ASI
Asia Social Issues

E-ISSN: 2774-0315

https://doi.org/10.48048/asi.2025.268161

Evidence-Based Model Curricula for Master's Degrees in Teacher and Principal Education Program in Cambodia

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Abstract This paper aims to study the challenges and way forward of evidence-based model curricula for bachelor's and master's degrees in Cambodia's teacher and principal education programs. There are three objectives: 1) to examine critical components to build evidence-based model curricula for master's degrees in teachers and principal education programs, 2) to identify the problems in implementing these curricula, and 3) to explore how to implement these curricula. Document-based and content analysis has been employed for data and information from research articles, reports, and books related to curriculum, design, and other relevant documents. This article's findings articulated three core components to building evidence-based model curricula: adaptive learning systems, practical-based learning, and need and problem-based learning. Moreover, the conventional mindsets of Cambodian teachers, insufficient human resources and scientific research, and lack of awareness and understanding among educators are challenges in carrying out evidence-based model curricula for master's degrees in teachers and principal education programs in Cambodia. Lastly, there are possible ways to solve those challenges, like producing more competent human resources, promoting more scientific research activities, and raising awareness of Cambodian teachers and educators to understand the importance of implementing those curricula and coping with the problem of skill mismatch in Cambodia.

Keywords Evidence-based model; Curriculum development; Master's degree; Teacher and principal education; School reform

Received: *October 3, 2023*
Revised: *January 19, 2024*
Accepted: *February 7, 2024*

Introduction

Retrospectively, Cambodia, around 20 years ago, was a victim of civil wars and destroyed many tangible and intangible resources due to the Pol Pot regime's legacy. This dramatic story made Cambodia a left-behind country among the ASEAN member states (Royal Government of Cambodia, 2018). The Royal Government of Cambodia has set a milestone achievement to reach a country with a high middle-income economy by 2030 and a high-income economy by 2050. Having sufficiently competent human resources is one of the most significant preconditions to attaining this ambitious goal (MoEYS, 2019a).

However, producing potential and competent human resources needs time and effort as only 13% 2021 of Cambodian students are enrolled in tertiary (Worldometer, 2023). Those university students face the problem of skill mismatch and uncertainty of unemployment (Sothy et al., 2015). These problems occurred due to the disconnect between teaching/learning and the job market, and the disconnect between teaching and learning started in early childhood, primary, and secondary education. The tertiary cannot connect students with the job market (Madhur, 2014). In this way, the Cambodian government has initiated and established policies and collaborated with developing partners to promote Cambodian education. For instance, rectangular strategy phase IV, education strategic plan 2019-23, national policy on lifelong learning, Cambodia's digital economy and society policy framework 2021-2035, education roadmap 2030, and to name a few, have been working on educational reform in Cambodia (MoEYS, 2019a, 2019b, 2019c). Educational reform is a complicated issue, and we understand the time and effort consumed to improve this sector. The same is true in the Cambodian context, which has undergone various stages of education reform. Educational reform in Cambodia is crucial for the Cambodian government to ensure that everyone has access to equitable and quality education. This reform will assist Cambodia in attaining growth, efficiency, equity, employment, and sustainability in alignment with the Pentagonal Strategy Phase I (The Royal Government of Cambodia, 2023).

Training teachers and school principals is one of the primary mechanisms for reforming education (MoEYS, 2022a). These training programs upgrade their educational qualifications since some need sufficient qualifications to meet local and international standards. For instance, Cambodian teachers and school principals do not have bachelor's degrees, not to mention master's degrees (MoEYS, 2018). A concrete and practical curriculum model for training teachers and school principals is acquired to upgrade them from bachelor's to master's degrees. As such, evidence-based model curricula for master's degrees in teachers and principal education programs in Cambodia must be implemented. Such training programs should focus on practical activities and evidence-based projects at their workplace rather than on textbooks. These innovative curricula for master's degrees in teacher and school principal education programs will help teachers and principals correctly teach their students with better learning outcomes and improve and rehabilitate their schools to become effective standard schools (MoEYS, 2021b). The evidence-based curriculum model is important in Cambodian education reform. It helps teachers and school principals increase their students' learning outcomes through their innovative curriculum based on authentic practices (Benveniste et al., 2008).

Moreover, the evidence-based model curricula for master's degrees provide a concrete mechanism for teachers and school principals in Cambodia to ensure equitable and quality education for Cambodian students. Project-based learning and experiential learning approaches are implemented in the evidence-based model learning and experiential learning approaches since the training concentrates on learners' practical experiences and shapes them to apply their knowledge to reality. These approaches are embedded in the evidence-based model curricula for master's degrees to cultivate teachers' and school principals' potential to improve their students' learning outcomes. However,

training with evidence-based model curricula for master's degrees is still elusive in the Cambodian context, and more studies are needed to improve Cambodian education. Notably, the previous research on evidence-based model curricula for master's degrees in teacher and principal education programs is limited and needs more evidence and research studies to fill this gap. Filling this gap will provide an informative mechanism for Cambodian education reform by implementing evidence-based model curricula (King, 2018). Therefore, this research study aims to study the challenges and way forward of evidence-based model curricula for master's degrees in Cambodia's teachers' and principals' education programs.

Research objectives

To respond to this research purpose, there are three main research objectives stated shown below:

1. To examine the key components to build evidence-based model curricula for master's degrees in teachers and principal education programs in Cambodia
2. To identify the problems in implementing evidence-based model curricula for master's degrees in teachers and principal education programs in Cambodia
3. To explore how to implement evidence-based model curricula for master's degrees in teachers' and principals' education programs in Cambodia.

Research questions

To attain these research questions there are three research questions mentioned in the following:

- What are the key components to building evidence-based model curricula for master's degrees in teachers' and principals' education programs in Cambodia?
- What are the main problems in implementing evidence-based model curricula for master's degrees in teachers' and principals' education programs in Cambodia?
- How do we implement evidence-based model curricula for master's degrees in teachers' and principals' education programs in Cambodia?

Literature review

The term education reform emerged in 1800, an exhilarating and unsettling change with the rise of factories and the Industrial Revolution (Lewis & Wang, 2015). The definition of education reform has changed as the students' needs shifted. In particular, at the heart of education reform, there was a change in teaching methods at school and how schools were governed, and the primary reform counted socio-economic status, equality, and equity.

Education reform in the global context

Education reform has been discursively permeated in many countries' policies and regulations (Högberg & Lindgren, 2023). The typical school movement aims to provide a cost-effective educational system for everyone, promoting moral development and responsible citizenship. For instance, white students were welcome to attend an ordinary school, which was often a one-room establishment supported by municipal taxes (McLaughlin & Ruby, 2021). Moreover, progressive education was a crucial component of various social reforms during the 1900s education reform. It is thought that rigorous instructors and authorities were a factor in the unhappiness of the populace during

this period. John Dewey was one of these pioneers who pushed for increased movement in the classroom (Jr. & Eyler, 1994).

Another education reform movement, standards-based educational policies, initially gained popularity in Anglo-Saxon nations in the 1990s after outcomes-based reforms did so in the 1980s. These changes shifted the emphasis on educational outcomes, such as student learning and school performance, and did so correctly (Sahlberg, 2006). Consequently, it is a casually held – and uncontested – conviction among policymakers and education reformers that establishing explicit and sufficiently high-performance criteria for schools, instructors, and students would inevitably enhance the caliber of anticipated outcomes (Wang et al., 2010). Furthermore, standards-driven education policies gave rise to the enforcement of external testing and assessment systems to gauge how effectively these standards have been met. Since the late 1980s, centrally prescribed curricula with specific and frequently ambitious performance targets, frequent testing of students and teachers, and test-based accountability have been characteristics of a global homogenization of education policies, promising standardized solutions at progressively lower costs for those wishing to improve school quality and effectiveness (Hallinger, 2010). Education reform aims to improve student's learning outcomes and school performance by providing equitable, quality, and inclusive education for everyone.

Education reform in the Cambodian context

Education has played a crucial role in producing competent human resources in Cambodia, ensuring equitable and inclusive education, and promoting lifelong learning opportunities for all citizens (MoEYS, 2019a). For instance, the education system in Cambodia can be divided into three stages: from 1979-1987, general education covered 10 years (4+3+3); from 1987-1994, it was 11 years (5+3+3); and from 1994 to now, general education has covered 12 years (6+3+3) (Ren & Kosal, 2016). In addition, the head of the Royal Government of Cambodia, regarding the importance of the immediate establishment of reform fields, the Ministry of Education, Youth and Sports is carefully focusing and coherent its activities with the three national reform programs (MoEYS, 2019b). These three programs include the public finance reform program, the decentralization and deconcentration reform program, and the civil service reform program (MoEYS, 2021b). These three reform programs support the implementation and achievement of the two policy objectives of the Ministry of Education, Youth, and Sport: (1) to ensure quality education in an equitable and inclusive environment and to promote opportunities throughout lifelong learning for all and (2) ensure the effective leadership and management of all education officials at all levels. In order to achieve these two targeted objectives and to support the implementation of the three reform programs at the same time, the Ministry of Education, Youth and Sport is implementing the secondary education improvement project since 2017, which is an effective support mechanism to achieve the implementation of these three reform programs above (MoEYS, 2018). This reform project supports the implementation of the first strategy of the rectangular strategy phase 4 to improve the quality of education and strengthen scientists and technology (Royal Government of Cambodia, 2018). The four success factors are the decentralization of power, capacity building, establishing support mechanisms for middle managers, and providing school resources. Moreover, with all those good practices from the implementation of the said project, the Ministry of Education, Youth and Sport will set up another project called GEIP with the aim of (i) Students benefiting from direct interventions to enhance learning (disaggregated by gender) (ii) Percentage of targeted schools that have achieved minimum standards (disaggregated by sub-sector) (iii) Percentage of teachers using effective teaching practices in reading and mathematics at upper grades primary school (disaggregated by gender) (MOEYS, 2022c).

The concept of evidence-based model curricula

Meaningful learning is vital to unleash students' potential and enable them to function fully in the real world of work. Learning through theory and textbook-based cannot provide students with this meaningful learning experience. Instead, learning through genuine experiences with practical applications enables students to cultivate meaningful learning experiences with full potential (Finotto et al., 2013).

The idea behind evidence-based model curricula is to create educational programs and curricula based on best practices and empirical data. By using research and tried-and-true techniques instead of depending on custom or gut feeling, this approach guarantees that data support instructional material and practices (Aikenhead, 2005). By integrating evidence from several sources, including educational research, assessment data, and real-world experiences, the aim is to improve the efficacy of education. Some components of evidence-based curricula, include experience-based learning, project-based learning, research-based design, continuous assessment and feedback, multidisciplinary learning, and technology integration learning (Elliott, 2001). Furthermore, the learners are encouraged to learn from their genuine experiences and work as a team to perform their activities. Research and 21st-century skills are requisite for them to carry out project-based activities and integrate their diverse expertise and majors to tackle common ground and cultivate creative inputs. On the other hand, teachers and facilitators have played an important role in providing simultaneous feedback to improve students' activities and motivate them intrinsically and extrinsically to keep learning and polishing their work (Green & Ellis, 1997).

Institutions that use an evidence-based approach to curriculum creation aim to improve student achievement, raise the standard of instruction, and adjust to the changing education requirements. This approach emphasizes a dynamic and flexible approach to curriculum design, guaranteeing its continued relevance and efficacy in a continually evolving field of education.

Conceptual framework

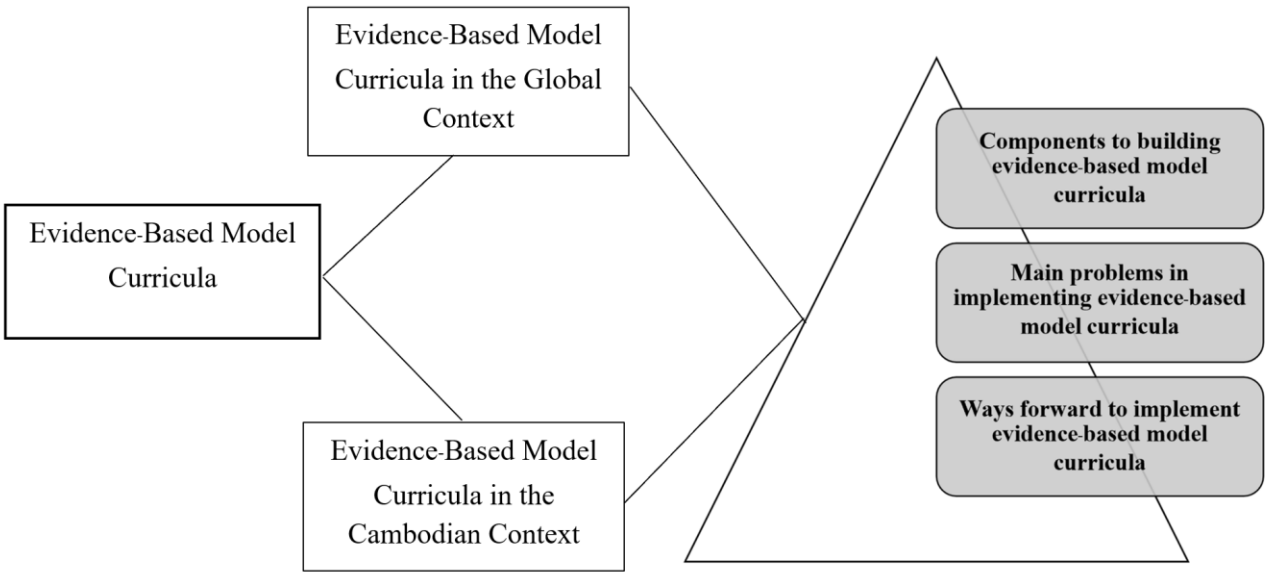

Figure 1 Research conceptual framework

Theoretical review

Experiential learning approach

Experiential learning refers to learning based on the experience of learners, which requires the learner to practice in the actual context to gain new knowledge. Experiential learning was described by John Dewey (1915) as "Learning by doing". Learners need to practice experimenting or observing phenomena daily to gain new knowledge from those experiences (Jong et al., 2006). Training is based on the learners' experiences; they can ask questions, observe, experiment, solve challenges, and engage mentally, emotionally, and directly (Kolb, 1984). Some concepts and principles of experiential learning are as follows: 1). Learners must take their new knowledge to test with active experimentation, 2). Learners need to put into practice solid experimentation. 3) Learners need to observe and reflect on their practice and experimentation to see what new things are happening and what challenges students need to address. 4) Learners must connect new knowledge to reality with their experience (Marton et al., 1984).

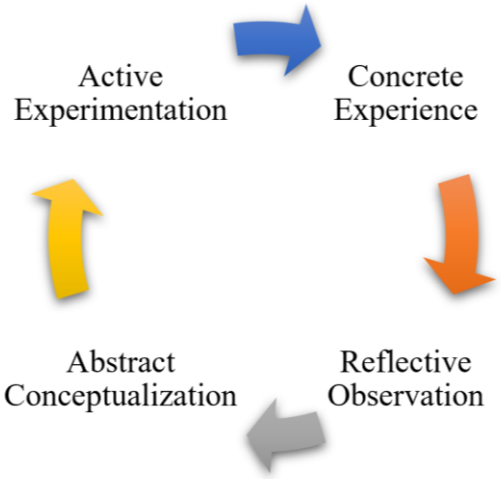

Figure 2 Experiential learning approach framework

Project-based learning approach

The project-based Learning approach refers to teaching by establishing curricula that provide opportunities for learners to develop knowledge and skills through assigned projects and identify their challenges and problems (Drain, 2010). In addition, project-based learning is student-centered and has three main principles: 1). The study focuses on the actual context, and 2). Learners must be actively involved in all learning processes 3). Learners must achieve their goals by interacting and sharing their insights and knowledge (kokotsaki et al., 2016). Teachers act as facilitators in the classroom and provide students with the knowledge they have acquired in projects. Learners must collaborate and share their knowledge and skills with other learners in Classrooms. Learners can work in teams to collaborate on project implementation given by the facilitator and work on the project according to their needs and interests. Project-based learning also incorporates experience-based learning and problem-based learning because when students do projects, they need to practice and collaborate, focusing on the problems they are facing (Habok, 2015).

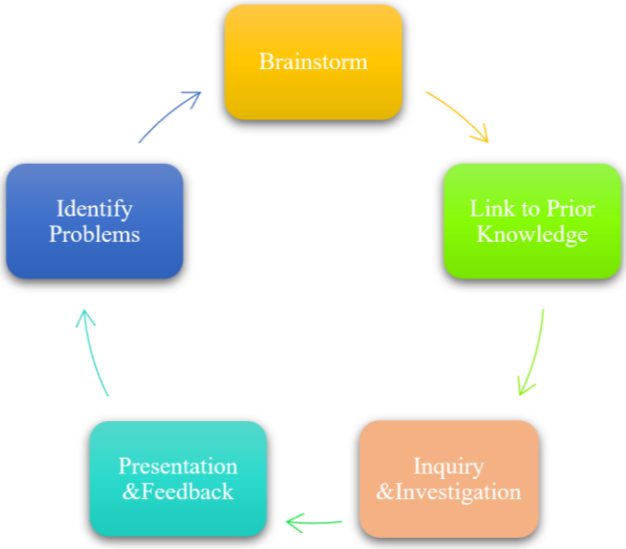

Figure 3 Project-based learning approach framework

Research methodology

This study employed a qualitative research methodology to uncover the phenomenon's origin. In addition, qualitative research concentrates on the subject's thoughts, perceptions, views, or beliefs, which are intangible and cannot be quantified. It also asserts that qualitative research may be used to discover and comprehend the significance that certain people or groups assign to social human problems (Creswell et al., 2004). Therefore, it is the best suit for conducting this research study.

Participants and sampling method

This research study used purposive sampling to select research articles, reports, and books related to curriculum, design, and other relevant documents. Those documents should be in the following criteria:

- Demonstrate the best practices of evidence-based model curricula for master's degrees in teachers' and principals' education programs in Cambodia.
- Legislate the national policy on promoting evidence-based model curricula for master's degrees in Cambodia's teachers and principal education programs.
- Focus on the challenges and mechanisms to build evidence-based model curricula for master's degrees in teachers' and principals' education programs in Cambodia.

Data Collection

There are three main processes in the data collection as following:

Phase 1: conduct documents to collect the research articles, reports, and books related to curriculum, design, and other relevant documents.

Phase 2: research documents according to the sub-theme of each phenomenon, such as the critical components, the main challenges, and ways forward to implement evidence-based model curricula for master's degrees in teacher and principal education programs in Cambodia.

Phase 3: ensure the credibility and validity of each document by investigating the nature and source of each document in detail.

Data analysis

This research study employed document-based and content analysis to understand and synthesize the data collection. The document-based and content analysis articulates the conceptual theories and knowledge found to be important phenomena. The analyzed data were used to compare selected documents based on the classification of knowledge approaches. To categorize and examine the repeating analyzed data, the method was as stated in the following:

1. Similar criteria for each piece of content were categorized and labeled as collectively exhaustive categories.
2. Each content's partial similarity was inclusively grouped, while different content criteria were categorized and labeled as mutually exclusive categories to ensure that they did not overlap.
3. The information was coded in the content and analyzed based on the nature of each problem and phenomenon.
4. The data was analyzed critically and thoughtfully according to the content of each problem.
5. The collected data were finally synthesized to uncover the research problems and phenomena.

Finding and discussion

What are the critical components to building evidence-based model curricula for master's degrees in teachers' and principals' education programs in Cambodia?

The vision of Cambodian education is to establish and develop human resources that are of the very highest quality and are ethically sound in order to develop a knowledge-based society within Cambodia as the mission is to lead, manage, and develop the education sector in Cambodia, responding to the socio-economic and cultural development needs of its people and the reality of regionalization and globalization. Following the Constitution and the government's commitment to the United Nations Convention on the Rights of the Child, the ministry's immediate goal is to ensure that all Cambodian children and youth, regardless of social status, geography, ethnicity, religion, language, gender, and physical form, have equal opportunities to access high-quality education. However, Cambodia is facing a shortage of skilled human resources even for low-to-medium skill-intensive industries, and there is a widening gap between the skills that industries and businesses need and what the education institutions, whether academic or vocational training, are producing. Cambodia's skill gap is emerging at a time when the Association of Southeast Asian Nations (ASEAN) is preparing to launch the ASEAN Economic Community (AEC) in 2015 (Madhur, 2014). The AEC will allow more unrestrained movement of certain kinds of skilled labor across national borders. That could further pressure the country's growth but there needs to be a more skilled young workforce.

Adaptive learning systems

Adaptive learning systems that are individualized for students to master each skill or lesson unit are based on knowledge networks constructed to be configured by teachers to cover a set of competency elements or lesson units (Hwang et al., 2013). The teacher shall support students by assuring that each student learns every lesson unit with the principle "right student, right lesson, and right time" (Essa, 2016). In addition, adaptive learning helps students through the three Rs, such as respecting students' prior knowledge, responding to students' demands, and reducing their gaps in understanding. In other ways, adaptive learning helps students learn their existing knowledge, helps them put their problems into solutions, and cuts down their knowledge gaps in any particular phenomenon (Kabudi et al., 2021). Teachers must personalize each student with the three Rs in each lesson unit to cultivate learning.

Furthermore, an adaptive system helps students learn through 3 Ms, namely monitoring what students need assistance, measuring curriculum performance, and maximizing course outcomes (Osadcha et al., 2020). Moreover, adaptive learning helps teachers customize teaching material from traditional to modern ones and establish unique experiences unavailable in traditional classes. In the Cambodian context, adaptive learning helps Cambodian students learn best by respecting their existing knowledge, responding to their needs, and helping their gaps of knowledge to put their problems into solutions. In this manner, adaptive learning can be applied to evidence-based model curricula for MA in teachers and principal education programs in Cambodia to solve the skill mismatch problem (Garaway, 2004). This will help Cambodia produce competent and well-rounded human resources to develop this country into an upper-middle-income country by 2030 and a high country by 2030.

Practical-based learning

It is crucial for the students who are studying for a master's degree to bring their perceived knowledge and experiences into practice. Students learn best from applying applications since they can experience real situations and circumstances rather than learning from the theory (Matsui et al., 2007). For instance, a Confucian scholar (340-245 BC) stated that what I hear, I forget. What I see, I remember. What I do, I understand (Carless & Lam, 2014). This quote implies that what students hear and see is insufficient to perceive knowledge, but that experience matters more. In other words, students have to put their knowledge into actual practice. In addition, Edgar postulated theoretical learning, in which the learners obtain more information and knowledge through what they have experienced and implemented. He claimed that what students do contradicts what is heard, read, and observed. Students generally remember 10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they see and hear, 70% of what they say and write, and 90% of what they do (Jackson, 2016). John Dewey emphasized the significance of learning by doing and nicely put education: "Education is preparation for life; education is life itself." (Sari et al., 2017). Education is a lifelong process that connects social life. In the Cambodian context, teachers should implement teaching methods by putting down their conventional teaching methodology. By so doing, the students will be able to learn best and capture meaningful learning through learning by doing, as well as fill the gap of mismatched skills that are occurring in Cambodia.

Need and problem-based learning.

Education meets student's demands and puts their problem into solution, which is ideal. As master's degree students are adult learners, the teachers must provide education according to their genuine demand. Holton et al. (2001) acclaimed that adult learners must learn something based on their needs. Without a clear purpose and intention of learning, adult students are not willing to continue their education. In addition, students attempt to pursue their education once schooling can help them solve their problem or their community's problem (Barrett & Moore, 2011). In the context of a problem-based learning approach, students must study the actual problems occurring daily and reflect on their own experiences. In addition, problem-based learning makes students more active in learning because it brings students experience in real-world issues and makes them more responsible (Duch et al., 2001). Problem-based learning emphasizes helping learners develop strategies and generate new knowledge. Problem-based learning is encouraged in the classroom because facilitators must practice student-centered and ensure students can learn about the issues at hand by collaborating with peers and other students to discuss solutions to those problems (Dolmans et al., 2016). Therefore, the need for problem-based learning is also one of the dimensions of evidence-based model curricula for MA in teachers' and principals' education programs in Cambodia. These three main components are reflected in previous studies, which mentioned evidence-based curricula and research, as well as how

to build this curriculum to ensure students can apply their knowledge in the real–world. In the Cambodian context, the study articulated that there are three main components to building evidence-based model curricula for master's degrees in teacher and principal education, similar to previous studies in the ASEAN countries like Thailand and Vietnam. As a result, the critical components to build evidence-based model curricula for master's degrees in the teacher and principal education program are snapshots in Figure 4.

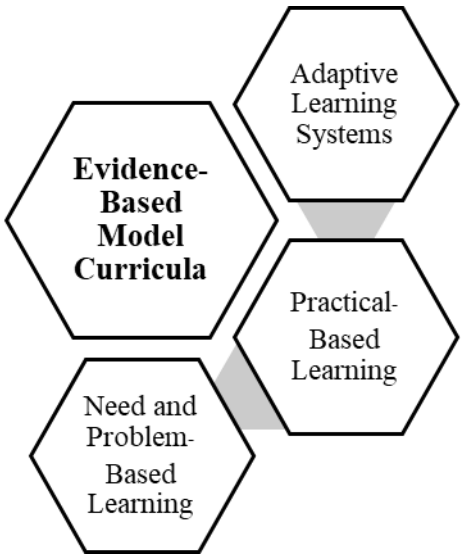

Figure 4 Components to build evidence-based model curricula for master's degree

Understanding the key obstacles in implementing evidence-based model curricula for master's degrees in teachers' and principals' education programs in Cambodia is a crucial step toward improving the quality of education in the country. This research question forms the basis of our study.

Implementing evidence-based model curricula for master's degrees in teacher and principal education programs is a complex task that requires a comprehensive understanding of the context. In this paper, we will explore the challenges that hinder this implementation, providing a roadmap for our discussion.

The first challenge in implementing evidence-based model curricula for master's degrees in teacher and principal education programs is the conventional mindsets of Cambodian teachers in changing their teaching methodology. Cambodia has undergone many civil wars, especially the Khmer Rouge regime, which devastated many human and natural resources (Dy, 2013). For instance, the strategy of Prime Minister Hun Sen stated that "people with low education teach the ones with no education and people with high education teach the ones with low education," a significant departure from the Khmer Rouge regime's slogan of "Study is not important. What is important is work and revolution." (Madhur, 2014). This has indicated that the education of Cambodian teachers is still limited, and their thinking is relatively conventional to care about updating their teaching methodology. This is a perpetuating problem that needs more attention to put this problem into a solution. Furthermore, some Cambodian teachers still stick to their traditional cultures and values and do not bother to initiate an innovative curriculum to cope with the problem of skill mismatch that Cambodia is facing now.

The second challenge is insufficient human resources and scientific research, which prevents Cambodia from implementing evidence-based model curricula for master's degrees in teachers' and principals' education programs. Moreover, the need for more trained teachers is a vicious cycle problem. For instance, today's kids are struggling because today's instructors are struggling, and tomorrow's teachers are struggling because today's struggling students are tomorrow's teachers, and so on (Bredenberg, 2004). Cambodian University teachers hold master's degrees, and Ph. D. is still limited, which makes it quite difficult for Cambodia to carry out this evidence-based model of project-based curricula (Rany et al., 2012). On the other hand, insufficient scientific research has been done regarding implementing an evidence-based model of project-based curricula for bachelor's and master's degrees in teachers' and principals' education programs in Cambodia (Kim, 2011). The Cambodian government and education system do not have enough activities and incentive systems to motivate Cambodian educators and scholars to conduct more scientific research to establish innovative curricula, deal with the problem of skills mismatch, and improve teachers' teaching methodology to Cambodian education's status quo.

The third challenge is Cambodian educators and teachers' lack of awareness and understanding regarding implementing evidence-based model curricula for master's degrees in Cambodia's teachers and principal education programs. For instance, some Cambodian teachers must be aware of the skill mismatch problem among Cambodian university students with job market demand (Royal Government of Cambodia, 2021). They must know the benefits of practicing an innovative curriculum to enhance Cambodian students' abilities and knowledge and keep them updated with an ever-changing world. In addition, a controversial issue is emerging among Cambodian educators and scholars regarding implementing evidence-based model curricula for master's degrees in teachers' and principals' education programs (MoEYS, 2022a). It is because they do not acknowledge that these curricula benefit Cambodian students.

Consequently, Cambodian teachers and educators need a deeper understanding of reforming the Cambodian education system and solving the current problem. This could help Cambodian students be more competent in reaching the job market expectations. Similarly, Cambodian education needs more flexibility in allowing educators and teachers to initiate their innovative ideas. As such, implementing these curricula is still limited and needs more flexibility and autonomy at the top levels (Sothy et al., 2015). In previous studies, there are various challenges in implementing evidence-based model curricula. Such as human resource constraints, financial issues, poor physical infrastructure, the need for more awareness, traditional mindsets, and insufficient scientific research. and other issues. However, there are only three main challenges in implementing evidence-based curricula, which have been pointed out in this study to fit with the Cambodian context, especially for master's degrees in the teacher and principal education program.

What are the ways forward to implement evidence-based model curricula for master's degrees in teacher and principal education programs in Cambodia?

As we navigate the challenges in implementing evidence-based model curricula for master's degrees in teacher and principal education programs in Cambodia, the Cambodian government and other stakeholders have the opportunity to devise practical mechanisms and strategies that can significantly enhance the quality of education in our country. These strategies, when implemented, will pave the way for a brighter future in education.

The first mechanism is to develop more competent human resources to develop and implement evidence-based model curricula for master's degrees in Cambodia's teacher and principal education

programs. The Cambodian core trainers and education have to enhance their capacity building and upgrade their education qualification from bachelor's degree to master's degree and master's degree to Ph.D. For instance, the Faculty of Education, Royal University of Phnom Penh, has carried out the Teacher Upgrading Program (TUP) and Leadership Upgrading Program (LUP) under the supervision of the Ministry of Education, Youth, and Sport with financial support from the World Bank (Faculty of Education, 2021). The first phase, this training program run through the project entitled "Secondary Improvement Project (SEIP)" from 2017 to 2022, which has trained teachers with three cohorts in a total of 1,298 (F564) and non-target school (1,048 (F355) and school principals in a total of 210 (F21) and non-target schools (284 (F31)) (MoEYS, 2018). In addition, the training program will extend the scope of activities ranging from early childhood education to secondary education from 2022-2026. The training program will cover 4 credits to a master's degree program. The 4-credit program obtains teachers from early childhood education 476 and primary education (2,000).

The bachelor's degree program has 8,500 teachers and 2,000 school principals, and the master's degree has 120 teachers and 230 school principals (MOEYS, 2022b). By so doing, Cambodia will have adequate human resources to reform Cambodian education. Moreover, expanding funds allocated to the education sector is compulsory for developing more human resources. Enough financial and technical support could motivate Cambodian educators to improve and upgrade their educational qualifications (MoEYS, 2021a). For instance, most Cambodian educators and teachers live with low living standards, which keep them busy with outside academic tasks and extra money to support their families (Rana et al., 2017). They will be more willing to enhance capacity building once they provide a sufficient budget to support their families. As the number of competent human resources increases, there will be fewer barriers to implementing evidence-based model curricula for master's degrees in Cambodia's teacher and principal education programs (Rana & Ardichvili, 2014). The second strategy is to promote more scientific research activities among Cambodian educators and scholars to conduct more practical studies on implementing evidence-based model curricula for master's degrees in principal education programs in Cambodia. For instance, more research articles, journals, workshops, seminars, and other educational platforms must be promoted to raise awareness of the significance of implementing evidence-based model curricula (Heng & Sol, 2021). More allocated finances should be provided to foster scientific research in Cambodia, particularly in the field of curriculum and instruction, as well as to reform the Cambodian education system to fill the gaps of skill mismatch happening among Cambodian university students with the actual demand of the job market (Kitamura et al., 2016). In addition, the Cambodian government and other relevant stakeholders established a transparent system to motivate Cambodian educators and researchers, especially teachers, to keep researching their teaching methodologies and how to improve their student's learning outcomes. For instance, Cambodia initiated practical research incentives, such us providing a professor, associate professor, and assistant professor when they meet the requirements. Cambodian educators also have a chance to receive educational titles such as young professionals, education specialists, and senior education specialists when they are able to develop their school or their regional school to become effective standard schools (MoEYS, 2019b). By so doing, more scientific research activities will be happening to improve current Cambodian education and implement evidence-based model curricula for master's degrees in teacher and principal education programs.

The third mechanism is raising awareness of Cambodian teachers and educators to understand the importance of implementing evidence-based model curricula for master's degrees in Cambodia's and principals' education programs. For instance, developing a community of practices involves Cambodian teachers and educators sharing knowledge and best practices in implementing innovative curricula (Rogers & Anderson, 2019). In addition, shifting Cambodian educators' and principals' mindsets is crucial to removing their traditional mindsets and teaching methodology to keep updating themselves with the modern teaching style and adapt the learning environment to provide students

with equitable quality and inclusive education for everyone (Tan & Tee Ng, 2012). Furthermore, it provides more flexibility and autonomy for Cambodian teachers and educators to take action and think outside of the box to reform Cambodian education and conduct research to improve their students' academic performance. The Cambodian government has reformed the education system by transforming from centralization to decentralization, providing more authority at local and grassroots levels through school-based management and school community strategy (MoEYS, 2022a). By doing so, teachers and school principals have more authority and autonomy to develop their schools into effective standard schools. Hence, once they have autonomy, they shift their mindset and acknowledge the importance of these curricula; implementing evidence-based model curricula for master's degrees in teachers and principal education programs in Cambodia will be more visualized and viable. There are some ways forward to implement evidence-based model curricula for master's degrees in teacher and principal education, which are explained in more detail in Figure 4. Those suggestive mechanisms in this study reflected on the current situation and the feasibility of applying evidence-based model curricula in Cambodian and other countries with similar contexts and backgrounds.

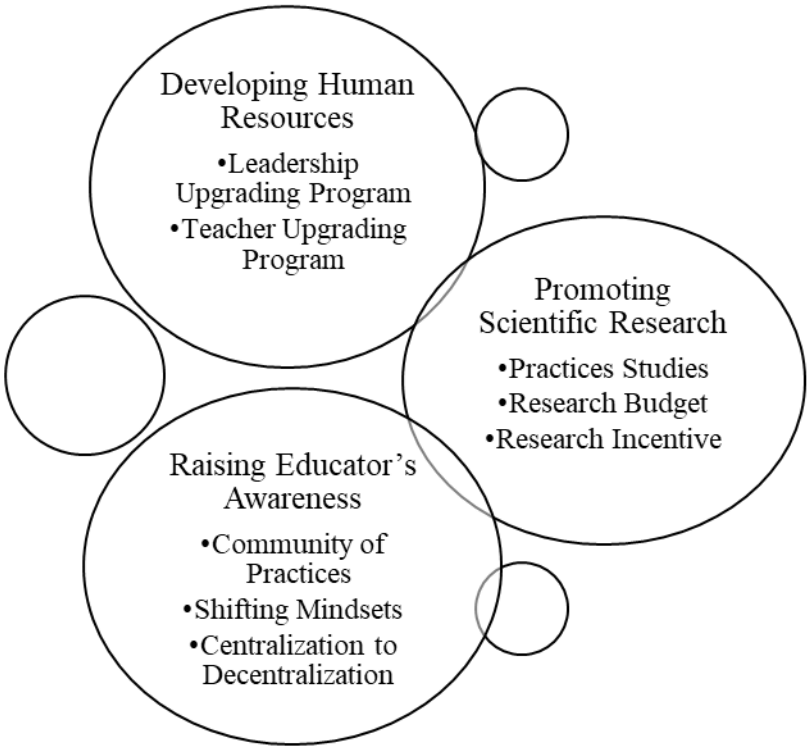

Figure 5 Ways forward to implement evidence-based model curricula for master's degree

Conclusion and recommendation

Reforming the Cambodian education system is a profound undertaking, and it requires the serious commitment of the Cambodian government and other stakeholders. This article, therefore, delves into the challenges and potential solutions for implementing evidence-based model curricula for master's degrees in Cambodia's teachers and principal education programs. The three main research objectives discussed in this paper are designed to provide a comprehensive response to the research aim. The first objective explores the critical components of building an evidence-based models of project-based curriculum, for master's degrees in Cambodia's teachers and principal education

programs. This research has identified three core components crucial for developing evidence-based models of project-based curricula: adaptive learning systems, practical-based learning, and need and problem-based learning. These findings hold the potential to significantly enhance the quality of education in Cambodia, instilling a sense of hope and optimism in the audience.

The second research objective is to identify the significant challenges in implementing evidence-based model curricula for master's degrees in teachers' and principals' education programs in Cambodia. The main hurdles are the traditional mindsets of Cambodian teachers in changing their teaching methodology, the scarcity of human resources and scientific research, and the lack of awareness and lack of understanding among Cambodian educators and teachers in implementing those curricula. The third research objective is to explore practical ways to implement evidence-based model curricula for master's degrees in teachers' and principals' education programs in Cambodia. This research has proposed several potential solutions to these challenges, such as the production of more competent human resources, the production of more scientific research activities, and the raising of awareness among Cambodian teachers and educators about the importance of implementing these curricula and addressing the problem of skill mismatch in Cambodia.

Recommendation

This paper provides comprehensive recommendations for practices and further research studies. The recommendations for the practices are divided into 3 main layers: national, organizational or university, and individual (teachers and principals). Each layer addresses specific actions and strategies to be implemented.

National layers:

 The Ministry of Education, Youth, and Sport, and other policymakers should consider upgrading Cambodian teachers and trainers to meet international professional standards.

 Policymakers and developing partners should provide more authority and budget allocation to foster scientific research activities and design and implement evidence-based model curricula for master's degrees in Cambodia's teachers and principal education programs.

Organization or university layers:

 Organizations or universities should raise more awareness of research activities on designing evidence-based model curricula for master's degrees in Cambodia's teachers and principal education programs.

 Organizations or universities should consider implementing evidence-based model curricula for master's degrees in teachers' and principals' education programs to enhance their capacity building and increase student learning outcomes in Cambodia.

 The organizations or universities shall implement evidence-based model curricula for master's degrees in Cambodia's teachers and principal education programs by following the suggested results from this research study.

Teachers and Principal layers:

 Cambodian teachers and principals shall implement evidence-based model curricula for master's degrees in teachers' and principals' education programs in Cambodia to solve the skill mismatch problem among Cambodian university students with job market demands.

 The Cambodian teachers and principals shall attend the training programs on evidence-based model curricula to ensure they can provide Cambodian students with equitable, quality, and inclusive education.

 Cambodian teachers and principals shall understand the benefits of carrying out these curricula and collaborate with their peers to mobilize resources from community people to develop and reform the Cambodian education system.

Recommendation for the further study

This research paper serves as a well-documented resource for the researcher, curriculum developer, and students to learn more regarding the concepts of evidence-based model curricula and some practical ways for implementing evidence-based model curricula for master's degrees in teacher and principal education programs. In addition, like-minded people can utilize this paper to develop an evidence-based model curriculum for master's in teacher and principal education programs. In this sense, it is ensured that this model will help the school principals and teachers provide students with quality and inclusive education The comprehensive nature of this research paper and its potential to guide future curriculum development should reassure the audience of its value and importance.

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