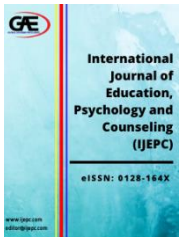
International Journal of Education, Psychology and Counseling
IJEPC
EISSN : 0128-164X
Volume 9 Issue 54 (June 2024) PP. 157-176
DOI 10.35631/IJEPC.953013



INTERNATIONAL JOURNAL OF EDUCATION, PSYCHOLOGY AND COUNSELLING (IJEPC)
www.ijepc.com

CHALLENGES AND OPPORTUNITIES OF EDUCATIONAL TECHNOLOGY INTEGRATION IN CAMBODIAN HIGHER EDUCATION INSTITUTIONS: A LITERATURE REVIEW

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Article Info:

Article history:
Received date: 25.04.2024
Revised date: 07.05.2024
Accepted date: 20.05.2024
Published date: 13.06.2024

To cite this document:

Keo, Vireak., Sam, R., Lan, B., & Wen, R. (2024). Challenges And Opportunities Of Educational Technology Integration In Cambodian Higher Education Institutions: A Literature Review. *International Journal of Education, Psychology and Counseling*, *9* (54), 157-176.

DOI: 10.35631/IJEPC.954013

Abstract:

This review investigates the challenges and opportunities for integrating educational technology into Cambodian higher education institutions. It seeks to identify the most effective ways to incorporate technology into the teaching and learning processes. This review identifies challenges and opportunities by systematically analysing data from 2007 to 2023, which includes research studies, academic publications, and empirical investigations. Identified challenges encompass technical issues, limited access to digital tools, cultural misalignments, inadequate digital competence, high costs, and insufficient infrastructure. On the other hand, educational technology has the potential to significantly enhance learning by increasing student engagement, providing expansive resources, promoting self-directed learning, and developing critical 21st-century skills. It also enables global communication, thus enriching educational experiences. The findings suggest that the optimal integration of technology into Cambodian higher education involves overcoming the outlined challenges and leveraging the identified opportunities. In implementing these strategies, it is crucial for school administrators to strictly enforce school and classroom policies to prevent students' ineffective use of digital tools, thereby ensuring that both educators and learners benefit from enhanced educational outcomes.

Keywords:

Digital Learning; Barriers; Advantages; Higher Education; Integration

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Introduction

Cambodia has 189 higher education institutions, including 79 public and 110 private universities spread across 20 provinces and Phnom Penh, managed by 17 ministries and one secretariat. It is worth noting that the annual registration rate in Cambodian higher education increased by more than two times between 2003 and 2023, from 14,778 to 28,4599 (MoEYS, 2023). A bilingual model of instruction that includes both Khmer and English may be more beneficial for academic programs in Cambodia (Sam et al., 2012 b; Long et al., 2024; Lan et al., 2024; Sam et al., 2013 a; Sam et al., 2013 b). In Cambodia, integrating emerging technologies like tablets and mobile computing is gradually transforming higher education's teaching and learning landscape. Reflecting a global shift toward technology-based learning, initiatives such as "Bring Your Own Device (BYOD)" are gaining popularity within Cambodian institutions. However, implementing BYOD and other technological innovations in Cambodia has its challenges. These include limited access to reliable internet and inadequate digital infrastructure, which can hinder the full potential of such initiatives. Despite these challenges, innovative strategies like digital storytelling courses resembling TV series have shown promise in improving student retention and understanding of complex concepts (Rodrigo, 2019; Tieng et al., 2023).

The integration of educational technology in Cambodia's higher education reflects a broader global trend. Al-Maashani & Mudhsh (2023) noted that technology's role in education has expanded significantly over the past three decades. Teachers and educators are increasingly drawn to the modernity of technology, utilizing a variety of tech tools that serve diverse educational functions. The adoption of these technologies has not only kept pace with societal changes but also elevated the quality of education, making learning more accessible and effective.

Significant transformations in higher education are reflective of these global trends. Cambodian universities, like their global counterparts, are embracing information and communication technologies (ICTs) for several reasons: 1) ICTs innovate learning methods and enhance online presence, aligning with students' natural inclinations; 2) they establish new goals for technology integration in education, positioning universities at the forefront of new training methods; and 3) ICT innovations open new avenues for learning, such as distance education, improved communication systems, and self-directed learning opportunities (Hamiti et al., 2014). The widespread use of multimedia technology in higher education has transformed traditional teaching methods, enhanced outcomes and making the educational process more dynamic and interactive (Chen & Xia, 2012; Sam et al, 2012a).

During the COVID-19 pandemic, the disruption of face-to-face education pushed many countries, including Cambodia, toward distance learning, albeit with varying degrees of success. The lack of socioeconomic and technological infrastructure in Cambodia posed significant challenges, as many students struggled to keep up with their education due to limited internet access, a shortage of digital devices, and insufficient training for teachers in digital pedagogy. This highlights the urgent need for educational technology and infrastructure investments to prepare for future crises (Karakose et al., 2021).

Furthermore, integrating technology into English language classes in Cambodia has boosted students' confidence, motivation, and interest in learning. It enhances their use of technology for instruction and learning, positively impacting their cognitive skills and abilities. This

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integration supports the continued effectiveness of teaching and is essential for academic success. As Harmer (2001) notes, motivation is crucial for learning success, and incorporating technology can enhance students' engagement with foreign language acquisition (Altun, 2015; Kirkwood & Price, 2016). Shyamlee and Phil (2012) also observed that technology consistently benefits learning, aligning with the ongoing effectiveness of the teaching profession. Therefore, it is recommended that technology be used in the classroom to enhance students' cognitive skills and abilities (Santhosh & Meenakshi, 2015). This review aims to better understand how the integration of educational technology can be optimized in higher education, particularly focusing on Cambodian students and teachers. The findings can greatly assist school administrators in understanding the impacts of educational technology on students and support the development of thoughtful policies regarding its use in classrooms.

Research Method

This review paper systematically examines and synthesizes existing data sources, including research studies, review papers, academic publications, instructional resources, and empirical investigations. By synthesizing the existing body of knowledge on the Challenges and Opportunities of Educational Technology Integration in Cambodian Higher Education Institutions and other settings, the study provides insights into the key factors influencing the successful implementation of educational technology initiatives in Cambodia. This paper examines various pieces of literature to identify the most effective methods for integrating educational technology in Cambodian higher education. The selection of documents spans from 2007 to 2023, ensuring that the review encompasses recent and relevant developments in the field. This approach allows for a thorough understanding of Cambodian higher education's current educational technology landscape.

Definition Education Technology

There are various definitions of ICT "educational technology" among scholars. The research and ethical practice of developing, utilizing, and overseeing suitable technological processes and resources to enhance performance and facilitate learning is known as educational technology (Januszewski & Molenda, 2013). Luppicini, (2005), moreover, a systems perspective defines educational technology as a goal-oriented approach to problem-solving that uses instruments, strategies, theories, and methodologies from different knowledge domains to: (1) efficiently design, develop, and evaluate human and mechanical resources to facilitate and leverage all facets of learning; and (2) direct change agency and transformation of educational systems and practices to help influence social change.

On the other hand, Dey (2017) states that by separating the words "education" and "technology," we can better grasp what is meant to be understood by the term "educational technology." "Technology" refers to the area of advanced scientific study that includes highly engineered hardware and software. It addresses using knowledge for practical purposes. Education is the process of changing one's behaviour, socializing, being socially adept, acculturating, adjusting to one's surroundings, and developing one's personality holistically and harmoniously. The study of educational technology places a strong emphasis on methods for teaching and learning that include a variety of media in a thoughtful way.

According to Richey et al. (2008), "Educational technologies" in the broad sense of the term, are any resources, including methods, tools, or processes used for handling the activities involved in education. In this sense, the presence of a teacher, written materials such as books

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or physical materials such as alphabet blocks, the use of display media such as chalkboards or overhead transparencies, the techniques of lectures or hands-on laboratories, or even the use of assessment instruments are all "educational technologies."

More interestingly, the concept of "educational technology" within the university context should be viewed as a comprehensive initiative that extends beyond the confines of teaching staff or administrative structures to encompass students and their utilization of technology to enhance their learning experiences (Pachler et al., 2010). Educational technologies encompass various tools and resources, including information technologies, research tools for accessing scientific and educational materials, computer-based technologies for processing educational data, methods for organizing student training programs, and tools for the execution and presentation of graduation projects or academic assignments (Ignatyeva, 2015).

Challenges Of Educational Technology

Educational Technology has the potential to revolutionize learning by providing numerous benefits such as enhanced engagement, personalized learning experiences, and greater access to information. However, the integration of technology in education is not without its challenges. To fully understand these complexities, it is essential to examine the various issues that arise when implementing Educational Technology from different researchers' perspectives. This analysis will shed light on the multifaceted nature of these challenges and their implications for educators, students, and the broader educational system. As Onyema (2019) states that while it is clear that using educational tools, mobile phones, and other educational technologies can improve teaching and learning, there are many challenges that make it hard to integrate them smoothly into the process.

Technical and Accessibility Problems

Technical and accessibility challenges often hinder meaningful student participation in online classrooms. Effective use of technology requires careful design and implementation, focusing on interaction, relevant content, and seamless integration of all educational elements. According to Chet et al. (2022), numerous studies have revealed that one of the main obstacles preventing students from participating properly and meaningfully in their online classrooms is technical and accessibility concerns. Technical problems, which go beyond simply getting technology to function on networks to include making sure the program is successful by leveraging and supporting the right technologies, are one of the main hurdles. Making sure people can utilize the technology efficiently and avoid utilizing it just because it exists is one of the technological challenges (Hofmann, 2011). Based on the research conducted by Hofmann (2011), when learning, technologies are implemented. Too little time and money are usually spent on the design of relevant material to produce a successful program. Instead, technology implementation is the focus of attention. Considering how to teach (rather than just what to teach), matching the most effective delivery method to the performance objectives, preserving interaction in online offerings instead of one-way communication, guaranteeing participant commitment and follow-through with non-live elements, and making sure that all elements of the blended approach are well coordinated are some of the challenges associated with instructional design.

Furthermore, according to Habiburrahim (2012), the internet is frequently abused or utilized as a conduit for a range of criminal activities. A few instances that are constantly linked to using the internet are gaining access to pornographic websites, provocation and mockery, and

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stealing the money and private information of others. Today's overuse of the internet is frequently linked to the problem of intellectual property rights violation and other forms of plagiarism.

More interestingly, accessibility problems of digital tools are the most important to take over, since it can badly affect to students' academic achievement. Based on a study conducted by Soy (2022), even though, smartphones are helpful for school, they can also have detrimental effects that lower the quality of learning. Gowthami and Kumar (2016) assert that using smartphones for educational purposes has significant negative effects on students, including sending texts, browsing the internet, viewing television, cheating on tests, taking pictures or videos, and harassing others. Similar findings were found in two studies by Abu-Shanab and Samaha & Hawi (cited in Singh & Samah, 2018), which demonstrated that smartphone addiction results in health issues, stress, a lack of life fulfillment, and poor academic achievement because it impairs students' ability to focus on academic work. Additionally, Alfawareh & Joshoh (2014) found that students use their smartphones for social media, photography, and web browsing rather than for academic work.

Cultural and Contextual Adaptation

The nature of online learning presents another emerging obstacle to students engaging in self-care. Most of the students stated that they found it challenging to switch from traditional to fully online learning. This hampered their routines for self-care (Cleofas, 2021). Chet et al. (2022), surprisingly, found that students and professors are concerned about limited access to online resources, insufficient educational platforms, and lack of electronic devices. Insufficient ICT infrastructure and erratic internet connections disrupt student-teacher interactions, leading to material restatement. In addition, Chet et al. (2022) also highlight the challenges in online teaching and learning, including the lack of engagement and practice, and the pandemic's restrictions on fieldwork and experiential learning opportunities for students in science, technology, engineering, social science, arts, and humanities. These factors hinder academic performance and contribute to the challenges faced by students. The low level of digital proficiency and lack of preparation among Cambodian instructors is another major challenge impeding the growth of STEM education in the country.

Moreover, according to Mellati & Khademi's (2019) paper, many initiatives don't leverage resources because open e-learning platforms have a history of failing to adapt to local circumstances and demands. Research efforts are focused on defining how socio-cultural circumstances affect the use and development of open E-Learning systems and resources, according to Hsu and Wang (2014). Likewise, Richter and McPherson (2012), if the digital tools and their methods don't personify the socio-cultural traits of the specific learning context, then learners won't find any value in using Open E-Learning Resources. Additionally, based on Atabek (2019), the effect of technology on teachers' actual methods of instruction is another problem with technology integration. Educational technology does not appear to be changing how teachers educate, even when it is used. Remarkably, Herold (2015), educators have not changed the way they educate very quickly. And according to RAND Corporation, it is challenging to make long-lasting changes in the way teachers educate, and the initiative's evaluation's findings highlight the difficulties in persuading educators and institutions of higher learning to accept significant changes (Will, 2018).

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Digital Competence

A video file by AlkaPwnige (2020) claims that there are instances in which participants in online learning unintentionally strip off by using the comfort station or dressing up for the class. This can be connected to unconscious platform use as a result of unethical use of digital devices, which can be prevented through digital competence. Owing to the pandemic's digital transformation of educational activities, libraries must keep up with the times to provide faculty, students, and other stakeholders with effective services through digital libraries. However, faculty and students who lack basic digital literacy may find it challenging to utilize the digital libraries to their full potential. According to Omotayo and Haliru (2020), digital competence is a variable that positively correlates and has a significant impact on how higher education students use digital libraries. According to Ferrari (2012), digital competence is the set of abilities, knowledge, and attitudes required when utilizing ICT and digital devices to carry out tasks like information management, problem solving, and collaboration with regard to efficacy, efficiency, and ethics. Not all digital natives in this day and age are proficient in all areas of life, not just education (Bennett et al., 2008). Teachers and students with poor digital literacy risk falling behind in online education.

Continuous Professional Development (CPD)

Being educators in digital era is not an easy task because they have to stay updated their knowledge as well as their teaching profession focusing on implementing technology during instruction based on the need of technology improvement. According to MoEYS (2023), during the annual Education Congress, a concern was raised regarding the integration of educational technology into the higher education system. It cantered on the inadequate capacity of researchers to address the challenges posed by the digital era. This deficiency encompasses both the scarcity of researchers and their lack of expertise in comprehending and addressing the complexities of the digital age's impact on society. Moreover, it underscores the shortage of scholars and professionals capable of effectively analysing, evaluating, and resolving issues at the intersection of technology and education. Moreover, the difficulties facing Cambodian higher education is lack of information technology (IT) and a lack of internet connections on campuses, especially in the provinces (MoEYS, 2022). Due to these issues, higher education in Cambodia is less effective. Teachers have a limited ability to integrate information technology to improve their teaching, and students find it more difficult to connect their educational tool to the internet to solve assignments because internet connections can be spotty on some campuses. Meanwhile, a lot of underdeveloped nations lack the digital infrastructure and resources needed to adopt blended learning, including Cambodia. The shift to blended learning has been hindered by a lack of expertise, knowledge, and abilities in online teaching and learning, particularly among staff and students (Sim & Em, 2023).

The Cost to Access Digital Learning

Plenty of students coming from low socioeconomic status concern about accessing their learning in digital age because of the price and their experiences using digital apps. Following research on expectations and challenges of using technology in education, Sudarsana et al. (2019) identified three primary difficulties with educational technology. First, educational Technology Hardware, including hardware like laptops and computers, faces challenges due to high prices and inequality. This perception leads to the belief that education is expensive, causing delays and problems in the education sector. Second, Educational Technology Software: Rogers' view of technology focuses on hardware and software, but some argue it's oriented towards tangible goods, posing challenges for educational technology. This hinders

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the advancement of education and makes it difficult for educators to adapt. Finally, Educational Technology Brainware: it is necessary to comprehend the function of brainware, or users, when using educational technology, including hardware and software. Brainware helps students solve problems and develop the information, abilities, and attitudes necessary for globalization. For education to be successful, expectations and realities must be balanced. More interestingly, the most difficult thing for the learners in integrating technology in the process of teaching and learning is that they have never experienced using digital tool to assist in reaching learning outcome. The research, conducted by Abrakaby et al. (2023) at Delta State University, students face several obstacles when using the internet for academic purposes. These include the high cost of internet access, the high cost of internet devices and services, the lack of access points and devices with limited capacity, the lack of personal internet devices, and the need to rely on friends and family for internet access. The study was also shown that the majority of pupils struggle with language difficulties, digital device use, and internet browsing proficiency. Similar to this, Almarabeh's et al. (2016), case study of the University of Jordan on Internet usage, challenges, and attitudes among university students showed that some of the students' challenges include the slow Internet connection and the absence of ICT adoption in the course syllabus.

Funding and Resource Allocation

E-learning or conducting teaching and learning through technology cannot succeed without getting support from the relevant group. There are three primary obstacles to implementing an e-learning system were listed by Green et al., (2015). The first was a shortage of funding for project implementation. The second reason they classified it as a subcategory was insufficient funding for this economical educational method. They think that when investments are delayed, a lack of funding may make realization more difficult. They claim that the absence of time is the third obstacle. Given their heavy workloads, employees find it challenging to hold learning sessions while at work. For instance, the educators often have heavy teaching loads and administrative responsibilities, leaving them with little time to design, implement, and participate in e-learning sessions. Moreover, even if an e-learning platform is initially set up, maintaining and updating the system requires ongoing financial resources. And without financial supporting from other stakeholder, launch an online learning platform will be failed.

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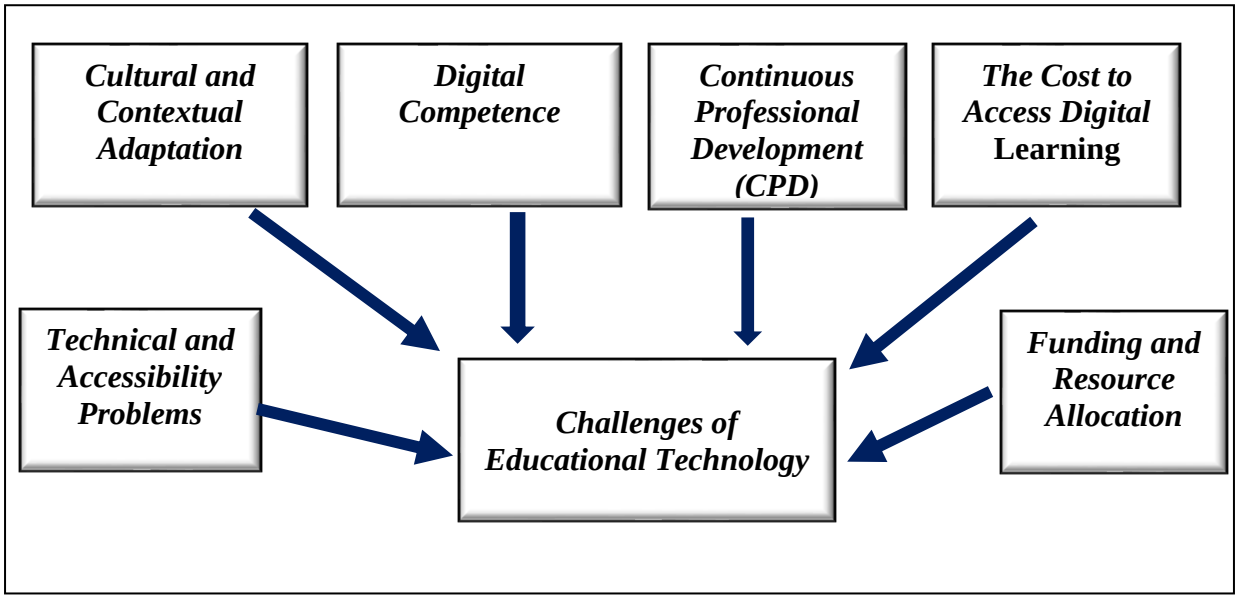

Figure 1: Factors Causing Challenges Of Educational Technology

Opportunities of Educational Technology

This section will highlight positively impact of integration of technology in education and pave the way for innovative and effective teaching methods.

Motivated And Enhanced Student's Learning

Technology integration provides students the excitement and the chances to learn from different environments. Base on the research conducted by Stosic et al. (2020), Information and Communication Technology (ICT) in faculties improves student learning and expression, integrating them into the educational process. It gives instruction a fresh perspective by enabling student participation outside of the box. Additionally, ICT makes it easier and faster for pupils to acquire knowledge, which improves their ability to share what they know. Cabaleiro-Cerviño and Vera (2020), additionally, students' enthusiasm to learn has increased as a result of the usage of technology in the classroom, which has made material more accessible to them outside of the classroom. Technology use has also increased the vibrancy and excitement of schooling; technology has made it possible for students to participate more actively and for collaborative learning to flourish. Also, Habiburrahim (2012), the internet allows for continuous communication, allowing for debate, reasoning, and hypothesis testing. It enables study groups to collaborate online and tutorials to be delivered as electronic chats. Whereas, Ehrmann (2000) raised that Effective ICT use is a continuous process that includes: 1) establishing pedagogical goals, 2) determining what activities will serve this aim, and 3) selecting the proper instruments to perform the activity.

Access to a Wealth of Resources

One more thing, learners can receive the information from diverse resources around the world through internet access. According to a study conducted by Apuke & Iyendo (2018), internet mobile learning among college/university students has resulted in a vast and diversified body of information. Not far from here, Ivwighreghweta & Igere (2014) examined how the internet affected students' academic performance at a few Nigerian tertiary institutions and discovered that the majority of students were computer savvy and only used the Cyber Café to acquire

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pertinent academic resources. The majority of students admitted that using the internet helps them prepare better for exams. And among the frequently utilized resources were electronic books and journals. More intriguingly, research has shown that college and university students' use of online and mobile learning has resulted in a deep and varied body of knowledge (Ivwighreghweta & Igere, 2014). For instance, Ahmed & Bukar (2016), discovered that most Nigerian students attending Adamawa State University relied on their mobile devices to access the internet for learning and enjoyment.

Similarly, Dogruer et al. (2011) found that there were specific online spaces where students felt at ease, such search engines, which are favored by 80% of research participants and are readily and efficiently used. They added that they discussed academic topics and shared expertise on social media platforms. They further asserted that they could quickly locate information sources, download relevant files and images, and perform other tasks via the Internet. Additionally, the participants reported using translation tools, e-dictionaries, and e-encyclopaedias to assist them in writing assignments and completing projects.

Increasing Student's Self-Directed Learning and Confidence

By using technology, the students are able to learn something new by their own self to improve their language learning skills (Reading, Speaking, Listening, and Writing) through variety source such as, initiative videos, and other apps or platforms. After conducting a research study on The opinion of ELT students on the technology-based classroom approach, Kazu and Issaku (2021) conclude that ELT department students believe that learning English is enhanced by technology-based classrooms. Most students think they can study English on their own using technology, and they think that using technology in the classroom helps them become self-directed learners. Furthermore, they believe that they can guide their own education without the guidance of an instructor. The results of this study showed that, while technology-based classrooms at universities are beneficial, more work needs to be done to maximize their advantages. This work includes updating the equipment, adding new gadgets and devices, introducing effective teacher training courses, and informing students of the value of technology-based classrooms in language learning environments.

Moreover, a study was shown by Shah et al., (2016) that digital tool, smartphones, encourage IELTS learners to enhance listening. Also, Hossain (2018) argued that many applications (Apps) can be installed and used on smartphones to learn English because students can improve four macro skills, learn vocabulary or pronunciation, practice tests, learn tips, and access lectures. Therefore, they can obtain both technological and linguistic knowledge with fun at the same time. In other words, they can learn anything at anytime and anywhere. In short, smartphones are useful for instructors and learners since this kind of gadget can offer people conveniences and rich resources.

Development the 21st Century Skills

Technology Skill, one of the element in the Literacy Skills of the 21st Century Skills, is essential for all the students because with the knowledge of technology student can learn faster, get motivated, build confident, and improve creativeness. Furthermore, based on a study by John (2018), rapid technologies like computer-assisted language learning (CALL), robot-assisted language learning (RALL), and mobile-assisted language learning (MALL) have significantly improved second and foreign language learning. John (2018) adds that these technologies integrate reading, writing, speaking, and listening activities, reducing anxiety and increasing

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motivation. Game-based activities and creative opportunities are common. Digital technology also helps learners develop social identities online, boosting confidence in communicating with native speakers. This technology provides a medium for learning between first and foreign languages and offers real-time feedback on assessments, allowing easy monitoring of learning progress (John, 2018; Long et al., 2024). Finally, John (2018) clarifies that digital technology aids in reducing language learning anxiety and increasing motivation by offering game-based activities and creative opportunities. It also fosters social identity development, boosting confidence in communicating with native speakers. This medium facilitates learning between first and foreign languages, and real-time feedback on assessments allows easy monitoring of progress.

Worldwide Communication

Digital apps and platforms provide different aspects of benefit, especially provide the opportunity to the students make a long distance communication in order to join online course, the conferences, meeting, and other events. On the other hand, the researchers Raja & Nagasubramani (2018) and Richie (2018) see that digital cameras, projectors, and 3D visualization tools are examples of technical innovations that have enhanced teaching and learning, according to research. This has also been made possible by globalization, which enables students to use video conference calls to discuss academic material with others without ever having to leave the classroom. Furthermore, by removing geographic restrictions, online degree programs have made it simpler for students to study at home. A few foreign universities have also opened up enrolment for online degree programs. Notwithstanding the difficulties, online education has given students all around the world a lot of options (Adedoyin & Soykan, 2020; Heng, 2020). For example, Heng et al. (2023), show that During COVID-19, the majority of university students in Cambodia used cell phones or PCs/laptops to access their online coursework. While using a smartphone to access online courses is handy, it might have prevented them from fully utilizing the platforms, which could have had an impact on the efficiency of their online education.

Infrastructure Development

The Ministry of Education Youth and Sport (MOEYs) take action to support the shift to online teaching to overcome the negative impact of the pandemic to the usual education to enable the digital apps. Similarly, Som (2020) shows that Cambodia's Ministry of Education is working with organizations to create a better digital learning curriculum. With only 30% of students having access to smart gadgets, the recently built centre will aid in expanding the student body and offering better educational resources. The centre will support educators in creating additional instructional videos and activities, particularly for kids in underserved regions and rural areas. As a result of COVID-19 worries, the ministry has been trying to enhance distance learning nationwide. Students will gain more independence, develop stronger research techniques, and establish autonomous study habits as a result of the shift to online instruction. Doeur (2021), ultimately, states that technological advancements enable second language learners to access various learning platforms and interact with peers from diverse backgrounds, simplifying language learning compared to traditional dictionaries with translations. Doeur (2021) adds that Smartphones and other digital devices, like social media, are frequently utilized in language acquisition. Particularly, social media sites like Facebook and Telegram have been utilized to help people learn second languages.

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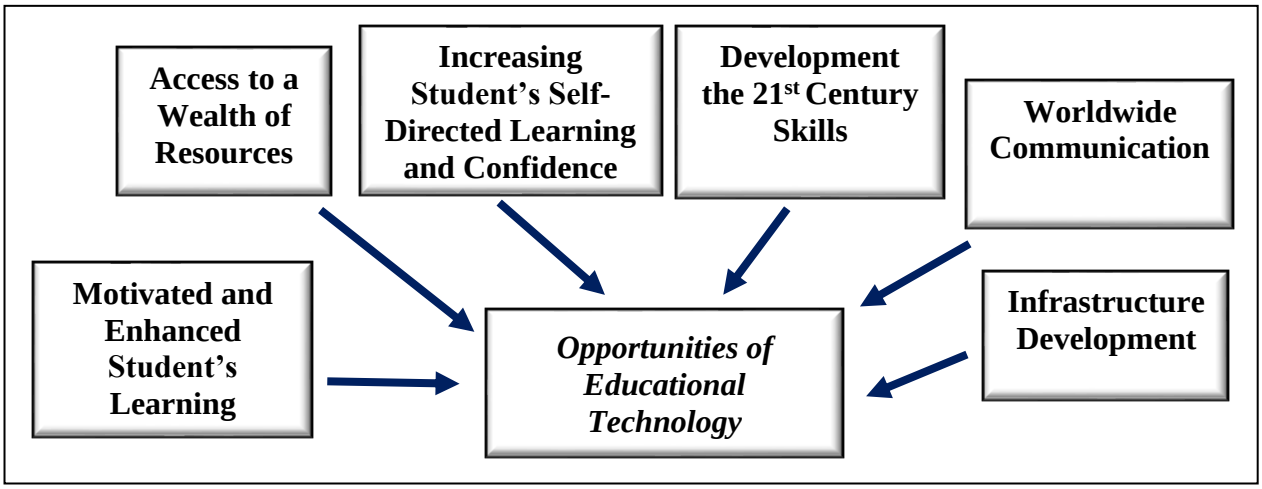

Figure 2: Opportunities of Educational Technology

Educational Technology Integration

The Royal Government of Cambodia (RGC) aims to transform the national economy and industry by 2025 by transforming it from labour-intensive to knowledge-driven, and improving the lives of its people by strengthening the environment for ICT application in all aspects of life. And a nation's competitive advantage stems from its human resource base's proficiency in 21st-century skills, especially the tactical application of ICT (information and communication technology), according to the Ministry of Education, Youth, and Sport (MoEYS). Additionally, MoEYS will build the ability to spearhead ICT for Education innovation throughout the industry through the Department of Information Technology (DIT). DIT will evaluate the applicability of international lessons for the Cambodian environment and provide technical line departments of MoEYS with recommendations on ways to leverage IT to boost productivity. The vision of MoEYS, additionally, is to improve efficiency while offering enough data to support evidence-based leadership decisions. Additionally, the organization aims to produce graduates who can successfully navigate the challenges posed by the information and knowledge economy and society through improved teaching and learning for all students. Surprisingly, MoEYS's goals for ICT in Education has two objectives: (1) In order to update procedures and improve the efficacy, efficiency, and openness of the governance and performance monitoring of the education sector, MoEYS will implement new management and administrative procedures. (2) To prepare students for the workforce of the twenty-first century, MoEYS will use ICT as a teaching, learning, and knowledge-sharing tool throughout the education sector (MoEYS, 2018).

Meanwhile, Researchers have focused most of their attention on communication and teamwork as 21st century abilities. It's most likely due to the fact that 21st-century society is becoming more multinational and that interpersonal communication and teamwork are improving along with the intricacy of connected tasks because the 21st century workplace values teamwork, academics concentrate on communication and collaboration abilities. In addition, there hasn't been much research on problem-solving techniques, and no one has looked at career and life skills. Among the essential 21st century talents, problem-solving techniques emphasize students' capacity to identify issues, apply critical thinking, and find solutions to challenges in the context of an evolving and changing society (Greenstein, 2012). For instance, researchers

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have examined learners' problem-solving abilities in virtual language learning with technology support (Chen et al., 2021).

Additionally, the research conducted by Shadiev and Wang (2022) categorized technologies into eight groups according to their purposes: (1) collaborative tools (like Google Docs or Padlet) to help students work together on a project by sharing information and co-editing; (2) social tools (like Facebook or Skype) to help students communicate and share content synchronously or remotely using text, audio, and video; (3) creative tools (like Photo Story or Adobe Spark) to help students create work (like digital stories or videos); (4) learning management systems (like Moodle) to combine learning resources and activities for adaptive online learning; (5) classroom interaction tools (like Quizlet or Kahoot) to facilitate quizzes and other classroom activities; (6) Multimedia resources refer to online audio and video content or multimedia textbooks; (7) Presentation tools, such as PowerPoint, assist students in showcasing their learning information in a digital format; (8) Wearable technology, such as Google Glass, could enable students to observe or engage with information in virtual reality classrooms.

Strategy For Integrating Educational Technology

Development of Competencies Through Technology

According to Oliver et al. (2012), with the aid of technology integration, students can develop into competent information technology users, researchers, analysts, assessors, problem solvers, decision-makers, innovative technology tool users, communicators, and collaborators. Moreover, basic computer and network functions like word processing, spreadsheets, presentation software, the Web, and audio/video projectors are frequently used in classrooms (Chung, 2007). In the connection with this, successful technology integration is an ongoing process that requires collaboration, flexibility, and a commitment to adapting to the evolving educational landscape. It's important to create a supportive environment where both teachers and students feel comfortable exploring and utilizing technology for learning. For instance, Gilakjani (2017) shows that educators should be provided with technical assistance because more organized and frequent training in ICT applications needs to be done to increase teachers' ICT skills (Hafifah & Sulistyo, 2020).

Accessibility of Educational Apps

In addition, a plethora of free instructional apps are available for usage on smartphones and computers. The learning activities and abilities that are practiced by all EFL learners are covered by those apps. As Al-Jarf (2020) established, all facets of language learning are covered by applications, including: speech, reading, writing, phonics, grammar, vocabulary, prefixes, suffixes, and roots; daily English lessons; preparation for various standardized tests, including the TOEFL, IELTS, GRE, SAT, and TOEC; audiobooks; bilingual and monolingual dictionaries; encyclopedias; ESP; flashcards; podcasts; novels, short stories, magazines, newspapers, and YouTube. Moreover, in Cambodia, most teachers try to take advantage of educational technologies that are available for both teachers and students to use in authentic teaching and learning. Doeur (2021), for example, demonstrates that Digital apps are designed to supplement classroom education and increase learners' enthusiasm in learning a foreign language. Facebook and Telegram are two examples of technical technologies that can help with language teaching and learning. In Cambodia, they are widely used for social networking, marketing, and study, especially language acquisition.

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Enhancing Pedagogical Practices

Numerous studies, ultimately, highlight the value of integrating technology into pedagogical practices and suggest that it helps teachers and students participate in the learning process (Salam et al., 2019). According to Islam et al. (2019), using technology in the classroom helps teachers become proficient in both pedagogy and subject matter, and it also facilitates students' efficient use of technology. Numerous studies emphasize the benefits of technology use for educators. For example, the study by Vongkulluksn et al. (2018) shows that teachers who are proficient with technology would rather spend more time instructing in the classroom. Teachers' performance is improved because their technological competencies also make it easier for them to adopt different teaching pedagogies and approaches.

Methodologies for Technology Integration

More interestingly, Englund et al. (2017) present five methodologies for integrating technology into teaching: (1) A teacher-centric approach where technology serves to convey disciplinary information without much interaction with students. The emphasis is on demonstrating and delivering subject-specific facts and skills, with technology serving as a supplementary tool. (2) Similar to the first approach, the teacher remains the focal point for disseminating subject-related information, employing various delivery methods to aid student comprehension. Technology is utilized to assist students in grasping syllabus concepts through predetermined content delivered via institutional technology platforms. (3) Building upon approach (2), this method incorporates dialogue with students using communication technologies. Students engage in activities such as digital simulations, project work, and group discussions. (4) The teacher leverages technology for collaboration and communication among students, fostering problem-based learning where students can generate their own digital resources. Virtual environments are employed to create authentic learning settings where students actively contribute to knowledge creation. (5) Students take the lead in designing and creating their own learning scenarios through virtual environments or audio/video recordings. Curriculum and learning materials are collaboratively developed by both teachers and students. Open educational resources and social media platforms are integrated into the learning process, with students driving communication, creation, and delivery of digital resources aimed at preparing them for future roles and careers.

Conclusion

After systematically analyzing existing documents and preliminary research in the field, the researchers have identified a dual reality in the review: substantial challenges and promising opportunities. On one hand, obstacles such as technical issues, limited access to digital tools, cultural and contextual misalignments, and inadequate digital competence among educators and students impede the effective adoption of technology. Additionally, high costs, insufficient infrastructure, and the need for continuous professional development further complicate these challenges. On the other hand, educational technology holds significant potential to transform learning experiences. It boosts student engagement, provides access to extensive resources, fosters self-directed learning, and aids in developing essential 21st-century skills. Furthermore, it enables global communication, allowing students and educators to connect with peers worldwide, enriching their educational experiences. Developing competencies through technology and the availability of educational apps also highlight potential growth and improvement in the education sector.

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By examining the challenges and opportunities of technology integration in education across various settings from 2008 to 2023, this research provides a crucial foundation for illuminating strategies for successful technology integration in Cambodian higher education. The findings are directly applicable to the Cambodian context, making them particularly valuable for educational policymakers, administrators, and educators in the country. Based on the review, integrating educational technology into Cambodian higher education requires a comprehensive approach that addresses these challenges while capitalizing on opportunities to transform the educational landscape. Strategic investments in digital infrastructure are essential, ensuring reliable internet connectivity and access to modern devices for students and educators. Implementing policies to make digital tools more affordable through subsidies or bulk purchasing agreements is crucial. Moreover, enhancing digital literacy through continuous professional development for educators and integrating digital skills training into student curriculums are vital for effective technology use in education.

Developing culturally adapted content and providing multilingual support will make digital resources more relevant and accessible, thus engaging students more effectively. Supporting educators with incentives, technical assistance, and recognition for innovative practices will encourage the widespread adoption of technology in teaching. Strong leadership and clear policies from government and educational institutions are necessary to advance this agenda, securing the required funding and resources. Building partnerships with international institutions and tech companies will facilitate the exchange of best practices and access to advanced technologies. Engaging local communities, including parents and businesses, will also support and sustain digital learning initiatives.

Finally, the continuous monitoring and evaluation of technology integration efforts are not just important, but critical for ensuring continuous improvement and adaptation to local needs. This ongoing process will allow Cambodian higher education to overcome obstacles and fully harness the transformative potential of educational technology. The result will be a more inclusive, engaging, and effective learning environment that prepares students for a digital future and enhances teaching and learning outcomes.

Acknowledgements
We extend our heartfelt gratitude to all the researchers, educators, and policymakers who have enriched this review paper with their valuable contributions. We are particularly thankful to Dr. Sam Rany for his invaluable support and guidance throughout the review process. Our appreciation also goes to the Cambodian higher education institutions and stakeholders for providing insights that have deepened our understanding of the challenges and opportunities in integrating educational technology. Their commitment to advancing higher education is deeply admirable.

Limitation
Like all research, this study has its limitations. It is conceptual in nature, primarily based on a review of existing literature concerning the challenges and opportunities of educational technology integration. Moreover, it does not encompass all research on the subject investigated, and the selection of literature reflects the authors' subjective choices made during the research process.

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Further research

This research still has limitations, so further research needs to be done on "Challenges and Opportunities of Educational Technology Integration in Higher Education Institutions" in various contexts to give the audience flexible solutions to this kind of subject, as completed in the Cambodian context.

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