.72	satisfied
Media and Learning Supports			
Course materials and media	4.05	0.76	satisfied
Various types of school media	4.21	0.69	very satisfied
Pilot technology usage in teaching and learning	4.34	0.74	very satisfied
Beneficial patterns and activities in learning platform to improve citizenship characteristics	4.16	0.78	satisfied
Can be applied to other subjects	4.11	0.88	satisfied
Total	4.17	0.77	satisfied
Learning Assessment			
Evaluation corresponding to learning materials	4.11	0.75	satisfied
Various evaluating methods	4.13	0.80	satisfied
Participatory evaluation	4.32	0.80	very satisfied
Accurate evaluation	4.29	0.76	very satisfied
Total	4.21	0.78	very satisfied
Learning Assessment (Self-assessment for Students)			
Preparation for class	3.82	0.88	satisfied
Class participation	4.05	0.89	satisfied
Enthusiasm in self-study	3.79	0.83	satisfied
On-time attendance and class frequency	4.08	0.84	satisfied
Practical usage of knowledge	3.82	0.91	satisfied
Total	3.91	0.87	satisfied
Total	4.17	0.76	satisfied

As seen in Table 2, the analysis of the six aspects of digital open badge learning innovation satisfaction indicates that the digital open badge is overall at a satisfactory level, with an average score of 4.17. For instructors, the highest satisfaction is with the materials, which have an average score of 4.35, followed by studying materials at 4.30, and learning assessment at 4.21.

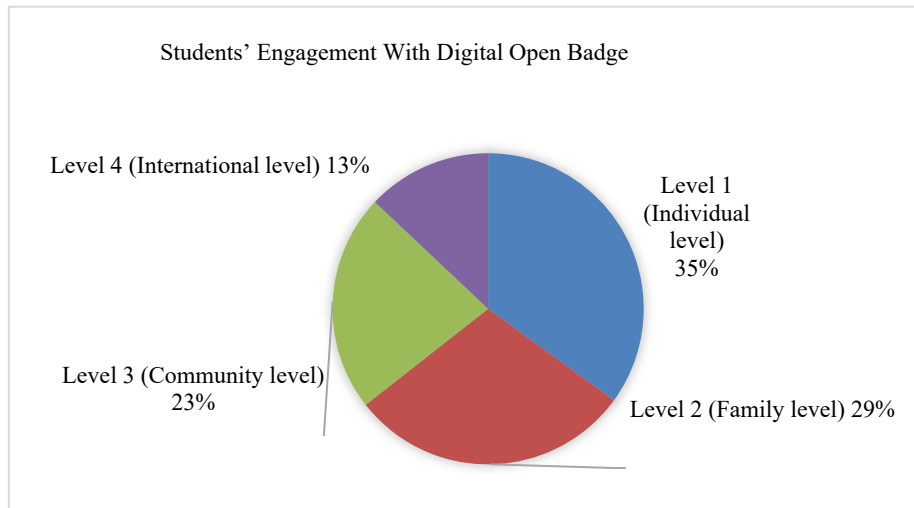4.4.2 Observation of Students' Engagement with Digital Open Badge

Figure 3. Percentage of Students' Engagement with Digital Open Badge

Figure 3 suggests that the highest percentage of students' engagement with Digital Open Badge learning is at the individual level, at 35.02%, followed by the family level at 29.39%, and the community level at 22.62%
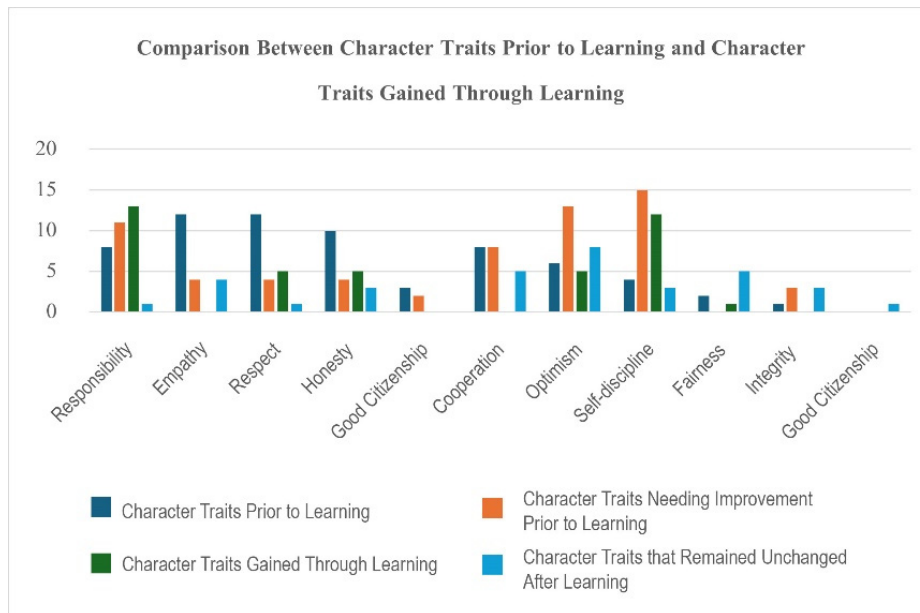

Figure 4. Comparison Between Character Traits Prior to Learning and Character Taits Gained Through Learning

As seen in Figure 4, the survey indicates that students are aware that the character traits requiring the most improvement are self-discipline and optimism. When looking at character traits that have been improved, responsibility is the most obvious result in the students' character development, followed by self-discipline. However, the character traits that haven't improved at all are optimism and cooperation.

From Figure 5, the obvious change in students' characters according to parents is responsibility, followed closely by empathy and cooperation. On the other hand, the least changes are optimism, fairness, and integrity consequently.
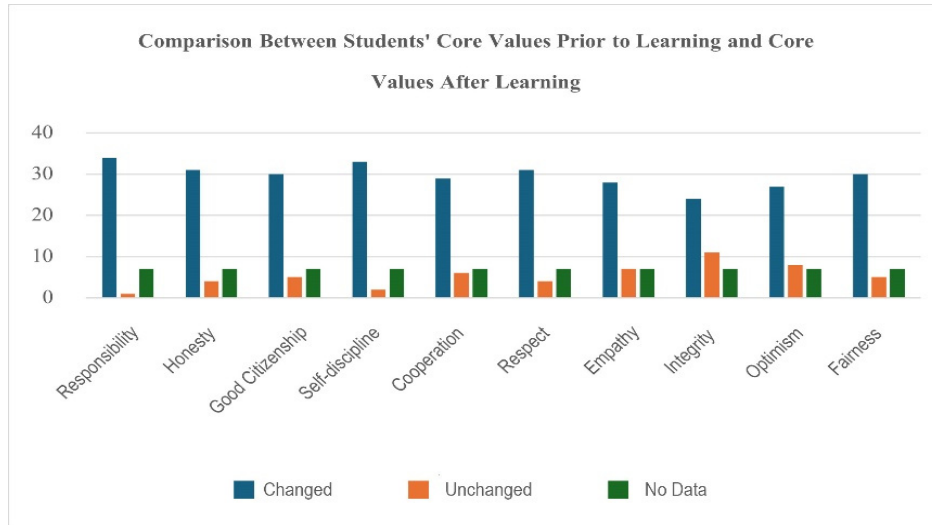
Figure 5. Family Interviews on Comparison Between Students' Core Values Prior to Learning and Core Values After Learning

Table 3. Changes in Students' Characters According to Advisors' Opinions

Characters	Changes in Students' Characters
Responsibility	Students are exhibiting greater responsibility towards their assignments and showing more enthusiasm for self-study. This includes taking their responsibility for their own actions and their consequences. However, some students still ignore their assignments and lack a service-minded attitude.
Honesty	Honesty is improving among students who already possess this trait.
Good Citizenship	Students show more responsibility in their roles by following agreements and accepting their own responsibility. However, some students lack a service-minded attitude, and therefore, their good citizenship trait does not meet expectations.
Self-discipline	Students become more enthusiastic about turning in their homework and exhibit greater self-discipline. They begin to approach tasks following societal expectations, demonstrating increased responsibility towards their duties within a limited timeframe and their roles.
Cooperation	There is increased evidence of participation and cooperation, including expressing opinions in class. However, a few students are still absent when it comes to helping teachers and advisors.
Respect	Students, especially those in leadership positions, are generally more open-minded and respectful of others' perspectives. However, a few students still exhibit bias towards teachers.
Empathy	Students are more sympathetic, as observed through their cooperation both in and outside of class. They are helpful and willing to assist in resolving the issues during class. However, some students still lack the willingness to assist.
Integrity	Students believe in their righteousness. If they find themselves in unfair situations, they will fight for their beliefs. They see justice as a power rather than as righteousness.
Optimism	Students are becoming more pessimistic, increasingly competitive, and living under pressure in several aspects. They often see themselves as losing their own benefits, rights, and freedom.
Fairness	In case something unjustified is bestowed upon students, they will always protest for their rights and freedom.
Notable change in characters	There is a significant improvement in students' cooperation, as they express their opinions and participate in activities more frequently.
Least change in characters	Optimism is the least changed character trait. Students already possess traits of honesty and fairness. Regarding self-discipline, their learning abilities remain within their proper learning potential – not overly good or outstanding – though they are following their assignments accordingly.

Table 3 shows the changes in students' characters according to advisors' opinions. The obvious change in character is that students are being more cooperative; they express their opinions and participate more in class activities. The least change in character is optimism; students are becoming more pessimistic, and competitive, living with more limitations, and seeing themselves losing their values, rights, and freedom.

5. Results

5.1 Synthesis

The synthesis of core values from the Character and Citizenship Education curricula of the five sample countries, using Josephson's six pillars theory, indicates that Singapore and the United States embody all six values, Canada demonstrates five, the United Kingdom adheres to four, and Thailand possesses three values.

5.2 Results of Digital Open Badge Learning Innovation Development

5.2.1 A Needs Assessment Questionnaire Analysis

According to the synthesis of the needs assessment of Digital Open Badge, there are 19 core values in the educational systems of the five sample countries. Involved personnel indicated that the character traits most requiring improvement are responsibility, at 90.6%, followed by honesty, good citizenship, and self-discipline at 87.5%, and cooperation at 84.4%.

5.2.2 The Designed Course Curriculum on Character and Citizen Education

Ten character traits are utilized to design the Digital Open Badge corresponding to the desirable characteristics of students, divided into four levels: individual level, family level, community level, and international level. This structure aims to facilitate the evaluation and measurement of an online learning platform and the user manuals for https://www.openbadgesvk.com/ website.

5.3 Results of Digital Open Badge Learning Platform

5.3.1 Digital Open Badge Assessment

The overall student satisfaction level with Digital Open Badge innovation is 4.17. Teachers and instructors are even more satisfied with an average score of 4.35.

5.3.2 Behavioral Observation and Interviews

Observation indicates that students' behaviors have positively aligned with the objectives of the learning approach. This is supported by students' self-assessments and family evaluations, which show similar results. The most notable change in character traits is an increase in responsibility, while advisors note a significant improvement in cooperation traits. The behavioral observation indicates changes at various levels: individual level at 35.02%, family level at 29.39%, community level at 22.62%, and international level at 12.97%.

6. Discussions

From the objectives and research questions, the findings are to be discussed as follows:

6.1 What Are the Core Elements of Character and Citizenship Education evident in the Educational Systems of the United Kingdom, Canada, the United States, Singapore, and Thailand?

Josephson's six pillars of character theory (2002) include trustworthiness, respect, responsibility, fairness, good citizenship, and caring. These values are internationally recognized in cultural, social, economic, and religious aspects. Moreover, they can be easily observed in schools, homes, as well as communities. Corresponding to Josephson's theory, Singapore and the United States exhibit all six core values, Canada displays five, the United Kingdom adheres to four, and Thailand possesses three core values. Furthermore, Thailand has one value that is different from the international values, one that is specifically essential to Thai people, which is loyalty to the monarchy.
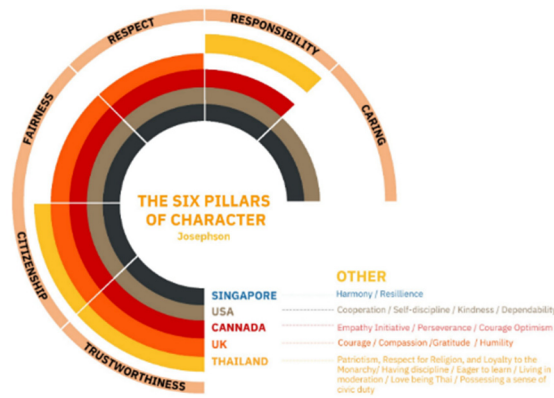
Figure 6. The Synthesis of the Five Countries' Core Values

6.2 What Needs to Be Addressed in Digital Open Badge Learning Innovation to Effectively Improve Secondary School Students' Character Traits, and What Will the Platform Look Like?

There are four main topics to be discussed below:

6.2.1 Results of Digital Open Badge Learning Innovation

The study has examined the curricula of high school students from five countries across 10 designated learning units. Proper activities were designed to correspond to the stages of moral development as outlined by Kohlberg (1963). These stages include:

- Level 3: Postconventional Morality (Morality of Self-Accepted Moral Principles), which corresponds to Stage 5: Social Contract and Individual Rights. This stage is characterized by community acceptance and occurs when children understand the concept of rules that benefit society, typically starting at age 16.

- Stage 6: Universal Principles of Conscience, which begins with one's conscience and feeling of remorse after engaging in regrettable actions. These principles, such as justice, equality, and human rights, are universally accepted as basic ethical guidelines for adults to live peacefully and properly in society.
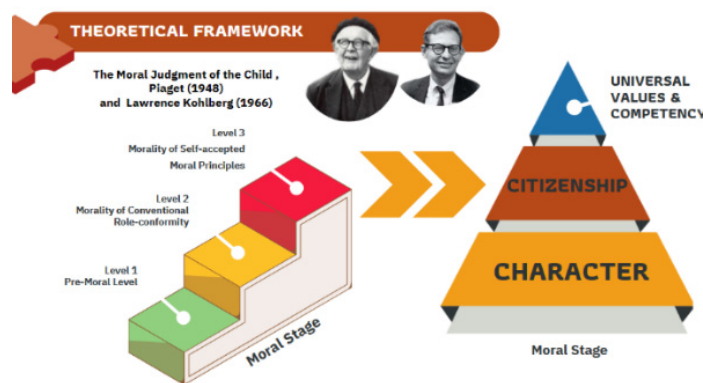

Figure 7. The Moral Judgment of the Child Theoretical Framework by Piaget and Kohlberg

6.2.2 Results of Learning Management

The ethical paradigm of Thai character education aims to cultivate desirable citizenship traits in public education. This objective is reflected in educational documents such as Character and Citizenship Education for Primary School B.E. 2521 (revised edition B.E. 2533) and the Basic Education Core Curriculum B.E. 2551. These documents highlight the potential for nurturing characteristic citizenship among primary school students, aligning with the

values and ideals endorsed by the government. The learning approach emphasizes the use of a framework rooted in ethics, drawing from Buddhist philosophy and practices. This framework serves as a foundation for cultivating virtues related to goodness, beauty, and ethical conduct. Additionally, it incorporates values derived from Thai identity and culture, including national institutions, religion, and the monarchy. At the same time, the curriculum delineates characteristics, both ethical and non-ethical, through dedicated ethics education subjects. These developments aim to shape students' perceptions of themselves, others, and society, enabling them to navigate various relationships and expressions within the Thai social context. For example, the curriculum integrates characteristics such as patriotism, religious devotion, loyalty to the monarchy, pride in Thai identity, and communal spirit. Learning activities within the curriculum are designed to enable institutions to enhance students' self-image by integrating subject matter across eight domains, facilitating student activities, fostering desirable characteristic development projects, and integrating these efforts into daily routines (Ministry of Education, 2017).

The authors acknowledge limitations in developing practical applications for desirable characteristics. Following the concept of learning-by-doing, the authors have applied the "5Ts of Action Learning" model to support student learning. The goal is to foster a collaborative community that engages in reflective activities such as "dialogue" or "real-life experiences," including fieldwork. These activities encompass "critical thinking" or reflection, leading to "action" for the collective benefit. This approach addresses cognitive, social-emotional, and behavioral dimensions (WESSA, 2016), promoting learning through both top-down and bottom-up approaches. It aligns with character education, guided by values that enhance citizenship development, with various institutions contributing to sustainable change. These processes encompass five steps:

- Think (Reflect & Revise): This study is designed to raise global issues, such as corruption, human rights, environmental concerns, etc., to stimulate learners' critical thinking skills on ethics and the lack of necessary traits. These results suggest that students are more inclined to voluntarily cooperate in expressing their opinions on global issues they are interested in.

- Touch (Fieldwork encounters): This gives students opportunities to reconsider the meanings of each core value based on their experiences and to assess themselves. The outcomes illustrate that students still do not understand the meanings of each value within Thainess or Thai culture at the international level. For instance, students only perceive respect as a salute to elders.

- Take Action (Explanation): At this step, students are encouraged to reconsider the original meanings of core values or their own experiences within the framework of Thainess. This designed approach fosters the creation of new understanding at four levels: individual, family, community, and international. Students are invited to observe themselves through an online platform that incorporates Digital Learning Design. This reflects the evolving influence of educational philosophy, especially the Hybridism Philosophy of Education, which aims to meet the three teaching objectives: knowledge, attitudes, and skills (Charin Mangkang, 2016).

The approach shifts from lecture-based teaching, where teachers and instructors solely impart knowledge, to hybrid teaching which prioritizes interactive learning. Additionally, the badge system is designed to (1) motivate behavior, (2) serve as an educational tool, and (3) act as a certification linked to economic and social opportunities. This design aligns with Williams' approach to Character and Citizenship Education (Williams et al., 2003). Williams proposes a method of thematic value-based education that can be used for both classroom and school-wide activities. Monthly themes, which can be developed for a single academic year or a set of core values, are established to guide weekly activities. The approach involves goal-oriented values for each month, focusing on specific behaviors and student understanding. For example, under the theme of compassion, students can practice behaviors such as using kind words, offering help, inviting others to join activities, and expressing appreciation.

- Turn in (Plan together): Once students observe their own behaviors, they will have opportunities to exchange their experiences from several aspects, sharing different practices and understandings of each core value creatively. At an individual level, students can observe their respectful behaviors by giving self-respect, believing in their decisions, and not making disturbing noises. At a family level, they can improve by respecting their parents, helping with their parents' work, and being polite. At a community level, students must obey community rules. At an international level, students should learn to be more open-minded towards their friends' opinions during group assignments and be mindful of the environment by caring for natural resources and other objects in schools or society. This process illustrates that students can develop a deeper interpretation of their actions and can express their behaviors in more meaningful ways.

- Talk (Dialogue): This process involves defining new meanings through the exchange of experiences, self-reflection, and explanations. The outcomes demonstrate that students' behaviors alter positively and that

individual connections expand to an international level.

6.2.3 Measurement and Evaluation Results

This study consists of formative assessment, which is conducted during the learning process by observing student behaviors and tasks, and summative assessment, which evaluates learning outcomes at the end of the teaching period. The results involve the participation of students, parents, and teachers through interviews. Additionally, the assessment is conducted using portfolios and a scoring guide, including tools for evaluating tasks and defining scoring criteria (rubrics). Tasks are assigned through the course's website platform, https:/www.openbadgesvk.com/. The assessment focuses on behavior-based evaluation consistent with 21st-century learning assessment (Reeves, 2010; Shepard et al., 2005), emphasizing that the evaluation should align with "real-life situations." It highlights the assessment of both the process and outcomes of project- or task-based learning. The assessment results provide feedback to support both student and teacher learning. Evaluation and reporting are done in team results (rather than individual results), with the content and assessment criteria transparently shared with students (rather than kept secret). This approach also encourages students to self-assess their learning processes and outcomes.

6.2.4 Digital Open Badge Guideline

The guideline consists of the following components: (1) introduction, (2) course description, (3) learning management structure, (4) ten learning units incorporating the 5Ts (Action-Learning-Process) framework to design the learning activities, (5) media and learning resources created by authors, (6) user manual for the online platform, (7) measurement and evaluation methods, and (8) sample evaluation criteria. The guideline is evaluated by experts for content validity (IOC) with a score of 0.80, and adjustments are made based on their recommendations.

For platform development, ten characteristics are employed to design digital badges. These badges align with the learning process in the form of tasks and are categorized into four levels: individual, family, community, and global. The aim is to motivate students to use the badges for measurement and evaluation. The platform and user manual for the website https:/www.openbadgesvk.com/ are developed by starting with the platform workflow to create a prototype for the website development. The sample user manual and platform are evaluated by experts for content validity (IOC) with a score of 0.80, and adjustments are made based on their recommendations.

6.3 How Will the Digital Open Badge Learning Innovation Improve Students' Citizenship Characteristics?

For notable changes in students' citizenship characteristics, according to the assessment, the overall average score is 4.17, which is considered a satisfactory level. The essential factors are as follows:

6.3.1 Thematic Value-Based Education

According to the assessment results, the overall rating for teachers is at the highest level, with an average score of 4.35. Specifically, the expertise and competence of the teachers receive the highest ratings, followed by preparedness and lesson planning, which are also at the highest level. These findings can be applied to classroom activities and on an international scale. The assessment results may be attributed to the authors' design principle, which involves setting ten core value themes to facilitate students' understanding and organizing activities to meet the learning needs through the learning unit structure, overall to be used weekly.

The behavior-based learning approach, which targets weekly value themes, allows students to spend time observing themselves to record specific behaviors and their understanding. By practicing and discussing these behaviors, students gain a clear understanding of what they are learning and their learning objectives. In every learning activity, the authors choose to communicate in a way that encourages students to review the original meanings of core values and arrive at new interpretations, opening new perspectives on each characteristic. This is done by asking questions that move from familiar to distant topics and establishing an equal authority level with the students, focusing on students' opinions to create a relaxed learning atmosphere.

The assessment results show that the teaching activities are rated at a high level, with an average score of 4.12. The teaching methods and the variety of integrated activities receive the highest ratings, with an average score of 4.24. This is because the authors designed four levels of characteristic development for behavior observation or participation: individual, family, community, and global. Students have considerable freedom to design and choose activities according to their interests or skills.

For example, in terms of honesty, students demonstrate the highest level of self-honesty by saving money as they promised themselves. At the second level, family, they are honest with their parents about their whereabouts. At the third level, community, they help calculate the community's water bills without overcharging and participated in the Don Pao Subdistrict's Children and Youth Council, managing the budget honestly without embezzling funds. At the

global level, they portray honesty by not cheating in business by trading fairly without overpricing, and being honest with consumers.

6.3.2 Real-Life Application and Participation in Social Institution

The overall materials assessment is at a satisfactory level, with an average score of 4.30. This result indicates that knowledge from the course syllabus can be applied to other situations or subjects. Additionally, the materials supporting Character and Citizenship Education average 4.42 scores. The designs of learning approaches are based on daily life activities in classrooms to grant them spaces for exchanging opinions. The students' interactions with societal institutions have led to citizenship participation in accordance with moral development. Berkowitz (2002) points out that characteristic citizenship development depends on each individual and their living environments and has divided these environments into four categories: family institutions, educational institutions, friends, and communities. These categories play essential roles in an individual's life. For example, media shapes different understandings and values such as racism and violence, neighboring countries and their traditional cultures influence individuals, and religions control improper behaviors as well as serve as a pillar for living.

6.3.3 Integration of Technology to Encourage Students Learning through Badge Collection for E-Portfolios

The results of media and learning support demonstrate that the overall teaching quality is at a satisfactory level, with an average score of 4.17. The use of modern technology for teaching is also rated at a highly satisfactory level, with an average score of 4.34. This corresponds to the open badge pilot technology that the United States has been developing since 2011 to certify learners' capacities, independent of educational background or diploma certificates. The open badge comprises three key factors: the earner, issuer, and displayer. The "earner" refers to a student or life-long learner who receives digital symbols as rewards for engaging with this technology. Moreover, the United Kingdom has implemented this technology in their "Badge the UK" project for learners. At the University of California. Davis, necessary traits have been categorized into skills, knowledge, honor, experience, and capacity (Yu, 2018) to complement the development of Thaidigizen and active citizens while preserving Thai identity and preparing individuals to become global citizens through appropriate learning approaches.

6.3.4 System Evaluation, Certification, and Improvement of Digital Open Badges Learning Innovation

The overall assessment results for measurement and evaluation are outstanding, with an average score of 4.21. In addition, collaborative assessment and evaluation receive the highest rating, averaging 4.32. This aligns with Davidson and Goldberg's (2009) assertion that digital badges enhance the accuracy of educational outcome assessment by serving as meaningful symbols of learning. They provide evidence of activities and facilitate communication and demonstration, thereby conveying learning outcomes, interests, and achievements. However, their effectiveness hinges on their relevance to organizational learning and assessment strategies, as well as their integration into assessments of organizational credibility and user perception. Trust in badges as reliable symbols of certified learning is established when they are widely recognized as such.

However, the platform and instructional support tools developed by the authors to assist in the measurement and evaluation of the website face limitations, mainly due to budget constraints. This has resulted in the system's functionality not being fully comprehensive. Specifically, the processing of Digital Badge results, which can be downloaded as certification files in various formats, is only summarized on the profile page. To address the issue, the authors have utilized the accumulated Digital Badge results to issue certificates of characteristics to students who have passed the assessment. This approach aligns with Ongarj Naiyapat's (2014) concept of portfolio assessment, which evaluates students' knowledge, skills, abilities, or characteristics based on evidence indicating their diligence, progress, and performance in portfolios systematically collected and organized over a certain period of time.

6.3.5 Behavioral Changes Corresponding to Necessary Learning Approaches

The data collected on the ranking of characteristics that involved personnel perceive as necessary or important demonstrate that responsibility is the most significant preference, with 90.6% alignment between self-assessment by students and evaluations by parents. The characteristic that saw the highest change in students' attributes is responsibility, as reflected in observed behavioral changes. For instance, there has been an improvement in punctuality; students who previously submitted work inconsistently now consistently meet deadlines. They also take responsibility for household chores. This change is consistently observed in family observations, where students demonstrate increased responsibility towards assigned tasks, towards the community, and exhibit good citizenship. They show increased respect for elders, an improved ability to differentiate between right and wrong, and take initiative in household chores without being prompted. In assessments by advisors, the characteristic showing the most significant change is cooperation among students, reflected in increased participation, collaboration, and

self-discipline. They do not excel or underperform excessively but display increased interest and self-monitoring in their learning activities.

In addition, based on observations and interviews conducted by the authors with students before, during, and after students receiving Character and Citizenship Education, the outcomes indicate that before the learning period, there are common behavioral problems such as arriving late to school, receiving warnings, and in some cases, being placed on probation by the disciplinary department. Other issues include arriving late to class, lack of cooperation in activities initially, and not participating in classroom upkeep or ensuring the classroom's tidiness before leaving. These issues are believed to stem from various factors, including the environment and a lack of instilled qualities necessary for self-awareness and awareness of their surroundings. However, during the learning period, these behaviors positively changed. Instances of arriving late to school and class decrease significantly, and students start to show interest and set goals to improve themselves. For instance, during the fifth week of the learning activities on the topic of self-discipline, each student undertakes a personal challenge to change something about themselves within two weeks. They observe and record their progress daily. This illustrates that most students want to improve their discipline in managing time and resources, such as waking up and going to bed on time, planning their time for playing games versus reviewing lessons, planning and managing finances, and meeting deadlines for their assignments. After sharing their results in the classroom, more than half of the class members can achieve their goals. Consequently, during classroom activities, there is increased attention to small details, such as maintaining the classroom and ensuring it is tidy before leaving without needing any instructions. Students become more self-aware and more aware of their surroundings. After the learning period, interviews, self-assessments, and evaluations by family members and advisors reveal positive changes. Additionally, disciplinary records show that the group of students participating in the study did not exhibit any behavioral problems in the past semester.

In terms of behavioral observation in Digital Open Badge in Social Studies to enhance secondary school students' citizenship characteristics, the highest percentage recorded in the system after receiving Character and Citizenship Education is self-level at 35.02%, followed by family level at 29.39%, community level at 22.62%, and global level at 12.97%. Interviews with the students themselves reveal that, before the learning period, their existing characteristics are primarily behaviors exhibited at the self, family, and school community levels. These behaviors are still framed within the context of Thai culture, such as seniority and respect for elders. After the learning period, students exhibit improved responsibility in their academic behaviors, especially at the self-level, and as observed by their parents, these behaviors are evident at both the self and family levels. Additionally, after the learning period, students demonstrate behaviors that reflect greater consideration for others, increasingly at the community and societal levels.

7. Conclusion

This study has utilized the Character and Citizenship Education of five sample countries to synthesize the universal core values within diverse cultural and societal contexts, comparing them to Thailand. The results demonstrate that Thailand lacks a curriculum that supports universal core values. In other words, Thailand still lacks precise definitions of what are considered universal core values. This study has extracted core values and created school curricula for students in pilot schools according to the Education Sandbox program in Chiang Mai, where they are compatible with creating resilient curricula. There are ten core values that are necessary for developing citizenship characteristics in students. Consequently, the authors have designed a learning innovation and a learning platform using Digital Badges to design effective in-class and out-of-class learning activities based on the 5 Ts Action Learning. From 40 hours of learning observation, the quantitative outcomes suggest that the overall satisfaction with the curriculum is high. The notable changes in students' character traits are responsibility and cooperation; other traits of the core values are also more noticeable at individual, family, community, and global levels, according to observations and interviews with students, families, and advisors.

8. Recommendations

For future education, the results of students' citizenship characteristics in social studies, as outlined in the Basic Education Core Curriculum B.E. 2551, such as honesty, discipline, enthusiasm for learning, determination, and service-mindedness, can be used for credit transfer. However, the networks involved in incorporating and assessing citizenship characteristics within curricula need to be trustworthy to properly evaluate students' character and issue certificates for their future education and employment. Additionally, the contents of Selective Civic Education should be revised to align with Character and Citizenship Education in both Thai and global contexts.

Nonetheless, for practical applications, the learning platform's development is still limited, causing the website to fail in performing some functions. To improve its efficiency, the platform needs proper support and funding. Additionally, a dedicated team should supervise the system to assess and monitor each student's progress. To achieve sustainable changes in character traits, the study should be ongoing. Character and Citizenship Education should be evaluated once or twice a semester to gather comprehensive empirical evidence, assessing everyday traits and beyond.

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