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RESEARCH ARTICLE

From Learners to Creators: Empowering Cambodian Youth with Digital and AI Literacy in Secondary Schools

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ABSTRACT

As Cambodia navigates its digital transformation agenda, integrating digital and artificial intelligence (AI) literacy into secondary education has become an urgent national imperative. This study looks at clever and successful ways to introduce digital and AI skills to the curriculum for students ages 13 to 18. It begins by talking about the wider picture of society and technology and how ready high school pupils are to learn. Then the paper talks about how vital it is for kids to learn how to use computers, think like a computer, and understand AI so that they are equipped for civic involvement, academic research, and the job market, which is always changing. Looking closely at Cambodia's present education system, reveals numerous flaws, such as inadequate infrastructure, lack of content, and unprepared teachers. The paper recommends ways to teach that are effective and acceptable for people of all ages, based on research in the subject and best practices from throughout the world. Project-based learning, blending diverse subjects, and employing digital tools that can change are some of these strategies. It also talks about flaws with the system, such as rules that are too different, a lack of professional progress, and cultural barriers to employing technology. The study offers a lot of strategic ways to solve these issues, like making tiny changes to the curriculum, offering teachers national accreditation, forming collaborations between the public and commercial sectors,

and putting up clusters of young people who want to innovate. In the last part of the article, the author advocates for a long-term, collaborative vision in which Cambodian high school students are not simply passive users of technology, but also ethical, creative innovators who make a meaningful difference in the country's riches.

Keywords: Digital literacy, Cambodian secondary schools, curriculum reform, digital equity

FULL PAPER

Introduction

Cambodia is at a very significant time in its national development. Digital transformation is no longer just a fantasy; it must happen. RGC (2021) argues that the country's long-term digital goal is to teach its inhabitants how to use AI, cloud computing, and big data. The ASEAN Digital Masterplan 2025 supports these goals by emphasizing that digital inclusion, innovation, and building human capital are all important for the economy to be strong and connected (ASEAN Secretariat, 2022). The government has plans, but schools are not ready to follow them yet. Since the Fourth Industrial Revolution (Schwab, 2016) is speeding up the disruption of technology in the workplace and in society, Cambodian schools need to stop teaching by rote and set up dedicated ICT classrooms. According to Selwyn et al. (2017), digital education should not just be about building infrastructure. It should also provide students with greater power, ways and how to use digital technology in a moral way and encourage them to think critically. Cambodian specialists agree with these concerns: Huot et al. (2025) state that even while policies have come a long way, the way they are put into action is still unfair and does not always consider that learning in the 21st century needs to integrate digital, visual, critical, and media literacies.

Secondary schools, which are for youngsters ages 13 to 18, need to change a lot. During this stage, students' mental, social, and intellectual skills are increasing very quickly. Inhelder and Piaget (1958) argue that kids this age can undertake formal operational thought, which means they can think about things in a general way, a hypothetical way, and in different domains. This is based on the principle of

development. UNESCO (2022) agrees with this point of view by saying that high school kids are at a *critical threshold* for obtaining the higher-order digital and social-emotional skills that will affect their learning and career chances for the rest of their lives. Now the global tendencies of developmental issues are much more essential. The World Economic Forum believes that more than forty per cent of students today will wind up working in jobs that do not exist yet, that a lot of these jobs will be in digital settings as supplementary abilities; they consider them as necessary skills that determine how well someone can participate in both business and society. Trilling and Fadel (2009) suggest that schools should not just educate kids how to collect information, but also how to think about it, use it, and come up with new ideas with it.

Cambodia's structure is still having a lot of problems that will not go away. Un and Sok (2022) argue that the buildings and other things that make up rural schools are often not very excellent. For example, they might not have electricity, internet access, or even the most basic digital tools. People do not always use materials enough when they are easy to get to, or they do not match how they are taught. Ogisu (2022) says that the national curriculum right now relies too much on memorizing things and does not use digital resources in the classroom in a way that helps students learn. Researchers have urged for more focus on fair and culturally relevant digital education because of this. Huot and Em (2024), in their study of underserved Cambodian communities, argue that bridging the digital divide requires more than device access, it necessitates localized pedagogies that integrate digital multiliteracies with language and content instruction. Huot et al. (2025) concur and say that the greatest method to help kids get ready for the 21st century is to educate them multiliteracies. This is especially true in locations where there are not many resources and pupils speak more than one language.

The number of teachers is still a serious problem. Soo-Siang and Sonia (2019) say that a lot of teachers in Southeast Asia do not know much about digital education or even the foundations of AI. Huot et al. (2025) also noticed that there is a gap between the resources that Cambodian teachers have and the skills they need to execute their jobs. Most teachers cannot switch from traditional teaching methods to technology-based ones that promote inquiry, cooperation, and ethical reasoning without getting professional development. Putting all these issues together creates a confusing paradox: Cambodia wants to go digital, but the secondary school system may not have the proper teachers, infrastructure, or staff to make it happen. But this moment also presents a unique opportunity unlike any before. By making digital and AI literacy part of high school, Cambodia can make a generation of students that are

not just adept with technology but also know how to think critically, be responsible, and be honest.

The purpose of this study is to find a new way for Cambodian high schools to teach their pupils how to use computers and AI. It claims that ICT training should no longer be done in separate classes. Instead, it should be done in a way that covers multiple fields and focuses on learner agency, ethical engagement, and putting what they learn into practice in the real world. In this model, students learn more than just how to use computers and other digital tools. They apply them in a way that makes sense in all their classes, such as language arts, social studies, and science. This helps kids learn things that will be useful to them at school, at work, and in their communities. Williamson (2020) says that critical digital education theory says that people need to learn how to be thoughtful and active digital citizens who can utilize, criticize, and alter technology. This method is based on that premise. The proposed model meshes with global frameworks like the UNESCO Education 2030 Agenda (UNESCO, 2015), which says that digital skills should be a focus of high-quality, inclusive, and fair education. This study also cites facts from Cambodia to highlight how crucial it is to change education based on culture and the situation. Hinchey (2008) and Huot et al. (2025) state that Cambodia's educational reforms should be based on the demands of the students, such as their language, social, and infrastructure needs. The solutions offered here should be both scalable and adaptable. They explain how to make systemic change that takes into consideration Cambodia's unique problems and opportunities.

This study has a big impact on politics, society, and schools. First, it adds to the growing body of research on how to combine digital and AI capabilities in countries with low or middle incomes. Countries with a lot of money do a lot of research on education systems around the world. This study, on the other hand, looks at what's going on in Cambodia, which makes it a better example for other school systems that are having similar challenges. Second, the study gives good advice on how to change what and how to teach. It fills in key gaps in both policy and practice by giving a paradigm that blends cross-curricular integration, digital literacy, and multiliteracies. Huot et al. (2025) contend that letting pupils use technology is not enough to prepare them for the 21st century. It also needs teaching approaches that are relevant to society, focus on the student, and are based on questions. This study indicates education is crucial for closing the digital gap and making progress for everyone. Warschauer (2003) indicate that not everyone having the same level of access to digital skills can make divides in society and the economy even greater. Teaching Cambodian pupils how to utilize technology and AI could help make things

fairer and provide them more possibilities to be part of society, do well in school, and progress up the economic ladder. This is very essential because there are still big inequalities in schooling between cities and the countryside.

Lastly, the paper has some good recommendations for policies that could change how education functions throughout the whole country. The article discusses about how to improve Cambodia's schools by educating instructors, revising the curriculum, and putting money into the country's infrastructure. All these goals and more can be accomplished. The approach aligns national development goals and global initiatives to build a resilient, future-ready for societies. Before, the only approach to teach digital skills in Cambodia was to demonstrate pupils how to operate basic hardware and software. While this foundation remains important, the urgency of the Fourth Industrial Revolution demands a far more sophisticated and functional form of digital fluency. Functional digital fluency entails not only the operational ability to use digital tools but also the intellectual capacity to critically analyse, evaluate, and create digital content with discernment, creativity, and purpose (Trilling & Fadel, 2009). This adjustment is very crucial for high school students. Teenagers are ready to learn how to think more profoundly, reason more abstractly, and use information from many different areas when they are between the ages of 13 and 18 (Inhelder & Piaget, 1958). Digital literacy programs need to be updated so that students may use cloud-based technologies to work collaboratively, tell stories, generate multimedia presentations, and learn by doing projects that are like solving problems in the real world. Huot, Loch, Nget, and Em (2025) believe that a multiliteracies approach helps students become active knowledge makers in digital settings instead of just passive consumers. They underline that students in the digital age need to learn how to read and write in a variety of symbolic forms, such as text, video, code, and data visualizations.

This study is backed up by Huot and Em's (2025) research of how English is taught in poor areas of Cambodia. They discovered that employing digital tools in the classroom made pupils more independent and eager to learn, especially when those technologies were connected to things that were significant to them. Adding tools for communication and collaboration to digitally enhanced classrooms also help students learn in school and in their social life, which is the first step toward joining digital networks (Selwyn et al., 2017). Cambodia's education system, on the other hand, has a lot of serious flaws that need to be corrected before this aim can be reached. Some of these challenges are outdated school curriculums, not enough access to technology, and a continual disparity in infrastructure and teacher training between cities and rural areas (Un & Sok, 2022). Going from basic to functional

fluency will be a dream and not a reality without planned and policy-backed adjustments. It is evident that high school kids need to study AI because technology is always changing how businesses work, how economies work, and how social systems work. Preparing students to interact with and critically assess AI-driven technologies is not merely a matter of technical competence, it is a matter of civic preparedness, ethical awareness, and socio-economic equity. AI literacy refers to the ability to understand fundamental AI concepts, such as data collection, machine learning, automation, and algorithmic decision-making, while also grappling with their broader ethical, cultural, and political implications (Williamson, 2020; Williamson et al., 2020). Secondary students need to study the basics of how AI systems learn from data, how algorithms sort and generate predictions, and how human biases can be built into systems that are supposed to be neutral. These ideas should not just be taught in computer science classrooms; they should be taught in all subjects. For instance, social studies schools may talk about algorithmic prejudice, while science students could look at how AI can be used in environmental science. This wider view fits nicely with the multiliteracies model put up by Huot, Loch, Nget, and Em (2025), who suggest a teaching framework that puts new digital technologies in culturally relevant and thought-provoking situations. They say that learning about AI should be both a technical and moral education.

This way, students may understand not just how AI works, but also who it helps and who it leaves out. Also, in Cambodia, AI education could be very important for solving local development problems like improving agriculture, managing disaster risk, or keeping an eye on public health. If taught in a way that relates to Cambodia, AI literacy can provide students the skills they need to make AI-based solutions to challenges in their own country instead of just using technologies. Hinchey (2008) stressed that effective education reform must be based in the community, which means students use technology in ways that are relevant to their social and cultural backgrounds and goals. But this change cannot happen without a lot of money going into teacher training, redesigning the curriculum, and making learning materials easier. Most teachers in Cambodia still do not know the basics of AI and do not have the teaching tools they need to educate them in a meaningful way (Soo-Siang & Sonia, 2019). To fill this vacuum, the Ministry of Education, NGOs, teacher training institutions, and the corporate sector will all need to collaborate.

UNESCO's Digital Literacy Global Framework and the OECD's Learning Compass 2030 are two important models in this area. Both frameworks stress important skills including creativity, problem-solving, working together, digital ethics, and resilience (OECD, 2023; UNESCO, 2018). By making Cambodia's

educational practices more like these international ones, students will be ready for both local and global issues in a knowledge-driven economy. Huot and Em (2024) said in their study on bridging the digital gap that underserved Cambodian children learn a lot more when global teaching ideas are put into culturally appropriate and resource-sensitive contexts. It is important to find a balance between worldwide standards and local realities so that solutions do not just look good on the surface or come from other countries and are not long-lasting. Cambodia can also start to close the educational gap with other ASEAN countries by incorporating global frameworks into national policy and classroom practice. Many of these countries have already switched to competency-based education models that emphasize digital and AI literacy (ASEAN Secretariat, 2022). This kind of alignment makes it easier for students to move around, get jobs, and compete internationally. It also promotes the ideals of digital responsibility, democratic participation, and understanding other cultures. Also, Cambodian researchers have been stressing more the need to include environmental, social, and linguistic aspects in digital education. This supports the view that digital competence is fundamentally interdisciplinary. As Huot and Em (2024) show digital storytelling and sustainability-based initiatives can be used to teach English while also teaching students how to use technology in a way that is relevant to the real world.

As its core, global frameworks can help change systems, but they need to be put into action with localized methods, teacher training, and policies that include everyone. As Cambodia moves toward digital transformation, it will be important to make sure that educational changes are in line with worldwide norms and are based on the country's own needs. This will help create a generation that is digitally empowered, as viewed in Table 1.

Table 1: How Digital and AI Literacy Are Important in Cambodian High Schools

Part	Focus	Important Skills
Going from basic digital fluency to functional digital fluency	Move from using fundamental ICT to using digital tools and making content more deeply.	Making and analyzing digital content, talking to people, working together, and thinking critically.

Part	Focus	Important Skills
The Importance of Knowing About AI	Knowing how AI works, what it means, and how to apply it in a moral way in society.	Basic machine learning, algorithmic thinking, AI ethics, and data patterns.
Aligning with global standards for skills	Putting digital and AI literacy on the same level as global education standards.	Digital ethics, problem-solving, global citizenship, sustainability, and multilingual digital practices.

The current state of secondary education in Cambodia

The big difference in technology infrastructure between cities and rural areas is one of the biggest problems that Cambodia's secondary school system must deal with. Schools in Phnom Penh and other provincial capitals may not have easy access to computer laboratories, electricity, or reliable internet, but most rural schools still do not have enough resources. In many situations, schools outside of big cities do not even have the most basic digital infrastructure, including consistent electricity, let alone Wi-Fi, PCs, or mobile learning devices (Un & Sok, 2022). Ironically, a lot of high school kids have cell phones, especially those who live in cities and suburbs, but they do not use them as much for learning. Most students use their smartphones mostly for fun or social networking, and there is not much educational content available in Khmer or that fits the Cambodian curriculum (Huot et al., 2025). This is part of a bigger problem: having access to technology does not ensure students will be engaged unless the curriculum is designed with a clear purpose in mind and teachers help students use it. Huot and his co-authors (2025) say in their historical review of Cambodian education that education in Cambodia is still having trouble incorporating abstract knowledge, like digital literacy, into practical, localized teaching methods. This is even though Cambodian education has been evolving for a long time from instinctive learning to more creative ways of thinking.

Scholars like Nget along with his co-authors (2024) have lately noticed that mobile access alone would not overcome the educational gap without specific efforts to improve infrastructure and digital fairness. Instead, it may unintentionally make inequities worse, as affluent children have access to global knowledge

resources while poorer pupils fall behind because of language problems, lack of educational assistance, or lack of access to data. So, without a strong national plan that makes sure infrastructure is distributed fairly, trains teachers on how to use mobile devices in the classroom, and encourages digital inclusion, Cambodia could end up using its technology goals to make things worse instead of better. The current structure and content of Cambodia's national secondary curriculum is another big problem that makes it hard to integrate digital and AI literacy. Right now, the curriculum only contains a little bit of digital education. The focus is on fundamental ICT skills like word processing, spreadsheets, and simple internet browsing, not more advanced digital skills like computational thinking, coding, data analysis, or algorithmic reasoning (Ogisu, 2022). This is part of a bigger problem: people see digital skills as extra talents for jobs or technical fields, not as basic skills that everyone needs.

More importantly, the current curriculum does not include much, if any, artificial intelligence or related themes. As AI changes not only the job market but also how knowledge is created, judged, and shared, the fact that formal education does not teach AI literacy is a big problem. Even at the most basic level, concepts like machine learning, data bias, and algorithmic decision-making are not yet covered, even though they are becoming more important in almost every field of work. The existing curriculum also does not encourage the use of digital technologies to learn across disciplines. For example, scientific lectures could still use memorization instead of simulations or data visualization tools, and humanities programs do not look at digital storytelling, online discourse ethics, or digital media analysis. Because digital education is so separate, students do not often get to use technology in a meaningful way across topics or in project-based, problem-solving situations. This lack of connection is not new. As Huot et al. (2025) show in their study of how Cambodian education has changed over time, traditional education was good at teaching survival skills through observation and repetition. However, today's students need higher-order thinking, digital creativity, and critical reasoning, skills that can't be learned by just watching or using ICT in a disconnected way. The deficit is made worse by the fact that there is not much Khmer digital content available. A lot of the educational material that is out there is in English or based on foreign curricula. This makes it hard for teachers to put lessons in context or for students to relate what they are learning to their own lives (Huot & Em, 2024; Soo-Siang & Sonia, 2019).

One of the biggest problems with getting Cambodian high school students to learn about digital and AI is that teachers are not very good at using digital tools in

the classroom. Most instructors, especially those who work in public schools or live in rural regions, haven't had much experience with modern digital teaching tools or student-centered, tech-integrated methods. There is still a big gap in knowing how to use digital technologies in the classroom to encourage inquiry, cooperation, or creativity, even among younger instructors who may be more comfortable with them (Soo-Siang & Sonia, 2019). Huot and Loch (2025) say that Cambodian schools have always concentrated on learning from teachers and developed knowledge hierarchies. These are things that come from schools that were built during and after the war. This is why new ideas and experiments in education are still rare, especially in places where resources are limited, training is restricted, and there are stringent regulations regarding what to teach. Pre-service teacher education programs have also been sluggish to catch up with the times. Many schools still do not have the technology they need to show how to do digital learning well, and teacher training modules do not even mention AI principles. If their schools do not have rules that put digital and AI abilities at the top of the list, teachers do not have much motivation or support to learn about them on their own.

Professional development workshops do happen, but they are mainly one-time activities that emanate from the top down and do not involve ongoing mentorship, peer collaboration, or means to provide and get feedback (Nget et al., 2024). Also, while grading or promoting teachers, digital education is not something that is generally considered. Teachers feel stuck because they are overworked, under-supported, and do not know how to fit digital innovation into their daily teaching tasks. This is because there is not enough monitoring of the system. Because of this, Cambodian teachers are still behind in teaching their students the skills they need to have in the digital age. Not all institutions are ready, though, and people are not ready either. A lot of school leaders do not know how to make digital changes happen, and there is not a lot of information about how to do digital or AI projects throughout the whole school. Schools rely on donations for much of their digital education funding, which means they are in danger of failing trial programs.

Cambodia's secondary school system has a lot of challenges that make it challenging to teach both digital and AI skills at the same time. Some of these challenges are a lack of infrastructure, gaps in the curriculum, and not enough skilled people. Huot and Em (2025)) say that the country's history of moving from instinctual to structured and creative schooling suggests that it might alter. But the current system does not have the coherence, capability, or ability to change with the times. Addressing these challenges requires more than modernization. It needs to

be done for the sake of national growth, digital equity, and giving young people more power, as depicted in Table 2.

Table 2: An Overview of Cambodia's Secondary School System

Thematic Area	Key Points	Problems Found
Getting to infrastructure and technology	Schools in cities could have basic digital tools, while schools in the country might not have electricity, the internet, or labs. Many students have smartphones.	Not everyone has equal access to the internet, the infrastructure is inadequate, mobile technology is not used sufficiently for school, and there is not enough digital content that is specific to a certain area.
Curriculum gaps	ICT is part of the curriculum; however, only basic tools are taught. There is no AI, computational thinking, or usage of ICT across disciplines.	The ICT focus is out of date, there is no AI integration, not all fields use digital tools, and there are no Khmer digital learning resources.
Getting Ready for School and Teacher	There are not many motivations for teachers to learn more about digital education or AI, and they do not get a lot of training in these areas.	Teachers do not know much about technology; they do not get much training before they start working; they have professional development from the top down, but it does not last; and they use old teaching methods and resources.

How to Teach Digital and AI Skills That Are Useful and Right for Kids

The first step in bringing digital and AI education to high schools is to figure out what specific skills pupils need to learn to do well in a society that is becoming more technologically driven. These abilities need to go beyond just knowing how to use technologies. They also need to involve higher-level thinking and moral

reasoning. Digital fluency requires the ability to effectively use digital tools, understand their functions, and apply them in various contexts. This starts in Cambodian high schools by teaching students how to type and use word processors, spreadsheets, and presentation software to get things done. How to do systematic and ethical online research, evaluation of digital sources, and synthesis of findings should all be integral parts of instructions. Students should also learn how to read charts, find trends in data, and make simple graphs. Many Cambodian students have cell phones, although they do not use them for school very frequently yet, especially in rural areas (Huot & Em, 2025).

Teachers should show youngsters how to utilize digital tools in ways that are beneficial so that they do not just think of them as fun things to do. Computational thinking helps computer scientists address problems in a rational and useful way. It comprises breaking down difficult problems into smaller pieces (decomposition), looking for patterns in tasks (pattern detection), focusing on the most important information (abstraction), and coming up with unambiguous, step-by-step solutions (algorithms). When high school students learn these ideas, they learn to think critically about a lot of different things. Deconstruction and abstraction can be taught through visual puzzles or logic games. Pattern recognition can also be incorporated into math or science lectures. One way to teach children how to think algorithmically is to have them write stories in which characters or robots must follow instructions. By adding computational thinking in their studies, Cambodian students will learn the core skills they need for programming, engineering, and solving problems in a methodical way.

As AI becomes increasingly common in everyday technology, it is crucial for high school students to master the foundations of how it works. The principles of AI can be taught without the necessity of coding. This can be accomplished through hands-on and conceptual activities. First, teachers can discuss about datasets and how computers learn to find patterns in big collections of data. For example, students can use Google Teachable Machine and other websites to teach a simplified model of how to see or hear things. These activities teach children about artificial intelligence without the need to write code. As their skills improve, students can learn about decision trees, supervised and unsupervised learning, and real-world examples such as how recommendation systems function in apps like YouTube and TikTok. This information is the first step toward more in-depth AI research and helps individuals understand how these systems affect their digital lives in significant ways. Learning how to be a good digital citizen is just as vital as being good with technology. Students need to learn how to use technology in ways that are safe,

moral, and good for society. Cambodian high school students should understand how to keep safe online, how to avoid cyberbullying, their privacy rights, and how destructive fake news can be. For example, students can look at screenshots of online chats to assess if they are courteous. They should also learn how to manage their digital footprints and what it means to post personal information online. Digital citizenship education is particularly crucial for helping students become aware, compassionate, and critical users of technology in a world where they are exposed to more global digital content without rigorous restrictions (Trilling & Fadel, 2009).

Teachers need to use a range of tools and platforms that are right for the technology in their schools and the ages of their students to teach digital and AI skills well. These tools should be easy to use and useful. They should also help students learn more advanced abilities once they have mastered the basics. Programming using text and programming with blocks: Scratch is a great block-based programming environment for folks who are new to coding. These platforms use a drag-and-drop interface to show how to use loops, conditionals, variables, and programming logic in a style that is easy to understand. This makes it easier for people to learn grammar. Scratch is fun and educational because it lets youngsters make games, tales, and animations that they can play with. When they are ready, students can learn text-based programming languages like Python. Python for All (2023) is a fantastic language for new users because its rules are simple, and it can be used for many things.

Students can utilize tools like Jupyter Notebooks to develop simple scripts that solve math problems for them, build digital tools, or even train simple AI models. Students should also learn how to use technologies like Google Workspace that help them work together. Google Docs, Slides, and Sheets make it easy for students to work collaboratively, obtain feedback from teachers right away, and do project-based work. Schools that do not have strong internet access can use LibreOffice and other offline programs to get their job done. Design tools like Canva can be used to create infographics, digital stories, and visuals for social media campaigns. These tools help kids get ready for school and educate them how to talk to and work with other people, which are very vital abilities for jobs these days. AI Learning Tools: AI-focused educational materials can teach youngsters about AI in fun and age-appropriate ways. For example, Google's Teachable Machine allows anyone to train a model by giving it photographs, voices, or facial expressions and then making predictions based on those inputs. Cognimates and Machine Learning for Kids employ graphics and words to help kids understand how AI works. These platforms are ideal for Cambodian schools with limited technology as they require

minimal computers, skills and functions in any web browser. Simulations and instructional games: These kinds of games and simulations can help students learn how digital concepts work in the real world. Cybersecurity games can help kids learn how to spot phishing attempts, while economic games can help kids learn how to manage their money and resources online. These kinds of tools help keep kids interested by making digital notions that are not very clear. This is quite a beneficial institute where learning by doing is not possible.

Digital and AI abilities should not be taught separately from other subjects, like ICT or computer science. Instead, they should use them in normal classes. Cross-curricular integration lets students understand how technology can be useful in a lot of different areas and makes sure that everyone has the same chance to develop these abilities. Combining STEM Fields: Students in math and science classes can use programming and data analysis to come up with ideas and test them. For example, students could use sensors and microcontrollers to collect information about the weather, such as temperature or humidity, and then use spreadsheet software to look at the data. Robotics clubs or class projects can be a fun and hands-on approach to learning the basics of engineering and coding. Social studies classes let students reflect about how AI affects people and society in a moral way. Teachers can explain about how surveillance technology's function, how algorithms impact people's minds, and how automation changes the way people work. Students can think critically about how new technology affects society by writing position papers, debating, or acting out roles. Language and Arts Integration: In language classes, students can build digital stories that use pictures, words, and AI-generated things like poetry or background music. They could employ AI-powered tools to generate styled portraits or investigate how robots figure out what looks nice in the visual arts. These projects that bring together people from different fields help them get better at both technical and creative skills.

Digital and AI skills can be developed through real-world, collaborative, and student-led activities with Project-Based Learning (PBL). PBL gives students control over their own learning by letting them use digital tools to research problems, find solutions, and display their work to actual people. Some ideas for projects are making a chatbot to help classmates with their homework, starting a digital awareness campaign to stop cyberbullying at school, or looking at statistics about their community, like how much water they use or how easy it is for them to get online, and coming up with ways to make things better. Students need to apply their research, communication, creativity, and technical skills all at once to do these assignments. This gives students a whole learning experience that is like how people

solve problems in real life. Collaborating with classmates fosters communication and teamwork skills. Presenting projects to the public builds confidence and enhances online communication abilities. Working together and being involved in the community are also important values in Cambodian culture, which is why PBL works well there. Students learn how to use technology to improve their own lives and the lives of others by solving problems in their own communities. This gives them a sense of duty and motivation. It is important for education and the country's growth to teach Cambodian high school students the correct digital and AI skills for their age. Teachers can help make a generation of students who are not only good with technology but also have strong morals and can compete on a global level by focusing on basic skills, using the right tools, linking content across subjects, and encouraging active, collaborative learning. Moving forward requires more than just fundings. It also calls for knowledgeable teachers, a shared vision among educators' policymakers, and communities, and a clear awareness of the current situation.

Addressing Implementation Challenges

One of the hardest things about getting more Cambodian high school kids to learn about digital and AI is that the country's infrastructure is highly diverse in different places. While urban schools may have intermittent access to computer labs, Wi-Fi, or digital projectors, rural and remote areas frequently operate without even the most basic technological resources, such as electricity or functioning classroom buildings. In these regions, mobile technology, primarily smartphones, has become the most common digital access point for both students and teachers. But there are certain problems with using mobile devices, like restricted capabilities, small screens, and poor typing speeds, which make it tougher for students to undertake more advanced digital production or computational thinking. Closing this gap requires more than building infrastructure tailored to the problem. It also involves promoting digital solutions that are affordable, usable offline, and effective in low bandwidth regions. Some technologies that can aid in the near term while infrastructure is being built up are preloaded educational software, solar-powered digital classrooms, and USB-based offline learning systems (Huot et al., 2025).

Instructors are the most important people in altering education, yet many Cambodian instructors still do not know how to teach digital and AI-related courses. Most of the teachers who are now working do not have a lot of expertise with new teaching approaches that make good use of digital tools. They do not know much about AI or other related topics because teacher training programs are old and there are not many chances for them to learn new things while they work. This knowledge gap severely hampers the ability of educators to foster student-centred, inquiry-

based digital learning environments. Moreover, even when digital devices are available, they are frequently underutilized due to a lack of confidence and practical training among teachers (Soo-Siang & Sonia, 2019).

Achieving long-term improvement requires investing in comprehensive teacher skill development. This may include short-term certificates in digital pedagogy, modular AI training, and peer-led digital teaching communities. According to Huot et al. (2025), introducing digital literacy to ongoing teacher training programs can gently modify how teachers teach and encourage new ideas in the classroom. There is not a clear national digital curriculum framework in Cambodia that makes sure all secondary school students learn about digital and AI literacy. Because of this shortage, projects are all over the place and work is not always done on time. Some schools test things out on their own, while others do not get any help at all. Changes to the curriculum usually do not function or last if there is not a clear plan. When there is not enough money in the budget, these difficulties get worse. Many public schools have problems getting the money they need to run their basic operations, which makes it challenging to buy, maintain, or produce technology or teaching resources. Schools also do not have a lot of tech assistance because there are not many IT specialists, and when digital devices malfunction, it might take a long time to fix them or not at all. For strategic policy responses, people from different sectors need to work together.

For instance, the ministries of finance, telecommunications, and education should work together to make digital education a key priority in national development goals. The two key first measures are to create a national digital competency framework and provide schools with their own budget for digital transformation (Huot et al., 2025; UNESCO, 2022). In addition to challenges with technology and the way schools are set up, deeply rooted cultural and social factors also limit how Cambodian schools teach digital and AI literacy. When it comes to using technology, guys and girls are still different. Boys often get more help and access to digital tools, while girls are expected to achieve less in STEM and tech-related subjects. Addressing this issue requires gender-sensitive digital education policy, mentorship programs for girls, and the promotion of excellent role models in technology careers.

Also, if students do not learn about digital ethics, they might use technology in the wrong way by plagiarizing, cyberbullying, or relying too heavily on generative AI tools without knowing what they can and cannot do. Huot et al. (2025) say that Cambodia's schools need to move away from relying on intuitive senses and toward creative thinking. This shift involves more than just mental growth; it also demands

moral and civic awareness. Digital citizenship should be an aspect of digital education so that kids learn how to utilize technology in a responsible, ethical, and wise way.

Conclusion

Cambodia would make a lot of progress if high school curricula taught students how to use computers and artificial intelligence (AI). Teaching kids how to utilize computers and AI is no longer just a good thing to do; it is crucial for building a strong, future-ready nation as technology moves quicker around the world. It is essential to consider the purpose of education in the 21st century to ensure children are prepared for a world driven by technology, data, and innovations. This goal for change requires more than just adding new things to an already comprehensive curriculum. It needs to change the way it thinks about teaching methods, how schools are set up, and what the country should focus on. Project-based learning is a good way to teach these skills since it gets students involved and allows them to utilize technology in new and responsible ways. This includes knowing how to use computers and having a strong understanding of AI systems. Also, to be effective, implementation must make sure that everyone can get online, especially pupils in rural areas and other groups that are often left out.

The main goal of this adjustment is to help teachers, school administrators, and schools that can foster digital curiosity and creativity. Achieving a common objective requires collaboration across public, private, and international sectors. That goal is to make sure that the next generation of learners not only consume digital information but also uses technology to come up with beneficial solutions. This includes investing in infrastructure, changing the curriculum, and forming collaborations. This journey will be challenging, and it will take a lot of work, time, and determination to go through it. But the prize is big: a Cambodian education system that helps kids do well in a linked digital world, helps the country thrive, and lets them confidently participate on the world stage. Cambodia can make sure that its future citizens are not left behind by developing this foundation now. Instead, they will be ready to lead with innovation, compassion, and moral responsibility.

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