Enhancing digital literacy in Thai higher education: A strategic imperative

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Abstract: This study aims to enhance digital literacy in Thai higher education through the development of an integrated framework—3CLPC (Cloud-based, Collaborative, and Positive Coaching). A mixed-methods approach was employed, combining surveys and interviews with students and faculty from three public universities. Quantitative data were analyzed using descriptive statistics, while qualitative input informed iterative model refinement. The results indicated improvements in students' digital competencies, especially in collaboration, content creation, and problem-solving. Participants also reported increased confidence and engagement when using cloud-based tools and receiving supportive coaching. The 3CLPC framework effectively addresses the divide between access to technology and pedagogical effectiveness, particularly in under-resourced institutions. The model is scalable and adaptable to other Southeast Asian contexts. Practical implications include integration into teacher training programs and digital curriculum policies. The study contributes to bridging the gap between policy and practice in digital education, emphasizing equity and learner-centered design.

1. Introduction

Digital literacy, broadly defined as the ability to locate, evaluate, utilize, and communicate information using digital technologies, has emerged as a foundational skill in the 21st century. In the context of Thai higher education, fostering digital literacy is imperative for empowering students to thrive in an increasingly technology-driven world. Despite widespread access to devices and internet connectivity, disparities in digital literacy remain stark, especially among students from rural areas. This article addresses the need to enhance digital literacy among university students in Thailand by examining current challenges, analyzing global best practices, and proposing context-specific strategies. Hattie and Zierer [1] emphasize that effective learning occurs when educators adopt positive teaching mindframes and focus on visible impacts on student achievement. Digital literacy is now recognized as a fundamental competence in education, as argued by Leahy and Dolan [2] requiring schools to embed such skills across all levels of curriculum.

2. Theoretical Framework

This study is grounded in the frameworks of digital competence established by UNESCO [3] and the European Commission [4]. These frameworks outline key components of digital literacy, including information and data literacy, communication and collaboration, digital content creation, safety, and problem-solving. They provide a comprehensive guide for evaluating and enhancing digital literacy among educators and learners in diverse educational contexts.

3. Current Challenges in Thailand

Several challenges hinder the development of digital literacy in Thai universities. These include outdated curricula, insufficient teacher training, limited access to digital infrastructure in remote areas,

and a lack of integration of digital competencies into assessment practices. Moreover, the COVID-19 pandemic has highlighted the digital divide and underscored the urgency of equipping all students with essential digital skills for learning, communication, and innovation. The evolution of distance education has significantly influenced how technology is integrated into teaching and learning. Anderson and Dron [5] propose three generations of distance education—cognitive-behaviorist, constructivist, and connectivism—each representing a shift in pedagogical approaches aligned with advancements in digital technologies. These frameworks provide valuable insight into how digital literacy can be conceptualized and operationalized in higher education, particularly in online and blended environments. Understanding these paradigms allows educators and policymakers to align digital tools with instructional strategies that support meaningful learning

4. Strategic Interventions for Enhancing Digital Literacy

To bridge the digital skills gap, this study proposes the following strategic interventions:

- Integrating digital literacy modules into general education curricula
- Establishing teacher professional development programs focused on digital
- Pedagogy
- Promoting student-centered and project-based digital learning experiences
- Leveraging cloud-based platforms for collaborative learning and feedback
- Developing localized assessment tools aligned with international standards

These interventions aim to create a digitally competent academic ecosystem capable of adapting to future educational demands.

5. Policy Recommendations

National education policies must prioritize digital literacy as a core outcome of higher education. This includes funding for digital infrastructure, mandatory digital literacy training for faculty, and standardized competency frameworks. Collaboration between government, universities, and private technology providers is essential to create sustainable and inclusive digital learning environments.

6. Challenges in Policy Implementation

Although national policies in Thailand emphasize digital transformation, the implementation often lacks continuity, funding, and adequate monitoring. Differences in urban and rural access to infrastructure and disparities in teacher digital competencies remain persistent. Additionally, resistance to change and insufficient stakeholder engagement further hinder the full realization of digital initiatives. Collaborative input from institutions, educators, and government agencies is essential to bridge these gaps and make policy more actionable.

7. The Role of Professional Development

Ongoing professional development is a critical component in building educators' confidence and competence in using digital technologies. Workshops, peer coaching, and learning communities are proven strategies that help build a culture of digital innovation. The 3CLPC model supports this by embedding digital pedagogy into regular training routines, allowing educators to model the same strategies they wish to impart to students.

8. Student Perception and Digital Mindset

A digital mindset encompasses adaptability, curiosity, and self-directed learning. It is important to understand how students perceive and engage with digital tools. Research indicates that learners who feel empowered and supported are more likely to develop confidence in navigating digital environments.

Positive coaching and collaborative activities foster a sense of ownership, which is key in cultivating lifelong digital learners.

9. Global Perspectives and Case Studies

Lessons from countries like Estonia, South Korea, and Singapore highlight the importance of centralized digital strategies, early integration of digital literacy, and strong public-private partnerships [6]. These nations provide valuable blueprints for Thailand as it refines its digital education roadmap [7].

10. Future Directions

Future studies may explore AI-enhanced personalization of digital literacy programs, gamified learning environments, and integration of digital ethics [8]. There is also a need to assess long-term outcomes of models like 3CLPC, particularly in shaping graduate readiness and employability in the digital economy. Research that involves multi-university collaborations will provide robust insights and cross-contextual applicability [9].

11. Extended Discussion

Implementation of the 3CLPC model in diverse learning environments has demonstrated its adaptability in both synchronous and asynchronous settings. Cloud technologies ensure persistent access to learning resources, while collaborative learning fosters social presence and peer interaction [10]. Positive Coaching, based on motivational psychology such as Bandura's self-efficacy theory, helps students build confidence and persistence.

Effective integration of digital tools in higher education requires not only technical infrastructure but also changes in educators' beliefs, confidence, and institutional culture. As Ertmer and Ottenbreit-Leftwich [11] sustainable technology adoption depends largely on teachers' internal readiness and contextual support.

This model supports global educational trends post-pandemic, where digital pedagogy and emotional resilience are intertwined. According to connectivism theory [12] learning is a process of building networks. The 3CLPC model follows this principle by utilizing cloud technology, community learning, and encouragement to develop future-ready learners with high digital competence.

12. Conclusion

Enhancing digital literacy in Thai higher education is both a challenge and an opportunity. It requires a multi-stakeholder approach involving educators, policymakers, students, and technology partners. By adopting global frameworks and adapting them to local contexts, Thailand can equip its university graduates with the digital competencies necessary to succeed in a dynamic global economy.
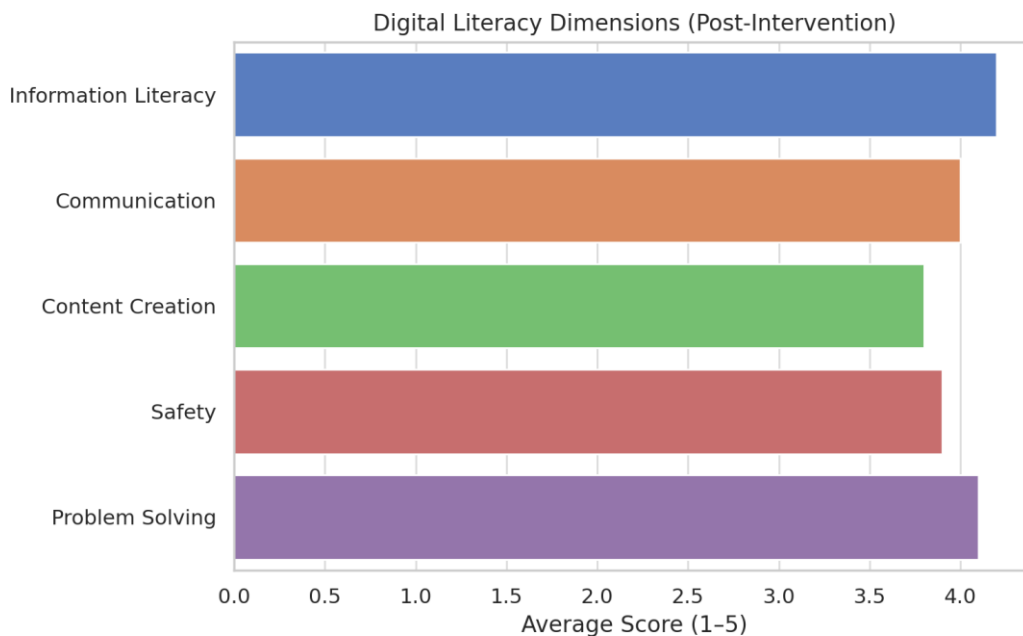
Figure 1.
Digital Literacy Dimensions.

Illustrates the average post-intervention scores for digital literacy dimensions, based on the DigCompEdu framework.
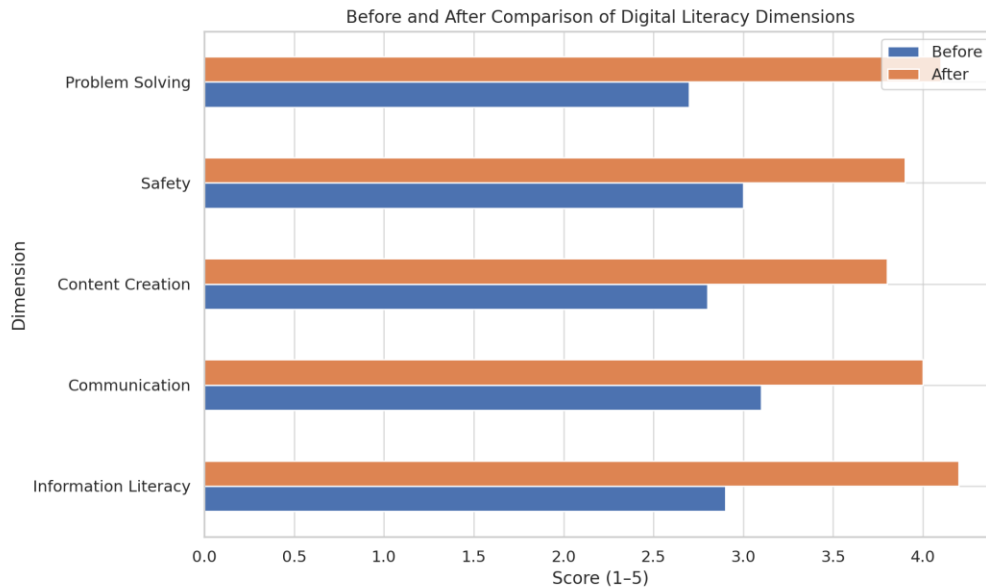

Figure 2.
Before–After Comparison of Digital Literacy.

Compares the digital literacy scores before and after the implementation of the learning intervention.

Figure 3.
3CLPC Infographic Model.

Infographic illustrating the 3CLPC Model: Cloud-based Collaborative and Positive Coaching. This model synergizes digital tools, teamwork, and motivational techniques to promote digital literacy development in higher education. Collaborative learning methods, as discussed by Johnson, et al. [13] are proven to enhance student engagement and retention through structured interaction and peer support.

Transparency:
The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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