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Editorial

Making Cambodia's Higher Education Responsive to the Labor Market in the Digital Transformation Era.

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Cambodia has been one of the few post-conflict countries that have successfully brought peace after a prolonged civil war for decades. Since the 1990s, Cambodia has opened up to the world and is attracting international assistance and foreign direct investment for national construction and rehabilitation. The general election was organized between 23 and 28 May 1994 with support from the United Nations Transitional Authority in Cambodia (UNTAC). 1991 Cambodia was categorized as one of the least developed countries or LDC. The country has made good progress due to effective macroeconomic management, political stability, and a liberal trade and investment regime that has enhanced high economic growth and poverty reduction (MoP, 2010). Cambodia aspires to become an upper-middle-income country by 2030 and a high-income nation by 2050. According to the United Nations Development Programme (2024), the United Nations Economic and Social Council (ECOSOC) has endorsed Cambodia to graduate from the LDC in 2029 with a five-year preparatory period.

The World Economic Forum (2022) has recognized the success of Cambodia in transitioning from a labor-intensive to a knowledge-based society. Chet et al. (2023) claim that the contribution of higher education institutions (HEIs) is enormously important for promoting national development and economic growth. Since the early 2000s, Cambodia has emergingly adopted a digital policy focusing on information and communication technology or ICT (SET, 2020). According to the World Bank (2017), digital transformation is crucial for inclusive development and requires skills development. In 2022, the Ministry of Post and Telecommunications developed the Cambodia Digital Government Policy (2022–2035) to advance access to public services for human resource

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development (MoPT, 2022). Moreover, the World Education and EdTech also developed the Cambodia Digital Education Landscape Scan from October 2022 to January 2023 to evaluate and map the mechanism and thoroughly consider the digital learning interventions for students and teaching staff. The Ministry of Education, Youth and Sport (MoEYS) formulated a Policy and Strategies on Information and Communication Technology in Education in Cambodia to integrate ITC into the education sector (MoEYS, 2004).

Digital transformation has started popularly promoting teaching and learning at the HEIs by adapting technological advancements (Fadeeva, 2021) based on the Fourth Industrial Revolution (Alenezi, 2023). According to Qolamani and Mohammed (2023), implementing digital technologies at the HEIs has transformed from traditional teaching and learning methods to adopting artificial intelligence (AI), online learning, and learning management systems. Moreover, digital transformation helps promote the knowledge, skills, and competencies of educators and students to thrive in a digital education landscape (Mamaeva et al., 2020). The digital platform and tools have enhanced operational efficiencies and learning experiences. These include digital learning environments, data analytics, and online courses that help improve support decision-making and student outcomes (Shenkoya & Kim, 2023). Digitalization at the HEI also created a new teaching mode that diversifies teaching and learning resources and creates interactive environments to advance students' learning effects and teachers' teaching quality (Xu, 2023). The existing study reveals that digital education allows HEIs to make students' self-assessments but requires technology-supported teaching and learning processes (Kamsker et al., 2020).

This editorial work is written based on a desk review of the published papers and documents. The paper also includes views and analyses of the authors regarding digital transformation at the HEIs in Cambodia. This paper explores the importance of making Cambodia's higher education system responsive to these changes and proposes strategies to foster a more adaptable, skill-oriented, and future-ready workforce. Achievements and challenges in adopting digital transformation at the RUPP is also described in this paper. In Cambodia, the higher education sector is crucial for the country's social development and economic growth, particularly in the ongoing digital transformation era. The rapid evolution of technology and the increasing integration of digital tools across various industries have significantly changed the nature of work, creating challenges and opportunities for the labor market. HEIS must adapt and align its curricula, teaching methods, and institutional structures in this environment to better prepare students for the evolving labor market.

In promoting digital transformation at the HEIs, the RUPP has developed the ICT Policy and Master Plan (2017-2020) and Information and Communication Technology Policy (2023 – 2028). The existing ICT Policy and Master Plan have addressed key elements, including (a) teaching, learning, and research, (b) academic administration and management, (c) library administration and management, (d) financial administration and management, and (e) Human resource administration and management, and (f) governance (RUPP, 2023). Information Communication and Technology, or ICT, is adopted to support teaching, learning, and research to enable electronic presentations, animated demonstrations, simulations, computer-driven experimentation, communication, and collaboration. The university's policy also promotes technology modernization, focusing on research management information systems, e-learning systems, and rewards systems –demands of online learning.

The RUPP has improved the efficiency and effectiveness of teaching, learning, and research by: (1) modernizing all lecture rooms to ensure that they are suitable for both traditional and collaborative online learning methodologies, (2) modernizing all labs to enable, where needed, computer-driven experimentation and simulations as well as access to remote labs, (3) establishing linkages that enable access to advanced computational facilities; and exploiting virtual reality to enhance learning, (4) retraining lecturers to understand the advantages and limitations of e-learning using student-cantered self-led learning approaches, including content preparation, discussion mediation, and grading, (5) establishing a rewards system that recognizes the demands of online learning. vi. Implementing a locally hosted E-learning System, (6) developing and implementing a holistic E-learning Policy, and (7) developing and implementing a holistic Research Policy and a Research Management Information System.

The RUPP has also established reliable ICT resources and research equipment for the RUPP and built the capacity of RUPP faculties by sending them to enroll PhD programs in Sweden with t support from the Swedish International Development Agency (SIDA). This bilateral cooperation has assisted the RUPP to develop a guiding framework for ICT implementation. Moreover, the RUPP has been beneficial for utilizing ICT in various aspects of learning, teaching, research, management, and management. Main Infrastructure components include data center development, network infrastructure, and implementation phases. The project was implemented in four phases: Phase 1: Planning & Assessment, phase 2: Core Infrastructure, phase 3: Access Network, and Phase 4: Services & Applications. The project aimed to achieve three main outcomes, including (1) improved connectivity, (2) enhanced services, and (3) capacity building.

During the COVID-10 pandemic, the RUPP also shows its successful transition from traditional classroom to full online teaching and learning. Between 2020 and 2021, universities and schools in Cambodia closed for around 250 days (MoEYS and ESWG 2021, Sok et al., 2025). Since early 2019, the university has worked with UNESCO-ICHEI and Microsoft Cambodia and UNESCO-ICHEI to develop the ICT hardware and software to operate blended learning. Moreover, Microsoft Cambodia has sponsored free licenses of Office 365 (online version) with an account for each student, faculty member, and staff, assisting the RUPP in starting blended learning. During the pandemic, IT officers created 37,960 accounts for students and 1,809 for faculty members. The committee also monitored real-time to support students and faculty members in operating classes and examinations effectively and successfully (Chet et al., 2022). Since 2023, all students and faculties have been freely and widely able to access internet WIFI on the university's two campuses. Faculty members and students can access the Internet for teaching, learning, and research.

In response to the current need and situation, the university is also working to implement the Cambodia Cyber University Network and promote the ITC and technology for human resource development and technology advancement in Cambodia. Since 2023, the RUPP has worked to establish a Cyber University and has prioritized eight undergraduate courses under four bachelor programs for this initiative; they include (1) computer science and engineering, (2) Food Technology and Engineering, (3) Bio-Engineering, and (4) English. In 2024, four courses were planned for the Bachelor in Computer Science and Engineering: Computer Network II, Statistics Analysis II, Information System Design, and Core Java Programming II. One course in the food analytical lab has been planned for a Bachelor in Food Technology and Engineering, and another food chemistry lab is designed for a Bachelor in Bio-Engineering. Two courses are Literature Studies 202 and Literature Studies 301.

In addition, the RUPP hosts various centers to promote digitalization at the HEIs, such as the National Incubation Center of Cambodia (NICC). The center officially announced the inauguration by the MoEYS on 14 March 2024. The inauguration was presided over by H.E. Hang Chuon Naron, the Deputy Prime Minister and Minister of Education, Youth, and Sports, H.E. CHANG Won Sam, KOICA President, and H.E. Park Jung-Wook, Korean Ambassador to Cambodia. The center has played important roles in assisting youth and startups in technology, research, information, and communication. The center is also a space for entrepreneurs, startups, students, and enterprises to gather and discuss the best strategy and solution to promote their products through digitalization[1].

1. See detail at https://nicc.rupp.edu.kh/about-us/

The digital transformation era reshapes industries globally, and Cambodia is no exception. The country is witnessing rapid growth in the digital economy, with increasing demands for technological skills across sectors such as information technology, e-commerce, finance, healthcare, and manufacturing. However, a growing gap exists between graduates' skills and the labor market demands. A report by the International Labour Organization (ILO) suggests that Southeast Asia, including Cambodia, faces a critical challenge in aligning education outcomes with industry needs, particularly in the digital skills domain. This gap affects graduates' employability and the competitiveness of businesses in the region. To ensure Cambodia's workforce can thrive in the digital age, higher education must become more flexible, industry-driven, and aligned with employers' needs. This alignment is crucial for enhancing the employability of graduates, improving productivity, and fostering long-term economic development (ILO & ADB, 2015). Table 1 describes the challenges and issues in promoting digital transformation at Cambodia's HEIs.

Technology has become an important tool for teaching, learning, and research in the 21st century, and it is useful for faculty performance and student management. Moreover, the adoption of technology in education sectors helps educators customize their lessons, teach from their homes, conduct research,

Table 1: Key challenges and issues faced in promoting digital transformation at Cambodia's HEIs

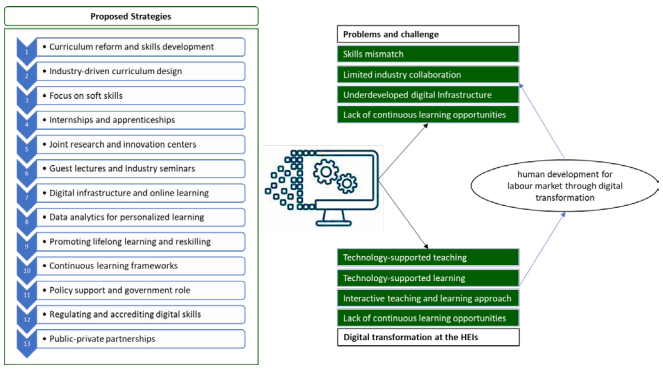
Challenges and issues	*Description*
Skills mismatch	The current curriculum in many Cambodian higher education institutions is not sufficiently aligned with the skills needed in the digital economy. Graduates often lack the technical and soft skills employers require, such as digital literacy, critical thinking, and adaptability.
Limited industry collaboration	A lack of systematic collaboration between HEIs and industries hampers educational programs' ability to stay current with labor market demands. Many employers report difficulty finding qualified candidates with relevant skills.
Underdeveloped digital Infrastructure	Although digital tools and online platforms are increasingly used, many HEIs in Cambodia still face challenges integrating advanced technology into their teaching methods and infrastructure.
Lack of continuous learning opportunities:	The fast-paced nature of digital transformation requires continuous learning. However, Cambodia's higher education system does not adequately offer lifelong learning and reskilling opportunities, leaving workers unable to adapt to technological changes.

Source: Authors' design, 2014.

improve their pedagogical skills, and collaborate with friends in real-time across schools and geographical distances. In particular, digital tools and the advancement of educational technology assist students in seeking employment, supporting their learning, deepening their understanding of complex concepts, conducting research, passing exams, managing their courses, and gaining online degrees.

The digital transformation era presents significant opportunities and challenges for Cambodia's higher education system. By aligning educational outcomes with labor market needs, particularly in digital skills, Cambodia can better equip its workforce to contribute to national development and thrive in the global digital economy. Cambodia can create a responsive, adaptable, and future-ready education system through curriculum reforms, stronger industry-academic partnerships, and policy support. In the long term, a responsive higher education system will benefit students, businesses, and the broader economy, contributing to a more innovative, productive, and competitive Cambodia in the digital age. Figure 1 illustrates the proposed strategies and implications for making Cambodia's higher education responsive to the labor market in the digital transformation era.

- *Curriculum reform and skills development*. Digital Literacy Integration: Incorporating digital literacy as a fundamental part of all programs, from technical courses to social sciences, to ensure that graduates are comfortable using technology in the workplace.
- *Industry-driven curriculum design: Establish* advisory boards that include industry representatives to ensure curricula reflect current labor market demands and trends. HEIs should actively engage with businesses to co-create programs that address specific skill shortages in the workforce.
- *Focus on soft skills*. In addition to technical training, HEIs should prioritize the development of soft skills such as communication, critical thinking, problem-solving, and emotional intelligence, all of which are highly valued in the digital economy.
- *Internships and apprenticeships*. Expanding opportunities for students to gain hands-on experience through internships and apprenticeships with digital companies. These collaborations would also serve as a pathway for employers to identify potential future employees.
- *Joint research and innovation centers*. Encouraging the creation of research and innovation centers where academic institutions and businesses can collaborate on projects that address industry-specific challenges, particularly those related to digital transformation.
- *Guest lectures and industry seminars*. Bringing industry experts into academic environments to share knowledge and trends, allowing students to learn firsthand about emerging technologies and business needs.
- *Digital infrastructure and online learning*. E-Learning Platforms and Digital Resources: Investing in e-learning platforms and digital resources to give students access to high-quality education, regardless of location. This would also open opportunities for lifelong learning, especially for working professionals seeking to upskill.
- *Data analytics for personalized learning*: Leveraging big data and AI to tailor learning experiences to individual students, helping them focus on areas for improvement and supporting personalized learning paths.
- *Promoting lifelong learning and reskilling*. Short-Term Certification Programs: Partnering with digital companies to offer short-term certification programs focused on high-demand skills such as coding, data analysis, digital marketing, and artificial intelligence.
- *Continuous learning frameworks*. Developing a national framework for continuous professional development, ensuring the workforce can adapt to new technologies and job requirements as industries evolve.
- *Policy support and government role*. Incentivizing Collaboration: The government should provide incentives for partnerships between HEIs and industries and for companies that invest in educational initiatives, such as training programs or research collaborations.
- *Regulating and accrediting digital skills*. Establishing a regulatory framework recognizing and accrediting digital skills, ensuring graduates possess validated and marketable credentials.
- *Public-private partnerships*. Encouraging public-private partnerships to invest in infrastructure, digital tools, and training programs that promote the development of a digitally savvy workforce.



Source: Authors' design

Figure 1: Proposed strategies and implications for making Cambodia's higher education responsive to the labor market in the digital transformation era

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