Ministry of Education, Youth and Sport

Education Research Council

CAMBODIA EDUCATION REVIEW

Jan-Jun
2018

Volume 2 No 1

Cambodia Education Review

Volume 2, No. 1, 2018

Access to online publication: www.erc.moeys.gov.kh

E-mail: cer.editor@moeys.gov.kh

This publication is supported by ADB Loan Number: 3427 CAM (COL)

Published and typeset in Cambodia by Education Research Council

Front Photo Credit to Dr. Nguonphan Pheakdey

Cambodia Education Review

Contents

Editorial

Article

CALL FOR PAPERS

Cambodia Education Review

The *Cambodia Education Review (CER)* is aimed at providing a referred and authoritative reference in the fields of education, comparative education and other related areas.

Objectives: The objective of *CER* to establish an effective mode of communication between policy-makers, planners, academics (including teachers) and research institutions about issues of education including policy development and teaching and learning both content, facilities and environments. *CER* aims to promote research culture in Cambodia while also providing evidence-based research to inform policy formulation and project intervention in Cambodia.

Contents: *CER* is a bilingual (Khmer and English) and biannual publication that is scheduled to be released in June and December every year. It is composed of two main sections: original research papers and dialogue. The dialogue can be in the form of book reviews, opinion essays and policy responses.

Subject Coverage:

- Educational leadership and management
- Educational philosophy and theories of education
- Educational policy
- Learning and teaching
- Pedagogies
- Sociology of education
- Teacher education
- Testing and evaluation

Specific Note for Authors: All manuscripts submitted to *CER* will go through an initial editor screening and a thorough (double-blind) peer review. A guide for author(s) is available at www.erc.gov.kh/cer/papers. Authors are encouraged to submit the manuscript in hard copy or in soft copy form of an MS Word file via email to Associate Editor below:

Dr. Sok Serey, ERC Office, Level 2, MoEYS Administration Building, St 380, Boeng Kengkang I, Phnom Penh at cer.editor@moeys.gov.kh Or Chhinh Nyda at chhinh.nyda@moeys.gov.kh

Ministry of Education Youth and Sport
Education Research Council

Editorial

Why Does Academic Research Matter?

Leang Un

Faculty of Social Sciences and Humanities,
Royal University of Phnom Penh
(Correspondence: leangrupp@gmail.com)

Citation: Un, L. (2018). Why does academic research matter? *Cambodia Education Review, 2*(1), 1–3.

Francis Bacon (1561–1626) once said "knowledge is power." The issue is, then, how can knowledge be obtained? Knowledge can be gained through personal experiences, tradition, religion and expertise. However, the knowledge that derives from these sources is not always powerful enough to transform human existence and lead society to a better future in sustainable and innovative ways. The movement towards producing scientific knowledge to guide the evolution of human existence and society towards a desired condition first emerged in the West in the 18th century. Since then, belief in scientific knowledge has been spread across the globe, especially since the start of the age of globalization.

The process of arriving at scientific knowledge is called *research*. Research describes the process in which data/information is collected, analyzed and interpreted in order to advance our understanding of a topic or issue or to find a new solution for a particular problem. Research findings are very useful for establishing communication and a dialogue with policy-makers, planners and practitioners and to guide practical development interventions. Moreover, research provides positive impacts for education, the economy, the environment, industries, healthcare and society.

However, research is not just about designing or implementing a development project. In addition to this, simply copying a development project from one place and implementing it in anther might not work depending on the specific context. Therefore, we just cannot apply "lessons from elsewhere" to solve Cambodian problems. For Cambodia to develop, we need to create new ideas here and now in order to solve our local problems. All new ideas and development program for contemporary Cambodian human and social issues must come from research conducted by local universities either alone or in cooperation with more experienced researchers from overseas.

Scientific research usually consists of three steps: posing questions for investigation, collecting and analyzing data/information and presenting the findings concerning the research questions. There are two different types of research: academic research and applied research. Each type is used for a specific purpose and has a specific research design methodology and paradigm analysis. Academic research has traditionally been done by professors and students at universities to advance new knowledge and ideas, while applied research is conducted to solve specific and urgent problems. In Cambodia, research has been mainly conducted by national and international organizations to track the progress of or to evaluate the effectiveness and efficiency of development projects. This has resulted in more applied research being done than academic research. Local universities are not very involved in academic research-related activities due to either a lack of financial resources or limited manpower. In many cases, research has been conducted through the theses required to fulfill the requirements of bachelor or master's degrees at universities. While there are some local scholars who conduct research, these researchers have been deeply dependent upon international research funds and outsider interests, directed by other's goals and aims rather than pursuing his or her own research interest.

In a research-intensive or research teaching university, research is an obligation that faculty members must carry out in order to advance their professional careers and to be recognized by their peers. But our concern here is why faculty members at any particular university in Cambodia need to do research? The answer is not always straightforward. Career advancement for academics in Cambodia does not require any outstanding research publications or experiences nor there is any peer pressure for recognition. The only incentive that Cambodian researchers at any particular university are getting or seeking for conducting research is their researcher's fee. However, sometimes this research fee is not geared

towards academic research inquiry but, rather, towards development consultation-oriented projects. This type of research is not *research* as we defined it above: research is not about implementing a development project in whatever form.

Recently, there has been a growing demand for evidence-based policy among Cambodian ministries and policy-makers. This demand has been translated into investment in and a turn towards building a research culture among Cambodian universities. The attempt to build a research culture in Cambodia by the government is evident through the availability of research grants for university researchers through the US $23 million Higher Education Quality and Capacity Improvement Project (HEQCIP) 2010–2015/17, which is funded by the World Bank and implemented by the Ministry of Education, Youth and Sport. Since its implementation, some universities are actively promoting their research activities.

With limited conduct and investment in academic research, new technology, knowledge and innovation have rarely emerged in Cambodia. We strongly believe that for Cambodia to develop technologically, economically and socially, academic research must be strengthened and the research community become more active. To meet this aim, the Cambodian government has placed more investment in research in Cambodia through the upcoming Higher Education Improvement Project 2018–2023, which has a total budget of more than US $90 million. With this investment, government strongly believes that a few selected universities that benefits from this project will improve their academic research culture.

Ministry of Education Youth and Sport
Education Research Council

Article

Identifying the Optimal Mechanisms for the Professional Development of Academic Staff at the Royal University of Phnom Penh

Nary Tao, Sokha Om and Visal Sot
Faculty of Education of the Royal University of Phnom Penh
(Correspondence: narytao@gmail.com)

Received 26 March 2018; Accepted 15 May 2018

Abstract

Academic staff's ongoing professional development is being given increasing importance in countries all around the world. In Cambodia, there is an increasing public and government focus on the effectiveness and quality of teaching staff. Yet, even though they are considered the most crucial actors in implementing all instructional reforms and they are the direct forces serving the university functions of teaching, research and community services at the grassroots level, little is known about the professional development needs of academic staff in higher education. This study employs a mixed-methods sequential exploratory design. Research instruments comprising the survey questionnaire and semi-structured interviews were used to obtain data for the study. In the first phase of the study, 148 survey questionnaires were completed by academic staff at the Royal University of Phnom Penh (RUPP). In the second phase, eight teaching staff and 13 senior administrators were selected for semi-structured interviews. Descriptive statistics such as percentages, mean and standard deviation were used in analyzing the questionnaire data while the interview data was analyzed using themes. It was found that these academic staff highly appreciated the professional development programs that they had engaged in the last three years. They also highlighted the connection between the frequency of professional development programs

offered and the positive impact on their instruction. However, they reported that they did not have access to regular professional development programs. They further revealed that there were a number of obstacles that hindered them from fully participating in the professional development programs offered. The findings of the current study have various implications for policy and implementation and practice in relation to the optimal mechanisms for the professional development of academic staff in a tertiary setting.

Key Words: Professional development, outcomes-based assessment, reflective practice, action research

Citation: Tao, N., Om, S., & Sot, V. (2018). Identifying the optimal mechanisms for the professional development of academic staff at the Royal University of Phnom Penh. *Cambodia Education Review, 2*(1), 4–29.

Introduction

The changing nature of higher education in the 21st century requires academic staff to constantly improve their knowledge and skills and to develop the effective and efficient delivery of their pedagogical instruction and outcomes-based assessment (Tao, 2016). Academic staff also play a critical role in developing the quality of universities, as they are the direct forces serving many of the university's functions including teaching, research and community services (Zepeda, 2012). They, therefore, must have the up-to-date, relevant knowledge and skills in their subject areas including curricula, pedagogies, outcomes-based assessments and research. In other words, the quality of education depends largely on the academic staff's abilities and performances (Steward, 2009). In this context, academic staff need continuous professional development programs to stay abreast with the changing needs of their profession. In-service professional development training can help academic staff to become qualified and proficient in performing their pedagogical instruction and outcomes-based assessments in order to fulfill their students' needs through equipping them with up-to-date knowledge and skills in their subject areas (Badri, Alnuaimi, Mohaidat, Yang & Rashedi, 2016). Research has shown that one of the most important factors in student learning achievement is closely related to the academic staff's effectiveness (i.e., having up-to-date and relevant subject knowledge and

pedagogies) (OECD, 2011). It has been stated that ongoing professional development is the key building block for developing effective academic staff. However, Donkor and Banki (2017) found that a lack of access to professional development training results in crippling the development of academic staff and student learning in Ghana. The study concluded that the academic staff employed the same teaching approaches in their classes as they did not have the opportunities to acquire new subject knowledge and teaching methods (Donkor & Banki, 2017).

It has been widely asserted that academic staff's subject matter knowledge, competence, teaching skills and commitment have a positive impact on their instruction and student learning (Steward, 2009; Zepeda, 2012). Such an assertion justifies the urgent need for academic staff's ongoing professional development. In recognition of the fact that there is a positive relationship between academic staff's effectiveness and student achievement, the Royal Government of Cambodia (RGoC) and the Ministry of Education, Youth and Sport (MoEYS) have developed various policy reform measures to improve academic staff's instructional competencies, such as the Teacher Policy Action Plan. In alignment with the commitment of RGoC and MoEYS to improve the quality of academic staff, it is of great importance that the top management of the Royal University of Phnom Penh (RUPP) identify their academic staff's professional development needs as well as the ways in which professional development activities can be effectively implemented in order to enable them to develop quality professional development programs that support the learning and growth of academic staff.

This study explores academic staff's perceptions of the current professional development programs and the barriers to their participation in professional development activities in order to obtain insights for developing quality professional development programs at RUPP. The study also aims to identify the optimal mechanisms for the professional development of academic staff at RUPP. In particular, this study examines academic staff's views on the frequency of their participation in professional development programs and its impact on their instruction, the areas they need professional development programs in, their preferred format, time, numbers of hours, location and trainers' profiles as well as the barriers to participating in their professional development programs.

Conceptualizing Professional Development

Features of Effective Professional Development

Numerous studies have found that effective professional development consists of seven main features: content focus, active learning, collaboration, models of effective practice, coaching and expert support, feedback and reflection, and sustained duration (Buysse, Castro & Peisner-Feinberg, 2010; Buczynski & Hansen, 2010; Allen, Pianta, Gregory, Mikami, & Lun, 2011; Roth, Garnier, Chen, Lemmens, Schwille & Wickler, 2011; Johnson & Fargo, 2014).

The first feature of effective professional development is being content focused. Professional development should emphasize instructional strategies that address specific curriculum content. Having such a focus provides support for academic staff's learning within their own classrooms, as they have the opportunities to examine their students' work, implement the newly acquired knowledge and skills with their students and explore specific pedagogy in the content area (Johnson & Fargo, 2014). For example, Buysse, Castro and Peisner-Feinberg (2010) and Johnson and Fargo (2014) found that designing academic staff's professional learning so that it was context specific, job embedded and content focused was crucial for addressing the diverse needs of academic staff in various settings. The authors concluded that this type of professional development provided academic staff with the opportunity to utilize such teaching content with their own students and thus enhance their students' learning achievement.

The second feature of effective professional development is incorporating active learning. This means designing professional development so that it employs authentic artifacts and interactive activities. When academic staff are actively involved in designing various instructional strategies, they have the opportunity to be involved in the same type of learning they are designing for their students (Daehler, Wong, Shinohara & Miratrix, 2012). Designing professional development through addressing how and what academic staff learn is consistent with theories of adult learning and development (Trotter, 2006). Such theories highlight that adults come to learning with experiences that should be used as resources for their new learning and that they should choose learning opportunities that match their interests and their own classroom experiences and/or needs. In addition to this, reflection and inquiry should be central to their learning and development. For instance, Buczynski and

Hansen (2010) and Heller, Daehler, Wong, Shinohara and Miratrix (2012) found that professional development that engaged academic staff in the same learning activities they were designing for their students through a form of active learning experience was the most effective in supporting academic staff's learning and growth.

The third feature of effective professional development emphasizes supporting collaboration. Through working collaboratively, academic staff can set up their community of learning by means of sharing ideas and working together in their learning. Such collaboration can range from one-on-one or small group interactions to institutional collaboration with other professionals beyond the academic staff's own universities (Allen et al., 2011). Allen et al. (2011) found that professional development that utilized collaborative work could provide a trusting environment for academic staff's inquiry and reflection into their own practices, allowing them to take risks, solve problems and attend to dilemmas in their instructional practices.

The fourth feature of effective professional development is employing models of effective practices. Providing academic staff with curricular models and modeling instruction and outcomes-based assessment (Tao, 2016) can enable them to see a clear picture of what best practices look like. Such models comprise lesson plans, sample student work, observations of peer academic staff and written cases of teaching (Heller et al., 2012). Heller et al. (2012) found that the professional development that incorporates curricular models and/or modeling of effective delivery of content and pedagogical learning for academic staff proved successful in improving student achievement.

The fifth feature of effective professional development is relevant to providing coaching and expert support. Having coaching and expert support can provide academic staff with an opportunity to share expertise about content and evidence-based practices while also addressing individual academic staff's needs (Roth et al., 2011). Studies by Powell, Diamond, Burchinal and Koehler (2010) and Roth et al. (2011) showed that academic staff who received coaching and expert support were more likely to enact desired teaching practices and applied them more appropriately than those receiving more traditional professional development (i.e., courses and lecture-based methods).

The sixth feature of effective professional development is related to offering feedback and reflection. This aspect of professional learning

provides sufficient time for academic staff to think, receive input and make changes to their practices by facilitating reflection and soliciting feedback (Johnson & Fargo, 2010). For example, Johnson and Fargo (2010) and Greenleaf et al. (2011) suggest that professional development programs that leverage feedback and opportunities for reflection had the potential to create richer environments for academic staff's learning.

The last feature of effective professional development is sustained duration. Professional development of sustained duration provides academic staff with an adequate time to learn, practice, implement and reflect upon new instructional strategies that can empower them to make changes in their practices (Johnson & Fargo, 2014). A number of studies (i.e., Doppelt, Schunn, Silk, Mehalik, Reynolds & Ward, 2009; Heller et al., 2012; Johnson & Fargo, 2014) found that professional development that was sustained through providing multiple opportunities for academic staff to engage in learning around a single set of concepts or practices had a greater chance of transforming teaching practices and student learning. This type of professional development was contrasted with one-off workshop professional development that did not offer academic staff meaningful professional learning.

Barriers to Implementing Effective Professional Development

A number of researchers have identified some barriers to the implementation of effective professional development programs (Buczynski & Hansen, 2010; Badri, Alnuaimi, Mohaidat, Yang, & Rashedi, 2016; Tooley & Connally, 2016; Ros & Oleksiyenko, 2017). Buczynski and Hansen (2010) found that the various challenges that academic staff reported included a lack of time allotted to teaching curriculum that uses the newly acquired knowledge and skills, the need to teach mandated curriculum on a pacing guide, a lack of resources (i.e., curriculum materials, technology or science equipment), and classroom management issues. The study concluded that a lack of resources was the largest obstacle to professional development implementation. Badri et al. (2016) identified further barriers that academic staff faced: a lack of employer support, conflict with work schedules, not having time because of work schedules, family responsibilities and a lack of relevant professional development offered. Another study conducted in one public university in Cambodia by Ros and Oleksiyenko (2017) also found that the institutional authorities lacked adequate resources and motivation to organize personnel development programs for academic staff. The study

further revealed that the university lacked both specific policies on professional development and a budget for professional development programs.

Tooley and Connally (2016) have also identified four main obstacles to implementing effective professional development. The first obstacle is identifying professional needs. Academic staff's professional development is usually conducted without first exploring what type of development academic staff actually need. Therefore, academic staff's professional development is considered as ineffective by academic staff as it does not match their needs. The second obstacle is choosing approaches that are most likely to be effective. Most professional development training is implemented in less effective formats like one-off workshops rather than being of sustained duration. Similarly, in their study Ros and Oleksiyenko (2017) reported that academic staff said that most of the departmental professional development workshops they had were spontaneous, eclectic, irregular or irrelevant one-off or recycled short courses and workshops. Despite the fact that one-off professional development workshops are easy to schedule and require less time for implementation, there is a consensus among professional development experts that such workshops are ineffective (Zepeda, 2012; Tooley & Connally, 2016). The third obstacle is implementing approaches with quality and fidelity. Although educators have knowledge of effective professional models, professional implementation presents its own obstacles. Various implementation barriers include the depth of observation, feedback and suggestions for things to try differently, a lack of time and accountability for academic staff to follow through with the recommended next steps, the lack of an integrated, coherent approach to instruction and insufficient capacity. The last obstacle is assessing professional development outcomes. It has been reported that the lack of good systems for monitoring the quality and impact of professional development programs can result in academic staff receiving little meaningful professional learning (Tooley & Connally, 2016).

Methodology and Study Area

The present study employed a mixed-methods approach through integrating quantitative and qualitative methods within a single study to obtain a better understanding of the complexity of research inquiry for exploring academic staff's perceptions of the professional development programs they were offered. A mixed-methods approach was chosen as

neither quantitative nor qualitative methods were adequate for providing an in-depth understanding into the complexities of academic staff's views on their professional development programs. The use of mixed methods complemented the strengths and weaknesses of quantitative and qualitative methods. The current study used a mixed-methods sequential exploratory design comprising two distinct phases. The quantitative phase was a survey questionnaire. The goal of the quantitative phase was to explore the academic staff's views on the frequency of their participation in professional development programs and the programs' impact on their instruction, their current needs for professional development programs, their preferred format, time, number of hours, place, and trainer profile as well as the barriers to participating in their professional development programs. The questionnaire items were based a review of the literature on professional development for academic staff. The qualitative phase included semi-structured interviews, field notes and document analyses. The goal of the qualitative phase was to allow academic staff to respond in an open way so that it was possible to obtain additional perspectives with regard to their experiences and feelings on professional development training activities. This second phase also sought to obtain senior administrators' perspectives on the professional development programs at their university.

To explore the academic staff's perceptions of their professional development programs, the study employed purposive sampling to select RUPP for the current study. The university is the oldest and largest higher education institution in Cambodia and it offers degrees from undergraduate to doctoral programs. It has approximately 78 top management, 307 academic staff, 76 administrative staff and 17,644 students (RUPP, 2018). Hence, this university was selected on the basis that participants' characteristics matched the study's aim and objectives. All academic staff who were working at RUPP's five faculties (Science, Social Science and Humanities, Development Studies, Engineering and Education) and the Institute of Foreign Languages were invited to participate in the first phase of the study by completing the survey questionnaires. Unfortunately, the survey questionnaires could only be administered to teaching staff who were present during a staff meeting at their departments. 180 teaching staff in total took a questionnaire. This could be the limitation of the study due to the fact that the researchers were unable to involve all teaching staff in this study, as some staff were absent during the questionnaire administration period. Teaching staff took the questionnaire from the meeting to complete at their homes and were asked to return the

questionnaires within a one-week period. 148 survey questionnaires were completed and returned to the researchers in phase one, yielding a response rate of 82 percent. In the second phase of the study, eight teaching staff and 13 senior administrators were selected for semi-structured interviews. Of the eight teaching staff, two were from the Faculty of Social Science and Humanities, two from the Institute of Foreign Languages, one from the Faculty of Sciences, one from the Faculty of Development Studies, one from the Faculty of Engineering, and one from the Faculty of Education. The 13 senior administrators included one vice rector and 12 deans/vice deans/department heads from the five faculties and the Institute of Foreign Languages. The selection criteria were based on their experiences with professional development programs, number of years of working experience, number of teaching hours, academic qualifications, disciplines and gender.

The Academic Staff Professional Development Questionnaire was developed based on a thorough literature review related to academic staff professional development. Some items were constructed while some items were adapted from the Teaching and Learning International Survey (TALIS) (2013). The design of the questionnaire also drew from several theories and previous studies on professional development programs. The validity of the questionnaire was examined through a consultative meeting with six potential teaching staff. The Academic Staff Professional Development Questionnaire had six sections. The first section covered the participants' demographic information. The second section focused on professional development activity participation using two four-point rating scales of "never" to "always" and "no impact" to "large impact." The third section emphasized professional development needs, employing a four-point rating scale of "no need" to "high level of need." The fourth section included barriers to professional development participation using a four-point rating scale of "strongly disagree" to "strongly agree." The fifth section explored professional development method preference, employing yes/no statements. The last section included open-ended questions related to sections two to five and also asked for recommendations for improving professional development programs.

The semi-structured face-to-face interviews were conducted after the administration of the questionnaires in phase one of the study. The open-ended questions were developed based on a literature review related to professional development. They were employed to gain deeper understandings and to explore senior administrators' and individual

academic staff's perspectives about the professional development programs. The quantitative data (survey questionnaire) was analyzed using SPSS version 21, focusing on descriptive statistics including percentage, mean scores and standard deviation. Although the data of the senior administrators and academic staff were analyzed separately, constant comparisons were made to provide a generic picture of the perspectives of academic staff with regard to their own professional development programs. The qualitative data (i.e., interviews and field notes) were analyzed using both descriptive and narrative approaches by dividing them into themes. In summary, both quantitative and qualitative data were integrated and discussed to examine the academic staff's perceptions on their professional development programs.

Results and Findings

Participants' Background Characteristics

There were 148 participants who responded to the survey questionnaire of this study. Slightly over 70 percent of them were male. About 77 percent of them were married and 20 percent were single. In relation to the highest educational level, 78 percent reported that they had obtained master's degrees, 13 percent had received doctoral degrees and about 9 percent had a bachelor's degree. Nearly 50 percent reported that they had completed their highest educational level after 2010, followed by 40 percent who had finished between 2000 to 2010. Slightly over three-quarters of the respondents identified themselves as civil servants and less than a quarter of them labeled themselves as contractual staff. Approximately 84 percent were teaching bachelor level programs and 14 percent were teaching both bachelor and master-level programs. The respondents' ages ranged from 21 to 61 years, with a mean age of 37.95 (SD = 8.39). They taught between two and 34 hours per week, with mean teaching hours of 14.83 (SD = 8.57), indicating that the number of teaching hours of some respondents were too much. The respondents also reported that they taught between one and five subjects per semester, with a mean number of teaching subjects of 2.04 (SD = 0.80). Their teaching experience was reported to range from one to 30 years, with a mean teaching experience of 11.53 (SD = 8.07).

Professional Development Activity Participation and its Positive Impact

As Table 1 shows, overall the respondents had participated in professional development activities, with a mean of 2.79 (SD = 0.80). The most

frequent professional development activity that they had participated in was "knowledge and understanding of my subject fields," with a mean of 3.06 (SD = 0.99), followed by "pedagogical competences in teaching my subject fields," with a mean of 2.91 (SD = 0.93). The least frequent professional development activity that they attended was associated with "teaching students with special needs," with a mean of 2.26 (SD = 1.03). This was followed by "student career guidance and counseling," with a mean of 2.65 (SD = 1.08). A close examination of Table 1 also shows that there was variation in the professional development activities participated in by these respondents, indicating that some of them had frequently attended professional development programs while others had rarely participated in these activities. The respondents reported that the professional development activities they attended had a moderate positive impact on their teaching, with a mean of 3.01 (SD = 0.64). The most moderate impact of professional development activities was reported to be related to "knowledge and understanding of my subject fields," with a mean of 3.25 (SD = 0.80), followed by "pedagogical competences in teaching my subject fields," with a mean of 3.22 (SD = 0.71). The professional development activity with the smallest impact was "teaching students with special needs," with a mean of 2.52 (SD = 1.01). This was followed by "student career guidance and counseling" with a mean of 2.80 (SD = 0.97). Interestingly, the professional development activities that staff had most frequently participated in were reported to have the largest impact on their teaching, whereas the professional development activities they had engaged in the least had the smallest impact on their instruction.

The key informant interviews further revealed that academic staff had participated in several types of professional development training formats including workshops, seminars and conferences. Most of them stated that they had only participated in professional development training on one occasion, while a few of them highlighted that they attended professional development training between three to five times per academic year. All academic staff said that the professional development training they attended was inadequate for them to gain in-depth knowledge and understanding related to their subject fields.

Table 1. Professional development activities participation and their positive impact

Attributes	**Participation** 1=Never 2=Rarely 3=Sometimes 4=Always		**Impact** 1=No impact 2=Small impact 3=Moderate impact 4=Large impact	
	Mean	**SD**	**Mean**	**SD**
Knowledge and understanding of my subject field(s)	3.06	0.99	3.25	0.80
Pedagogical competences in teaching my subject field(s)	2.91	0.93	3.22	0.71
Knowledge of the curriculum	2.90	0.92	2.93	0.84
Student behavior and classroom management	2.90	0.98	3.07	0.88
Student evaluation and assessment practice	2.87	0.92	3.12	0.73
Research skills	2.81	0.88	2.90	0.77
Approaches to individualized learning	2.80	1.04	2.98	0.81
ICT skills for teaching	2.79	1.05	2.99	0.92
Teaching cross-curricular skills (e.g., problem-solving)	2.73	0.91	2.94	0.82
Student career guidance and counseling	2.65	1.08	2.80	0.97
Teaching students with special needs	2.26	1.03	2.52	1.01
Overall	2.79	0.80	3.01	0.64

Current Needs for Professional Development Activities

As Table 2 illustrates, overall the respondents indicated their current need for professional development activities was slightly above the moderate level with a mean of 3.20 (SD = 0.54). They pointed out that area with the highest need of professional development activity was related to "knowledge and understanding of my subject fields," with a mean of 3.40 (SD = 0.74). This was followed by "research skills," with a mean of 3.38 (SD = 0.69), "approaches to individualized learning," with a mean of 3.26 (SD = 0.74), "pedagogical competences in teaching my subject field(s)," with a mean of 3.22 (SD = 0.80), "teaching cross-curricular skills," with a mean of 3.18 (SD = 0.70), "student evaluation and assessment practice," with a mean of 3.17 (SD = 0.72), "knowledge of the curriculum," with a mean of 3.13 (SD = 0.74), "student career guidance and counseling," with a mean of 3.10 (SD = 0.77), "ICT skills for teaching," with a mean of 3.08

(SD = 0.89), "teaching students with special needs," with a mean of 3.08 (SD = 0.77), and "student behavior and classroom management," with a mean of 3.05 (SD = 0.82) respectively.

Table 2. Current need for professional development activities

Attributes	**Need level** 1= No need 2= Low need 3= Moderate need 4= High need	
	Mean	**SD**
Knowledge and understanding of my subject field(s)	3.40	0.74
Research skills	3.38	0.69
Approaches to individualized learning	3.26	0.74
Pedagogical competences in teaching my subject field(s)	3.22	0.80
Teaching cross-curricular skills (e.g., problem-solving)	3.18	0.70
Student evaluation and assessment practice	3.17	0.72
Knowledge of the curriculum	3.13	0.74
Student career guidance and counseling	3.10	0.77
ICT skills for teaching	3.08	0.89
Teaching students with special needs	3.08	0.77
Student behavior and classroom management	3.05	0.82
Overall	3.20	0.54

The key informant interviews further showed that both academic staff and senior administrators perceived that professional development activities were useful in terms of providing the teaching staff with opportunities to upgrade their knowledge and skills related to their subject fields. Such professional development training had a positive impact on them professionally as it helped them to become lifelong learners. As a result of attending professional development training, academic staff pointed out that they gained confidence in their teaching, as they acquired up-to-date knowledge and skills in their subject areas that they could then utilize in their class. They further stated that professional development training workshops provided them with the opportunity to build up networks with other colleagues that enabled them to learn with and from one another both within and across universities.

Barriers to Professional Development Participation

Table 3 illustrates the barriers to professional development participation reported by the respondents. The barrier that hindered them the most in participating in professional development activities was a lack of incentives for participating in such activities, with a mean of 2.97 (SD = 0.82).This was followed by a lack of employer support, with a mean of 2.75 (SD = 0.93), no relevant professional development being offered, with a mean of 2.66 (SD = 0.83), professional development being too expensive/unaffordable, with a mean of 2.61 (SD = 0.86), professional development conflicting with work schedules, with a mean of 2.54 (SD = 0.77), a lack of time due to family responsibilities, with a mean of 2.44 (SD = 0.78), and not having the pre-requisites, with a mean of 1.71 (SD = 0.78).

Table 3. Barriers to professional development participation

Attributes	**Level of agreement** 1= Strongly disagree 2= Disagree, 3= Agree 4= Strongly agree	
	Mean	**SD**
There are no incentives for participating in such activities	2.97	0.82
There is a lack of employer support	2.75	0.93
There is no relevant professional development offered	2.66	0.83
It is too expensive/unaffordable	2.61	0.86
Professional development conflicts with my work schedule	2.54	0.77
I do not have time because of family responsibilities	2.44	0.78
I do not have the pre-requisites (e.g., qualifications, experience, seniority)	1.71	0.78
Overall	2.53	0.49

The key informant interviews further demonstrated that there were a number of obstacles that hampered academic staff from attending PD training programs. These barriers included financial issues (i.e., they were required to pay the fee for professional development training), no appointment from the department heads/faculty deans, lack of incentive (i.e., no connection between professional development participation and promotion/ advancement), lack of support/encouragement, lack of autonomy in choosing the types and topics of professional development

training, irrelevant topics, training covering mostly theories, teaching not on practical topics (i.e., something that could not be implemented in class), previous training workshops discouraging them from attending future workshops (i.e., the speakers/presenters had little expertise in the topics presented), professional development being held at times that conflicted with their teaching schedules (i.e., professional development training occurred during their teaching sessions), and family commitments. The senior administrators also added that professional development training was not compulsory for all teaching staff at each department as there was no professional development policy at the faculty and/or university level. The lack of such a professional development policy meant there was no specific budget amount allocated for professional development training activities for teaching staff. Therefore, the professional development training workshops that were held were instead driven by donors' interest or served the agenda of a particular group rather than fulfilling the actual needs of teaching staff, resulting in their low participation. Consequently, these professional development training workshops had been identified to have very little impact on academic staff due to their donor-driven and one-off nature.

Table 4. Respondents' preferred format of professional development methods

Attributes	**Percentage**	
	Yes	No
Courses/workshops (e.g., on subject matter or methods and/or other education-related topics)	88.3	11.7
Observational visits to other universities/schools	84.7	15.3
Education conferences or seminars (where teachers and/or researchers present their research results and discuss educational issues)	75.2	24.8
Qualification programs (e.g., a degree program)	66.7	33.3
Problem-based projects	65.7	34.3
Mentoring/coaching	58.7	41.3
Small study group	46.8	53.2
Other	8.9	91.9

Academic Staff's Preferred Format for Professional Development Methods

Table 4 displays the academic staff's preferred format for professional development methods. Over 80 percent of the respondents favored two professional development formats: courses/workshops and observational visits to other universities/schools. Another 75 percent would like to have education conferences or seminars as the format of their professional development methods. Slightly over 65 percent of them favored qualification programs and problem-based project methods. Nearly 59 and 47 percent preferred their professional development methods to be associated with mentoring/coaching and small study groups respectively.

The key informant interviews further highlighted that the academic staff liked various types of topics to be included in their future professional development training programs. These topics were project-based learning, critical thinking skills, information and communication technology integration in teaching and learning, innovative teaching methodology, innovative assessments for enhancing instruction and learning, curriculum development and research skills.

Academic Staff's Preferred Times for Professional Development

Table 5 shows academic staff's preferred times for professional development. 57 percent and 44 percent of the respondents preferred their professional development to occur on vacation weekdays and vacation weekends respectively. Over one-third wanted their professional development to be offered in the mornings and afternoons on the weekend. Less than 30 percent wanted their professional development to be conducted in the evening weekdays or at lunch time on weekdays.

Table 5. Respondents' preferred times for professional development

Attributes	**Percentage**	
	Yes	No
On vacation weekday	57.0	43.0
On vacation weekend	44.4	55.6
One weekend mornings and afternoons	35.9	64.1
In the evening on weekdays	29.6	70.4
At lunch time on weekdays	24.1	75.9
Other	7.7	92.3

Academic Staff's Preferred Number of Hours, Places and Trainer Profiles for Professional Development

Table 6 shows the academic staff's preferred number of hours, places and trainer profiles for professional development. 58 percent of the respondents preferred three hours of professional development programs per week, while about 31 percent wanted to engage with their professional development activities for six hours weekly. Nearly 50 percent wanted to have their professional development program located at RUPP, whereas 46 percent indicated they were willing to participate in their professional development activities anywhere suitable. Over-one third reported that they were in favor of trainers who were foreign experts, while more than half of them did not mind whether their trainers were foreign or local experts.

Table 6. Respondents' preferred number of hours, places and trainer profiles for professional development

Attributes		**Percentage**
Preferred number of hours to undertake professional development per week	3 hours per week	58.3
	6 hours per week	30.6
	9 hours per week	4.2
	12 hours per week	0.7
	15 hours per week	2.8
	More than 15 hours per week	3.5
Preferred place for professional development	At RUPP	47.9
	Elsewhere	6.3
	Anywhere	45.8
Preferred profile of trainers	Foreign expert(s)	35.4
	Local expert(s)	8.3
	Either foreign or local expert(s)	56.3

Academic Staff Need for their Institution to Support their Professional Development Fees

Table 7 shows respondents' opinion as to how much their institution should support their professional development fees. Nearly 70 percent of respondents reported that they needed their university to pay for all of their professional development program fee. Less than 10 percent wanted their university to mostly cover their professional development program fees. Another 16 percent said that they only needed their university to pay for half of their professional development program fees. Interestingly, only 5 percent reported that they could pay for the whole professional development program fees themselves without needing any financial support from their university.

Table 7. Respondents' need for RUPP to financially support their professional development fees

Attribute	Distribution	Percentage
Need RUPP to financially cover the professional development fees	0% (no need at all)	5.0
	25% (partially cover)	2.1
	50% (half cover)	16.4
	75% (mostly cover)	8.6
	100% (completely cover)	67.9

Discussion

Both quantitative and qualitative data revealed that academic staff participated in professional development during the last three years with different levels of frequency. There was a large variation in the frequency of participation in professional development activities among these respondents. These results demonstrated that some respondents had frequently participated in professional development activities while others rarely attended such activities, indicating a gap in the knowledge and skills acquired by them. Such variation in the frequency of professional development participation was due to the donor-driven and ad hoc nature of the professional development programs offered. These results also indicated that professional development was associated with one-off workshops. These findings were consistent with the previous studies (i.e., Ros & Oleksiyenko, 2017) that found that this type of professional

development did not provide academic staff with meaningful professional learning.

Overall, the academic staff demonstrated that their professional development participation had a moderate impact on their profession. They highlighted that the types of professional development activities that they had engaged the most frequently (i.e., knowledge and understanding of their subject fields and pedagogical competences in teaching their subject fields) had the largest positive impact on their instruction. In contrast, they reported that the types of professional development activities that they had rarely participated in (i.e., student career guidance and counseling and teaching students with special needs) had the smallest positive impact on their teaching. These results indicated that there was a positive relationship between the frequency of respondents engaging in professional development activities and the impact on their instruction. Such findings supported previous research (i.e., Johnson & Fargo, 2014) that found that frequent/sustained professional development had a greater impact on academic staff's learning as it provided them with opportunities to learn, practice, implement and reflect upon new teaching methods/strategies in their own classes.

In relation to the respondents' current needs for professional development, it was found that their needs for professional development activities were slightly above moderate level. The professional development programs that respondents reported needing were knowledge and understanding of their subject fields, research skills, approaches to individualized learning, pedagogical competences in teaching their subject fields, teaching cross-curricular skills, student evaluation and assessment practices, knowledge of the curriculum, student career guidance and counseling, information and communication technological skills for teaching, teaching students with special needs, and student behavior and classroom management. These results showed that these respondents would fully participate in the above professional development programs due to the relevance of these activities to their individual needs. These findings indicated that the academic staff valued professional development, as they perceived that it played a vital role in ensuring that they were well-equipped with up-to-date knowledge and skills to support student learning in their classes (Steward, 2009; Zepeda, 2012).

In relation to the barriers for their participation in professional development programs, academic staff indicated there were a number of obstacles. These were a lack of incentives, lack of support/encouragement,

irrelevant professional development programs, a lack of practicality, unaffordable fees, a lack of autonomy, and conflicts with teaching schedules. Such findings supported the recent study undertaken by Badri et al. (2016). The senior administrators also identified that further barriers included the university's lack of a professional development policy, the lack of a specific budget being allocated for professional development activities and the donor-driven nature of professional development. These obstacles were likely to prevent academic staff from participating in the professional development programs offered. These findings were aligned with Ros and Oleksiyenko's (2017) study. The authors found that a lack of professional development policies and budget hindered the implementation of professional development programs and activities in one public university in Cambodia.

In relation to the preferred professional development format, the study found that the format the academic staff preferred the most was courses/workshops dealing with their subject matter/methods and/or education-related topics, followed by observational visits to other universities, education conferences or seminars where lecturers and/or researchers presented their research results and discussed educational issues, qualification/degree programs, problem-based projects, mentoring/coaching, and small study groups. These results demonstrate that the respondents tended to favor professional development courses/workshops over mentoring/coaching and small group study methods. This may be due to their less frequent participation in such professional development format of methods. These findings differed from the study undertaken by Roth et al. (2011). The authors found that professional developments that provided coaching and expert support could provide academic staff with opportunities to share their expertise about content and evidence-based practice and emphasized individual needs.

It was also found that the respondents preferred their professional development programs to be scheduled during their university vacations on either weekdays or weekends for a duration of three hours per week. They favored their professional development programs to be located either at their university campus or another suitable location. They preferred their professional development programs to be conducted by either foreign or local experts. They also needed the financial support from their university to enable them to participate in the professional development programs offered. These results show that these respondents wanted to fully participate in the professional development programs and did not want to

have conflicts between the times the professional development programs were offered and their teaching schedules. They seemed not to be mind about the profile of the professional development trainers or the location of the professional development programs. They did, however, tend to have financial constraints in relation to paying for professional development fees.

Conclusion and Recommendations

The findings emerging from the current study reveal that academic staff strongly appreciated the professional development programs that they had taken part in in the three years prior to this study. They highlighted the connection between the frequency of professional development programs offered and the positive impact on their instruction. Unfortunately, they also reported that they did not have access to regular professional development programs. Moreover, the degree of involvement in professional development varied, with some staff reporting having participated in many professional development activities while others reported rarely attending professional development programs. A number of obstacles have been identified that hindered them from fully participating in the professional development programs offered. The findings of the current study have various implications for policy and implementation and practice with respect to the optimal mechanisms for the professional development of academic staff.

In relation to policy, the top administrators should carry out a needs assessment to identify the urgent and most pressing needs and desires of academic staff in relation to their professional learning. Such needs assessments data can ensure that the academic staff's professional learning is well connected to their classroom practices by means of providing them with necessary and relevant knowledge and skills. The top administrators should also adopt the features of effective academic staff's needs assessments to design the professional learning that is right for their academic teaching staff. Furthermore, the top administrators should take into consideration the use of time, the integration of peer teaching/observation, mentoring and coaching, collaborative lesson planning and teaching schedules to ensure academic staff have ample opportunities for learning and collaboration. Such planning will enable academic staff to fully participate in the professional learning community. The top administrators should also set up a concrete platform for developing expert academic staff as mentors and coaches to support other

teaching staff's professional learning in their relevant areas of expertise. Moreover, the top administrators should consider linking in-service staff training to incentives within the overall structure of an academic staff career pathway in order to monitor the professional growth and continued career progression of teaching staff. The top administrators should consider creating teaching and research awards to reward and recognize innovative and excellent teaching and research in order to raise the status of the academic staff and also provide incentives for staff. In addition to this, funding should be provided to establish a Teaching and Learning Unit (TLU) within the university in order to provide all academic staff with continuous in-service learning opportunities including workshops, seminars, mentoring, coaching and peer observation. The establishment of the TLU can provide an institutionalized structure for the professional development of all academic staff, resulting in institutionalizing a system of university-based in-service teaching staff training.

In relation to professional development implementation and practices, it is crucially important to ensure the effective implementation of professional development programs. It is recommended that professional development training be provided to all academic staff within the university vacation for a duration of between 30 to 60 hours per academic year in order to provide them with opportunities to update their knowledge and skills for effective and efficient delivery of their instruction. It is also vital to include the use of reflective practices in this professional development training as such self-reflection can greatly improve academic staff's instruction by systematically reflecting on their prior classroom teaching. This reflection practice can help academic staff to find solutions for addressing teaching problems associated with teaching methods/techniques, outcomes-based assessments, classroom management and student learning, resulting in improving instructional skills and practices. Furthermore, it is essential to encourage academic staff to undertake action research to explore their classroom issues and student learning by providing funding for undertaking such research activities. When planning professional development programs, there is a need to anticipate the main barriers for its implementation as well as to identify the specific methods for evaluating the professional development program's implementation. It is also necessary to ensure that the professional development programs are responsive to the academic staff's specific needs, particularly in relation to their teaching and learning contexts. It is also recommended that there should be a teaching and research awards day held at the end of each academic year within the

university to reward high-performing teaching and research staff as well as to provide a platform for sharing the most innovative pedagogy, innovative assessment methods, and best research findings that contribute to the higher education development in Cambodia.

Acknowledgments

This work was supported by the Royal University of Phnom Penh (RUPP) Research Fund Round 1 (2016–2017).

Brief biographies

Nary Tao received a PhD in Educational Assessment from Victoria University (Australia). She lectures in classroom-based assessment, critical pedagogy and training and professional development as part of the master's degree program at RUPP. Her primary teaching and research interests are classroom-based assessment literacy, large-scaled learning assessment, the impact of testing on learning and instruction, quality assurance, program evaluation, teacher professional development, academic misconduct by students including cheating and plagiarism, and gender-related issues.

Sokha Om graduated with a Bachelor in Teaching English as a Foreign Language from the Institute of Foreign Languages in 2005 and a Master in Educational Management and Planning from RUPP in 2011. She obtained her PhD in Education, focusing on Educational Leadership and Management, from De La Salle University (Philippines) in 2015. Her teaching and research interests include educational leadership and management, teacher education, higher education development and higher education governance.

Visal Sot earned his bachelor's degree in Teaching English as a Foreign Language from the Institute of Foreign Languages at RPPP in 2010. He obtained a Master's in Educational Administration and Leadership from RUPP in 2014, also receiving an outstanding award. He is currently a lecturer and researcher at the Faculty of Education. His teaching specializations include introduction to research, quantitative research and educational leadership and management. His research area and interests encompass program evaluation, school leadership and management, in-service trainings and professional development and English language teaching and learning.

References

Allen, J. P., Pianta, R. C., Gregory, A., Mikami, A. Y., & Lun, J. (2011). An interaction-based approach to enhancing secondary school instruction and student achievement. *Science, 333*(6045), 1034–1037.

Badri, M., Alnuaimi, A., Mohaidat, J., Yang, G., & Al Rashedi, A. (2016). Perception of teachers' professional development needs, impacts, and barriers: The abu dhabi case. *SAGE Open, 6*(3), 1-15.

Buczynski, S. & Hansen, C. B. (2010). Impact of professional development on teacher practice: Uncovering connections. *Teacher and Teacher Education, 26,*599–607.

Buysse, V., Castro, D. C., & Peisner-Feinberg, E. (2010). Effects of a professional development program on classroom practices and outcomes for Latino dual language learners. *Early childhood research Quarterly, 25*(2), 194–206.

Desimone, L., Smith, T., & Phillips, K. (2013). Linking student achievement growth to professional development participation and changes in instruction: A longitudinal study of elementary students and teachers in Title I schools. *Teachers College Record, 115*(5), 1–46.

Donkor, A. K., & Banki, R. D. (2017). Assessing the Impact of In-service

Training Programmes on Basic School Teachers of China in the Kassena Nankana West District of Ghana. *Journal of Education and Human Development 6* (4), 64-76.

Doppelt, Y., Schunn C. D., Silk, E. M., Mehalik, M. M., Reynolds, B., &

Ward, E. (2009). Evaluating the impact of facilitated learning community approach to professional development on teacher practice and student achievement. *Research in Science and Technological Education, 27*(3), 339–354.

Greenleaf, C. L., Hanson, T. L., Rosen, R., Boscardin, D. K., Herman, J., Schneider, S. A., Madden, S., & Jones, B. (2011). Integrating literacy and science in biology: Teaching and learning impacts of reading apprenticeship professional development. *American Educational Research Journal, 48*(3), 647–717.

Harrington, P. E. (2002). Attracting new teachers requires changing old rules. *The College Board Review111* (1), 1-10.

Harwell, S. H. (2003). *Teacher professional development: It's not an event, it's a process*. CORD.

Heller, J. I., Daehler, K.R., Wong, N., Shinohara, M., & Miratrix, L. W. (2012). Differential effects of three professional development models on teacher knowledge and student achievement in elementary science. *Journal of Research in Science Teaching, Vol. 49, No. 3, pp. 333–362.*

Johnson, C. C., & Fargo, J. D. (2010). Urban school reform enabled by transformative Professional development: Impact on teacher change and student learning of science. *Urban Education, 45*(1), 4–29.

Johnson, C. C., & Fargo, J. D. (2014). A study of the impact of transformative professional development on Hispanic student performance on state mandated assessments of science in elementary school. *Journal of Elementary Science Teacher Education, 25*(7), 845–859.

OECD (Organization for Economic Cooperation and Development) (2011). *Building a teaching profession: Lessons from around the world*. Paris: OECD Publishing.

Robson, J. (2006). *Teacher professionalism in further and higher education: Challenges to culture and practice*. New York, Routledge

Ros, V., & Oleksiyenko, A. (2017). Policy misalignments and development challenges in the Cambodian academic profession: Insights from public university lecturers. *Higher Education Policy*

Roth, K. J., Garnier, H. E., Chen, C., Lemmens, M., Schwille, K., & Wickler, N. I. Z. (2011). Videobased lesson analysis: Effective science PD for teacher and student learning. *Journal on Research in Science Teaching, 48*(2),117–148.

RUPP (2018). *Prospectus*. Phnom Penh: RUPP.

Peter Neil, P., & Morgan, C. (2003). *Continuing professional development for teachers*. London, Kogan Page.

Powell, D. R., Diamond, K. E., Burchinal, M. R., & Koehler, M. J. (2010).

Effects of an early literacy professional development intervention on Head Start teachers and children. *Journal of Educational Psychology, 102*(2), 299–312.

Steward, A. (2009). *Continuing your professional development in lifelong learning*. London: Continuum International Publishing Group.

Tao, N. (2016). Implementing outcomes-based Assessment in Cambodian higher education: Challenges and opportunities. *Paper presented at the AQAN Seminar and Roundtable Meeting*, 28-29 September 2016, Siem Reap Province, Cambodia.

Teaching and Learning International Survey (TALIS) (2013). *Teacher professional development*. Organization for Economic Co-operation and Development (OECD).

Tooley, M., & Connally, K. (2016). *No panacea: Diagnosing what ails teacher professional development before reaching for remedies*. Washington, DC: New America.

Trotter, Y. D. (2006). Adult learning theories: Impacting professional development programs. *Delta Kappa Gamma Bulletin, 72*(2), 8.

Zepeda, S. J. (2012). *Professional development: What works (2nd ed.)*. New York: Taylor and Francis

Ministry of Education Youth and Sport
Education Research Council

Article

The Impact of a Podcast Project on Learning Outcomes: A Case Study of Two Content-based Courses

Samarnh Pang and Chenda Khan
(Correspondent Author: samarnh@gmail.com)

Received 1 April 2018; Accepted 19 May 2018

Abstract

The need for content-based courses that can cultivate learners' reflective inquiry and improve their linguistic ability is now a dominant theme in literature. How this cultivation is achieved by podcast activities remains under-explored, particularly in an outcome-oriented and evidence-based performance learning environment. This paper aims to explore and provide insights into how podcasting impacts learning experience and is based on a piloted project which involves two groups of students in two content-based courses (i.e. Foundations of Education and Critical Thinking) over a one-semester course of 18 weeks in the 2017–18 academic year. The study employs ongoing observations, weekly journals, online interactions and two focus-group interviews as the methods for data collection. The findings on the impact of students creating podcast activities show that the activities have enabled students to achieve several remarkable learning outcomes including improved English-speaking motivation, English vocabulary, in-depth thinking, collaborative skills and sociocultural awareness. The students also showcased their willingness to learn beyond the limits of the lessons, extending their search for knowledge outside the classroom.

Keywords: Podcast, content-based course, collaborative learning, Royal University of Phnom Penh, Institute of Foreign Languages

Citation: Pang, S., & Khan, C. (2018). The impact of a podcast project on learning outcomes: A case study of two content-based courses. *Cambodia Education Review, 2*(1), 30–51.

Introduction

There has been a recent shift away from teacher-centered teaching, such as lectures, in Cambodian schools. This has resulted in an opportunity to implement innovative instruction methods that best fulfill the needs of both individuals and society in the present and the future (MoEYS, 2014). Identifying the need for such innovation, the Ministry of Education, Youth and Sport (MoEYS) has been promoting the use of information and communication technology (ICT) in higher education institution (HEIs) classrooms, making innovative thinking, communication, problem-solving skills, research and information retrieval, and processing skills the focal points in teaching and learning (MoEYS, 2009-2013). However, in line with this ministerial endeavor, the MoEYS has also identified a serious lack of well-trained faculty members who are ready to integrate technologies into their classroom. The Ministry has therefore been investigating any innovative methods that HEIs can use to enable their faculty members to integrate ICT in their classrooms.

Given the importance and ubiquity of technology, finding ways to integrate ICT into practical classrooms has become increasingly urgent. In particular, classroom teaching and learning in university content-based subjects have long waited for the technological emphasis and innovations which can promote knowledge diversity along with meaningful activities and active thinking for learning (Cenoz, 2015). The overarching objective of this study is to help build faculty members' confidence in the use of ICT in teaching and learning in their HEI classrooms. This study identified that, given the amount of resources and other teaching aid choices that HEIs in Cambodia currently have in place, determining the fundamental requirements to achieve the full use of ICT for content-based course classrooms is a crucial step. This study implemented podcasting activities as a means to assist the teaching and learning process in HEI classrooms, placing English language skills, working in a team, solving complex problems and critical thinking skills at the center of the investigation.

The Roles of Podcast-Assisted Dialogue for Content-Based Instruction (CBI) in HEI Classrooms

Content-based courses have been widely integrated into the local universities' curricula in Cambodia. In fact, content-based instruction (CBI) has been used in language teaching to position communication as a key for identifying and eliciting knowledge from various existing sources including documents, experts and justified datasets that can be verified and utilized (Brookfield, 1995). CBI is an effective choice for teaching because it motivates students to communicate in lengthy dialogue, which might promote communication, initiative, creativity and critical-thinking skills among learners. Learning is about giving meaning to the surrounding world, becoming conscious, and acquiring the mental capacity to reflect on one's own experiences and actions (Freire, 1994). As dialogue can be a social platform to recreate knowledge, as described in Freire's dialogic pedagogy, this current project has been inspired by how dialogue can be utilized to benefit learners.

A myriad of research reports a number of benefits from the use of group discussions as a teaching-and-learning technique at undergraduate level. For example, in a meta-analysis of 168 studies, Johnson et al. (2014) discovered that group discussions had profound impacts on students' retention of learning materials and those who had been involved in group discussions had better developed reasoning skills than those who studied individually. The process of learning in group discussions enables students to construct new knowledge (Davidson & Major, 2014), improves communication skills (Jackson et al., 2014) and raises sociocultural awareness (Finelli et al., 2011). In contrast, the conventional ways of teaching, such as the direct teaching approach, position teachers as the major determining factor for the amount of students' learning and, therefore, has led to intellectual dependency (Davidson & Major, 2014) and limited students' creative thinking, innovation and other hidden capacities (Bowman, 2016). In addition to this, Shor (1996) considers learning a sociocultural process of meaning-making, contributing to the development of personal identity which surpasses a mechanical way of memorizing words and identifying grammatical rules. In the 21st century's learning processes, the teaching and learning at universities can revolutionized with the help of technology (Selwyn, 2007).

Podcasting is a relatively new technology in teaching and learning in HEIs. A podcast is an audio program or file that is created by a person who then uploads it onto an online platform, allowing someone else to

download it via a platform such as iTunes and listen to it on a device such as an iPhone or iPod. Because it is both free of charge and widely available, podcasting has gained increasing attention and captured the imagination of practitioners from all areas of education, emerging as a new approach in both mobile learning and e-learning. Powered by Web 2.0 technologies and services, podcasting has enabled users to produce and share content within their online communities. Making podcasts also develops many skills, as creating a podcast involves not only technical productions such as recording voices but also requires a sound knowledge of content, delivery of content and teamwork skills (McCombs & Liu, 2007).

Conceptualizing the Effect of the Podcast Project on Learning Outcomes in Content-based Instruction Courses

In the Student Creating Podcast Project (SCPP), which was assisted by the present technology, the dialogue has to be customized as a recorded file in podcasting. The customization of the dialogue will be introduced to the senior students in two content-based courses: Foundations of Critical Thinking Skills (CT) and Foundations of Education (FE). These courses run for one semester at the Institute of Foreign Languages (IFL) at the Royal University of Phnom Penh (RUPP).

Student-generated podcasts develop learning skills and storytelling skills (McDrury & Alterio, 2002). The authors also identified the art of storytelling as a powerful tool for deep learning and reflection. The current Web 2.0 multimedia technology allows students to create a variety of electronic portfolios and share them with their peers, gaining educational and social benefits. For example, this distinctive feature is expected to enhance not only individual creative skills but also critical thinking through further reflective discussions after a podcast has been created. According to Rossiter et al. (2009), it is possible for students to transfer from surface learning to a deep learning approach. The transfer allows learners to personalize their learning in a self-directed way along with the use of a student-generated-audio learning approach.

Podcasting and fostering an online community are crucial factors in increasing satisfaction with the learning experience. There is evidence that students demonstrate positive satisfaction with the portability and flexibility of podcasting (Chan et al., 2006). In this regard, a question remains: must an increase in learning occur for new methods to be considered effective, or is positive student satisfaction adequate for encouraging the adoption of new technology methods? According to Lee

and Chan (2005, 2007), podcasting is a tool that can help address undergraduates' anxiety. Both Lee and Chan studied the effectiveness of mobile learning in the form of podcasting in undergraduate classrooms. They discovered that the effectiveness of podcasting as a learning tool for adult learners in higher education is yet to be established. The researchers reported that the surveyed adult learners believed that podcasts were the most effective revision tools for them in terms of time, flexibility and workload. E-learning, particularly via podcasting, is felt by listeners to be an authentic learning experience for students learning foreign language; however, studies examining their use is seldom evaluative (Chinnery, 2006).

While podcasts can be used in a number of areas such as business, journalism, entertainment and personal broadcasting, podcasting has also increasingly attracted the attention of the academic community. The next step is to develop pedagogical models in order to find ways to support and enhance students' motivation and learning through podcasting. Podcast pedagogy has been proven to be a successful model to meet the specific needs and enhance cognitive abilities of diverse learners (Kukulska-Hulme & Traxler, 2005). In their study trial held in 2007 within the Faculty of Economics and Business at the University of Sydney, Australia, Kukulska-Hulme and Traxler (2005) investigated the value of using short-format podcasts as one of the assessment tools for undergraduate and postgraduate students. They found that the students appreciated the flexibility of podcasting in supporting their learning process and the teachers reported that this new teaching tool helped diversify their teaching methodologies and would support a diverse student population.

Study Area and Methodology

The Royal University of Phnom Penh (RUPP) was the research site for the study. Since its establishment in 1960, RUPP has enrolled more than 12,000 students every year in their certificate courses and diploma, undergraduate and postgraduate programs in the Faculties of Science, Social Science and Humanities, Engineering and Development Studies, and the Institute of Foreign Languages (IFL).

IFL, an emerging research institute under the umbrella of RUPP, has been encouraging its faculty members to conduct more research in order to promote their teaching performance and to help students demonstrate improvement of learning in their contexts. Such improvement is central to establishing a culture of reflective learning and improving language and

communication skills. The researchers of this project, who are experienced at teaching CBI courses, saw podcasting as an innovative teaching approach for two courses taught to senior students at IFL: CT and FE. In the first semester of 2017, the researchers allocated about 40 percent of the instructional time for lectures and assessment activities for the courses where group-based and task-based learning procedures were employed for students' podcasting.

The content-based course syllabi, therefore, were customized to leverage learning interest and outcomes. With this, the study aimed to take part in addressing the aforementioned expectations in the two content-based courses with the support of SCPP. In these courses, students were assigned to engage in as many recorded discussions as possible and were encouraged to attend the online community discussions to gain additional learning opportunities. More precisely, in the content-based learning approach, the course teachers doubled as the project researchers required the students to practice personal readings and complete chapter worksheets to get ready to collaborate in the learning process.

The study utilized a qualitative research paradigm as it was exploring experiences and perceptions that are practical in nature (Babbie, 1992). The researchers adopted both case study and phenomenological approaches to deal with phenomena that were difficult or impossible to quantify mathematically, which in this case were the students' beliefs, feelings, experience and perceptions of their motivation and barriers with SCPP. Through the use of the case study approach, detailed information about the students' weekly progress was gathered and explored to analyze the dynamics of SCPP in the CT and FE courses, while the phenomenological approach allowed the researchers to examine and make sense of the construct of the phenomena (Creswell, 2003). For instance, the researchers investigated why some students found SCPP an opportunity to sharpen their skills while the others did not. By using these approaches, the researchers were able to form an in-depth understanding of the students' enthusiasm and behaviors and the factors that produced such behaviors during SCPP. The approaches allowed the researchers to see *why* and *how* the students achieved their learning tasks, which helped the researchers to predict the students' eventual outcomes.

At the beginning of the semester, the students agreed to participate in group podcasting after they studied the informed consent letter, which had previously been approved by RUPP's research center. The informed consent letter included the background of the research, outlined its significance, purpose, methodology and the data collection procedures and

provided the assurance of ethical conduct in the utilization of the participants' data.

For the first week, the researchers ran a workshop that showed the students how to the prepare for SCPP. This included how to engage in the educational dialogue using the Freire's problem-posing approach; how to use the podcast software Voice Record 7 to record, store and manage their podcast productions; and Schoology, which was the online platform where the students could share and discuss the produced podcasts. SCPP was then implemented in both courses from the second to the 18th week of the first semester in 2017. Using the ELI assessment framework in Table 1 described by Coghlan et al. (2007) as the guideline, the researchers were able to measure what SCPP had accomplished by identifying the strengths and the limitations in four main areas: content, delivery, technical production and teamwork.

Table 1. Criteria for determining the effect of the SCPP

Category	**Criteria**
Content	Accuracy, logical sequence, relevance to previously learned materials
Delivery	Confident, enunciated, expressive, cohesive
Technical production	Transitions, quality of audio, length, clarity
Teamwork	Enthusiasm, collaborative, respect

Adapted from ELI discovery assessment criteria (Coghlan et al., 2007)

The participants were two groups of students from two content-based courses: Foundations of Critical Thinking Skills 401 (CT) and Foundations of Education 401 (FE). A total of 58 students participated in SCPP throughout the semester, 27 of whom were from CT (14 female and 13 male) and 30 from FE (17 female and 13 male). The two undergraduate courses are designed for senior students doing either a Bachelor of Education in Teaching English as a Foreign Language (TEFL) or a Bachelor of Art in Professional Communication at IFL. To encourage active contribution from each group discussion member during SCPP, the researchers divided them into small-sized groups of three to four. For each weekly podcast episode of about 30 minutes, having a group of this size provided each student with an equal chance to engage deeply in the discussions of the assigned topics, which are listed in Table 2.

When the courses finished at the end of the semester, the researchers interviewed the students about their perceptions of SCPP via two focus-group interviews, each of which consisted of five participants. There were two females and three male participants both the CT group and the FE group. Each participant was assigned an identification code to protect their anonymity; for instance, P1 is a participant from FE, whereas P6 is another participant from CT (see appendix). All of the interviewees were selected via the quota sampling technique, a non-probability sampling method used to obtain the same proportions of all the individuals in the entire population. To achieve the same proportions that best represented the two courses, the researchers identified four main characteristics: gender, knowledge of SCPP procedure and output, frequency of their participation in SCPP, and willingness to provide data. Data was collected from the two focus group interviews, audio analysis, the students' discussions on *Schoology* and the field note journals.

Table 2. Topics assigned to each group for their SCPP activities

Foundations of Education	**Foundations of Critical Thinking Skills**
• Education: meanings and kinds • Enculturation and education • Debate on nature and nurture effects • Community participation in education • Characteristics of a good school philosophy • Education partnership and accreditation • The needs of early childhood education in Cambodia • The applications of zone of proximal development in actual classrooms • Creating environments conducive to learning • 21st century teachers	• Development: meaning and applications • Critical thinking: values and characteristics • Reflection: liberating education: why knowing isn't enough • Avoiding logical fallacies • Asian development outlook 2015 • Blaming China won't improve the US's economic woes • Sweatshop economy: debates • The Coca-Cola Company declares environmental goals • Real wages in the garment sector fell over 10 years • Why can companies no longer afford to ignore their social responsibility?

This study was mainly based on the empirical investigation of students' experience with SCPP and the review of literature in the area of

technology-assisted learning and integrative learning. The descriptive data were collected through the observations and the students' entry in each episodic SCPP event. The researchers observed and recorded the classroom dynamics, which included grouping structure, involvements in the discussion, teamwork and the various issues that occurred in each podcast episode. The researchers used the online discussions posted on *Schoology* as the narratives and as evidence of the students' learning outcomes and willingness to learn. Finally, the researchers transcribed the two focus group interviews using Express Scribe v4.0 and then analyzed the data using a content analysis method. The content analysis was completed in four main steps: the researchers read the transcribed interview materials and identified the emerging themes, each theme was assigned a code, the main themes were categorized and quantified, and the main themes were reported accordingly.

Results and Findings

The Impact of SCPP on Students' Learning Outcomes

One participant described three important positive effects of SCPP on their learning outcomes. They reported that the active learning that was embedded in the SCPP problem-based discussions encouraged each group member to put a lot of effort into their reading preparation and to demonstrate their willingness to take up the learning responsibilities in order to productively engage with the given discussions. Moreover, the group members became more attentive to the information presented by taking notes and this, to some extent, improved their memory and cognitive skills. As explained by P1:

> *The podcast-creating activities made me work harder myself and with other students. It helps me improve my note-taking skills and I could remember lessons very well. In our SCPP I like to provide information outside the book and allow my friends to give feedback. That way I can encourage my group members to think more.* (Pers. Comm. P1)

Another participant from the CT course also reported a similar positive effect on their learning. They also said that engaging in a supportive teamwork environment is another important learning outcome that the students have achieved. The group developed a sociocultural understanding in academic situations by reinforcing mutual respect and acceptance of each other's opinions in order to maintain the involvement and engagement of the entire group. A clear example was when the members of the team listened to each other's opinions and appreciated

different ideas. It is also worth noting that complex tasks, such as complex and difficult discussing topics, were alleviated by maximizing group learning cohesion. P9 explained:

> *I learn that [SCPP] helped me to respect other people's opinions, even though I sometimes do not like those ideas. Some topics are hard but we can deal with them because all of us read and can clarify points in our discussion. My friends are very supportive, and we help each other to learn new knowledge. Sometimes my friends corrected my English during SCPP, but I don't mind that. The teacher taught us to open our mind. I used to be afraid of comments, but when everyone just does the same, I became okay with comments.* (Pers. Comm. P9)

Moreover, the students also reported their language skills improved because of a series of discussions and interactions that occurred while creating the required podcasts. According to P5, even though language skills are not generally the main focus of the courses, SCPP was seen as an opportunity for students to sharpen their English speaking skills. By engaging in creating podcasts, the participants believed that they improved their assertiveness, pronunciation skills and spoken grammar in speaking English. The discourse of the SCPP dialogues conditioned students to take an active role in communicating ideas, which provided them with an opportunity to use a number of the spoken grammatical aspects and paralinguistic skills that were most appropriate for the given contexts. In addition to this, they reported an improvement in vocabulary learning during their podcast sessions. One participant said:

> *A lot of us had never done a podcast. I, too, felt nervous at first, but I realized that I had improved my confidence in speaking English. SCPP gave me a chance to present my ideas in correct English. I became more aware of how I speak English . . . like improving my pronunciation and organizing ideas. I also learned words and grammar from my team members while we were having discussions. Some of us used a lot of good words. I noted them down so that I can use them in our conversation in the future.* (Pers. Comm. P5)

Critical thinking is another important aspect of the learning outcomes reported by P7. The observed students were able to discern and synthesize their peers' opinions through critical analysis. SCPP provided the involved students with an opportunity to analyze information for deep learning. They also utilized the podcast activities to discuss the in-class problems collaboratively by connecting real-life issues with the studied ethical principles. The students reported using thinking techniques they had

learned such as the Socratic questioning method to enhance the possibility of further learning. P7 explained further:

> *I think that SCPP is a golden opportunity to improve critical thinking. Many topics want me to think a lot. It helps us to analyze information before we accept it. I think I learned the lessons deeply about a problem when the teacher gave more time for SCPP. I remember when we discussed "liberating education," everyone shared many good points from the article and from our real-life experience in school. . . . When I had nothing to share, I used the Socratic method. I asked questions, moral questions, like a lot of questions. I got a lot of information by doing that.* (Pers. Comm. P7)

Despite the many beneficial effects of SCPP on students' learning, the students also raised a few concerns, as presented below.

> *I sometimes feel bad when I don't have good points to share with the group.* (Pers. Comm. P2)
>
> *My English is not good, so it is hard to share ideas.* (Pers. Comm. P3)
>
> *We usually agreed to each other's points . . . I sometimes feel that we did not reach good details.* (Pers. Comm. P6)

As the students were placed in situations that required them to think and communicate their thoughts to the others in the group, they might have developed feelings of inferiority and anxiety if they could not generate ideas as a response to the points of the discussion. Such feelings might have had the effect of either encouraging them to increase their efforts in preparing for the podcast activities or damaging their self-esteem. The negative feelings might have occurred because some students dominated the dialogues or if the topics of discussion were too complicated for them. Language skill was also another barrier that hindered students' participation in the SCPP dialogues; for some students, learning attitudes, conditioned by their culture and social values (i.e. saving face) might have discouraged their deep learning and hindered rigorous inquiry-based learning to a certain extent.

SCPP and Students' Willingness to Learn Beyond the Limits of the Lessons

The current research produced a considerable amount of evidence to support that students would have varying degrees of willingness to prepare and engage in a learning situation and that this determined their levels of achievement. All interviewed participants reported that they were willing to engage beyond the limits of the lessons by researching and exploring

more deeply into the topics to gain better understanding of them. This willingness was exhibited in various forms, such as the feelings of concerns and the enthusiasm in researching on the assigned topics.

Students' perception of and practices in SCPP, therefore, confirmed that a willingness to learn and accepting the responsibilities of their learning are the attitudes that students needed to develop throughout the course. One way to demonstrate such a willingness to learn beyond the limits of the lessons is by applying active learning, such as asking probing questions, doing research and analyzing the information collected from the discussions. This study strategy requires an effort that needs to be driven by purpose, as described by two participants:

> *I can't provide just any ideas, so I do research a lot to get ready for the group podcast in class. I usually read the assigned materials and also Google for more information. Personally, I don't always feel that I can accept all points. I always need to check those points by asking for details or searching on the Internet to see if they are good enough.* (Pers. Comm. P5)

> *I spent a lot of time analyzing my group members' ideas to see if they are assumptions or facts.* (Pers. Comm. P7)

From P7's statement, it can be seen that students' willingness to learn beyond the limits of the lessons could be affected by negative emotions such as anxiety and fear of criticism, as reflected in their desire to find out what is right by challenging other group members' points of view and/or doing further research. The desire favors transformation (change) and its process. In the CT course, change is a central theme that is intensely discussed in the course readings regarding the academic, economic, social and ethical development. As P7 explained further:

> *Others may hate me for being too critical, but I do that as a habit to challenge bad ideas for good change. Plus, it is shameful to stay on the surface while on the podcast.* (Pers. Comm. P7)

Other students reported that their group environment was supportive and few conflicts occurred, therefore allowing their desire to overtake the fear. This is shown in the following dialogue:

> **P1**: I believe SCPP increased my desire to explain more by giving more details.
>
> **Researcher**: How do you describe that desire?
>
> **P1**: Like . . . I feel more concerned and always want to say something.
>
> **Researcher**: With the desire, what specific actions did you take?

> **P1**: Well, mostly I keep adding more points . . . also, I link them to real life. I also share my personal experience.

The nature of the various SCPP's dialogue activities revolves around the participants' ability to explain their ideas during the discussions. To effectively communicate their ideas, each member in the discussion group had to expand upon their opinions, which they had developed through logical and prepared organization. P6, for example, needed to organize her points, which could have been collected from the textbook, the lectures, peer discussions and self-driven research, in such a way that she would feel confident that her group members would understand what was at stake and beyond.

> *I need to organize my ideas and explanation very clearly so that I can help my friends who are struggling to fully get the points.* (Pers. Comm. P6)

Students also noted that their active involvement in discussions led to useful discoveries. The emphasis on the desire to be autonomous was evident, reinforcing the value of discovery through personal exploration among their peers for valuable knowledge that is relevant to real life.

The response below shows that the students appreciated learning autonomy, as it empowered them to authenticate knowledge by connecting the issues discussed in class to real life. In addition to this, the project field notes also support the importance of having a learning environment that enabled such in-depth discussions among peers. For example, the time for recording podcasts was extended in cases where any groups were still enthusiastic about the topics and wished to discuss more. In this vein, P9 said:

> *SCPP is my favorite learning time. I feel excited when my podcast members like to relate [the podcast] to the issues to our society, that way I can make learning useful. I think . . . I don't learn well if teachers talk the whole session. I do agree that SCPP helps me to control my own learning because I can explore my interests.* (Pers. Comm. P9)

Discussion

Bowman (2018) emphasizes the importance of the inquiry-based learning approach for content-based subjects in nurturing active learning agents and also notes that learning develops a broad spectrum of skills and proficiencies including thinking, dialogue, decision-making, research and reflective inquiry. The challenges in achieving such outcomes may call for classroom pedagogies that motivate a culture of dialogics (Freire, 1985; Freire, 1994; Alexander, 2008). From a social constructivist perspective, the motivation

derives from both extrinsic and intrinsic sources, positioning learning as essentially a social phenomenon that is conditioned to rewards provided by the knowledge community (Vygotsky, 1978). In addition to this, as knowledge is actively constructed by the learner, learning is related to a learner's internal drive to understand and promote the learning process. Since learning does not take place within a vacuum in which students are passive recipients of knowledge without first examining it against their schema, learning in university content-based courses may demand collaborative and integrative approaches jointly, through which motivation in the learning situations could potentially be enhanced by technologies.

Collaborative Learning Assisted by Computer-Mediated Learning

The current research confirms previous findings. Marco (2007) conducted an experiment concerning group podcasting in the classroom by studying students producing podcast lessons at the University of Bergamo. The results showed that podcasting in the classroom had positive effects on the students' grades. The findings of this research, therefore, support that content-based learning assisted by SCPP should occur in a collaborative environment, requiring motivation in all of its stages, from an interest in obtaining knowledge about SCPP procedure, preparation and engagement to a reflective practice of what has been learned. While the students reported using SCPP as a platform to exercise and test their ideas, the presence of students' research *for learning* and *as learning* are the prerequisites for developing deep learning, which is generally understood as the acquisition of knowledge beyond the visible facts. This is because information needs to be supplied at depth and breadth in targeted learning. Therefore, the profound outcomes of content-based learning occur due to collaborative learning arrangements that activate learner autonomy, self-confidence, community-learning and a high level of reasoning (Fransen, et al.,1995).

Collaboration in a constructivist classroom promotes personal meaning-making among individual students and creates a platform wherein the social construction of knowledge, skills and meanings can occur (Jonassen, et al., 1995). In a collaborative learning environment, integrative instructional methods such as SCPP could essentially accomplish a number of learning outcomes. These include assisting knowledge generation, promoting initiatives, creativity and critical thinking, allowing students to create a shared goal for learning and form the foundation of a learning community, addressing all learning styles and

leveraging issues of culture. The 18-week piloted study used SCPP in a way that required learners to develop teamwork skills by regarding individual learning as essentially related to the success of group learning and by allowing students to achieve the possible skills (Miranda et. al, 2015). Moreover, smaller groups are potentially more conducive to richer and more equitable access to knowledge collaboration than larger groups. In the current study, for instance, SCPP enhanced the peer interaction, class discussions and constructive feedback that were facilitated by the teacher. The learning processes were channeled through students' narratives of specific concepts and/or relevant real-world problems, which were then furthered by guided questions, clarification and additional input by other team members.

Promoting Students' Willingness to Learn Beyond the Lesson

The current study confirms the important role of willingness to learn beyond the lesson. Improving students' willingness to learn is an essential component of promoting lifelong learning processes, since knowledge is endless as far as learning goes. In particular, SCPP confirms that students' willingness to verbally communicate enables them to generate input and output (McCroskey, 1997), affirming beliefs in their ability in speaking (MacIntyre, 2007), developing sensitivity of information (Hidi & Harackiewicz, 2000), creating a positive learning atmosphere (Dörnyei, 1994), providing reasonable challenges (MacIntyre, 2007) and alleviating gender barriers in communication (Baker & MacIntyre, 2000). One of the important roles of university education could be correlated with students' ownership of their learning (learner autonomy) and, when this education is advanced by instructional settings that are thought-provoking in nature, it heightens students' integrity, ethical principles, character, wisdom, knowledge, temperament, words and actions (Hock, 2000). These attributes have a potential to promote lifelong learning, which most school curricula aim to achieve as an outcome.

However, since knowledge, creative thinking and innovation are skills in much demand in the employment sector, it is important to investigate how available technologies such as podcasts will make a difference in education on a large scale. How could instructional technology promote deep learning, particularly in EFL contexts such as the Cambodia's? Such questions require attention from various stakeholders, such as policy-makers, teachers and educationalists, perhaps asking them to rethink their conventional practices including the existing instructional approaches, previous understandings of learning and learners' psychology,

assessments, and the types of resources used to leverage sustainable knowledge cultivation in classroom settings. In this vein, Hew (2007) identified six factors that affect successful technology integration: lack of resources, lack of specific knowledge and skills, institutional structures, teacher attitudes and beliefs towards technology, types of assessment, and subject culture.

Planning and Policy Implication for the Integration of Podcasting into HEIs in Cambodia

Since 2003, MoEYS has been promoting the integration of ICT in education through a number of strategies, including the donations of computers to secondary schools and the ICT trainings for teachers across the country. However, the existing ICT methodology and resources are aimed at secondary school teachers and teacher trainers. For instance, two cohorts of teacher trainers in the local public training centers have been trained how to design websites and produce web-based audiovisual educational resources in the Khmer language for administration, teaching and learning purposes (MoEYS, 2009-2013). In higher education, ICT has been much more accessible and easily implemented, as most private HEIs are located in urban areas, where it has been easy to set up ICT facilities and an Internet connection. MoEYS recognizes the importance and relevance of ICT in students' development and thus recommends that HEIs use their scarce ICT resources to fulfil their capability to teach learners and connect them to any virtual learning platforms around the globe as much as possible.

MoEYS's policy guideline on 'new generation schools' is aimed at modernizing local classrooms, starting from the basic educational level. This nationwide policy sees ICT as a key element in making the new generation schools possible (MoEYS, 2016). Thus, the Ministry encourages all schools to use ICT as a means to integrate 21st-century innovations into the teaching and learning process. The findings of this SCPP support that a technology-assisted approach, where HEIs students create podcasts in order to improve their learning and promote in-depth understanding of content-based subjects, should be used as a creative teaching methodology in the other HEIs. The results of the study, therefore, suggest that HEI teachers be trained in how to execute podcast activities in classrooms, that university course syllabi be customized and that support structures such as academic policies and administrative support be made possible to accommodate innovations of this nature in classrooms.

Conclusion

The findings and discussion of this study support the integration of SCPPs for learning and teaching content-based subjects in HEIs. This study found that podcasting provides learning diversity and helps shape classroom learning, which may help students to demonstrate their unique capacities in creative thinking, improve language skills and make higher education more relevant to real-world needs. SCPP has proved to be an effective instructional method that has leveraged learning crises rooted in shyness and passiveness in learning, and has promoted students' willingness to interact, research and think beyond what is taught in EFL classrooms. SCPP has helped students develop several important skills including speaking skills, vocabulary, research, teamwork and sociocultural awareness. The findings also suggest that teachers should create a supportive environment in which every student's problems with SCPP could be discussed. To manage a project such as podcasting, teachers need to pay close attention to designing learning materials that are contemporary in nature. Topics should be challenging and reflective of the real-world issues. Additional time should be provided when necessary and group podcast structures could be small in size. To encourage meaningful contributions from individual SCPP group members, teachers must balance giving students control over their projects and free practice in the discussion sessions. Doing these things enables students to extend their learning beyond what is taught in class.

Acknowledgments

This work was supported by the Royal University of Phnom Penh (RUPP) Research Fund Round 1 (2016–2017).

Brief Biographies

Samarnh Pang has taught several undergraduate courses in the Department of English of the Institute of Foreign Languages at RUPP (Cambodia), including Literature Studies, Foundations of Education, and Foundations of Critical Thinking. He obtained a Master of Education degree from Charles Darwin University (Australia) in 2014, a Master of Arts in TESOL from the Institute of Foreign Languages in 2012, and a Bachelor of Arts in English Language from the Asia-Pacific International University (Thailand) in 2008. His research interests revolve around technology-enhanced language teaching and learning, adult literacy and lifelong education.

Chenda Khan has been teaching at the Department of English and the Department of Media and Communication at RUPP (Cambodia) since 2005. He obtained a Master of Arts in Public Policy from the Lee Kuan Yew School of Public Policy at the National University of Singapore in 2011. His research interests revolve around public governance and leadership, education and social development. He sees education as key for addressing many of the current poverty and crime-related issues in Cambodia.

References

Alexander, R. (2008). Culture, dialogue and learning: Notes on an emerging pedagogy. In *Exploring talk in school*, ed. N. Mercer and S. Hodgkinson, 91–114. London: SAGE

Babbie, E. (1992). *The practice of social research.* New York: Macmillan.

Baker, C., and MacIntyre, D. (2000). The role of gender and immersion in communication and second language orientations. *Language Learning, 50*(2), 311- 341.

Beattie, V., Collins, B., & McInnes, B. (1997). Deep and surface learning: a simple or simplistic dichotomy? Accounting Education, 6(1), 1-12.

Bowman, R. (2018): Teaching and Learning in the Age of Questions, The Clearing House: A Journal of Educational Strategies, Issues and Ideas.

Chan, A., Lee, M.J.W., & McLoughlin, C. (2006). Everyone's learning with podcasting: A Charles Sturt University experience. In Who's learning? Whose technology? Proceedings of the 23rd annual ASCILITE conference, ed. L. Markhauskaite, P. Goodyear, and P. Reimann, 111–20. Sydney, NSW: University of Sydney.

Cenoz, Jasone (2015). Content-based instruction and content and language integrated learning: the same or different? Language, Culture and Curriculum, 28:1,8-24.

Coghlan et al. (2007). *ELI Discovery Tool: Guide to Podcasting*. EDUCAUSE.

Creswell, J.W. (2003). *Research design: Qualitative, quantitative, and mixed approaches.* Thousand Oaks, CA: Sage.

Davidson, N., & Major, C. H. (2014). Boundary crossings: Cooperative learning, collaborative learning, and problem-based

learning. *Journal on Excellence in College Teaching*, *25*(3/4), 7-55.

Dörnyei, Z. (1994). Motivation and motivating in the foreign language classroom. *The Modern Language Journal, 78*(3), 273-284.

Elizabeth, M. A., & Zulida, A. K. (2012). Problem-Based Learning: A Source of Learning Opportunities in Undergraduate English for Specific Purposes. The International Journal of Social Sciences, 3(1), 47-56.

Finelli, C. J., Bergom, I., & Mesa, V. (2011). Student teams in the engineering classroom and beyond: Setting up students for success. *CRLT Occasional Papers, 29*.

Fransen, J., Kirschner, P., & Erkens, J. (2011). "Mediating Team Effectiveness in the Context of Collaborative Learning: The Importance of Team and Task Awareness." Computers in Human Behavior 27: 1103–1113.

Freire, P. (1985). The politics of education. Culture, power, and liberation. South Hadley, MA: Bergin & Garvey.

Freire, P. (1994). Pedagogy of hope. New York, NY: Continuum.

Hidi, S., & Harackiewicz, J. M. (2000). Motivating the academically unmotivated: A critical issue for the 21st century. *Review of Educational Research, 70*(2), 151-179.

Hock, D. (2000). The art of chaordic leadership. Leader to Leader 15:20–26.

Jackson, D., Sibson, R., & Riebe, L. (2014). Undergraduate perceptions of the development of team-working skills. *Education+ Training*, *56*(1), 7-20.

Jacob, S.M., & Issac, B. (2008). The Mobile Devices and its Mobile Learning Usage Analysis. Retrieved June 30, 2018, from https://arxiv.org/ftp/arxiv/papers/1410/1410.4375.pdf

Johnson, D. W., Johnson, R. T., & Smith, K. A. (2014). Cooperative learning: Improving university instruction by basing practice on validated theory. *Journal on Excellence in University Teaching*, *25*(4), 1-26.

KukulskaHulme, A., & Trexler, J. (eds). (2005). Mobile Learning: a handbook for educators and trainers, London: Routledge.

Lee, M.J.W. & Chan, A. (2007). Reducing the effects of isolation and promoting inclusivity for distance learners through podcasting, Turkish Online Journal of Distance Education, 8, 1, pp. 85-104.

MacIntyre, P. D. (2007). Willingness to communicate in the second language: understanding the decision to speak as a volitional process. *The Modern Language Journal, 91*(4), 564-576.

Marco, Lazzari. (2007). Podcasting in the classroom: involving students in creating podcasted lessons. *Proc. of the Annual Int'l Conf. of Human-Computer Interaction Educators, HCIEd 07.*

McCroskey, J. (1997). Willingness to communicate, communication apprehension, and self- perceived communication competence: Conceptualizations and perspectives.

Mcdrury, J. and Alterio, M. (2002). Learning through storytelling in higher education; using reflection and experience to improve learning, London.

Miranda and et al. (2015). Collaborative learning in higher education: lecturers' practices and beliefs, Research Papers in Education, 30:2, 232-247, DOI: 10.1080/02671522.2014.908407

McCombs, S., & Liu, Y. (2007). The efficacy of podcasting technology in instructional delivery. International Journal of Technology in Teaching and Learning, 3(2), 123-134.

Ministry of Education Youth and Sports. (n.d.). Retrieved December 1, 2017, from http://www.moeys.gov.kh/en/education/higher-education.html#.WiDIgdKWbIU

MoEYS. (2007). *Education statistics and indicators.* Phnom Penh: MoEYS.

MoEYS. (2007-2017). *Education statistics and indicators.* Phnom Penh: MoEYS.

MoEYS. (2008). *Education statistics and indicators.* Phnom Penh: MoEYS.

MoEYS. (2009). *Education statistics and indicators.* Phnom Penh: MoEYS.

MoEYS. (2009-2013). Master Plan for Information and Communication Technology in Education. Phnom Penh: Cambodia.

MoEYS. (2010). *Education statistics and indicators.* Phnom Penh: MoEYS.

MoEYS. (2011). *Education statistics and indicators.* Phnom Penh: MoEYS.

MoEYS. (2012). *Education statistics and indicators.* Phnom Penh: MoEYS.

MoEYS. (2016). *Policy Guidelines for New Generation Schools for Basic Education in Cambodia.* Phnom Penh.

Naren, K. (2016, October 27). Draft Budget Moves Ahead, Boosts Education. Phnom Penh: Cambodia.

RGC. (2013). *Rectangular strategy: Phase III.* Phnom Penh: RGC.

Rossiter, A., Nortcliffe, A., Griffin, A., & Middleton, A. (2009). Using student generated audio to enhance learning. *Engineering Education, 4*(2), 52-61. doi: 10.11120/ened.2009.04020052

Selwyn, N. (2007). The use of computer technology in university teaching and learning: A critical perspective. *Journal of Computer Assisted Learning* 23, no. 2: 83–94.

Shor, I. (1996). *When students have power*. Chicago, IL: The University of Chicago Press.

UNESCO Mobile Learning report. (2011, December). Retrieved June 30, 2018 from http://www.unesco.org.

Vogt, M., Schaffner, B., Ribar, A., & Chavez, R. (2010). The impact of podcasting on the learning and satisfaction of undergraduate nursing students. Nurse education in practice, 10(1), 38-42.

Vygotsky, L. (1978). *Mind in Society*. London: Harvard University Press.

Appendix

List of participants who participated in the focus group interviews

Code	Position	Date
P1	Year 4 student (Bachelor of Education in Teaching English as a Foreign English) from Foundations of Education Course	16/01/2018
P2	Year 4 student (Bachelor of Education in Teaching English as a Foreign English) from Foundations of Education Course	16/01/2018
P3	Year 4 student (Bachelor of Education in Teaching English as a Foreign English) from Foundations of Education Course	16/01/2018
P4	Year 4 student (Bachelor of Education in Teaching English as a Foreign English) from Foundations of Education Course	16/01/2018
P5	Year 4 student (Bachelor of Education in Teaching English as a Foreign English) from Foundations of Education Course	16/01/2018
P6	Year 4 student (Bachelor Arts in Professional Communication) from Foundations of Critical Thinking Skills Course	18/01/2018
P7	Year 4 student (Bachelor Arts in Professional Communication) from Foundations of Critical Thinking Skills Course	18/01/2018
P8	Year 4 student (Bachelor Arts in Professional Communication) from Foundations of Critical Thinking Skills Course	18/01/2018
P9	Year 4 student (Bachelor Arts in Professional Communication) from Foundations of Critical Thinking Skills Course	18/01/2018
P10	Year 4 student (Bachelor Arts in Professional Communication) from Foundations of Critical Thinking Skills Course	18/01/2018

Ministry of Education Youth and Sport
Education Research Council

Article

Reflective Practice for Pre-service Teachers of English Language Teaching: A Case Study at the Institute of Foreign Languages of the Royal University of Phnom Penh

Chan Narith Keuk and Sarina Monh
Institute of Foreign Languages of the Royal University of Phnom Penh
(Correspondence: keukrith@gmail.com)

Received 2 April 2018; Accepted 20 May 2018

Abstract

This paper is part of a bigger project on reflective practice organized for developing and improving the teaching quality of pre-service teachers in the field of English language teaching. This study aimed to uncover pre-service teachers' concerns about teaching, what reflective practice activities they used, and what views of being a teacher they have perceived. Four hundred and seventy-two pre-service teachers were involved in responding to the questionnaire regarding the concerns about teaching; eight pre-service teachers were involved in a narrative frame which focused on reflective practice activities; and nine students from the supplementary English class provided self-assessment of the reflective practice conducted in the study. The analyses reveal that pre-service teachers are highly concerned about teaching in five areas: theories of teaching, approaches and methods, evaluating teaching, self-awareness, and questions about teaching. The pre-service teachers have adopted effective reflective practice activities, such as self-monitoring, peer critical friendship and collaborative work (Farrell, 2015; Farrell, 2018) in order to improve their teaching practice in the practicum. The students in the SEC program did not only improve their English proficiency but they also developed essential skills for further development. The study therefore

suggests that reflective practice is an effective and practical strategy for improving the teaching quality of the pre-service teachers.

Key words: Reflective practice, practicum, pre-service teacher, Cambodia

Citation: Keuk, C. N., & Monh, S. (2018). Reflective Practice for Pre-service Teachers of English Language Teaching: A Case Study at the Institute of Foreign Languages of the Royal University of Phnom Penh. *Cambodia Education Review, 2*(1), 52–80.

Background of Pre-service Teachers' Teaching in Cambodia

The English language has become more commonly taught, learned and spoken in contemporary Cambodian society since the early 1990s, when international personnel and military forces from the United Nations Transitional Authority in Cambodia (UNTAC) arrived to assist Cambodia in organizing a fair and free general election, in which all Cambodian political parties were involved (Pit & Roth, 2003; Clayton, 2006). The Cambodian government's reforms of free markets and trading, the democratic political atmosphere and integration into various international organizations and communities (i.e., the World Trade Organization (WTO) and the Association of Southeast Asian Nations (ASEAN)) (Clayton, 2006) have contributed to the growth of English language teaching in Cambodia. As a result, English language teaching (ELT) has been integrated into curricula in public and private schools, universities and institutions (Neau, 2003; Keuk & Heng, 2016; Ministry of Education Youth and Sport, 2016). In order to fulfill demand while still achieving high quality in ELT education, ensuring the quality of pre-service teacher training is essential. One way of developing high-quality pre-service teacher training is to promote and implement reflective practice with pre-service teachers (Rhine & Bryant, 2007; Etscheidt, Curran et al., 2012; Robichaux & Guarino, 2012; Brooke 2014; East 2014; Uzum, Petrón et al., 2014). Richards and Farrell (2005, p. 7) describe reflection as "*the process of critical examination of experiences, a process that can lead to a better understanding of one's practices and routines."* In this sense, within a framework of reflective practice, pre-service teachers undertake reflection on teaching before and after teaching. Before teaching, pre-service teachers may express their concerns regarding teaching (Liou, 2001). After teaching, they may reflect on the strengths and weaknesses of

their teaching, including aspects of lesson planning, activities and materials selected and designed for teaching, and students' learning outcomes and, in doing so, find more effective and practical ways to improve teaching (Brooke, 2014).

Moore (2008) describes the experience of one female teacher (Sorida) doing first-year teaching at a higher education institution in the Cambodian context. Sorida was trained in the pre-service teacher training program in the Bachelor of Education in Teaching English as a Foreign Language (BEd TEFL) to become a high school teacher, but was offered a teaching position in a tertiary ELT institution. Sorida stated that there were two sets of fundamental issues which assisted her in successfully teaching in the first and the subsequent academic years: institutional and personal. Despite the importance of such issues, Cambodian pre-service teachers' concerns, motivation, anxiety and struggle for survival in their teaching practicum and their institutional support remain unstudied empirically. It is therefore important to examine this practice in order to better understand the pre-service teachers' concerns regarding teaching (i.e., in the practicum and future teaching profession) and to find out appropriate methods to assist pre-service teachers achieve high teaching quality.

Reflective practice in language teaching has received strong attention from various scholars, applied linguists, researchers and ELT professionals. Prominent scholar Thomas S. C. Farrell, whose pioneering work on reflective practice has strong influence in ELT education, has examined reflective practice in different contexts of English language teaching and has published a number of important studies in this area (Farrell, 2008; Farrell, 2013a; Farrell, 2013b; Farrell, 2015; Farrell, 2016; Farrell, 2018). Farrell's (2018) review of 138 studies regarding reflective practice reveals six common elements of reflective practice: practical, cognitive, learner, metacognitive, critical and moral. These elements together define the concept of reflective practice. Farrell (2018, p. 27) defines the principles of reflective practice as

> *a meaning-making process that moves a learner from one experience into the next with deeper understanding of its relationships and connections to other experiences and ideas. It is the thread that makes continuity of learning possible, and ensures the progress of the individual and, ultimately, society. Reflection is a systematic, rigorous, disciplined way of thinking, with its roots in scientific inquiry. Reflection needs to happen in community, in interaction with*

> *others. Reflection requires attitudes that value the personal and intellectual growth of oneself and of others.*

These principles were originally produced by Dewey (1933, as cited in Farrell, 2018) and later were summarized by Rodgers (2002, as cited in Farrell, 2018).

Given these principles of reflective practice, training pre-service teachers to reflect on teaching allows them to question teaching and systematically collect information on their reflected activities that they can apply in subsequent teaching as well as analyze the information and draw a conclusion on their reflective practice (Farrell, 2013a). This reflective practice will help pre-service teachers to build confidence in and enhance their teaching practice in the practicum and their future profession as teachers. It is therefore essential to train Cambodian pre-service teachers to have sophisticated knowledge and skills in reflecting on their own teaching practice so as to facilitate and develop their competence in teaching (Russel, 2005, as cited in Sofo & Easter, 2014). As stated earlier, pre-service teachers may undertake reflection before, during and after teaching. Before teaching, pre-service teachers think about their concerns regarding the teaching they will undertake in the practicum and future teaching. This thinking is what scholars who advocate reflective practice have called "reflection for action," i.e., thinking about strategies that they will use to handle the possible problems that may arise in teaching in the future (Thorsen & DeVore, 2013; Sofo & Easter, 2014). Liou (2001) reveals a number of areas of concern highlighted by pre-service teachers encompassing theories of teaching: approaches and methods; evaluating teaching; questions about teaching; self-awareness; classroom management; and evaluation of lesson plans. Insofar as these concerns are questioned, one way to assist pre-service teachers in handling teaching effectively not only in teaching practicums but also in their future teaching profession is to train them with reflective practice (Richards & Lockhart, 2007; Etscheidt, Curran et al., 2012; Farrell, 2016).

During teaching, pre-service teachers may think about the teaching which is taking place in a real classroom setting. This kind of thinking is called "reflection in action," i.e., thinking about actual practice happening in the setting, determining whether pre-planned activities are working well in the process of teaching, giving instruction and answering questions, using a timeframe and type of classroom management that is realistic, and adjusting the practice in order to fully achieve learning outcomes (Farrell, 2018). Although this strategy is more common among experienced

professionals than new teachers (Somerville & Keeling, 2004), pre-service teachers should be encouraged to undertake this strategy in order to attain a high quality of teaching and learning. After teaching, pre-service teachers could think about the teaching which has just been completed. They can identify their strengths and weaknesses and look for strategies that they think can help improve their teaching. This kind of thinking is called "reflection on practice" by reflective practice scholars. Taking into consideration the context of formal educational (training) programs, pre-service teachers' teaching mostly takes place in the form of teaching demonstrations and practicums. In this regard, pre-service teachers' teaching has four important components (Joyce & Showers, 2002), as shown in Figure 1. According to Joyce and Showers (2002), at the early stage of the ELT training program, pre-service teachers acquire knowledge regarding teaching. Drawing from Harmer (2014), this first component of knowledge includes theories of language, theories of language learning, approaches and methods as well as techniques for language teaching and learning and knowing about learners, social and institutional philosophies and policies. These are just some of the important component parts of the knowledge pre-service teachers are supposed to acquire before moving to the next stage. Joyce and Showers (2002) state that this acquired knowledge is essential for pre-service teachers to be able to plan for practice, provide and clarify feedback on practice and to promote high achievement of learning outcomes.

The second component of pre-service teacher's teaching is demonstration. Pre-service teachers explore some modeling of skills in teaching through live teaching demonstrations in class and viewing videos of teaching and then analyze these instances of teaching, trying to connect theories and practices (Joyce & Showers, 2002). The third component of pre-service teacher's teaching is practice. Pre-service teachers undergo a trajectory of a series of teaching practices (i.e., in small groups and formal teaching practicum) in which they apply the knowledge and skills they have acquired about teaching in the training program. The fourth component of pre-service teacher's teaching is peer coaching. Joyce and Showers (2002) state that pre-service teachers work collaboratively with other pre-service teachers. They support and assist each other in planning teaching, providing feedback and handling any problem that might arise during the practice. In addition to this, in a formal practicum, pre-service teachers not only work with their peers, they are also working with assigned associate teachers and supervisors who help provide comments and feedback on planning and teaching. Given the context of pre-service

teachers' teaching, as described earlier, to successfully complete a training program, pre-service teachers have to undergo a trajectory of work that covers different types of academic coursework (including different types of assessment) and teaching. Thus, if they have little experience, pre-service teachers may be concerned about teaching (Brooke, 2014). These concerns may discourage pre-service teachers from completing the training program successfully. Accordingly, this paper has three aims: to examine Cambodian pre-service teachers' concerns about teaching in the teaching practicum and future teaching profession; to explore pre-service teachers' ways of reflecting on their own particular concerns regarding teaching; and to better understand the pre-service teachers' views of being teachers. In order to achieve these objectives, three main questions are developed: what are the pre-service teachers' concerns regarding teaching; what reflective practice activities are adopted by the pre-service teachers; and how do the pre-service teachers view themselves as teachers after the training?

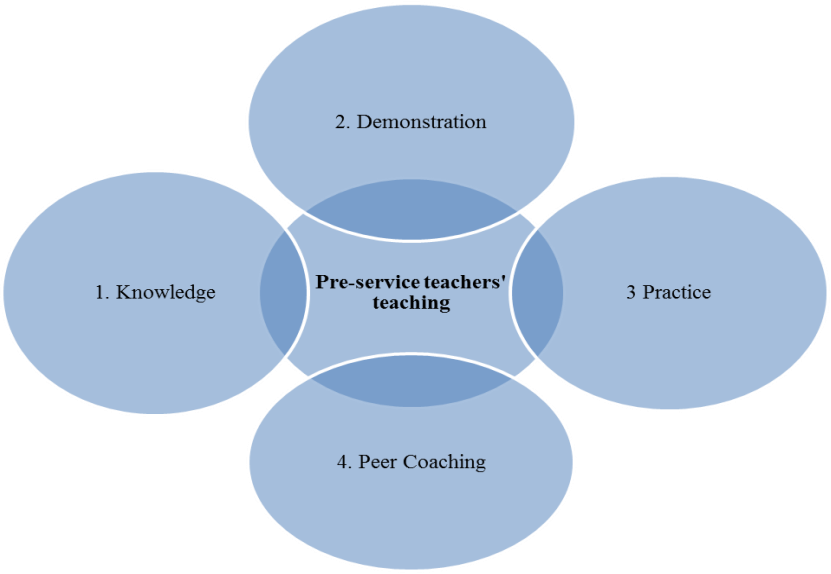


Figure 1. Components of pre-service teachers' teaching, reproduced from Joyce and Shower (2002)

Study Area and Methodology

This research is a case study of reflective practice in a pre-service teacher training program at the Department of English (DOE) of the Institute of Foreign Languages (IFL) at the Royal University of Phnom Penh (RUPP).

It follows a problem-solving approach in the form of action research undertaken in two phases. Phase 1 examines the concerns regarding teaching of Cambodian pre-service teachers who were taking a teacher training program (Bachelor of Education in Teaching English as a Foreign Language (TEFL)) at the IFL. This phase aims to better understand the trainees' uncertainties, worries and issues which might have serious impacts on teaching. Phase 2 explored reflective practice (RP) activities undertaken by pre-service teachers during the practicum and in the supplementary English classes (SEC) that were organized for the reflective practice project. The SEC was scheduled for Saturday mornings and afternoons.

The ELT pre-service teacher training program has been offered at the DOE since 1988. The program was originally called the Cambodian English Language Training Programme with support of the Quaker Service Australia. It was later developed into an undergraduate degree program titled Bachelor of Education in Teaching English as a Foreign Language (BEd TEFL), which is a four-year language training program (Pit & Roth, 2003). The DOE has recently started offering both non-degree and degree programs. For the non-degree program, the English Language Support Unit (ELSU) offers various levels of English courses to non-English language major students from different departments of RUPP.

The DOE also offers a bridging course (BC) to help who students have attained general English competence with test-taking strategies to prepare them for the entrance examination to the DOE's undergraduate degree programs. For the degree programs, the DOE offers a postgraduate degree program, a Master of Arts in Teaching English to Speakers of Other Languages (MA in TESOL), which was established in 2006, a BEd in TEFL, in which the reflective practice project was conducted, and a Bachelor of Arts in English for Work Skills, including English for International Business (IB), English for Professional Communication (PC), and English for Translation and Interpreting (TI). The students who enroll in an undergraduate degree program at the DOE are required to take courses for four years. In Year 1, which is a foundation year, students take various basic courses; in Years 2 and 3, students take general English courses, comprising Core English, Literature Studies, Global Studies and Writing Skills; and in Year 4, the students take specialization courses. For the Bachelor of Education program, in the final year the students (herein addressed as pre-service teachers) take three core courses (Applied Linguistics, Foundation of Education and Teaching Methodology) and do

a practicum. This ELT training program provides pre-service teachers with the theories, principles, approaches, methods and techniques necessary for teaching English, classroom management skills, and opportunities for teaching practice during the practicum. This current research study was conducted with this last specialization program: the BEd in TEFL (DOE, Student Information Booklet, 2017–2018).

Taking into consideration Joyce and Showers' (2002) components of pre-service teachers' teaching (as shown in Figure 1), the ELT pre-service teacher training at the DOE is viewed through two main stages: the building stage and the practice stage. In the building stage, which integrates Joyce and Showers' first two components (knowledge and demonstration), the program provides theories, principles, approaches, methods, techniques, assessment in language teaching, classroom management skills and other educational viewpoints (i.e., education and society, education and innovation and school effectiveness) in three courses: Applied Linguistics, Foundation of Education, and Teaching Methodology. These courses are taken in Semester 1 of the training program. In semester two, the students enter into the practicum. In this stage (in Semester 1), the pre-service teachers also perform teaching demonstrations of various language points and skills in class. The pre-service teachers plan micro teaching lessons, teach lessons to peer pre-service teachers, and receive feedback from other pre-service teachers and trainers. In the second stage of the training, which incorporates Joyce and Showers' third and fourth components (practice and coaching-mentoring), the pre-service teachers have opportunities for formal teaching in the practicum of a period of six weeks. As part of the practicum, they discuss lesson plans with and receive feedback from other pre-service teachers as well as an associate lecturer and supervisor. This stage allows the pre-service teachers to operate reflective practice activities through reflection for action, reflection in action and reflection on action, as revealed in the review of the literature in this study.

The participants in this study were divided into three groups. All the pre-service teachers in two academic years (2016–17 and 2017–18) of the DOE were invited to participate in a cross-sectional survey regarding concerns about teaching. The major aim for selecting all of the pre-service teachers to respond to the questionnaires was to gather all instances of concerns expressed by the pre-service teachers in order to help researchers, teacher trainers and pre-service teacher program developers and managers better discern the pre-service teachers' worries and issues and find out

workable strategies to help the pre-service teachers prepare effectively for teaching in the later stage of the program. Four hundred and seventy two pre-service teachers in total responded to the questionnaire. Among all respondents, 40.6% (191 respondents) were male; 57.5 % (271 respondents) were female; and 1.9 % (9 respondents) did not state their gender. The majority of the pre-service teachers (45.1%) were from the evening classes, followed by the morning classes (29.0%) and afternoon classes (25.8%). Eight pre-service teachers were selected to participate in the post-practicum reflection. The pre-service teacher participants were given pseudonyms (i.e., P1, P2, P3, P4, P5, P6, P7 and P8). Among these pre-service teachers, P1, P5, P6, P7 and P8 were involved in teaching English in the SEC and using RP activities for their teaching during the practicum. The pre-service teachers' behaviors in preparing for the teaching in the practicum and the PR activities they used during the practicum to improve teaching quality were observed. Of the 40 Year 1 students who had low English proficiency and were invited to join the SEC, nine students stayed through in the SEC until the end of the academic year. The other Year 1 students (31 students) dropped out of the SEC classes, partly due to the conflicting class schedule. These nine students were involved in developing personal learning plans for self-improvement of English proficiency and self-assessment of the reflective practice. The students were trained to plan their learning activities throughout the SEC classes. In this tudy, these students were given pseudonyms (S1, S2, … S9). Table 1 below summarizes the three groups of participants.

Table 1. Participants for the reflective practice project

Group	Participants	Phase	Description	Number
1	Pre-service teachers	1	Exploring pre-service teachers' concerns about teaching	472
2	Pre-service teachers	2	Implementing reflective practice professional development program	8
3	Students	2	Following trainees' teaching practicum	9

A set of questions was adapted from Liou (2001) and Brook (2014) to investigate the pre-service teachers' impression and concerns regarding the teaching that they would be conducting in the practicum. The questionnaire, comprising 26 items, mainly asks the pre-service teachers to rate their concerns over various aspects on a five-point scale using the following items: 1 (not concerned at all), 2 (not concerned), 3 (quite concerned), 4 (concerned) and 5 (very much concerned). The questionnaire was classified into five main categories of concerns: theories of teaching (items 1 and 2); approaches and methods in teaching (items 3 to 13); evaluating teaching (items 14 to 16); questions about teaching (items 17 to 18); and self-awareness (items 19 to 26) (Liou, 2001). At the end of the practicum period of six weeks, the participants were asked to write a reflection on the teaching in the practicum using the narrative frame adapted from Barkhuizen and Wette (2008). Barkhuizen and Wette's narrative frame is based on the use of writing frames suggested by Warwick Maloch (2003, as cited in Barkhuizen & Wette, 2008). Narrative frames provide guidance to the pre-service teachers in how to stay focused in the context of their writing. It consists of sentence starters, connectors and sentence modifiers (Wray & Lewis, 1997, cited in Barkhuizen & Wette, 2008). In this study, the narrative frame was modified to allow the pre-service teachers to reflect on their time during the practicum period. It was divided into three main stages: before the practicum, during the practicum and after the practicum. The narrative frame was also used to collect information regarding self-assessment from the students who joined the SEC. The data were analyzed quantitatively and qualitatively. The quantitative data were tabulated and reported in the form of percentages as displayed in Table 2. The qualitative data were coded according to the frames included in the narrative frame as stated above, and themes were sought and reported.

Results and Findings

Pre-service Teachers' Concerns about Teaching

For ease of analyzing the pre-service teachers' concerns about teaching, the five-item Likert scales were divided into two categories: not (very) concerned and concerned (i.e., a combination of the scale 'quite concerned', 'concerned' and 'very concerned'). Table 2 illustrates the pre-service teachers' concerns about teaching. The analysis reveals that the pre-service teachers' concerns about teaching are centered around five areas: theories of teaching; approaches and methods; evaluating teaching;

self-awareness; and questions about teaching. The first area of the pre-service teachers' concern is theories of teaching. Here, the pre-service teachers were concerned about what learning strategies are appropriate to a task and learning purpose (94.9%) and students' attitudes about learning (94.7%). The second area of the pre-service teachers' concerns was the approaches and methods they would use to teach students. Their concerns in this area cover improving students' learning outcomes, i.e., how they can motivate the low achieving students to learn (94.8%) and how to give feedback to students (89.3%); maintaining a good classroom learning environment, i.e., how to manage classroom interactions (93.2%) and how to manage large and noisy classroom (92.5%); giving instructions, i.e., how to give appropriate and effective instructions (94.9%) and how to modify their language to suit the students' level (91.3%); planning lessons and developing materials, i.e., how to plan lessons (93.6%), how to decide the appropriate activities for teaching a lesson (93.8%), knowledge about the content of the lesson (92.4%) and how to supplement textbooks (88.4%).

The third area of the pre-service teachers' concerns is teaching quality. For example, the pre-service teachers questioned how they could identify problems occurring while they were teaching (95.4%) and they were concerned about which criteria they could use to evaluate the effectiveness of teaching (93%) and what the kind of on-the-spot decisions they would have to make if problems arose with some aspects of their lesson (94.2%). The fourth area of the pre-service teachers' concerns is how they could identify the root causes of any problems that might arise from aspects of lesson (93.4%) and, if they did have a problem, who they would approach for advice to deal with the problem (86.5%). The final area of concern is self-awareness about themselves as teachers. These concerns vary from what role they should play in the classroom (82.7%); how to communicate goals to students (89.4%); how to ask questions (84.4%); and their own English competence, encompassing grammatical accuracy (89.5%), breadth of vocabulary (94%), pronunciation (88.9%), oral fluency (91.9%), reading and listening comprehension (91.4%), and writing (91.3%). We have so far analyzed the pre-service teachers' concerns about teaching. The analysis suggests that the pre-service teachers are concerned to some degree about almost all aspects or areas related to teaching

Table 2. Pre-service teachers' concerns about teaching

No	Attributes	Not very concerned	Not concerned	Quite concerned	Concerned	Very concerned	Sum of concerned category
		Not Concerned (%)			Concerned (%)		
Theories of teaching							
1	What learning strategies are appropriate to a task and learning purpose?	0.9	4.3	20.2	45.7	29	94.9
2	What students' attitudes about learning are.	0.6	4.7	21.3	46.6	26.8	94.7
Approaches and methods							
3	How I can motivate the low achievers?	1.1	4.1	13.7	36.6	44.5	94.8
4	The strategies to maintain classroom interaction.	0.6	6	15.4	42.3	35.5	93.2
5	How to manage/organize classrooms (large, noisy classes).	1.3	5.5	20.1	34.7	37.7	92.5
6	How to give appropriate and effective instructions.	0.8	4.2	13.8	41.7	39.4	94.9
7	How to give feedback on students' tasks.	1.7	8.7	24.4	40.5	24.4	89.3
8	How to modify my language to suit students' level.	1.5	6.8	24.4	34.3	32.6	91.3
9	How to plan lessons.	1.5	6.4	23.4	32.6	37.6	93.6
10	Knowledge of the content of the lesson.	1.9	5.5	18.2	36.7	37.5	92.4
11	How to supplement textbooks.	2.1	9.4	35.5	40.5	12.4	88.4
12	How to decide on appropriate activities to teach a lesson.	0.6	5.5	25.5	42.3	26	93.8
Evaluating teaching							
13	The criteria to evaluate the effectiveness of my teaching.	0.6	6.4	21.3	43.3	28.4	93
14	How to identify problems occurring while teaching.	0.2	4.3	18.4	47.5	29.5	95.4
15	What kind of on-the-spot decisions I make use of if problems arise with some aspects of the lesson?	1.3	4.5	27.4	38.6	28.2	94.2
Questions about teaching							
16	What the strategies to identify the root causes of the problems arising with some aspects of my lesson are.	1.1	5.5	26.4	46.5	20.5	93.4
17	Who I should seek advice to solve problems from?	2.8	10.6	30.6	35.7	20.2	86.5
Self-awareness							
18	What role I should play in the classroom?	2.8	14.6	32.1	34.3	16.3	82.7
19	My knowledge about grammatical accuracy.	1.7	8.8	16.2	38	35.3	89.5
20	My knowledge about the breadth of vocabulary.	1.5	4.9	16.6	40.8	36.6	94
21	My knowledge about pronunciation.	2.8	8.3	15.1	32.4	41.4	88.9
22	My knowledge about oral fluency.	2.1	6	17.7	34.5	39.7	91.9
23	My knowledge about reading and listening comprehension.	2.1	6.4	20.2	35.5	35.7	91.4
24	My knowledge about writing.	2.1	6.6	19.1	40.9	31.3	91.3
25	How to ask questions.	3.6	12	33.1	37.2	14.1	84.4
26	How to communicate the goals to my students.	3.6	7	24	36	29.4	89.4

Pre-service Teachers' Experiences of Teaching in the Practicum and Their Motivation

As stated earlier, eight pre-service teachers were involved in telling stories of their teaching experiences during the practicum through a narrative frame. The analysis of the narratives focuses on the pre-service teachers' motivation, concerns, their views of being a teacher, moving from the pre-practicum to the post practicum stage, the reflective practice activities the pre-service teachers have undertaken, and self-assessment conducted by the pre-service teachers and the students in the SEC classes. The first narrative analyzed here is the pre-service teachers' experiences in teaching English language. All of the pre-service teachers had experience in teaching English in both formal and informal English classes before starting the practicum. Some of the pre-service teachers (P2, P3, P6, P7 and P8) had taught English to young and/or adult learners in private English institutes for around one or two years; one pre-service teacher (P1) had taught English to his relative at home; and one pre-service teacher (P5) had only experienced teaching English in the SEC class in the reflective practice project, as stated earlier. Participant P4 did not provide information regarding their experience of teaching English before the practicum. During the six-week practicum, these pre-service teachers taught adult learners in the BC program in the DOE. Analysis of the pre-service teachers' narratives suggests that the pre-service teachers (P1, P2, P5, P7 and P8) have had high motivation and the clear goal of becoming an English teacher since they started studying at the IFL. Some pre-service teachers reported that they had wanted to be teachers since a young age; for example, P2 had wanted to be a teacher since he was young. P7 wanted to be a teacher even before she entered in the DOE's undergraduate degree program. Some pre-service teachers became interested in the teaching profession when they entered the DOE's undergraduate degree program. For example, P8 became interested in teaching when she began Year 1 of the program, while P5 stated that she had developed and pursued her dream of being a teacher of English since she was a junior.

The incentives of becoming a teacher include the pre-service teachers' own goals and passions, family background, experiences and advice from their friends and teachers. P7's choice to teach was influenced by her family background, i.e., her parents were teachers. She stated that she had developed an interest in teaching through observing her parents' work with students. P1 became interested in and enthusiastic about teaching when he was involved in tutoring his relative in English. P4's

interest in the teaching profession was influenced by her friends' and teachers' advice and encouragement. In the participants' own words *I always followed the dream of being a teacher of English. When I was a junior, I was so eager to know the feeling of being a teacher. I always kept my dream alive until the teaching practicum day.* (Pers. Comm. P5)

> *Frankly speaking, I have always wanted to be a teacher, even before I studied at IFL. My parents are teachers, which somehow shaped me to follow their path since I have seen them preparing lessons, correcting homework and doing a lot of paperwork since I was young.* (Pers. Comm. P7)

> *I thought my ability was not good enough to be a teacher because there was a hesitation of my speech . . . Then my lecturer and friends encouraged me to choose a major of BEd. They said I could do it.* (Pers. Comm. P4)

> *Before studying at IFL, the thought of being a teacher did not cross my mind at all nor did I consider choosing the Bachelor of Education as my Year 4 major. The idea of being a teacher did not come to me until I had to teach one of my brothers English at home.* (Pers. Comm. P1)

The Pre-service Teachers' Views of Being a Teacher Before and after the Practicum

The analysis finds out that all of the trainees perceived the roles of being a teacher as someone who inspires, guides, facilitates, provides a role model, transfers knowledge and controls the classroom. It is positive that all of them believed that even though their salary was low, they still had a responsibility to watch their students grow academically and professionally. P1 viewed the role of teacher as helping learners grow with knowledge. P2 saw teachers as knowledgeable people who can instill knowledge in students. P4 stated that as teacher, one should teach, guide, help learners acquire knowledge and treat learners fairly. P6 pointed out the roles of teachers in teaching, providing good advice as well as considering learners' concerns. The pre-service teachers viewed teachers as role models (P5), people who inspire learners to become better people (P7 and P8), people who inculcate moral values, attitudes and norms (P5), second parents (P7) and protectors who assist learners in growing and developing themselves as good people in society (P8). In the participants' own words:

> *Teacher means a person who is knowledgeable who can impart knowledge to the students.* (Pers. Comm. P2)

> *A teacher means a controller, facilitator and a role model. Exactly, a teacher controls the students, manages the class, support students, and be a model for the students in terms of moral values, attitudes, and norms.* (Pers. Comm. P5)

The pre-service teachers had positive attitudes toward their teaching experience. They described their experience being a teacher as exciting and memorable as well as challenging. They were able to put the theories and methods they had learned in the training program into practice as well as improve their communication skills. The practicum brought them a new perspective of being a teacher in comparison to the view they had of being a teacher before they began teaching. They started to view their roles as a catalyst, a guide, a person who improves the students' creativity and self-directed learning and watches the students grow. Moreover, being a teacher encouraged them to dress and behave professionally and boosted their self-esteem. It was interesting that the pre-service teachers viewed themselves as professional teachers after completing the practicum. In their own words:

> *The feeling after the practicum changed. For this reason, I think that I made the right decision in my life for choosing to be a teacher. . . . I feel so good when my students call me "teacher."* (Pers. Comm. P4)

> *Also, I found my strengths, such as preparation, punctuality, flexibility, and creativity for my lesson plan.* (Pers. Comm. P4)

> *The way I wore a uniform enabled me to see myself as a mature lecturer. . . . It is surpris[ing] that I looked more professional in teaching.* (Pers. Comm. P2)

> *I felt excited when I saw that my students actually learned and got back home with something beneficial.* (Pers. Comm. P5)

> *Even though I still made mistakes I was much more confident and I welcomed any mistakes and criticisms for I see that it is the opportunity for improvement.* (Pers. Comm. P1)

Through the trajectory of teaching during the practicum, the pre-service teachers perceived that the teaching practice provided opportunities for collaboration and communication between students and pre-service teachers, and pre-service teachers and supervisors/associate lecturers

through their face-to-face and virtual interaction with each other. P1 and P4 stated that they had observed various classes to learn new techniques, teaching styles, strengths and weaknesses. P2 pointed out that he had worked with his assigned associate lecturer and supervisor in terms of planning lessons and selecting materials, thus improving his lesson plans with clear objectives and practical techniques. P5 consulted their associate lecturer, supervisor and other pre-service teachers' lesson plans, materials and teaching. The participants said *A teacher is more than someone who teaches. It involves the strong bond and good relationship between students and teacher.* (Pers. Comm. P7)

> *I took the opportunity to observe more classrooms and learnt a lot more in terms of techniques and I wish I had more time to do so before my teaching.* (Pers. Comm. P1)
>
> *When I had problems or questions about my teaching such as planning my lessons and materials, I worked with my associate lecturer and supervisor. They helped, made suggestions and corrected my lesson plans so that I could have appropriate lesson plans with effective objectives and techniques.* (Pers. Comm. P2)
>
> *I started observing the other trainees in order to learn their styles of teaching, strengths and weaknesses.* (Pers. Comm. P4)
>
> *Planning was not enough if there were obstacles waiting for me ahead, so I asked or discussed with my supervisor, associate teacher and my co-trainees to get some ideas and advice as much as possible because I believed that different perspectives could improve my teaching from one session to another.* (Pers. Comm. P5)
>
> *To my supervisor and associate lecturer who had devoted their time, best effort and crucial guidance for my work. These two people were my primary support and help whenever I ran into problems related to my practicum teaching.* (Pers. Comm. P6)

The Pre-service Teachers' Feelings Before and After the Teaching Practicum

In the narrative frame, the pre-service teachers were asked to express their feelings before the practicum. The analysis shows that as the practicum was approaching, they had 'status anxiety', which is a mixture of feelings of nervousness and excitement, even though they had been equipped with knowledge about and strategies for language teaching and learning and some teaching experience. Moreover, some pre-service teachers expressed

their fear of being judged and observed by several people while teaching, especially by the supervisors, making unexpected mistakes, and even having low self-esteem. Some were afraid because the students were adult learners and their experience of teaching young learners would not match with those of adult learners' expectations. In their own words:

> *My feelings are mixed with joy and nerves. The joy was I would put what I have learnt into a real situation and could meet many new students; In contrast, being judged by the students and many observers upon my performance was my fear.* (Pers. Comm. P6)

> *Even if I felt afraid like I was in the middle of nowhere, I felt excited too because I acknowledged that I was mature enough to be called "teacher" already.* (Pers. Comm. P5)

Only one trainee (P7), who had two years of teaching experience as a part-time teacher, reported not having much concern about her teaching during the practicum.

The analysis shows that the first five to 10 minutes of teaching was described by the pre-service teachers as "a nightmare," as they were worried about their performance in terms of pronunciation, time management and their teaching pace. However, the feeling of worry and nervousness subsided after one or two techniques were implemented. The pre-service teachers started to feel confidence and energy as they became more familiar with classroom environment. The students were sources of comfort to the pre-service teachers, as the students were reported to be active, collaborative, cooperative, nice, friendly and welcoming. In the participants' own words:

> *When I first started to teach I was really confident with my performance, yet my mouth and hands started to shake since I realized that every moment I did would be considered.* (Pers. Comm. P6)

> *I also noticed that all my students participated actively in the class. They cooperated with other students to learn the lesson, and I remembered why I wanted to be a teacher at that time.* (Pers. Comm. P2)

> *The best thing was my students never dragged me down. They were active, energetic and cooperative and eager to learn, responded to any questions asked, and participated well in my class.* (Pers. Comm. P5)

The Pre-service Teachers' Reflective Practice Activities

The analysis of the narratives provided by the pre-service teachers related to the teaching journey reveals the useful reflective practice activities that the pre-service teachers conducted.

Classroom Observation

Before the actual teaching, the pre-service teachers had a chance to observe some classes taught by the associate or in-class lecturers and other pre-service teachers in order to understand and familiarize themselves with the teaching routines of the classes, especially to help them understand the students' abilities and what kind(s) of learning activities the students preferred so as to easily set their expectations of the classes. The participants reported that this classroom observation helped prepare the pre-service teachers a great deal for their actual teaching.

Lesson Preparation and Material Selection

The analysis shows that the pre-service teachers' successful teaching derived from collaborative work with other concerned professionals and among the pre-service teachers themselves. For instance, each pre-service teacher reported that after they planned a lesson, they discussed it with their supervisor and associate lecturer, observed classes taught by other pre-service teachers who were teaching similar themes, and then re-planned the lesson several times before the actual teaching. At this stage and through observing other classes, they felt that talking to people around them could help them improve their teaching. They could learn new teaching styles and exchange materials used by other pre-service teachers that were considered effective. In the participants' own words:

> *I asked or discussed with my supervisor, associate teacher and my co-trainees to get ideas and advice as much as possible because I believed that different perspectives could improve my teaching from one session to another. . . . They lighted the color of my journey.* (Pers. Comm. P5)

> *With encouragement from my close friend and lecturers, my second teaching was much improved from the first one.* (Pers. Comm. P1)

The pre-service teachers spent a lot of time searching for new classroom activities that were interesting and fun while also promoting learning and critical thinking at the same time, as they believed that the students would engage in the lessons better if they could introduce games or fun activities

in the classrooms. The engaging activities described were guessing words from hints, role-playing, and pair and group work. Not only did the pre-service teachers talk to their peers and experienced lecturers, but they also searched on Internet for some related activities. P7 stated that, "*Also, I usually search for new ideas or teaching style from the Internet."*

Because of the trust status, the pre-service teaches took the time to consult with supervisors and associate lecturers about lesson plans. They had a positive attitude towards the support they received from their supervisors and associate lecturers in terms of guidance, suggestions and feedback on their performance and used the support to improve teaching quality in subsequent teaching. P2 stated that:

> *I had some ideas about my lesson plan, but after I met him, he gave a logical suggestion about each technique and he also gave feedback on my first teaching and told me what I should do in the next teaching.* (Pers. Comm. P1)

Teaching and Learning Principles

The pre-service teachers were perplexed when asked about the specific teaching and learning philosophies or principles they had adopted in preparing the lessons. They only could describe that when planning the lessons, they preferred enhancing the communication as much as possible, which is the reason why they spent time looking for games and engaging class activities involving role-play and pair and group work.

Teaching Problems and How to Overcome Them

During the teaching practice, the pre-service teachers were asked to reflect on their teaching, especially their strengths and weaknesses, and think about solutions to handle those weaknesses in order to grow professionally in teaching in subsequent lessons. The common weaknesses during the first teaching they identified included low voice projection, grammatical errors and hesitation, poor classroom management, giving instructions, time management, whiteboard management, standing position, not being able to build rapport with students, not being flexible enough to modify the activities they were implementing in the class to fit the time, problems with writing lesson objectives, and dealing with students' disruptive behaviors.

To overcome these weaknesses, the pre-service teachers were positive, persistent and committed to getting the best results in the practicum. They stayed focused and wrote down what they would be talking about in the lesson plan. In their own words:

> *Luckily, I overcame those problems due to my own commitment and constructive comments from my supervisor, associate teacher and my co-trainees.* (Pers. Comm. P5)

> *I kept these [failing to look confident, follow lesson plan, control the class] from happening in my second teaching by being more focused. I told myself that I had prepared everything, so there was nothing to be afraid of. I can see some improvement in my second teaching.* (Pers. Comm. P8)

Future Improvement

Through successful completing the teaching practice, the pre-service teachers identified aspects about their teaching to improve in the future. These aspects include giving clear instructions, classroom management, teaching lessons clearly, improving their fluency, building better rapport with students, appearing confident in front of students, and techniques to promote student engagement and dealing with productive skills.

Self-assessment of the Reflective Practice

This section briefly reports on the feedback received from the students who attended the SEC. As stated earlier, in the SEC class, the students were involved in planning learning activities through a personal learning plan (PLP). Nine students who were able to stay through the SEC until the end of the academic year were invited to self-assess the reflective practice activities. In general, the students were positive and highly valued the SEC. They found the training of developing a PLP as well as being taught time management, vocabulary lessons, speaking lessons and TOEFL listening lessons in the SEC really useful. In their own words:

> *Teachers always asked what we needed and shared their personal experiences in studying English.* (Pers. Comm. S1)

> *Teachers helped me to improve all of my skills. Although my English isn't good, it is better than before.* (Pers. Comm. S3)

> *After taking this course, I felt delighted. I think I can improve many skills such as vocabulary . . . especially listening, which I've never learned before. I want to give sincere thanks to all of my teachers teaching every single week without caring about their tiredness, time.* (Pers. Comm. S4)

> *I think it is very good because it can help me improve a lot. I want teachers to continue.* (Pers. Comm. S5)

> *This course meets only once a week, but it can help me improve my major English skills at least.* (Pers. Comm. S6)
>
> *I do like PLP.* (Pers. Comm. S8)
>
> *I like the course because this course is very important for me and teachers always suggest how I can improve my English.* (Pers. Comm. S9)

The students also pointed out that the training did not only help them improve their English language skills, but it also enriched them with other skills, including self-improvement (S4, S6); how to prepare lessons, time management and scheduling (S3); building the confidence to go on (S7, S8); developing the habit of reading books (S7); appropriate use of free time to improve English skills (S7); motivation, bravery, and attention (S8); and study skills (S9).

Discussion

The analysis of the data collected in this study has yielded some important issues of concern regarding the ELT educational training program. First and foremost, the important issue of concern is preparedness. The findings in this study indicate that the pre-service teachers are concerned about teaching in five areas – theories of teaching, approaches and methods, evaluating teaching, questions about teaching, and self-awareness. Such concerns may suggest that the pre-service teachers, despite going through the training program, may not be ready for formal teaching, especially during the practicum. In other words, the pre-service teachers are absolute neophytes in the teaching profession (Ferguson, 1989; Brooke, 2014). They may merely apply theories in teaching without any appropriate consideration of effective and practical strategies, the practice of which is only to fully achieve an application of technical competence rather than the professional pedagogical growth of the pre-service teachers (Ferguson, 1989). Instead, to assist pre-service teachers in reaching their potential as professional teachers, they should be strongly encouraged to critically evaluate which teaching techniques they select for the classroom (Brooke, 2014). For this reason, prominent scholars strongly recommend that reflective practice is instilled in pre-service as well as novice teachers (Ferguson, 1989; Rhine and Bryant, 2007; Etscheidt, Curran et al., 2012; Brooke, 2014). The reflective practice should allow pre-service teachers to undertake the three forms of reflection: reflection for action, reflection on

action, and reflection in action (Rhine and Bryant, 2007; Thorsen and DeVore, 2013; Sofo and Easter, 2014; Farrell, 2015).

Another important issue of concern is motivation in the teaching profession of the pre-service teachers. As revealed in the analysis, the pre-service teachers have high motivation in teaching and the motivation is derived from the pre-service teachers themselves (i.e., intrinsic motivation) and their peers, lecturers and family members (i.e., extrinsic motivation). With such high motivation in teaching, pre-service teachers are actively engaged in successfully undertaking teaching not only in the practicum in the training program but also in subsequent teaching in any institution where they will be teaching. As Harmer (2014, p. 98) states:

> *It is accepted in most fields of learning that motivation is essential to success: that we have to want to do something to succeed at it. Without such motivation, we will almost certainly fail to make the necessary effort.*

The next important issue of concern is the effective strategies adopted by the pre-service teachers. In this current research, the pre-service teachers have adopted various effective strategies for completing their teaching practice. Some of the strategies include self-monitoring and peer critical friendship (Farrell, 2015) and using collaborative strategies (Farrell, 2018) to undertake their teaching and reflection to achieve their full potential in teaching. As reported earlier, the pre-service teachers have observed classes taught by associate teachers and other peers in order to learn more about the class and students. They discussed lesson plans with peers, associate teachers and supervisors. Some pre-service teachers have created Facebook groups for communication and explored various social networks to learn more about relevant tips for improving teaching. With the adoption of the reflective practice activities, it can be seen by the students that the pre-service teachers' teaching has improved and they have even become more confident in teaching. This current research has yielded a significant insight in that if the practicum is seen as the main component that pre-service teachers have to undertake in order to complete the training program successfully and prepare for future teaching, it should be developed and operated appropriately. The future ELT pre-service teacher training should engage both trainers and pre-service teachers in undertaking reflective practice in the program. Figure 2 illustrates a proposed model that integrates reflective practice activities in the ELT pre-service teacher training program, adopted from Ferguson (1989), Liou (2001), Joyce and Shower (2002), Burns (2010) and Brooke (2014).

The model comprises four steps. In Step 1, the model begins with understanding pre-service teachers' concerns about teaching. As stated earlier, pre-service teachers are completely new to teaching and they may have many concerns about teaching (Liou, 2001; Brooke, 2014), which may discourage them from active engagement in teaching. Hence, understanding pre-service teachers' concerns about teaching is helpful for both trainers and pre-service teachers to work together to find out appropriate and effective yet practical strategies to handle those concerns.

In Step 2, the model involves establishing a reflective practice orientation, i.e., training pre-service teachers to reflect on their concerns about teaching and set appropriate activities for overcoming those concerns (Ferguson, 1989). Step 3 of the reflective practice model is presentation of the instructional theory, i.e., pre-service teachers receive inputs in terms of the nature of language, nature of learning and various other relevant theories about teaching and learning (Ferguson, 1989; Joyce and Shower, 2002). In this step, pre-service teachers are also involved in micro-teaching activities in class to uncover interconnections between theories and practices. Step 4 of the model is the demonstration of lessons, i.e., pre-service teachers plan lessons with peers, teach the lessons, provide and receive feedback, and re-plan lessons. This step allows pre-service teachers to explore a trajectory of reflective teaching during the practicum and involves several cycles of reflective practice, drawn from Burns' (2009) action research framework. Figure 2 portrays two of a series of cycles, each of which has four steps: planning a lesson, teaching, collecting information and reflecting on the teaching. This knowledge base model has prepared readiness so that pre-service teachers can enter the practicum as well as the teaching profession with confidence and satisfactory outcomes.

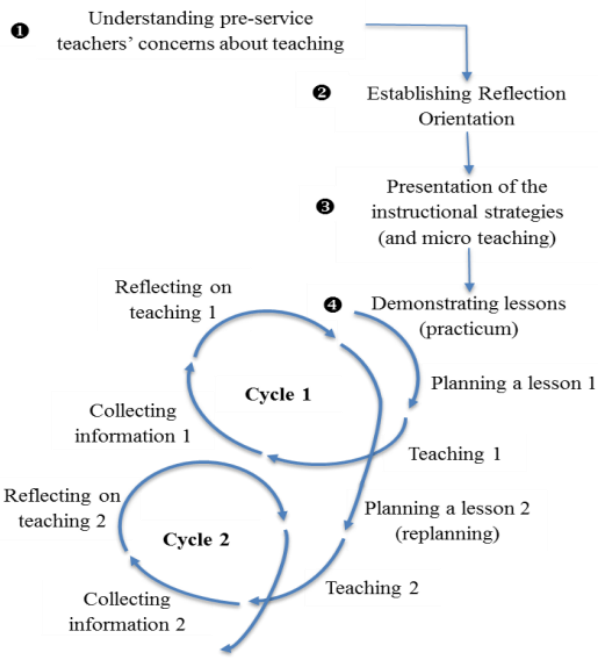


Figure 2. A model of reflective practice in ELT pre-service teacher training

Conclusion

This study has shed light on the development and integration of reflective practice into pre-service teacher educational programs. With little experience of teaching, pre-service teachers have many concerns about teaching. Their concerns are centered around students' learning outcomes, quality of teaching, knowledge of theories and principles about language teaching, and their own English proficiency. The findings have revealed the pre-service teachers' reflective practice activities, which include self-monitoring, peer critical friendship and collaborative strategies. The findings have also confirmed that the pre-service teachers grew more confident and passionate about teaching after completing the practicum. The study suggests that reflective practice, when undertaken appropriately and systematically (Farrell, 2013a), is an effective yet practical strategy to assist pre-service teachers in learning to teach. Not only do pre-service teachers develop knowledge base practice but they also develop motivation, interest, passion and confidence in the teaching profession. Therefore, an integration of the reflective practice into the existing teacher training program can create a more effective knowledge base for the pre-service teacher training program in the field of English language teaching.

This current study focused only on the pre-service teachers' concerns about teaching and explored the reflective practice activities undertaken by the pre-service teachers in the practicum. For the reflective practice activities to be successfully operated in the ELT pre-service teacher training program, future studies regarding the perceptions of the ELT teacher trainers and ELT program management teams about reflective practice should be undertaken. Moreover, in-depth studies of different groups of pre-service teachers involving implementing reflective practice activities in the training program, following the reflective practice model displayed in Figure 2, are needed to examine whether the model could have an impact on the pre-service teachers' teaching performance. Only when such in-depth studies of the practice of reflective teaching undertaken by the pre-service teachers are understood will the reflective practice model be able to be integrated in the ELT pre-service teacher training program effectively and efficiently.

Acknowledgments

This current research project was completed with financial support of the Royal University of Phnom Penh (RUPP) Research Fund Round 1 (2016–2017). We would like to sincerely thank the RUPP Board and RUPP Research Committee for providing this research grant to enable our reflective practice project to take shape and to be successfully completed. We are also grateful to the head of the Department of English for his heartfelt and motivational support for us to undertake the reflective practice research activities in the department. We would like to thank our pre-service teacher and student participants for their consent in participating in this project. Last but not least, we are thankful to the CER reviewers for assisting us in revising the manuscript.

Brief Biographies

Chan Narith Keuk is a coordinator of Research and Professional Development and a lecturer of Teaching Methodology, Research Methodology and Literature Studies in the Department of English of the Institute of Foreign Languages, RUPP (Cambodia). He obtained his PhD in Linguistics from Macquarie University (Australia) in 2015. His research interests include the varieties of English used in contemporary Cambodia, the study of English language teaching education in an EFL context, ELT teacher research and information and communication technology in ELT education.

Sarina Monh has been serving as a lecturer of English at the Department of English of the Institute of Foreign Languages at RUPP since 2005. She has taught Literature Studies, Global Studies and Professional Communication Skills. She is currently a project supervisor for the BEd TEFL honor degree students and co-coordinator of the community of practice of teachers in the department. She obtained an MA in Educational Development from Hiroshima University (Japan) in 2010. Her research interests include reflective practice for pre-service teachers, teacher training and assessment in language learning.

References

ASEAN. (2008). *The ASEAN charter.* Indonesia: Association of Southeast Asian Nations.

Brooke, M. (2014). Developing the reflective practice capabilities of pre-service trainees in TESOL through online means. *4th CELC Symposium Proceedings,* (pp. 50-60).

Burns, A. (2009). Action research. In J. Heigham, & R. A. Croker, *Qualitative research in applied linguistics: A practical introduction* (pp. 112-134). London: Palgrave Macmillan.

Clayton, T. (2006). *Language choice in a nation under transition: English language spread in Cambodia.* Lexington, VA: Springer.

East, M. (2014). Mediating pedagogical innovation via reflective practice: A comparison of pre-service and in-service teachers' experiences. *Reflective Practice, 15*(5), 686-699.

Etscheidt, S., Curran, C. M., & Sawyer, C. M. (2012). Promoting reflection in teacher preparation programs: A multilevel model. *Teacher Education and Special Education, 35*(1), 7-26.

Farrell, T. S. (1999). The reflective assignment: Unlocking pre-service English teachers' beliefs on grammar teaching. *RELC, 30*(2), 1-17.

Farrell, T. S. (2008). Reflective practice in the professional development of teachers of adult English language learners. *NETWROK*, 1-4.

Farrell, T. S. (2013a). *Reflective writing for language teachers.* Bristol: Equinox.

Farrell, T. S. (2013b). *Reflective practice in ESL teacher development groups: from practice to principles.* London: Palgrave Macmillan.

Farrell, T. S. (2014). 'Teacher you are stupid!' - cultivating a reflective disposition. *TESL-EJ, 18*(3), 1-10.

Farrell, T. S. (2015). *Promoting teacher reflection in second language education: A framework for TESOL professionals.* New York: Routledge.

Farrell, T. S. (2016). *From trainee to teacher: reflective practice for novice teachers.* London: Equinox.

Farrell, T. S. (2018). *Research on reflective practice in TESOL*. New York: Routledge.

Harmer, J. (2014). The practice of English language teaching. England: Pearson Education Limited.

Hyacinth, T., & Mann, S. (2014). Reflective practice in Nigeria: Teachers' voices and experiences. *TESL-EJ, 18*(3), 1-26.

Joyce, B., & Showers, B. (2002). *Student achievement through staff development.* Alexandria, VA: Association for Supervision and Curriculum Development.

Keuk, C. N., & Heng, V. (2016). Cambodian ELT teachers' beliefs and practices regarding language learner autonomy. In R. Barnard, & J. Li, *Language learner autonomy: Teachers' beliefs and practices in Asian contexts* (pp. 62-78). Phnom Penh: LEiA.

Liou, H.-C. (2001). Reflective practice in a pre-service teacher education program for high school English teachers in Taiwan, ROC. *System, 29*, 197-208.

MOEYS. (2016). *Curriculum framework of general education and technical education.* Phnom Penh: Ministry of Education Youth and Sport.

Moore, S. H. (2008). Trained for teaching high school, poached for teacher training: A case study of a Cambodian teacher's first year of teaching in Cambodia. In T. S. Farrell, *Novice language teachers: Insights and perspectives for the first year* (pp. 29-42). London: Equinox.

Moore, S. H., & Bounchan, S. (2010). English in Cambodia: Changes and challenges. *World Englishes, 29*(1), 114-126.

Neau, V. (2003). The teaching of foreign languages in Cambodia: A historical perspective. *Language, Culture, and Curriculum, 16*(3), 253-268.

Parsloe, E., & Leedham, M. (2009). *Coaching and mentoring.* London and Philadelphia: Kogan Page.

Pit, C., & Hok, R. (2003). English language teaching development in Cambodia: Past, present, and future. In H. W. Kam, & R. Y. Wong, *English language teaching in East Asia today: Changing policies and practices* (pp. 111-129). Singapore: Eastern University Press.

Rhine, S., & Bryant, J. (2007). Enhancing pre-service teachers' reflective practice with digital video-based dialogue. *Reflective Practice, 8*(3), 345-358.

Richards, J. C., & Farrell, T. S. (2005). *Professional development for language teachers: Strategies for teacher learning.* Cambridge: Cambridge University Press.

Richards, J. C., & Lockhart, C. (2007). *Reflective teaching in second language classrooms.* New York: Cambridge University Press.

Robichaux, R. R., & Guarino, A. (2012). Enhancing preservice teachers' professionalism through daily teaching reflection. *Hindawi Publishing Corporation Educational Research International*, 1-4.

Ryder, J. (2012). Promoting reflective practice in continuing education in France. *English Language Teaching, 66*(2), 175-183.

Sofo, S., & Easter, B. (2014). Developing reflective practice in preservice teachers: Influence of a data-based intervention. *American International Journal of Contemporary Research, 4*(6), 42-47.

Somerville, D., & Keeling, J. (2004). A practical approach to promote reflective practice within nursing. *Nursing Times, 100*(12), 42-45.

Thorsen, C. A., & DeVore, S. (2013). Analyzing reflection on/for action: A new approach. *Reflective Practice, 14*(1), 88-103.

Tice, J. (2004). Reflective teaching: Exploring our own classroom practice. *British Council Teaching English.* Retrieved from https://www.teachingenglish.org.uk/article/reflective-teaching-exploring-our-own-classroom-practice.

Uzum, B., Petrón, M., & Berg, H. (2014). Pre-service teachers' first foray into the ESL classroom: Reflective practice in a service learning project. (1-15, Ed.) *TESL-EJ, 18*(3).

Appendix

Pre-service teachers participating in narrative frame and students participating in self-assessment in the supplementary English class.

Code	Position	Date
Pers. Comm. P1	Pre-service teacher	March–April, 2017
Pers. Comm. P2	Pre-service teacher	March–April, 2017
Pers. Comm. P3	Pre-service teacher	March–April, 2017
Pers. Comm. P4	Pre-service teacher	March–April, 2017
Pers. Comm. P5	Pre-service teacher	March–April, 2017
Pers. Comm. P6	Pre-service teacher	March–April, 2017
Pers. Comm. P7	Pre-service teacher	March–April, 2017
Pers. Comm. P8	Pre-service teacher	March–April, 2017
Pers. Comm. S1	Year 1 student	July, 2017
Pers. Comm. S2	Year 1 student	July, 2017
Pers. Comm. S3	Year 1 student	July, 2017
Pers. Comm. S4	Year 1 student	July, 2017
Pers. Comm. S5	Year 1 student	July, 2017
Pers. Comm. S6	Year 1 student	July, 2017
Pers. Comm. S7	Year 1 student	July, 2017
Pers. Comm. S8	Year 1 student	July, 2017
Pers. Comm. S9	Year 1 student	July, 2017

Ministry of Education Youth and Sport
Education Research Council

Article

Improving Students' Speaking Ability Through the Integration of Information and Communication Technology in English as a Foreign Language Classrooms in Higher Education Institutions

Soviphea Chenda [1], Daro Nget [2] and Socheata Somchan [2],
[1] Department of English of Institute of Foreign Languages of the Royal University of Phnom Penh; [2] English Language Support Unit of the Royal University of Phnom Penh
(Correspondence: sovipheachenda91@gmail.com)

Received 30 March 2018; Accepted 12 May 2018

Abstract

Students who are quiet in English as a foreign language (EFL) classrooms are often not quiet because they have few or poor-quality ideas in response to the lectures; rather, they are quiet because one of the most difficult learning aspects for them is speaking. Petty (1993) states that perfect speaking outcome results from perfect practice; therefore, issues with speaking are the result of a lack of practice and/or practicing the wrong way. Integrating ICT into classrooms could go beyond traditional teaching and provide new ways to practice and practice correctly. Therefore, this paper examines the differences in students' performance in speaking before and after the implementation of ICT in an EFL classroom in a higher education institution. In addition to this, useful ICT tools and online learning platforms for effective learning and the difficulties students faced with the implementation are also analyzed. This paper uses surveys as a research design. One class of year 2 students was studied for a semester. Each participant was tested and filled out a questionnaire both before and after the implementation. Semi-structured interviews were held with three students – one outstanding, one of average performance and one of low performance. The research found that ICT implementation had a positive impact on most areas of the study. Therefore, this study shows that ICT

should be implemented in Cambodia at the university level to improve speaking in English. In addition to this, ICT support should be provided to both lecturers and students.

Keywords: Speaking ability, ICT integration, EFL classroom, Royal University of Phnom Penh (RUPP)

Citation: Chenda, S., Nget, D., and Somchan, S. (2018). Improving Students' Speaking Ability through the Integration of Information and Communication Technology in English as a Foreign Language Classrooms in Higher Education Institutions. *Cambodia Education Review, 2*(1), 81–107.

Introduction

Sydney J. Harris states: "The whole purpose of education is to turn mirrors into windows" (1994, p. 2). Education plays a vital role in allowing people to experience today's world and provides opportunities for further exploration. Before the Internet era, conventional methods for teaching English as a foreign language (EFL) included direct method, audio-lingual method, suggestopedia and community language learning (Schmit, 2002). In recent years, EFL lecturers have turned to a new method: information and communication technology (ICT) pedagogical integration (Kullberg, 2011). ICT represents the boosting tool to enhance only economy (Kamal & Qureshi, 2009) while ICT implementation can help to develop a nation's economy, education, culture and politics (Albirini, 2008).

After encountering various obstacles, Malaysia has used ICT in education to make positive changes in laboratories, resource centers and administrative offices (UNESCO, 2004). Moreover, Dudeney and Hockly (2008) argue that using technology in speaking can be beneficial as it exposes learners to authentic tasks and materials and provides opportunities for collaboration and communication, even across large distances. These uses are innovative ways to practice language and assess performance. After having observed for more a decade that the majority of EFL students complain that they about their speaking skills, Petty (1993) stated that the perfect speaking outcome results from perfect practice. From this, it can be understood that issues occur because students do not have enough speaking practice or they do not practice in the right way; therefore, to improve their language skills they needed better strategies to enhance their speaking ability. Recognizing the importance of technology

in the education system, Kituyi and Tusubira (2013) developed a framework that ensures the effectiveness of the implementation of e-learning in higher education institutions in developing countries such as Uganda, Kenya and Zimbabwe. These researchers identified audio and video projection and other technology as crucial tools for learning that should be combined with the existing course content. The framework also identifies the stakeholders, such as universities, who would ensure the successful implementation of the ICT program. Similarly, Wagner, Hassanein and Head (2008) propose that satisfying the needs and concerns of every stakeholder is necessary in order to successfully implement an e-learning program. However, different stakeholders, such as the students, instructors, institutions, content providers and technology providers, all have different needs, motivations and concerns in relation to virtual learning.

Concerned about the quality of education in Cambodia, in 2002 the United Nations Educational, Scientific and Cultural Organization (UNESCO) introduced a program entitled ICT in Education for Asia-Pacific Countries, which had the main aim of using ICT to help Asia-Pacific countries to enhance their educational quality in order to meet the demands of understanding and sharing information in education (UNESCO, 2007). Funded by Japanese Funds-in-Trust (JFIT), the ICT in Education program focused on the interrelated areas of education policy (i.e., the rules of ICT usage in educational systems), teacher education (i.e., the training and professional development of teachers and ICT effectiveness in learning and teaching), teaching and learning (i.e., the best use of ICT in school and UNESCO SchoolNet in the ASEAN context), non-formal education (i.e., ICT usage in community using non-formal teaching), monitoring and measuring change (i.e., ICT performance indicators), and research and knowledge-sharing (i.e., ICT practices, ICT infrastructure and ICT knowledge) (UNESCO, 2007). In addition to this, VVOB (the Flemish Association for Development Cooperation and Technical Assistance) provided a series of workshops for ICT pedagogical development, using multimedia to upgrade teachers' professional capacity, to teach teachers to use materials effectively and efficiently and to shrink the gap between students and teachers (Dionys, 2012). Thus, Dionys (2012) reports that national digital content has been introduced in higher education in the training with over 300 educational videos chosen and translated into Khmer language. Of these 300 videos, around 200 were filmed during class subject experiments, while over 100 clips were taken from existing sources, as required by VVOB for quality control.

ICT is the key for helping Cambodia to move forward in all aspects. The Association of Southeast Asian Nations (ASEAN) has launched the ASEAN ICT Master Plan 2015 with the purpose of encouraging social and economic growth (KOICA, 2014). Today, the development of ICT in Cambodia is focused on four areas: to embolden people through ICT human resource development and e-awareness; to strengthen connectivity through frameworks and infrastructure; to use ICT to improve the capabilities of industry, research and development; and to implement e-services in the government, public, economic and educational sectors (KOICA, 2014).

The 2014–2018 strategic plan of the Royal University of Phnom Penh (RUPP) outlines the future strategic plans of the university. The second and third missions of the plan are to become a center of excellence for language learning and information and communication technology (ICT) and to become a leading institution for social science, humanities and science, technology, engineering and mathematics (STEM) education (p.4). RUPP thus aims to be the core and leading center of ICT and STEM in educational systems at the higher institutional level in Cambodia and to equip students with academic, macro and employment skills as well as innovation, cross-cultural competence, values and attitude. At the same time that RUPP were establishing their aims for teaching and ICT, the Ministry of Education, Youth and Sport (MOEYS) developed a Master Plan for ICT in Education. From 2009 to 2013, they aimed to increase access to basic education, tertiary education and life-long learning, both formal and non-formal, by using ICT as alternative education delivery media; to improve the relevance and effectiveness of basic education by harnessing the potential of ICT as a major tool to enhance the quality of teaching and learning; to develop the ICT-based professional skills needed by graduates for employment in a knowledge-based society in order to ensure that Cambodia can compete and cooperate in an increasingly interconnected world; and to increase the effectiveness and efficiency of the Ministry and school management (MOEYS, 2013).

Therefore, the aim of this study is to examine the bridge between the traditional teaching of speaking and ICT integration, emphasizing pronunciation, intonation, stress, ending sounds, discourse markers, confidence, presentation, debate, manner, matter and method in public speaking. In this paper, we examine the importance of ICT application and integration at RUPP. Some of the biggest problems students have faced at RUPP is access to facilities and equipment, for example Wi-Fi on campus,

since the university cannot afford to supply those for free. Moreover, the majority of faculty members (mainly lecturers) need to receive ICT training, as most of them are not familiar with ICT. Both lecturers and students are in need of smart devices such as smartphones, tablets, laptops and projectors because not all lecturers and students can afford these devices and RUPP's budget is very limited and they cannot buy these devices for everyone at the university.

Conceptualizing ICT at Higher Education Institutions

ICT is primarily defined as the practice of using technology to send, store, display, share or exchange information via electronic devices such as radios, televisions, videos, DVDs, telephones, satellite systems and computers and the Internet services associated with websites, videoconferencing, emails and blogs (UNESCO, 2007, p.1). According to UNESCO (2010), ICT represents the practice of sending, sharing, expressing and changing information through devices, while Gokhe (2012) states that ICT includes the supporting activities involved with the interaction of information and communication with each other. Moreover, Kugemann (2002) defines ICT as the certain areas that allow for the updating of information and communication. This paper defines ICT as the educational program used to upgrade students' performance, mainly in speaking English, through particular tools, resulting in score enhancement, better speaking skills and reducing learning difficulties. The integration of ICT in EFL teaching should start at the university level, since most university students are mature enough to become involved with technology, able to pay to access ICT tools and the Internet, and prepared to deal with ICT implementation problems. Moreover, Balanskat, Blamire and Kefala (2006) state that among the four macro skills of EFL – speaking, writing, reading and listening – many students are scared of speaking and have approached their lecturer for help. Therefore, ICT integration in speaking provides positive impacts for learners in many areas like motivation skills, concentration, cognitive processing, independent learning, critical thinking and teamwork. Similarly, Rahimi and Yadollahi (2011) agree that ICT helps students at a university to be more creative and have better presentation and public speaking English skills, so they tend to be more confident during their presentations. As such, ICT becomes a potential communication and collaboration tool on the Internet through emails, chat groups, news groups, discussion groups and other activities (Krajka, 2002).

However, integrating ICT into curricula is not easy, as lecturers need to take a pivotal role in incorporating this method into the curriculum and students must be equipped with ICT facilities (UNESCO, 2004). As noted by Selwyn (2008), Web 2.0 can help with this through applications called "social software" that allow people to share, create and communicate information. Google, LinkedIn and Facebook are some of the most common tools that help ICT facility. Similarly, Kullberg (2011) finds that while Swedish lecturers and students have an positive attitude towards the use of ICT inside and outside the classroom, they have been most successful using four particular tools: Kahoot, Prezi, Project Libre and Wikis (such as Wikipedia, Wikinews, Wikianswers and Wikisource). Likewise, Wichadee and Pattanapichet (2018) state that students engage in learning much better when Kahoot is introduced, since Kahoot is easy for lecturers and students to use and assists with competitiveness at all levels.

Chhem, Khieng and Madhur (2015) state that in order to be successful in employment, students should have three dimensions of skills: cognitive, social and behavioral, and technical skills. The same study continues that technical skills can be developed from doing manual work such as using tools with expertise and from doing tasks in both social science and real science. With those skills, both employers and employees can perform better in most tasks. However, the study recommends introducing those skills, primarily the technological skills, at an early age at school since younger people are better able to acquire the related-to-technology skills more quickly and easily and, with ICT as the first step, they can acquire many technological skills. In contrast, Robert (2008) reports that while ICT in education is good, some universities in the South Pacific area have had problems using ICT tools like technology training, capacity-building, curriculum development, infrastructure (i.e., electricity, transport and basic services), financing and ICT updated policy initiatives. Muilenberg (2001) identified eight barriers students had in learning online: administrative and instructor issues, limitations of social interactions, limited academic skills, limited technical skills, learner motivation, time and support for studies, the high cost of and limited access to the Internet, and technical problems. Pearson (2015) states that Thailand has practiced a "one tablet per student" policy, which means each student is given a tablet with the aim of stimulating students by exposing them to technology and speeding up their thinking capacities. This program has had mixed results. First, they had positive results in relation to general cognitive skills, verbal skills, skills with coping with problems, and speaking and

listening skills. However, the facilities, commitment of students and faculty, and the roles of lecturers had negative outcomes, as, since most schools could not supply free Internet access, students gave up because they feel e-learning is more complicated than traditional teaching, which was exacerbated because not many lecturers were trained in the uses of ICT.

Study Areas and Methodology

RUPP, which opened on 13 January 1960, is the oldest and largest public university in Cambodia. It was completely closed during the Khmer Rouge period (1975–1979) but reopened on 13 May 1980 and, over the last three decades, the university has continued to grow and expand. Today, RUPP provides both undergraduate and postgraduate degrees under five faculties and one institute in many areas: sciences, social sciences and humanities, development studies, education, engineering and foreign languages. The university has been a full member of the ASEAN University Network (AUN) since 1999 and a member of Greater Mekong Sub-region (GMS) from 2015 and promotes international cooperation, joint research, student mobility and academic exchanges. The university's Quality Assurance Center fosters a culture of quality throughout the university in academic areas, research and community service. To realize its strategic plans (2014–2018), RUPP provided research grants to its staff and lecturers in three categories: USD 1000, USD 3000 and USD 5000 seed grants. The present study employs a mixed-method approach through integrating quantitative and qualitative methods within a single study to obtain a better understanding of the complexity of research inquiry for ICT implementation in EFL classrooms. A mixed-method approach was chosen as neither quantitative or qualitative methods alone were adequate for providing an in-depth understanding into the complexities of students who play truant and the use of mixed methods complemented the strengths and weaknesses of quantitative and qualitative methods (Creswell, 2005).

The purpose of this study is to examine whether the integration of ICT helps to improve the English-speaking ability of the students in EFL classrooms and also if it is suitable for large classes, like classes at RUPP. The study focused on three primary objectives: to encourage the use of ICT in EFL classrooms, to improve the teaching and learning environment in the classroom by using a variety of ICT materials, and to help English lecturers improve their pedagogies in teaching speaking to students in EFL classrooms. These aims corresponded with three research questions: what

speaking skills does ICT implementation help to improve, what are the most effective ICT tools used to improve speaking in English, and what are the major challenges in ICT implementation? The research was conducted as a survey design at a private English class of sophomores of a program at RUPP. There were 28 male and 27 female students from six departments (mathematics, biology, physics, engineering, environment and chemistry) and the class lecturer (as shown in Table 1). A convenient sample was chosen for this study. This group of students was purposefully selected as a sample because there were various majors within classes with an equivalent number of male and female students. All students were at an elementary level of English, which was a very common level of English proficiency among learners.

In order to track changes in the speaking ability of the selected students, researchers conducted tests both before and after the assessment. The test primarily looked at students' fluency, pronunciation, vocabulary, grammar, detail, gestures and eye contact. In both pre- and post-test assessments, students were asked to do a speaking task individually, and they were assessed against the above-mentioned criteria by the class lecturer. The students were also given a pre-test questionnaire at the same time so that the researchers could gather information related to the students' educational background, the devices they were using for ICT, frequency of surfing the Internet, devices and online tools used for ICT, and their speaking skills before ICT implementation. The students were also asked to rate any challenges they may have experienced before ICT implementation.

Table 1. Sample characteristics

Attribute	Male (N=28)	Female (N=27)	Overall (N=55)
Mathematics department	7	6	13
Biology department	5	7	12
Physics department	6	1	7
Engineering department	12	4	16
Environment department	3	2	5
Chemistry department	1	1	2

The last two sections were measured using a four-point importance scale. After the implementation of ICT, the students were given a post-test

assessment and questionnaire. Then, semi-structured interviews were held with three students based on GPA and teacher's observation: the poorest performing student, a medium-performing student, and the best performing outstanding student. The interview questions concerned smart devices, Internet connection, online platforms, speaking ability rating before and after ICT implementation, the challenges they faced and how, how much and how often they used ICT. As previously mentioned, the last two sections were measured using a four-point importance scale. The class lecturer was also interviewed to see how they implemented the ICT into their classroom and the challenges that emerged during the implementation stage.

For quantitative data, we used SPSS for data analysisfrequency (i.e., percentage, mean scores) and statistical analysis (e.g., t-test and Chi-square). The students' scores obtained from pre- and post-test assessments were analyzed by using a paired-sample t-test in order to see if there was any significant improvement in their competency in English speaking. In addition to this, the qualitative data was analyzed using both descriptive and narrative approaches by means of dividing them into themes and characteristics to establish the contextual factors that could be related to explaining the challenges in using ICT materials. In sum, these data were discussed to draw an interactive framework for policy and practice, particularly for further research on ICT implementation in English as foreign language (EFL) classrooms in Cambodia.

Findings and Results

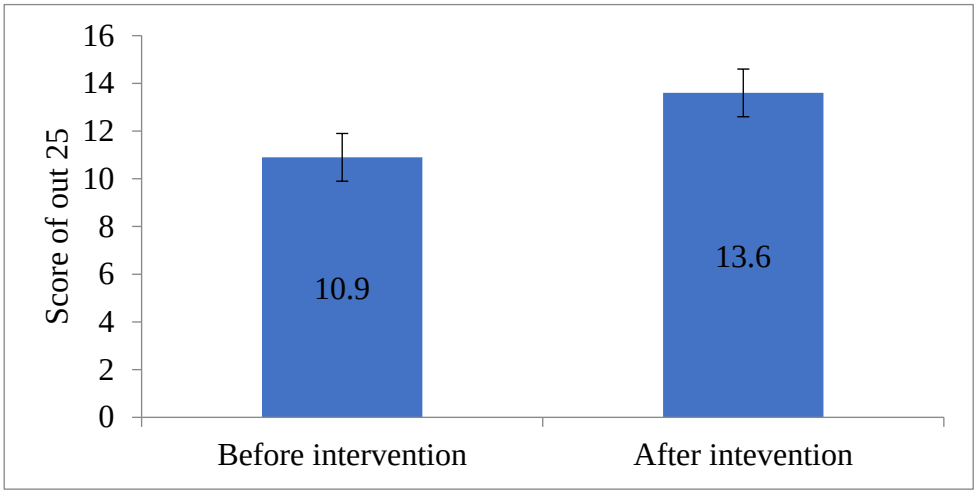
Overall Traits of Students' Speaking Test Score Before and After ICT Implementation

Since all of the participants were sophomores studying English at an elementary level, their English speaking was tested both before and after the implementation to assess their speaking skills. For the pre-test, they were given topics from the *Touchstone* textbook to prepare a week in advance. The topics given were randomly selected through a lucky draw and there were six topics in total – three topics before and three topics after ICT implementation. The assessments mainly focused on pronunciation, accuracy, fluency, eye contact, gestures or body language, pauses, ending sounds, word emphasis and native accent (Cambridge English, 2011). For the post-test, students were given the same procedure and assessment, but the topics for presentation were different. Referring to Table 2, more than half of the 55 students received a positive output from ICT implementation

when comparing the results from before and after the intervention. In the pair-sample t-test results, there was a significant different between the pre- and post-intervention scores (P-*value* = 0.000). The same analysis also pointed out that the significance of P-*value* (P-*value* = 0.012 < 1.000). Additionally, a one-sample t-test was applied. Out of 25 (the total score), the students' scores increased from an average of 10.9 before to 13.6 after the ICT implementation. Therefore, given the average score was 12.5 out of 25, a majority of students initially did not score higher than 12.5 but, after the ICT integration, they mostly scored over 12.5. A student described the effectiveness of ICT implementation as follows:

> *I did it! Well, I was like going to hell in that first speaking test, which had nowhere to start, and I just went with my speaking for the sake of the score, and the result was like what I thought, and I failed. However, I was enlightened after beating the fear of using ICT because ICT was completely new to me. At the end, my second speaking test score was more than I expected though the topic was harder. . . . In short, I passed with big smile, and I did it – speaking and ICT.* (Pers. Comm. P1)

Table 2. Pre-test and post-test of English speaking before and after ICT implementation



Note: 1. Pair-sample t-test was applied to investigate the difference/similarities between before and after intervention (P-*value* = 0.000)

2. One-sample t-test was applied to test if the average score of students was higher than the overall average score (12.5 out of 25 marks). Before intervention, P-*value* = 0.001; after intervention (P-*value* = 0.012).

The lecturer stated:

> *As their lecturer, I was very concerned about their speaking, since they made lots of mistakes and some were not confident to even speak in English. I would not ask anymore when I saw my students grow better with their speaking abilities. Maybe because we fought hard together, and maybe because of the TED-Ed and the YouTube ad videos I asked my students to upload on Facebook to overcome their fear and learn from their in-class and online friends' feedback.* (Pers. Comm. P4)

Pers. Comm. P1 explained that they were initially uncertain about speaking and they just used with whatever techniques they could think of based on their perception and experience in the test. However, they found that ICT was more than just technology to engage students' learning and it led them to the right path in learning and, although the topic was complicated and the ICT tools were not easy to use, they found they could speak better after the implementation of ICT. Another student reported a similar experience *ICT like using Emodo, Canvas, YouTube or email was not easy and I got confused a lot. When I pressed this thing, it popped another thing I did not want; nonetheless, after a while ICT tools were not as hard as they were, and I started to notice I felt cool about using them, and they were the silent bridge that meant my second speaking test score went up.* (Pers. Comm. P2)

Pers. Comm. P2 reported that they felt that they looked professional when they were able to use the ICT tools. They had some problems using the tools initially, but then they worked out how those tools assisted in speaking.

The lecturer, P4, expressed satisfaction, since there was an improvement in their students' ability to speak in English. These results show that while ICT made students feel nervous and they found it complicated to use initially, they overcame these barriers and found ICT was an effective tool to provide autonomous learning for students.

The Most Effective ICT Tools Used to Improve Speaking Skills

Since school support was limited, participants were asked to use their own available ICT tools, which were mainly smartphones, laptops, tablets,

LCDs (projectors) and desktops, both inside and outside the classroom. As shown in Table 3, among all of the ICT tools used, the four used the most were smart phones, laptops, tablets and desktops. Smartphones were the tools most students had and most students had possessed one since the beginning of the class. The male students possessed more ICT tools except for laptops than female students due to the portability of the tools. P1 stated that:

> *I thought a smartphone is not for learning purposes. Even my parents – when they saw me using my phone, they thought I was playing a game and scrolling Facebook, and I was doing what they thought, but then, my lecturer said smartphones can be for more than entertainment. [The lecturer] asked me and others to try [to use our smartphones] for academic purpose and yes, it is like what [they] said. I do not need to turn to only my desktop at home for learning.* (Pers. Comm. P1).

> *Ladies had limitations with smartphones because most of their parents said that ladies could do more on laptops rather than with phones for academic purposes like my experience and my friends.* (Pers. Comm. P1)

Table 3 also shows that the number of tools did not change before and after the ICT implementation. This is because, since lecturers could not afford to buy tools for students, students used their own tools for studying and they did not buy more tools. Instead, the lecturer encouraged the students to use the tools they already had for academic learning purposes. The lecturer explained further:

> *I could not ask my workplace to implement a One Child One Smart Device policy like the other countries, so I could only ask students to make the best use to what they had had, and ICT could only help bettering tools they had but not to make them buy more.*

Table 3. The most effective ICT devices

Attribute	Male (n=28)	Female (n=27)	Overall (n=110)	Pre-test (n=55)	Post-test (n=55)	Overall (n=110)
Smartphone	45	43	88	44	44	88
Laptop	40	46	86	43	43	86
Tablet	14	4	18	9	9	18
Desktop	12	10	22	11	11	22

P4 added that students from science departments tended to possess more ICT tools and be more familiar with technology than students from non-science departments. However, everyone who participated in this research owned at least one smart device. The lecturer also noted that the students from the engineering department used their smart devices most frequently followed by students from mathematics, physics and biology. Chemistry and environment students used their devices the least.

The Frequency of Use of Smart Devices and the Internet

Most of the students involved in this study were from the provinces, which meant they were not exposed to an environment where technology was used for English speaking and learning. Before the study, they did not commonly use technology for education, instead using their smart devices for entertainment and communication. Table 4 shows the frequency of use of smart devices before and after the intervention. The frequency of laptop use did not change, because students already used their laptops for learning purposes. Therefore, the Wright average index (WAI) remained similar both pre- and post-test. However, there was a notable increase in the use of other tools such as desktops, smartphones, tablets, LCDs (projectors) and the Internet. Students were more active in surfing the Internet after the test (WAI pre-test = 0.545 < WAI post-test = 0.589 and P-*value* = 1.000), since the implementation involved using online platforms and required the students to keep in touch with lecturers no matter what time and where the lecturers and students were. Interestingly, there was not a high change in surfing the Internet because they had to pay for the Internet access on their own. This is because, although RUPP provided free Internet access, it was not reliable and students could often not connect to the Internet. As reported by P3: "*Well, I liked to surf the Internet, but I needed to pay via*

my cellular or sometimes I asked for personal hotspot sharing from other students."

Desktops (WAI pre-test = 0.650 < WAI = 0.796 and P-*value* = 1.000) and LCDs (WAI pre-test = 0.632 < WAI post-test = 0.770 and P-*value* = 0.907) had a frequent-use change, although there was no significance change as expected. These results show that students used this type of ICT more often. The lecturer's usage changed also. They reported that they had previously sometimes used the LCD for presenting, but after implementing ICT, they engaged their students to talk and learn more. The lecturer stated:

> *It was easy to teach without a LCD and laptop because I did not have to carry heavy items, but the students' outcome was not as good as I wanted, so I decided to change. I used the LCD to teach to make them more familiar with it and then I used my laptop and talked about the lesson briefly, I could see they initially did not know how to use it, but after a few times the students knew how to speak using it.*

Table 4. Frequency uses of devices and the Internet before and after ICT implementation

Attribute	**Pre-test** (n=55)		**Post-test** (n=55)		**Overall** (n=110)	
	WAI	OA	AI	OA	*P-value*	
Laptops	0.269	L	0.269	L	1.000	L
Desktop	0.650	H	0.796	H	1.000	H
Smart Phones	0.258	L	0.261	L	0.000	L
Tablets	0.200	CL	0.200	CL	0.000	CL
LCD	0.632	H	0.770	H	0.907	H
Internet	0.545	M	0.589	M	0.907	M

Notes: WAI= Weight average index measured on a five-point scale [Considerably Less (CL) = 0.00-0.20, Less (L) = 0.21-0.40, Moderate (M) = 0.41-0.60, High (H) = 0.61-0.80, Very High (VH) = 0.81-1.00]; OA = Overall Assessment; *Significance at the 0.05 level; **Significance at the 0.01 level.

Smartphone use changed significantly in the post-test (P-*value* = 0.000). That shows that students increased with smartphones use for the purpose of learning. P4 stated:

> *I talked to my students, and one from environment replied that before she did not want to spend much time on the Internet since she thought that the Internet surfing was more about entertaining, but she then learned that the Internet was beyond that. And I remembered a student from the engineering department told me smartphones and laptops were good when he was out reach of a desktop, but that a desktop still could not be replaced for things like designing slides for presenting in English for my class. He noticed that he started to love his desktop more after the ICT implementation since he was with it more and more. Another student from the chemistry department was very scared of speaking in English with the LCD, and she said it was too professional, but she changed her mind at the end and said that she was going to be professional like her friends*.

Therefore, the frequency of use of devices and the Internet increased as study participants' trust in the ICT implementation increased.

The Most Effective Online Learning Platforms

ICT integration cannot be successful without online learning platforms. The pre-test questionnaire asked if students were familiar with 12 online platforms: Facebook, Canvas, Google Drive, YouTube, email, Dropbox, blogs, Khan Academy, Edmodo, Wikipedia and Blackboard. Only three of the platforms (Facebook, YouTube, and email) were popular among students and had little gender disparity (shown in Table 5). During implementation stage, the class lecturer took some time to introduce all 12 of these online platforms to students, showing them how to use all of the platforms for learning and to practice speaking.

The two most commonly used networks were Facebook and YouTube. Students reported that they used them for different purposes. For example, P1 stated that they used to only use YouTube to watch music videos, comedies and dramas, but during the implementation, they started to watch things related to the themes of the lessons such as TED-Ed. TED-Ed was defined as an educational program for youths that uses original animated videos in order to demonstrate ideas and concepts to teachers and students (TED-Ed, n.d.). Interestingly, although all students had a Facebook account, many were not active in using email. Out of the total of 55 students, only 10 male students and nine female students used email.

After the implementation, there was an increase in the use of email (Mean = 1 to Mean = 18). The lecturer explained to the students that email was a vital part of working life. In the semi-structured interview, P4 said:

> *I informed my students that email was not just about sending and receiving emails, but it was also about security for work, because it had features like particular dates, time, cc, and others. When my students sent emails, everything would be recorded as the evidence. In the end, one student from the environment department said he thought Facebook was faster for sending messages but, in terms of work, email was better.*

Therefore, the students did not need to be able to use all online platforms but at least they could some more effectively. According to P4, most students felt that YouTube was the most effective online learning platform, followed by Facebook. For YouTube, they shifted from using it for entertainment purposes to an effective learning purpose by watching videos to improve their pronunciation, fluency, gestures/body language and ending sounds. An effective way to use Facebook was when students were asked to post videos of themselves presenting a given topic weekly. As explained:

> *My classmates from my physics class told me that they used Facebook to message their lecturer, but they had never used Facebook as their video platform. They and I felt like, "Oh my, God! Uploading speaking in English videos?" But we did it! We felt we learned and we talked better in English after a while.* (Pers. Comm. P3)

> *I loved a story about lightning, thunderstorms and raining the most in TED-Ed because there was nice storytelling added on the theories taught about weather phenomenon in the environment department. I am not a kid, and the characters were drawn too cute, but they spoke in English by native speakers. Those made me want to watch and talk more like them more.* (Pers. Comm. P4)

Therefore, students could watch various videos, practice their speaking via those videos, and could use animations to keep them engaged in speaking; therefore, they had more opportunities to express themselves while practicing English speaking, which surely improved their speaking ability.

Table 5. The most effective online learning platforms

Attribute	Male (n=28)	Female (n=27)	Overall (n=110)	Pre (n=55)	Post (n=55)	Overall (n=110)
Facebook	56	54	110	55	55	110
YouTube	56	54	110	55	55	110
Email	10	9	19	1	18	19

The Speaking Skills Students Had Before and After the ICT Implementation

As noted previously, one of student's biggest fears in English language classes was the speaking exam. Students reported feeling annoyed, nervous, lost and confused when they did the presentation. They did not follow any set rule or routine and ended up shaking and getting stuck while presenting. Most of them believed that they would fail when it came to speaking English. At the beginning of the semester, students had problems with pronunciation, phonetic symbols, accuracy, fluency, eye contact, gesture/body language, pauses, ending sounds, word emphasis, slide presentation and native accent. There were significance changes in seven skills (pronunciation, accuracy, fluency, eye contact, gesture/body language, ending sounds and slide presentation) in the WAI pre- and post-tests; for example, pronunciation in the WAI pre-test was 0.459 and in the WAI post-test it was 0.781. This means students had improved on the seven skills tested (P-*value* = 0.000) (Table 6).

P2 described their experience as follows: "*I did not dare to talk and I did not deserve more than five out of 10 for speaking before ICT, but now I dare*." Thus, the student was not initially confident in their speaking skills but, after the ICT implementation, they performed better when speaking in English. In particular, P2 reported: "*The best improvements were that I pronounced better, I spoke smoothly, got manner in speaking for not yet accent after ICT*." This shows that students learned how to deal better with three methods in speaking – matter, manner, and method. The lecturer reported: "*Now I am confident to rate their speaking skills – pronunciation, accuracy, fluency . . . yes . . . also eye contact up from 6.5/10 . . . Thanks to LCD and YouTube*." The lecturer noticed a significant improvement in students' speaking ability in these four main skills.

However, there was no improvement in phonetic symbols, pauses, word emphasis and native accent, as the WAI pre- and post-test score remained the same (P-*value* = 1.000). Students found it hard to improve those skills because those skills represented native speaking and the students' ability had limitations during the implementation period since they were not exposed to an English-speaking environment until they were at the university. Thus, students may have needed more time to work on those skills. They may have also required dictionary skills, since phonetic symbols, pauses, word emphasis and native accent can be learned from an English dictionary, and dictionary skills were not integrated into the online learning platforms mentioned earlier. Additionally, the lecturer may not have directed students where to go to study those areas.

Table 6. The speaking skills students had before and after ICT implementation

Attribute	**Pre-test** (n=55)		**Post-test** (n=55)		**Overall** (n=110)	
	WAI	OA	WAI	OA	P-*value*	
Pronunciation	0.459	M	0.781	H	0.000	L
Phonetic symbols	0.663	H	0.663	VH	1.000	L
Accuracy	0.377	L	0.772	H	0.000	L
Fluency	0.450	M	0.880	VH	0.000	L
Eye contact	0.700	H	0854	H	0.000	L
Gesture/body language	0.457	M	0.783	H	0.000	L
Pauses	0.836	VH	0.836	VH	1.000	CL
Ending sound	0.835	VH	0.845	VH	0.000	CL
Word emphasis	0.754	H	0.754	H	1.000	CL
Slide presentation	0.823	VH	0841	VH	0.000	CL
Native accent	0.750	H	0.750	H	1.000	CL

The Difficulties Students Experienced Before and After ICT Implementation

Some students experienced difficulties before and after the implementation of ICT. The students from provinces and whose majors were not sciences were not very familiar with technology, so they encountered some

difficulties with the ICT implementation. These problems included Internet access, access to smart devices and paying for Internet access. There was no change of WAI pre- and post-test (P-*value* = 0.000), which means that these difficulties were not overcome. ICT requires students to learn online most of the time, so students could not avoid spending money on Internet access. For example, in the semi-structured interview, P3 said that because the university's Wi-Fi was free but not workable, they needed to pay for Internet access themselves. In addition to that, the also had to use their own smart devices, since the school could not afford to buy them for the students and non-science students had no access to a lab or computer room.

However, students had better results in coping with difficulties such as technology knowledge, English knowledge, using speaking with online flat forms and smart devices, and using slide presentations. This is demonstrated in the large difference in pre -and post-test WAI (P-*value* = 0.000), which showed significance. The four interviewees discussed their challenges as follows:

> *Speaking as video? God! Wish me luck. But then, I did it.* (Pers. Comm. P3)
>
> *I loved ICT, but I was too poor to get access just to learn ICT*. (Pers. Comm. P1)
>
> *I did not know why to commit in that class, or what motivation was, but the slide PowerPoint presentation (PPT) made me want to learn more*. (Pers. Comm. P2)

Students noted that they had some challenges in using videos, accessing and paying for the Internet, motivation, and commitment to keep going on in ICT integration class; however, one of them had positive attitude towards using slide presentations.

ICT implementation was a great way to motivate and encourage students to commit to learn. It also reduced the gap between lecturer and students because they were able to get in touch with the lecturer whenever they had problems. This is evident because there is a difference between pre- and post-test WAI (P-*value* = 0.000), which showed significance. As explained by P4:

> *Before my students were so scared of me, and I did not know why and maybe it was because I was their lecturer. However, they talked to me more openly and regularly through Facebook*

messenger and emails, and it was more about their weaknesses in speaking and how to improve.

Hence, the lecturer reported that they had more chances to understand their students through ICT implemenation.

In addition to this, P4 added that students from the engineering department spoke better English and made better PowerPoint slides as they were more familiar with smart devices and technology. Students from the biology and physics departments reported that ICT brought them closer to their lecturer than they had been before and that increased their commitment and motivation as they felt more able to approach their lecturer. Interestingly, all of them had some problems with using speaking with online flat forms; however, they overcame these once they got used to uploading their videos weekly. Having access to the Internet and paying for the access caused problems, as there was no budget given to students to pay for Internet access and, as mentioned earlier, not all students could get free Internet access from the university.

Table 7. The difficulties students encountered before and after ICT implementation

Attribute	**Pre-test** (n=55)		**Post-test** (n=55)		**Overall** (n=110)	
	WAI	OA	WAI	OA	P-*value*	
Internet access	0.263	L	0.263	L	1.000	CL
Smart devices	0.500	M	0.500	M	1.000	CL
Technology knowledge	0.268	L	0.681	H	0.000	CL
English knowledge	0.477	M	0.763	H	0.000	CL
Payment for Internet access	0.250	L	0.250	L	1.000	CL
Cooperation (teachers and students)	0.750	H	0.959	VH	0.000	CL
Motivation to learn with ICT	0.486	M	0.827	VH	0.000	CL
Commitment	0.431	M	0.781	H	0.000	CL
Using speaking with online flat forms	0.250	L	0.718	L	0.000	CL
Using speaking with smart devices	0.377	M	0.791	L	0.000	CL
Using slide presentations	0.818	VH	0.112	L	0.000	CL

Discussion and Conclusion

Reasons the Score Increased Before and After the Test

Before implementing ICT, students were not clearly guided in how to speak in English, so they spoke using what they believed was the right way based on their experience and what they had learnt from their former teachers. Thus, there was no particular technique and practice they could use and rely on. In addition to this, they had only been exposed to non-authentic speaking materials. Moreover, they spoke English mostly only in English class and with their lecturer, so they did not have enough exposure to English-speaking environments to allow them to speak like native speakers. As shown in in Table 2, after the implementation of ICT into English teaching, the scores of students for speaking in English increased due to the practical uses of ICT tools, the commitment of the lecturer and students, the exploration of authentic materials from TED-Ed videos and YouTube, and ability for students to contact the lecturer and other students no matter where they were via the Internet. Even though the topics covered in class and requirements of the lecturer were difficult in the speaking in English test, after going through ICT training, students managed to perform better than they had previously in their learning. This output supports Petty's (1993) claims that the best thing students could do improve their English speaking was to have perfect practice. These results are also in alignment with Kamal and Qureshi (2009), Alirini (2008) and UNESCO (2004), who argued that ICT implementation could develop a nation's skills in economics, education, culture and politics. In addition to this, MOEYS had a Master Plan for ICT Implementation in Education (2009-2013), with that plan's aims matching the aims of this study. Therefore, the results of this study demonstrate clearly the usefulness of ICT in education. The results support the implementation of ICT at a higher education level, since the students were mature enough to use the ICT tools, take part in the program and experience its benefits.

The Most Influential Tool for ICT Learning

This study found that students who accessed the Internet did develop more key components of speaking skills. The skills that improved the most after the integration period were pronunciation, accuracy, fluency, eye contact and body language. Skills which had a smaller improvement were PowerPoint presentation slides, pauses, ending sounds and word emphasis. There was no improvement in phonetics and native-speaking accent. Thus, ICT had a greater influence on speaking components than speaking

content. Balanskat, Blamire and Kefala (2006) and Rahimi and Yadollahi (2011) emphasized that ICT has the biggest effect on areas like motivation skills, concentration, cognitive processing, independent learning, critical thinking, teamwork, controllable skills and creative presentation skills. In this study, ICT did more good than harm in higher education. Both students and the lecturer ranked smartphones and laptop devices as the most used to access the ICT program, while the only online platforms used were Facebook, YouTube and email. This supports Selwyn (2008), who found that Web 2.0 is used to share, create, communicate and collaborate information.

Challenges and Problems Faced by ICT Usage

Finally, referring to Tables 6 and 7, students and the lecturer reported having more confidence with their technological knowledge, English knowledge, motivation, commitment, using speaking with an online platform, using speaking with smart devices, and using PowerPoint slides. This occurred because students were given training and they could practice what they had learned anywhere and at any time after class. These problems experienced by the students in this program, such as speaking skills, technology knowledge and experience, and commitment, also occurred in universities in South Pacific areas, and Robert (2008) reported that the barriers were with technology training, capacity-building, curriculum development, infrastructure, financing and ICT updated policy initiatives. This study could not solve the problems with Internet access, access to smart devices and paying for Internet access, because there was no support budget to pay for these three things.

Other issues faced not just by Cambodia but in all general learning online were administrative and instructor issues, limitations of social interactions, limited academic skills, limited technical skills, learner motivation, time and support for studies, high cost and limited access to the Internet and technical problems (Muilenberg, 2001). Given the improvement in the spoken English of students after the ICT implementation, implementing ICT across the university would assist students with academic skills, macro skills, employment skills, innovation skills, cross-cultural competence, values and attitude, thus helping to meet RUPP's strategic plan 2014–2018.

ICT implementation was not easy for either the students or the lecturer; however, they successfully completed the semester using ICT and the students' scores improved in comparison to the period before the ICT

implementation. In addition to this, ICT tools like Facebook, YouTube and email played vital roles in students performing better in speaking English. They improved their pronunciation, accuracy, fluency, eye contact, gestures/body language, pauses and PowerPoint slide presentation skills. The students and lecturer overcame their initial issues with ICT and achieved better technological knowledge, English knowledge, motivation, cooperation, commitment and speaking activities with smart devices.

Acknowledgements

This research would not have been achievable without the valuable contribution of a number of important people. We would like to thank the former private program coordinator, Ms. Sisotha Oeur, the deputy head of the Research Office, Mr. Serey Sok, the Head of Telecommunications and Electronic Engineering, Mr. Sokha Heng, and the research participants, all of whom worked with us in conducting this research at RUPP. These people helped us to deal with research problems, stood by our side to cheer us on under all circumstances, participated in ICT implementation, and completed questionnaires and interviews. This research would not have been successfully accomplished without them.

Brief Biographies

Soviphea Chenda is a lecturer of English at the Department of English, Institute of Foreign Languages, RUPP. Her duties are developing highly qualified and creative human resources with marketable skills and moral discipline and participating in department seminars aimed at sharing research outcomes and building interdisciplinary collaboration. She obtained a Master of Arts in Teaching English to Speakers of Other Languages from the Institute of Foreign Languages, RUPP. Her interests are blended learning, ICT pedagogical development, autonomous learning, teaching and learning motivations, language assessments, leadership, business, entrepreneurship and the environment. Recently, she has been working on a blended learning project, an ICT4D project called Improving Students' Speaking Ability through ICT Integration in EFL Classroom in Higher Education, and a CAM lost and found mobile app project.

Daro Nget works in the International Relations Office at RUPP. Mr. Nget Daro received his undergraduate degree in Education, majoring in English teaching, from RUPP in 2014. He is currently undertaking a master's degree in development studies majoring in community of development. He also teaches English to undergraduate students in the English Language Support Unit (ELSU) at RUPP. As a staff member in the International

Relations Office, he actively promotes internationalization and international cooperation and helps students attain scholarships.

Socheata Somchan works in the International Relations Office at RUPP. She received her undergraduate degree in Education, majoring in Teaching English as a Foreign Language, from RUPP in 2014. She is currently completing a Master of Arts in Teaching English to the Speakers of Other Languages at the same university. Her master thesis is related to the study of teachers' perceptions of authentic materials in EFL classrooms. Her main duties at the International Relations Office involve facilitating the administrative processes that relate to internationalization for faculty members and students at RUPP. In addition to her administrative work, she also teaches English at the English Language Support Unit (ELSU) of the same university and teaches general English to undergraduate students. This teaching involves direct teaching, preparing lesson plans and teaching materials and arranging classroom assessments.

References

Agbatogun, A.O. (2007). Effective Communication in a Large Class Viac. C.T.V: Teachers/Students Perception. *Nigerian Journal of Educational Research*, 7(1).

Albirini, A. (2008). The Internet in developing countries: A medium of economic, cultural and political domination. *International Journal of Education and* Development *using ICT, 4* (1), 49-65.

Balanskat, A., Blamire, R. & Kefala, S. (2006). The Impact Report. The Review of Studies of ICT impact on schools in Europe. 11 December 2006. Retrieved August13, 2008 from European Schoolnet. http://ec.europa.eu/education/doc/reports/doc/ictimpact.pdf

Cambridge English (2011). Assessing Speaking Performance Level B-2. Retrieved June 10, 2018 from www.cambridgeenglish.org

Chhem, R., Khieng, S., Madhur, S. (2015). Cambodia education 2015: Employment and empowerment. Phnom Penh, Cambodia: CDRI

Creswell, J.W. (2005). *Educational research: Planning, conducting, and evaluating Quantitative and qualitative research* (2nd ed.). Upper Saddle River, NJ: Pearson.

Dionys, D. (2012). Introduction of ICT and multimedia into Cambodia's teachers training centers. *Australian Journal of Educational Technology, 28* (6), 1068-1073.

Dudeney, G. & Hockly, N. (2008). *How to teach english with technology.* Harlow: Pearson Education Limited.

Flecknoe, M. (2000). How can ICT help us to improve education. *Innovations in Education and Teaching International, 39*(4), 271-279.

Gekhe, M. (2012). Concept of ICT. *Information and Communication Technology, 1*(1), 1.

Harris, J. S. (1994). What true education should do. In Feldstadt, M. C. (Ed.) *The thoughtful reader* (pp. 2-3). New York: Harcourt.

Kamal, M. & Qureshi, S. (2009). Classification of countries based on ICT infrastructure, skills and growth: The role of ICT capacity in emerging economies. In K.E.

Kendall and U. Varshney (Eds.), *Proceedings of the Fifteenth Americas Conference on Information Systems.*

Kituyi, G., & Tusubira, I. (2013). A framework for the integration of e-learning in higher education institutions in developing countries. *International Journal of Education and development using Information and Communication technology (IJEDICT), 9*(2), 19-36.

KOICA (2014). *Summary on Cambodia ICT master plan 2020*. Seoul: Konkuk University Press

Kugemann, W. F. (2002). The effectiveness of ICT in schools: Current trends and future prospects. *Organization for Economic Co-operation and Development*

Kullberg, T. (2011). *Swedish teachers' and students' views on the use of ICT in the* English *classroom*. Unpublished BA thesis, Linnaeus University: Spain.

Krajka, J.G. (2002). "Using the Internet in the Language Classroom to Foster Learner Independence? Ideal and Reality." Retrieved August 15, 2008 from http://www.iatefl.org.pl/tdal/n/krajka.htm

Muilenburg, L.Y. (2001). Barriers to distance education: A factor-analytic study. *American Journal of Distance Education 15*(2), 7-24.

Pearson, M. (2015). *ICT in the Thai Classroom: An assessment of teacher capabilities and attitude towards towards the One Tablet per Child policy in Thailand*. London: LSE Asia Research Centre

MOEYS (2013). Master plan for Information and Communication Technology in Education. Retrieved February 21, 2018 from http://www.moeys.gov.kh/images/moeys/policies-and-strategies/145/master-plan-ict-in-education-en.pdf

Petty, G. (1993). *Teaching today*. Cheltenham, England: Stanley Thornes.

Rahimi, M. & Yadollahi, S. (2011). "ICT Use in EFL Classes: A Focus on EFL Teachers' Characteristics". *World Journal of English Language, 1(2).*

Robert, W. (2008). Use of ICT in education in South Pacific: findings of the Pacific eLearning Observatory. *Distance Education 29*(1), 53-70.

Royal University of Phnom Penh (2014). RUPP Strategic Plan 2014-2018. Retrieved September 20, 2016 from http://www.rupp.edu.kh/strategicplan/RUPP%20Strategic%20Plan%202014-2018%20Second%20Draft%2014%20March-1.pdf

Schmit, N. (2002). An Introduction to Applied Linguistics. New York: Oxford University Press.

Selwyn, N. (2003). ICT in Non-Formal Youth and Adult Education: Defining Territory. ECD/NCAL International roundtable, Philadelphia. Retrieved September 18, 2008 from http://www.literacy.org/ICTconf/OECD.Selwynfinal.pdf

UNESCO (2004). Integrating ICTs into education: Lessons learned. Bangkok: UNESCO Asia and Pacific Regional Bureau for Education

UNESCO (2007). *ICT in Education Program*. Bangkok: Themma

UNESCO (2010). ICT Transforming Education: A regional guide. Bangkok: UNESCO Asia and Pacific Regional Bureau for Education

Wagner, N., Hassanein, K., & Head, M. (2008). Who is responsible for E-learning Success in Higher education? A Stakeholders' Analysis. *Educational Technology & Society, 11*(3), 26-36.

Wichadee, S. & Pattanapichet, F. (2018). Enhancement of performance and motivation through application of digital games in an English language class. *Teaching English with Technology, 18*(1), 77-92.

Ministry of Education Youth and Sport
Education Research Council

Article

Current State, Key Challenges and Ways Forward for Cambodian Research Capacities: A Review of Four Studies

Phyrom Eam
Research Associate, Cambodia Development Resource Institute (CDRI)

Received 18 April 2018; Accepted 19 May 2018

Abstract

This review paper examines four studies that tap into the current state and challenges of Cambodia's research capacities. These four studies identify systemic gaps in Cambodia's research capacities. However, they also acknowledge some positive changes of research development endeavors at certain Cambodian institutions. The remaining challenges include issues of the capitalization and utilization of financial resources, the optimization of academic infrastructure and culture, political influences, and individual and collective research competencies. These challenges make up an ecosystem that decelerates all kinds of research development endeavors in Cambodia, such as building a research culture, developing research competencies, increasing research productivity and commercializing research outputs. The four studies, therefore, suggest both systemic changes and programmatic interventions directed towards different stakeholders at different levels, from generating research funding to systemizing academic careers and creating long-term collaborative research development platforms. These studies reveal many practical truths and are thus basic groundworks for further, more focused and more analytical research studies on the topic of research capacities in the Cambodian context.

Citation: Eam, P. (2018). Current State, Key Challenges and Ways Forward for Cambodian Research Capacities: A Review of Four Studies. *Cambodia Education Review, 2*(1), 108-143.

Background

The roles that scientific discoveries and advanced research have played in many countries in establishing the foundations for economic development teach Cambodia and other developing nations to be critical of their research, science, innovation and technological capacities. It should be noted that the models utilized around the world today – for example, capitalism in economic and financial terms, scientism in intellectual terms, and/or technologism in material terms – have all developed from the scientific revolution and scientific research. Similarly, the academic and higher education sector of a nation is one of the key engines for the scientific culture and research that allows that country to function and grow. This sector is, therefore, an important hub for the intellectual independence of a nation. To compete in this global and knowledge-based era, a nation has to be clear and strategic with the relationship between national intellectual independence, scientific culture, and academic and knowledge systems. Such concepts are easily mimicked but deep wisdom and the tangible mechanisms to realize them are often deficient.

For Cambodian millennials and post-millennials,[1] technology is an important part of their everyday life, just like their generational cohorts in other nations. They adapt smoothly into the technological world. So, in terms of technology, the focus should be on how Cambodians can exploit it in an innovative way and for positive gains. How to advance research and science in academia is perhaps of greater foundational concern than technology in the eyes of critical Cambodian development observers and thinkers. The reason is that science and research are the foundation for critical and innovative thinking and can offer a systematic and evidence-based approach to reveal truth and solve many of the deep-rooted problems a society is facing.

[1] Millennials (or Generation Y) refer to the generation of people born between 1980 and 1997 and post-millennials (or Generation Z) refer to those born after 1997 to the present day (Holton & Fraser, 2015, p. 7). The age range varies slightly in different studies.

The promotion of research and science is one of the prioritized strategies in the agenda of the Cambodian higher education sector (as denoted in the Cambodian government's *Policy on Higher Education 2030* and other related policies). The World Bank co-funded the Development and Innovation Grants (DIG) scheme[2] and the proposed project for Cambodian higher education development (with a loan worth of somewhere between US $90 to $100 million) also constitutes partial aims to contribute to elevating research capacities and building a research and scientific culture in Cambodia. At the institutional level, most major Cambodian universities have research stated as one of their core missions, while some have staff engaging in ongoing commissioned research projects.[3] A number of people also include students' research (as discussed by Kwok et al. (2010)) – that is, research as part of their learning process – when it comes to research engagement in Cambodia.[4]

Other non-academic sectors in Cambodia – such as non-governmental organizations (NGOs) and public research institutions – engage in research as part of their missions. Some of these institutions include the Cambodia Development Resource Institute (CDRI), the Center for Khmer Studies (CKS), the Center for Advanced Study (CAS), Institut Pasteur du Cambodge, the Cambodian Institute for Cooperation and Peace (CICP), the Supreme National Economic Council (SNEC) and the Cambodian Agricultural Research and Development Institute (CARDI).

There is little information on market research and/or industrial research and development in Cambodia, despite the fact that these also exist in the business sector in some very limited ways. Indochina Research Ltd, for example, may fall into this category of private institutions that engage in market research in Cambodia and the surrounding region.

To have a thorough understanding of these patterns of research in Cambodia and the general state of the country's research capabilities, we

[2] DIG is a core part of the Higher Education Quality and Capacity Improvement Project (HEQCIP) 2010–2015 (with a total grant of US $23 million).

[3] These institutions will be specified in the following sections.

[4] This idea is generally criticized as a misconception of academic research because students' research works, in real practice, are seen as mere looking for information that they can write up in their course assignments. Even if those students' research is in the form of thesis writing (with the whole procedure and format academically styled), those works are generally noticed to be less scientific in approach or less academic in terms of level of criticality, validity and quality.

need to turn to previous literature on this particular area. An important area to study is the "research on the state of research"[5] in a nation, which is a critical discourse for intellectuals and policy-makers. Using various research-related variables and statistics, the Institute for Statistics of the United Nations Educational, Scientific and Cultural Organization (UNESCO) has established a mega database on the research and development of many countries in the world. The database aims to contribute to making knowledge about the state and conditions of national research and development publicly available. UNESCO also publishes science reports every five years in order to disseminate and update data and information on the investment, resources and productivity of research, science and innovation of many countries around the world. There are other global endeavors, such as from academic databases and academic research areas (i.e. scientometrics and bibliometrics), that create stocks of knowledge on this "research on the state of research" area. However, all those databases and reports may offer limited critical information and in-depth insights on the conditions and challenges of research in a country like Cambodia. For example, the information and data on the research and development of Cambodia in the UNESCO database are missing for many years and some particular information just does not exist.

Therefore, to holistically and critically comprehend the state of research in Cambodia as well as identify its challenges and development approaches, it is necessary to review and critique local literature. While this may not cover all aspects or sectors, it can offer a great deal of contextual knowledge and insights.

Introduction to the Review

Although research studies on the state of research in Cambodia are not abundant, some do exist. Examining these studies will allow researchers to master contextual knowledge on the issues in Cambodia and to foresee future research development opportunities in clearer and more strategic ways. Four studies were selected for examination:

- ***Study 1:*** "Scoping Study: Research Capacities of Cambodia's Universities"

[5] "Research on the state of research" is the term used by Mary-Louise Kearney in the foreword of the edited book *Universities as Centres of Research and Knowledge Creation: An Endangered Species?.*

- ***Study 2:*** "Engagement between the State and Cambodian Researchers"
- ***Study 3:*** "Higher Education Quality and Capacity Improvement Project (Development and Innovation Grants): Stocking Report"
- ***Study 4:*** "Doing Research in Cambodia: Making Models that Build Capacity"

The first study was published in 2010 by CDRI and co-authored by researchers from other partner institutions. It is the foremost study of the research capacities in the Cambodian university sector. In the form of a report, this document offers very comprehensive and descriptive information on research in Cambodian universities and provides multiple insights on the topic, using interview data from senior university leaders and key players in the Cambodian higher education sector.

The second study was published four years later by the same institution (CDRI). Dr. Eng Netra was the sole author. The study explores the challenges of research in Cambodia but examines these challenges from a very specific political perspective. It does not just examine academic institutions but looks at research in the country in general. In this article, the author – whose background is in governance – discusses the influence of politics on research engagement, albeit in a very approachable and constructive way. Among the four studies reviewed, this second piece takes the most clearly argumentative standpoint.

The third piece was written specifically as a report following the implementation of a large-scale higher education promotion project for Cambodia called the Higher Education Quality and Capacity Improvement Project (HEQCIP), which was supported by Ministry of Education, Youth and Sport (MoEYS) and the World Bank. It was published in 2015 and authored by consultants working for MoEYS and the World Bank. Using interviews, surveys and program document analyses, the study evaluates and reflects on what was experienced, produced and perceived by the university-based participants who were the implementers, leaders and/or relevant stakeholders in the DIG scheme-granted research projects.

The fourth study was published in 2016 by CICP and authored by Pou and co-researchers. The study also covers various aspects of research in Cambodia and offers a lot of information on research trends and patterns in Cambodia. The report uses multiple methods to understand Cambodia's research capacities and takes a more action-oriented approach than the other studies examined. Similar to the second study, the scope of this

particular work is beyond academic institutions. The study uses reasons, opinions and case-based evidence to support its claims.

These four studies have been selected because they are the few pioneering works on the topic of the state of research in Cambodia. Selecting these works therefore did not require critical searching for and filtering out complicated academic literature sets, as is done in the systematic reviews or meta-analyses of well-researched academic topics. Because these studies share both common characteristics and distinctive characteristics, they are good for synthetic, critical and comparative discussions.

These studies are related as they all reflect on the current state of research capacities in Cambodia. Certain aspects are covered by all studies: the trends of research engagement and development, the factors hindering/influencing research engagement and development, and the possible gateways to improving research engagement and development in Cambodia. Most of these studies are policy-oriented. In other words, they are applied not academic works, even though they employ academic approaches and methods. Most are written in the form of a report.

Some distinctive features can also be identified among these studies. The institutional scope of focus of the first and the third study is primarily Cambodian universities, while the second and the last documents tend to discuss research capacities beyond academic institutions. All of the studies other than the second one use multiple methods (for example, surveys, interviews and document analysis) and approach different target subjects (including HEI leaders, policy-makers, faculty members, intellectuals and/or students). The second study has a very specific scope of focus in terms of writing, while the rest are in a more comprehensive report form. Except for the second one, all of these reports are the work of multiple authors. Authorship of the four texts overlaps in certain ways, with the first and the second partially works of CDRI researchers and the second and the fourth studies authored by the same CDRI author. The insights of these two studies, which have the same authors, must therefore be related in some ways. The first and the fourth reports consist of foreign co-authors, which is not the case for the second and the third papers. The appendix at the end of this review offers a clearer explanation of each study in matrix form.

Methods of the Review

In an attempt to ensure that the review is rigorous and avoids bias, this section explains the review's methodological procedures and conceptual focuses.[6] This review is not a single book or article review, nor is it a systematic review or a qualitative meta-analysis of a topic. Rather, this study is a discussion of four documents that have been reviewed together. The method guided this work is in the form of a multiple book review essay. A multiple book review essay *"involves assessing the quality of two or more books that cover the same overall subject area . . . or that are related to each other in a particular way"* (University of Southern California, 2018). However, even though this approach is referred to as a multiple book review essay, it should be clarified that the reviewed texts are not in book format. Three of them are comprehensive research reports and one is an article.

Using this method of review, the current study focuses on the following aspects of each selected study: key themes and topics, critical issues and arguments, the contribution of the author(s) to the knowledge in this area, and the rigorousness of the works (i.e. theory and literature, methods/designs/data and evidence, policy relevance and bias).

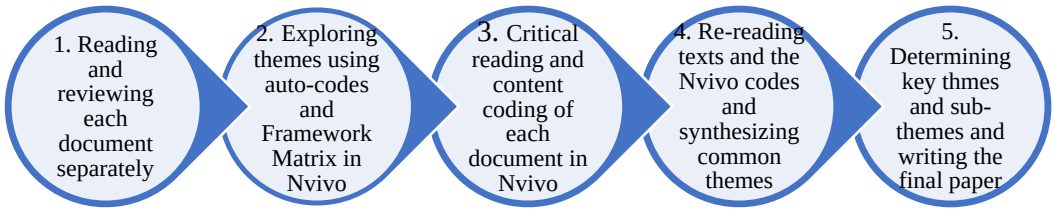


Figure 1. Procedure of the review (Source: Author)

Figure 1 below illustrates the procedure of this multiple document review study. NVivo 12 was used to assist in this whole process, namely in organizing literature files, generating auto-codes, creating a framework matrix and doing actual content coding and annotating to specify key themes, sub-themes and references. The main themes and sub-themes were

[6] It should be noted that this method section is rarely written in detail for general and narrative review works, but the author believes that a detailed explanation of review approaches is necessary for further critiques and the improvement of knowledge in this area.

generated by iteratively reading, coding and contemplating those four studies within the NVivo platform.

In terms of the conceptual focus of this review, two kinds of themes are included: a priori structural themes determined before the act of critical reading and coding, and generated themes from the critical reading and content coding of the reviewed texts. Therefore, the process is both inductive and deductive. The a priori determined themes include, as mentioned earlier, the current state, challenges and ways forward for Cambodian research capacities. These thematic dimensions are the basic and structural conceptual framework of the current review. Further identified themes or sub-themes related or additional to these a priori themes are generated from actual critical content coding. These two types of themes (i.e. prior determined and generated themes) together make up the sub-sections and discussion points of this current review paper.

Unlike some multiple book review essays that use block-style organization, the style of writing the current review is thematic, meaning that all contents of the current review text are based on those synthesized common themes determined and identified throughout the whole review procedure. With all these features of review approaches and the writing style, this particular piece of writing should be seen more as a reflective essay than an original empirical research paper.

In terms of the organization of the writing, the researcher starts by introducing the review in the first and second section, explaining why the research area being reviewed is important, what kind of literature was selected for review and why those works were selected. This section (i.e. methods of the review) explains approaches, procedures and methods of this review and describes the writing organization in order to offer an authentic and critical understanding about the working mechanism. Section 4 synthesizes the key common themes and sub-themes identified in the four documents and discusses the arguments of the works and the evidence used to back up those arguments. Section 5 points to some limitations of the four studies (both acknowledged and unacknowledged by the author(s)). This section also contains a contemplation of what these studies contribute to the knowledge area and identifies what further studies should focus on. The last section – the conclusion section – wraps up the whole review by highlighting some of the review's important points.

Synthesizing and Discussing Key Themes in the Four Studies

The term "research capacities,"[7] which is used in all of these four reviewed studies, is related to various ideas, from research culture-building and research support environment to research engagement and research performance. Drawing from such varied ideas of research capacities, a number of critical themes and points of argument were identified in the four reviewed studies. These correspond to three main questions:

1. *What is the current state of Cambodia's research capacities?*
    - The overall systemic limitations and gaps of Cambodian research capacities; and
    - The transitional momentum of research engagement and research support at some institutions and the national level.
2. *What factors challenge Cambodia's research capacities?*
    - The lack of funding and financial resources that would sustain flows of research-related activities;
    - The systemic problems with academic infrastructure and culture at institutional and national levels;
    - The systemic influences of politics;
    - The concern about individual and collective research competencies; and
    - The question of sociocultural impacts.
3. *What are strategies to further promote Cambodia's research capacities?*
    - Capitalizing and sustaining funding and financial resources;
    - Building and improving academic and research competencies;
    - Systemizing and optimizing academic infrastructures and culture; and
    - Establishing long-term and collaborative research development platforms.

On the Current State of Cambodia's Research Capacities

What the four reviewed studies collectively acknowledge is the systemic

[7] Research capacities can be viewed from different dimensions. For Vessuri and Teichler (2008, 16–17), research capacities constitute such dimensions as capable researchers, time, infrastructure, research climates, funding, structural conditions, research ethics and critical perspectives.

limitations and gaps in Cambodia's research capacities. Like other Cambodian social phenomena, its research entities exist in some form on the surface but lack a resilient and stable foundation. Kwok et al. (2010, p. 9) relate the problem to the issue of quantitative expansion versus the quality of universities and emphasizes the *"lack of research culture and research capacity in many universities*." A clear, undeniable trend is that Cambodian research productivity – i.e. publication and citation – is far below regional and international standards. Consequently, advanced mechanisms that commercialize university research outputs or transform those outputs into economic and social benefits obviously do not exist. The country's research culture is truncated because institutions of higher education are orientated more towards teaching than research. When research resources are limited, research development is generally not strategic and well-coordinated. The findings from all these reviewed studies, therefore, imply that research capacities at Cambodian universities – whether the research culture, research support structure or research performance – are limited and face challenges at all levels, from individual and institutional to social and national levels.

But, rather than calling this phenomenon a "systemic failure," these studies seemingly see transitional substances and momentum in Cambodian research engagement and capacity development, with evidence of positive cases and trends emerging. In other words, in this context of systemic gaps and limitations, Cambodia has been able to improve its research capacities in certain ways in the last few decades. Some of these trends and patterns (discussed below) include the existence of donor-driven consultancy research works, increased awareness and acknowledgement of the value of research, and increased piecemeal research promotion initiatives at institutional levels, with support from the national level. This transition implies the existence of some clusters of excellence in this country. However, those improving trends and patterns also receive critiques, which are also discussed below.

Existence of Donor-driven Research Work

One clear tendency concerning Cambodia's research capacities is that most research works are in the form of donor-funded, commissioned or consultancy projects. Two of the reviewed studies highlight this clearly:

> *With the near absence of state funding for university research, Cambodian researchers based in universities have been involved as collaborators or consultants in projects funded by*

> *donors, aid agencies, international non-governmental organisations, and foreign universities* (Kwok et al., 2010, p. 11).
>
> *Some academics at a few public universities are relatively active in research through projects commissioned by donors and overseas university partners or through consultancy projects* (MoEYS & The World Bank, 2015, p. 12).

These donor-supported trends are more obvious in non-academic and non-governmental sectors in Cambodia, which can be viewed as a positive contribution from the donor side to research development in the country. Eng (2014, p. 4) describes this as follows:

> *In fact, outside of the state institutions and public universities, critical and independent research is being conducted by Cambodians . . . . This is made possible through support and resources from international donors. Indeed, international donors have played very important and influential roles in setting research priorities, building research capacity, and mobilising the policy recommendations and actions arising from research findings.*

While such commissioned and consultancy works can be seen as something that fuels the research engine in the short run, researchers may question the long-term impacts, especially in terms of building (academic) research capacities in the country. Previous researchers have already cautioned that donor-driven research is not a sustainable model in the long run.[8] In some donor-funded projects and consultancy work, researchers may engage in the whole research process from start to finish, but in others, they are only commissioned to do certain tasks such as data collection or report writing. Pou et al. (2016) note that most of those projects are short term and require collaboration with foreign experts to operate. Collaboration with foreign experts is fine but dependence on them is not. Research priorities, for example, should be determined by capable local thinkers and practitioners who can master the contextual reality and have clear insights and visions for their areas of expertise in Cambodia. In that regards, Eng (2015) claims that local researchers have more contextual knowledge (with the advantage of local language) and can better communicate with local participants and interpret the given information.

The research outputs from consultancy works can be another concern in the long run. Most of the outputs are in the form of research

[8] See Eng (2014) for discussions on such arguments in the literature.

reports. These research outputs are generally not academically peer reviewed and so may not reach the quality expected by international academic journals, raising the question of the validity of the research. Such issues again point to the question of the long-term impact on academic research and academic culture at Cambodia's academic institutions. The problem of quality could be exacerbated if local researchers just engage in those projects in the expectation of financial incentives and not for increased research competencies or long-term academic credentials. It should also be noted that the root of research culture and practices at universities is academic research. Cambodian universities tend to engage in research in the opposite direction from other universities, starting from commissioned and mostly applied kinds of research before having a strong academic research foundation in place.

Increased Awareness and Acknowledgement of the Value of Research

The claim that there is an increased awareness and acknowledgement of the value of research by Cambodian academics and other stakeholders is agreed on by most of these reviewed studies. But, like the issue of donors-driven research, there are points to be critical of such claims.

The perception of the DIG projects' sub-managers is clear evidence that supports the idea of increased awareness and acknowledgement of the value of research in Cambodia's higher education sector. That study by MoEYS and The World Bank (2015) claims:

> *The subproject managers and HEI leaders interviewed valued the experience and learning from their participation in the scheme, and . . . they are becoming more aware and engaged in promoting research activities within the participating HEIs* (p. 42).

MoEYS and the World Bank (2015) also reported that sub-project managers are positive about the future sustainability of research culture promotion at Cambodian universities. In the same vein, Pou et al. (2016, p.7) mention "research-hungry instructors" and cite research-interested students to argue against the common view that the interest in research of Cambodian students and faculty members is very low. They write:

> *Cambodian ministers and administrators are accustomed to an environment where research is undervalued, capacity is low, and privileged students are not interested in doing work. However, what we found on the ground is a group of vibrant and very interested students and researchers, and in some cases innovative department heads and rectors who are attempting to forge a space*

> *where research that is already valued can be conducted with integrity* (p. 4).

This argument by Pou et al. (2016) may be overexaggerated if it intends to make generalizations beyond those cases in its study without further evidence to support its claims. There is a general pattern that seemingly contradicts this claim. Many undergraduate students at Cambodian universities, for example, when asked to choose whether to take examinations or to conduct research to graduate, choose the former. This is one reason for the common view that students are not interested in complicated, time-consuming research tasks. One critical question to also ponder is whether it is true that the majority of Cambodian academics stop seeing academic research as just students' research (as denoted by Kwok et al. (2010)) or whether they recognize the importance of academic research beyond something that generates income and/or reputation (MoEYS & The World Bank, 2015). One can easily talk about value of research; however, measuring its magnitude is hard. Generally, experiential understanding of those values may not happen for students or faculty members who have never deeply understood or experienced research themselves, especially academic and scientific research.

National and Institutional Contributions to Research Promotion

Despite the limitations and critiques of the research capacities in Cambodia in general, most of the reviewed studies positively acknowledge support and interventions for research development at national and institutional levels (Kwok et al., 2010; Eng, 2014; MoEYS & The World Bank, 2015; Pou et al., 2016). MoEYS and the Directorate General of Higher Education (DGHE) have contributed significantly through policy direction and by providing guidance and practical support for research development at universities, as evidenced by the issuance of research policy in the education sector, the development of a research masterplan and the coordination of the HEQCIP and DIG schemes. The study by MoEYS and the World Bank (2015) notes that participants who are sub-project managers and HEI leaders see the DIG scheme as a breakthrough support for Cambodian universities from the national level, especially in terms of research funding and training and the future career of faculty members.

At the institutional level, some universities have been active in research promotion. Kwok et al. (2010) and MoEYS and the World Bank (2015) specifically note some of those universities, including the Royal University of Phnom Penh (RUPP), the Institute of Technology of

Cambodia (ITC), the University of Health Science (UHS), the Royal University of Fine Arts (RUFA), the National University of Management (NUM) and the Royal University of Agriculture (RUA). Some of their key strategies include making available an internal financial package for research; creating appropriate researcher positions (as in the case of ITC); creating some forms of internal body to link to industry, partners and/or donors (also in the case of ITC); and sending faculty members overseas to pursue higher degrees and retaining them to serve the institution when they return. The increase in number of PhD holders from abroad into the local academic system is another appreciable transition at the institutional level that influences Cambodian research capacities, although retaining them in the system and engaging them in deep and sustainable research works can be a challenge (Kwok et al., 2010; MoEYS & The World Bank, 2015).

Outside of but related to the academic sector, the reviewed studies also highlight models of research capacity development. Kwok et al. (2010) point to the model of the Development Research Forum (DRF), whereby researchers from CDRI and its partner institutions take the lead in organization. Pou et al. (2016) also highlight the research capacity-building training along the implementation of the research project as a good model for building the research capacity of Cambodian researchers and students. The research training offered to universities along with the DIG schemes is obviously another model to promote research capacity. It should be noted that these endeavors are generally collaborative efforts.

However, these achievements and endeavors remain piecemeal and fragile overall. Policy, masterplans and periodic program interventions from the national level are not seen as sustainable mechanisms, generally because actions stop when support interventions and funding are completed. Institutional research promotional practices initiated by the institutions are still very limited and impractical in many aspects. For example, teaching-oriented faculty members still see income from teaching more easily earned and more satisfactory in amount than the financial incentives they can get from internally available funding packages. So, they still are not motivated to engage in research. Some of those institutional strategies are stuck at the "wishful thinking" stage and are never realized in actual practice. External mechanisms in the forms of research development forums are still new endeavors and they have not yet contributed systematically to larger beneficiaries, especially those in the academic sector. These external platforms also finish when the funding is finished. To understand these challenges in Cambodia, it is necessary to

explore the specific challenges hindering research performance and development identified in the four reviewed studies.

The Key Challenges of Research Capacity in Cambodia

The above contextual discussion on Cambodian research capacities may provide some insights into why the situation is as it is today. But, none of the specific challenges alone (for example, finance, competence, resources or time) and the specific level (such as individual, institutional or national) can fully explain the challenges facing Cambodia's research capacities. Taking a macro view, one can see the problems of Cambodia's research capacities – like many of its other social problems – as a combination of the direct and conditioned effects of different factors at different levels. The influencing factors are ecological and systemic as well as specific and context based.

From the four reviewed studies, four key challenges can be identified: financial constraints, institutional academic infrastructure and culture, political influences, and individual and collective competences. These are epistemically and pragmatically justifiable in many ways and together create an ecosystem of challenges facing any kinds of research promotion dimensions in Cambodia, whether it is research capacity and culture building, research resource-creating, institutionalizing research or commercializing research. Each of these issues is discussed below.

Funding and financial issues

A chronic lack of funding is considered a major challenge to Cambodian research capacities. The problem of funding in Cambodia can have various meanings, including a lack of government funding, a lack of incentives for researchers, inadequate academic salaries and undiversified income-generating sources for university. These gaps in funding further influence the conditions of other resources necessary to support research at the institutional level – resources such as materials for experimentation, laboratories, data analysis software, subscription to journal outlets and travel costs for researchers. Therefore, the capability of universities and related stakeholders to generate funding, to capitalize and sustain those financial resources and to efficiently utilize them is a critical issue. In developed countries, funding from government and industrial sectors for university research is generally adequate and grant opportunities are also available. Certain world-class universities can even compound their research capitals through commercializing and vending their research outputs. Cambodia, however, lacks funding from both the government and

the industrial sources. MoEYS and the World Bank (2015) put it:

> *Although the Royal Government of Cambodia provides financial support for basic operation of public HEIs, there is no governmental funding for research in higher education* (p. 11).
>
> *This lack of adequate public resources allocation and investment for HEIs and the education sector more broadly over the last three decades has significant implication on the ability of HEIs to attract and retain qualified staff, to implement on-going capacity improvement program of its staff, to conduct scholarly activities including research and scholarly publication, and to improve the quality standards of school graduates* (p. 18).

The increase in funding and financial support in the last decades are appreciable but still inadequate. For example, the HEQCIP program, which had US $23 million of funding in total, was initiated and implemented between 2010 to 2015. Such support interventions and unstable funding packages are still very small compared to the investment in research of other countries in the region and are not structured in a way that sustains decent research works at Cambodian universities in the long run.

While public universities face a shortage of supporting funds and financial resources, Cambodian private universities are also in a similar situation. Private universities in Cambodia are generally for-profit institutions that focus on training and teaching in order to generate income. Their income source is primarily student tuition fees. Large additional income sources with which to conduct expensive research projects do not exist at private universities.

Whether researchers see funding and financial issues as a key factor inhibiting research works or not, they tend to collectively acknowledge that the lack of funding and financial support is an undeniable truth in the Cambodian context and that the problem has to be solved. Various participants in the reviewed studies even implied in their words that providing financial support (i.e. incentives) to individual researchers has to be at an optimum level for research capacity-building to succeed; in other words, it has to be close to or higher than income from teaching or at least high enough to secure a decent life for the researcher in order to attract competent researchers to focus on research or to encourage teaching faculty members to engage more in research.

Research Competencies[9]

Funding is obviously a problem affecting Cambodia's research capabilities, but seeing it as the main and only cause would be an inaccurate perception. In fact, there have been many debates on whether it is funding or individual competencies that is the root cause of the low research engagement in Cambodia. Lessons from the DIG scheme (examined in the study by MoEYS and the World Bank (2015)) show clearly that the existence of funding does not guarantee research outputs and performance. A lack of experience with research management, a lack of an academic stock of knowledge with which to generate research ideas and dependence on external advisors to manage the technical aspects of research are some competencies-related issues identified in the report on the DIG scheme as barriers for quality research performance. MoEYS and the World Bank (2015, p. 60) report:

> *There was a mismatch between DIG's expectations and the research capacity of Cambodian academics. . . . It has been confirmed by our key informants that the majority of the subproject proposals – even many of the successful ones – were of less than satisfactory quality and majority of them appeared in the form of development project rather than research proposal.*

DIG grant recipients generally need rigorous and advanced training, internal advisors, key resource persons and/or donor research advisors to help them. Of the total 45 projects granted under the DIG scheme, MoEYS and the World Bank (2015, p. 43) reported that: *"Only a few of the subprojects (are likely to) produce results that will be accepted for peer-reviewed journal publications."* The fact that three of the four reviewed studies recommend research capacity-building and training platforms to promote research capacities implies that improving the research competencies of individual faculty members is needed to ensure research performance and culture at Cambodian universities.

In fact, individuals with competencies and commitment are the ones who have generated research outputs at Cambodian universities so far. However, the four reviewed studies seem to agree that Cambodia still lacks a critical mass of those experienced and research-qualified faculty members to systemically boost research outputs with quality at a faster

[9] Most of the studies reviewed used the term "individual research capacities" to refer to research competencies.

speed. Such a lack of researchers implies that funding is important but not the sole factor that leads to efficient research performance. As Pou et al. (2016, p. 7) put it:

> *The lack of funds for research activities was a consistent theme in our interviews. However, even when there are funds available, often research projects do not get executed.*

To be an effective researcher – more specifically, an effective academic researcher – one generally needs strong holistic and practical experience in research through their graduate and/or postgraduate years. Exposure to and mastery of academic background knowledge in a certain research area, experience with general and area-specific research methodologies and methods, competencies and experience to manage and lead projects and build networks, and competencies in publication and the dissemination of research outputs are all needed to function properly as a researcher. This is not to mention the other supporting skills and literacies required, such as English, communication and information-handling skills. Faculty members without such experience and skills will be overwhelmed with research works no matter how much they want to do research or truly value research. In fact, research competencies may be closely linked to how one understands research and therefore how they are committed to research or value it. In discussing the nature of science (NOS), McCain (2016, p. 4) asserts that: *"without a proper understanding of NOS one cannot truly understand the process of science, make well-informed decisions about socio-scientific issues, or fully appreciate the importance science has in our contemporary culture."* This is not to say that true academics and scientists with such level of competencies in Cambodia do not exist, but, again, they are very limited in number. Additionally, some leave academia for other fields.

Academic and Research Infrastructure and Culture

The lack of a strong academic and research infrastructure and culture is another huge concern for Cambodia. Cambodian infrastructure and the culture of academia and research are not just a factor at the institutional level but an issue for the whole system of higher education of the nation, and, when it comes to this factor, there are many deep-rooted issues involved.

Academic and research culture includes various key ideas, such as the idea of collegiality and academic community; the collective understanding of the nature of science and scientific ethics; a sense of

academic identity; academic career paths; an academic governance system that values academic freedom; the scientific root that shapes many aspects of academic disciplinary research; an academic peer-review system and the nature of academic pursuance of knowledge and truth. These issues are obviously a big concern for the nation at large since Cambodian HEIs, which were re-established after the downfall of the Khmer Rouge regime, are perhaps not based on such foundations in the first place. MoEYS and the World Bank (2015) state:

> *One critical aspect of a research culture in higher education is the existence of an academic community where academics come together to share and exchange ideas. It has already been noted that such a community is absent in Cambodia* (p. 51).
>
> *Cambodian universities, especially the public universities, lack a well-defined system of professional ranks and career tracks in which promotions and salary increases are mapped out for academic staff. This is a most glaring systemic weakness which cannot be solely addressed from within a university; it has to be addressed at a national level and from a national perspective* (Kwok et al., 2010, p. 10).

Aside from the academic culture, institutional academic and research infrastructure (in this review referring to the physical research supporting structure) is lacking. This includes research laboratories; research-based graduate schools; subscription to academic sources (e.g., academic journals, databases and indexing platforms); research offices that deal with research financial management and liaise with external stakeholders and research technical support offices (that may handle technical aspects of research and research methodologies). This is not to mention advanced research commercialization facilities (such as an office for technology transfers or an office dealing with patents) or the idea of a science park. Specialized and advanced centers of excellence in certain important fields also do not exist at Cambodian universities. Of course, some developing countries have functional research systems without the need to possess all these advanced infrastructural entities. However, for Cambodia, these facilities simply do not exist even at an optimum or necessary level. Some previous initiatives lead to the establishment of the so-called "research office" at Cambodian universities, but these offices generally do not offer much support to faculty members who do or want to do deep research and they are not in any sense close to the general idea of research centers.

Many justifications can be used to explain this lack of academic and research infrastructure and culture in Cambodia, from the idea of "missing generations" (as discussed by Kwok et al. (2010)) and the influences from French and Russian higher education models (as pointed out in MoEYS and the World Bank (2015)) to the lack of a tradition of research-based graduate programs that create researchers from younger ages.

In addition to these academic system issues, the current dominant teaching-oriented system of Cambodian higher education adds more difficulties to any attempts to create a strong research infrastructure and culture. Because the wages or salaries of university faculty members are based on the number of teaching hours, most academics tend to do a lot of teaching; and because universities' income source is dependent on students' tuition fees, as earlier mentioned, students are one of the most important stakeholders in evaluating teachers' quality. Therefore, so long as teachers can satisfy their students and help students learn well, research is not that important to university staff. The teaching-oriented system raises the question of what time is available for research. Kwok et al. (2010) put it:

> *Salaries remain low, especially at public HEIs. Lecturers tend to take up part-time teaching at a number of other institutions. Without being able to earn adequate incomes with a normal teaching load, lecturers are chained to the teaching treadmill, and there is literally no time left for research* (p. 10).

Research is time-consuming, especially for young researchers and those who have not gone through rigorous research-based doctoral programs. These groups cannot just do research right away: they have to learn how to do research through the process of doing it. Therefore, they need time. These issues of teaching-oriented system and time are part of a picture showing why the practical academic context in Cambodia does not match the expected academic roles of its faculty members in a theoretical sense. Many faculty members see this as a contextual reality that is hard to change.

MoEYS and the World Bank (2015, p. 21) consider employment practices at Cambodian universities *"to be also critical to shaping the experiences and expectations of the academic life in Cambodia."* In theory, academic institutions should have performance-based approaches for recruitment, motivation and promotion. Any inappropriate or unfair practices of these tasks – i.e. that are not based on academic principles –

can easily complicate the whole system. In simple language, if promotion is not based on quality research outputs, the motivation to engage in research can be low. At Cambodian universities, these employment practices (recruitment, promotion, etc.) have not been based much on the quality research works or knowledge contributions of faculty members into their academic areas.

One can consider all these gaps related to academic and research infrastructure and culture as the lack of an ecosystem of research in Cambodia in general. The research ecosystem can extend beyond those earlier mentioned problems and cover things such as the lack of intellectual property rights implementation, the lack of a unified national patent office and the lack of research traditions since early education levels. Again, this is not just a problem at the institutional level but obviously at the national level.

The Issue of Politics

Related to the issues of academic and research culture and infrastructure is the influence of politics on Cambodian public institutions in general and universities in particular. Among the four reviewed studies, Eng (2014) makes the strongest arguments on this particular issue. Her study claims clearly that politics is the core factor that influences Cambodian research capacities, arguing that while it is not the only factor, it is the most important one. The author further contends that the systemic influences of politics also condition the other factors affecting engagement of Cambodian researchers. Eng (2014) writes:

> *In Cambodia, while "lack of resources", "lack of institutional support" and "lack of infrastructure" may be seen as technical and institutional issues, access to resources, facilities, infrastructure, and institutional arrangements conducive to research career and capacity development are all the result of political decisions about who gets what, when and how* (p. 4).

This is an argument that Pou et al. (2016) and the other two reviewed studies also acknowledge in certain ways. Pou et al. (2016) mention the political impacts that cause a lack of collaboration from target institutions during data collection, seeing the situation as an inhibiting factor that distracts some from doing research. Previous local studies on the idea of accountability in Cambodia generally argue that the patrimonial culture and the patron–client system keep Cambodian public institutions as political institutions. For example, Chet (2009) claims that there are cases

where universities' leading members have been appointed for political reasons (as cited in Eng (2014)).

Politics can influence individuals. Expecting lucrative benefits, improved status and less challenging workloads, some potential academics have already stepped into positions that serve a political agenda (Eng, 2014). This is reflected by the idea of a "brain drain" of Cambodian academics raised by Kwok et al. (2010, p. 38). Because of these political influences, research results may be given less serious attention by stakeholders and by the government, a situation that further leads to the question of the values and feasibility of critical research in Cambodia.

In contrast to this argument, some critiques claim that politics is not necessarily the root cause of not doing research. Researchers can study many topics and areas which are not necessarily political in nature. Some critiques even further claim that such accusations about politics are just an excuse for not doing research. Cases where there have been increases in the collective research outputs of countries which are known for their government's influential political agenda on the state system, such as China, show that the research performance of academics (particularly in the fields of natural or physical science) may not be influenced by politics. Of course, this may depend on what disciplines of research being talked about. However, the point the authors of the reviewed studies make is not that politics affects the topics or disciplines of research but that it can influence the allocation of resources, support systems and decision-making that affect research engagement overall.

Sociocultural Factors

Sociocultural factors – which are distinguished from the earlier mentioned academic culture – generally refer to the overarching thought or belief systems of a society that shape individuals' ways of thinking, attitudes and behaviors. While these factors are raised and discussed in the reviewed studies (mostly indirectly), the studies minimize this argument and/or do not consider this a main factor influencing research engagement in Cambodia.

In fact, previous literature has claimed that a lack of reading culture, traditional teaching practices and a poor attitude towards asking critical questions and making inquiries are inherited cultures in some Asian countries that do not allow a strong research culture to sprout and grow well. Students in such contexts are believed to be taught to remember and follow advice rather than to think critically and creatively. But Kwok et al.

(2010) and Eng (2015) caution that this argument can be false because some Asian nations with similar social and educational cultures to Cambodia have already shown progress in research. Therefore, these studies argue that such sociocultural factors may not be a key problem for Cambodia.

Conversely, Pou et al. (2014) highlight the issue of possible conflict-provoking discussions when Cambodian researchers work together and so point to the issue of trust in research collaboration. This argument, which is different to the point that Kwok et al. (2010) and Eng (2015) discuss above, reflects part of the dominant sociocultural attitudes of a society. Such attitudes are obviously not friendly to research and academic culture in general. It should be noted that academic discussions point to ideas, not people, and are based on truth and evidence rather than emotion or subjective opinions. Academic and scientific attitude is about openness and progressive learning and the acceptance of disagreement. It is about critical, insightful discussions, not blind consensus. People lacking exposure to scientific research and academic community norms may find it hard to embrace such attitudes and the inability for them to work together and to accept criticism is very likely. Pou et al. (2016) further emphasizes that this inability to connect and understand each other based on trust and tolerance is one of the core factors inhibiting research in Cambodia.

It is hard to make any specific claims about the abstract concept of sociocultural factors with the data available now. However, academic studies should consider using the framework of social psychology or sociology to explore this issue in relation to research capacity in Cambodia. Some questions that could be explored are how much Cambodians are committed to truth and knowledge and how tolerant and open Cambodians are to criticism. The truth-loving attitude and open mindset are closely related to scientific and academic philosophies and approaches. If society does not embrace this mindset, the promotion of scientific research will face many challenges. Therefore, without studying these factors critically, claiming that sociocultural factors do not have any influence on Cambodian research and academic capacities by reflecting only on trends or literature existing in other contexts may be misleading.

On Ways Forward in Developing Research Capacities in Cambodia

By identifying the factors and understanding the contexts of Cambodia's research capacities, the four reviewed studies came up with four major domains of recommendation: creating and capitalizing funding and financial resources; building and improving academic and research competencies; systemizing academic and research infrastructures and culture; and establishing long-term and collaborative research development platforms. These can be either systemic or programmatic interventions. All of these recommendations are directed to the different stakeholders who play different but collaborative roles in promoting Cambodian research culture and performance. These recommendations are not just about research culture development but the promotion of the whole academic and higher education system of the country in general.

Creating and Capitalizing Funding and Financial Resources

Systemic support in terms of funding and financial resources from the government is one of the major recommendations made directly or indirectly by all four studies. Calls for government funding are important because not many countries around the world have a strong academic research culture and performance without large-scale funding support from the government. The government also has to make sure that the funding provision is merit-based. In addition to getting funding from the government, these reviewed studies encourage universities to connect with industry, partners and donors for more support. Institutions like ITC are examples of successful cases of such practice in Cambodia. This entrepreneurial approach allows universities to diversify and enrich institutional research funding sources. Internal funding schemes, which are an existing practice at certain Cambodian public universities such as NUM, RUPP and ITC, is another strategy for promoting research engagement from within. However, this strategy seems to not work well because the support does not reach the optimum level (i.e. higher than or equal to income from teaching) for most faculty members. The capability of Cambodian universities to avail, diversify and sustain funding for research is necessary to ensure research engagement in the long run. And there is no way for universities to do this besides becoming more entrepreneurial.

Research financial resources should consider the idea of incentives, which is a popular term in Cambodia. Given the fact that research is a hard, time-consuming task, low financial incentives may not change the attitudes

of teaching-oriented faculty members, remembering that teaching is the primary role of Cambodian faculty members because more teaching means more income. Using the word "profit" may be even more fitting than "incentive" in the Cambodian context because evidence from the DIG scheme evaluation shows that academics expect the research incentive package to be higher (i.e. more profitable) than incentives from other activities. Voluntary work with low incentives or without profits are seen as just an additional workload that nobody wants to do. Placing financial incentives first in order to do research is practical, if not pragmatic, for many in Cambodia. So, proper support in terms of both systemic funding and financial incentives is considered necessary to kickstart research engagement in Cambodia.

Building and Improving Academic and Research Competencies

Improving the academic and research competencies of faculty members individually and collectively as a team is necessary in order to build and improve academic and research capacities and productivity. Faculty members without a PhD need some quality research training as well as other professional development mechanisms to ensure their lifelong learning in the academic pathway. Research training is offered by the HEQCIP project but is considered too general, and so more advanced training courses are required. Exposing faculty members to international conferences or working with international researchers to author papers is also recommended. However, the practice of using external advisors to support local faculty members to complete their research tasks, although necessary for the implementation of DIG scheme, is no longer suggested. There are also suggestions that NGOs or civil society institutions with strong research capacities should contribute to capacity-building training for students either directly or through internship programs and to engage more faculty members from universities in their research activities.

What, then, are the key competencies required to be a researcher? While many different research competencies can be identified, four dimensions in particular are crucial: mastery of academic background knowledge in the research areas of a certain field or discipline; mastery of the philosophical, procedural and technical aspects of research methods in a certain field or discipline; competencies in research management and leadership skills (from planning and managing projects to leading and communicating with stakeholders); and mastery of research production skills (such as writing and publishing in academic journals, understanding the peer review system and presenting papers at academic conferences).

Any specific courses in research training – such as research grant proposal development, English academic writing, how to publish in an academic journal, using statistical software and using referencing software – fall into these major dimensions of competencies. Whether it is through training or through other kinds of programs, none of these major competency dimensions should be ignored.

Training for research support teams – dealing with logistic and procurement issues, for example – is also necessary for Cambodian universities, as illustrated in the study by MoEYS and the World Bank (2015). It should be noted that competencies among Cambodian faculty members and research support staff in terms of research implementation vary; therefore, different groups may need different kinds or levels of training or support. For example, some academics with extensive and long-term experience in research may find training unnecessary for them, while newer and less experienced researchers may need a lot of training. Designers of research capacity-building training or programs should keep this gap in mind.

Systemizing Academic Infrastructure and Enhancing Academic Culture

Another important macro-level recommendation from the reviewed studies was to systemize academic infrastructure and enhance academic culture. A strong academic career system is one of the most important elements to have to ensure a strong academic culture. Most of the reviewed studies identify academic rankings or professorships and academic salary scales as elements that need to be put in place and re-appropriated. The Cambodian system of higher education – which was damaged by prolonged wars, influenced by different higher education models and fragmented by piecemeal and poorly planned development interventions – needs to seriously rethink its academic system. Academic recruitment, workloads, evaluation and promotion are various factors that also need be re-organized or clarified so that Cambodian faculty members can have a favorable working environment. The procedures to implement these aspects has to be merit based, transparent, peer assessed and excellence oriented. Political reasons should not be related to these implementations.

In addition to this, the teaching-oriented and teaching-hours-based income systems currently in place in Cambodian universities need to be reconsidered and re-appropriated. Recruiting more full-time faculty members and giving them an adequate salary package may be an option to avoid them teaching too many hours and encouraging them to focus more

on research and other academic works. To put such recommendations in place in the macro-system requires the strong and sincere wills of leaders and policy-makers and, of course, collaborations among stakeholders.

There are still many other systemic and macro-level questions remaining unanswered for Cambodian academic and higher education systems. For example, one should question whether all universities in Cambodia should engage in academic research, considering their current practices. One should also question whether a clear typology and ranking system for universities should be established for the Cambodian higher education system. These and other questions may be easier to answer when proper and clear academic works and careers are in place.

Establishing Long-term and Collaborative Research Development Platforms

Although a lot of recommendations discussed so far focus on systemic changes and improvements, the authors of the four studies tend to believe that programmatic interventions are still a working approach for Cambodia. One common suggestion among the reviewed studies is that long-term and collaborative research development platforms are needed. These programmatic platforms will in the long run accumulate research resources for the country. Such interventions should be long term because there have been unsustainable and low impacts from short-term programmatic interventions in Cambodia in the past. The authors also believe that without multiple stakeholder engagement, the implementations will face problems and the expected impacts will not be paramount.

Three of the four studies mention development and training platforms and activities which can be learnt from and/or innovated further. Kwok et al. (2010), for example, focused on DRF (organized by CDRI and partner institutions). MoEYS and the World Bank (2015) discussed the HEQCIP and DIG schemes. Pou et al. (2016) mentioned the research-and-training combined activities (i.e. the action research component in their study). These models are research development models that these studies argue are very practical for the Cambodian context. However, none of these models can transform the Cambodian research culture and system to an optimum place if key systemic clarifications and re-appropriation do not occur, as discussed earlier. Academic and research institutions themselves are the key driving factors that determine the success of any programmatic or systemic promotion models.

Significance and Limitations of the Four Studies

These four studies can be considered pioneering works that introduce the topic of research capacities in Cambodia. They offer descriptive facts and opinions on the topic. Further attempts to investigate the states of research in Cambodia should embrace insights from these four studies. As a researcher of this particular issue myself, I have learned a great deal of factual information from these studies and can relate to the practical arguments the authors try to make. Policy-makers and practitioners may find these texts useful in many ways.

Information about the existence of research at certain well-known institutions in Cambodia in the first study (Kwok et al., 2010) offers direction for more critical research and case studies. Findings in the study on the DIG scheme (MoEYS and the World Bank, 2015) is also very important for future practices of MoEYS, the Directorate General of Higher Education (DGHE) and relevant institutions in promoting research endeavors at Cambodian higher education institutions. Some key arguments on systemic political influences in academia in Eng (2014) are sound and critical. It is, however, hard to measure how much this factor is a root cause and further investigation is required. In the study by Pou et al. (2016), the innovative approach that includes capacity-building training along the way of research can be appreciated, but how this model can really create researchers in Cambodia and sustain their engagement in research after the training ends also has to be explored.

Most of these studies offer lots of practical recommendations for stakeholders; however, the recommendations of some studies can be too many in number for policy-makers to consider, and it is debatable whether some of the recommendations are actually good and strategic in the context of limited resources.

Other Possible Areas for Further Studies

Despite many positive contributions to the research area, a few limitations related to thematic scopes of the reviewed studies should be highlighted.

The discussion of the factors that influence research engagement in the four studies does not explore in-depth academic leadership and management at the institutional level. Kwok et al. (2010) considers academic governance and leadership an important issue in some ways. The leadership and management dimensions of research can be interesting to explore because the issues of politics, academic infrastructure, resources

and finance can be strongly influenced by who the leaders and managers of the institutions are. The patron-client nature of Cambodian culture and institutions makes its leaders or bosses very powerful, and these leaders' academic qualification, experience and knowledge can determine the future of research performance at their institution. Such leadership roles are important, at least in the transitional period of research development in Cambodia. Some Cambodian key leaders and actors in higher education institutions have been identified as "game changers" who can self-reliantly contribute to reconstructing the fragmented academic, scientific and research cultures from within their institutions while entrepreneurially embracing external support schemes in a proper manner. These leaders may be engaged in politics but if they are academically competent and entrepreneurial, they can still find ways to raise research outputs and foster research cultures, even under the shadow of political agenda.

Such claims are not without evidence. The example of some key leaders, as in the case of ITC's rector and its research unit director and the case of leaders of RUPP and RUA, are evidence of how leadership plays a role in moving up research. Other cases – such as CDRI's director and CSK's director – may be interesting to study as well, even though they are theoretically non-academic institutions. Rather than blaming the context, these leaders innovatively and entrepreneurially work out ways to ensure some research engagement at their institutions. To do so, they have had to overcome deeply ingrained attitudes against research endeavors. It should be noted that little has been studied about leadership at public non-university research institutions, such as SNEC and CARDI, as well.

Also, none of these studies focus on measuring the research outputs and productivity of Cambodian researchers. These baseline statistics are very important in order to understand in an accurate way the real trends of research performance in Cambodia. Empirical studies using scientometrics or bibliometrics frameworks and instruments may be hard to conduct in the current Cambodian context because most Cambodian researchers who publish do it while they are working or studying outside the country. Local publications are generally not at the level indexed by international databases such as Scopus or Web of Science. So, a proper baseline survey with critical design may offer some good databases for future studies.

It should also be noted that none of these reviewed studies discuss or explore the market research or industrial research and development that are conducted in the business and industrial sectors. This is understandable because such research works may not exist abundantly in Cambodia and

because these authors have backgrounds in civil society or the academic sector. However, the industrial and business research dimension in Cambodia is worth exploring and understanding. In natural and physical science especially, funding and financial support from the industrial and business sectors are necessary to strengthen existing research.

The Frame and Depth of Argument of the Four Studies

Another limitation is the frame and depth of argument in some of the studies reviewed. Factors discussed in the studies are generally multidimensional and descriptive but not strategically critical and focused. It is perhaps more pragmatic for policy research to dig down to the root causes and figure out the main factors influencing research capacities in Cambodia. Only such in-depth studies can really point to clear strategic policy interventions. Eng (2014) tries to do this by focusing only on the political dimension and her arguments are logical and deep in many ways. Further studies should follow this focused approach and clearly specify certain factors influencing research capacities in Cambodia in order to understand them fully and deeply and to generate ideas of guaranteed interventions to solve those specific problems.

Discussions on the factors that influence research capacities without clearly distinguishing between those in the field of science and those in the field of social science and humanities is another gap to consider for further studies. The assumed generality for all research disciplines may make some arguments raised by the reviewed studies invalid. For example, research is more costly in terms of investment in the fields of natural and physical sciences than in the humanities or social science. The term "research" in these reviewed studies is too broad. They cover research in general, without focusing specifically on academic research, policy research by civil society and NGOs, practice-oriented research at the institutional level, or industrial research and development works. Pou et al. (2016) and Eng (2014), however, do focus mostly on social research. Again, a clear frame will allow discussions to be focused and in-depth.

In an academic sense, some claims made in the reviewed studies are stated without any serious evidence provided in support. Most studies claim to use a mixed-methods approach, but there is little description or evidence on how they really integrate qualitative and quantitative analyses. From the perspective of advanced mixed-methods, the lack of deep integrative aspects between the quantitative and qualitative data is a weakness of design.

Conclusion

Cambodia and its universities require robust capacities of research and science to ensure further development and, in the long run, to catch up intellectually, economically, politically and socially with other developed nations. The four reviewed studies in this current work, with their main focuses on research capacities of Cambodia, collectively reveal systemic patterns of gaps and limitations that need to be alleviated. These studies are pioneering works that introduce and elaborate on this critical topic in Cambodia.

All four studies note that some piecemeal cases of good practices exist at certain universities and institutions (such as ITC, RUPP, RUA and CDRI) and that some interventions (such as DRF, HEQCIP and some universities' internal strategies) have been implemented. With such observed facts, these studies conclude that Cambodian research is in transition in its performance and development.

The main issues and challenges identified are a lack of mechanisms to capitalize and utilize research funds and financial resources, fragmented academic careers, infrastructure and culture at institutional and national levels, systemic political influences, and individual and collective research competencies. With these identified issues, the studies offer some recommendations that are based on the big idea of long-term and collaborative research capacities development platforms, secured systems of funding and financial resources, and clarified academic culture and systems. Some intervention models (such as the DRF) and comments on national academic systems (such as on establishing academic rankings and improving academic salaries) are specifically proposed by these studies.

While all of these studies are notable for their practical knowledge and big-picture understanding, more critical and analytical studies that focus on specific key factors (raised but not discussed deeply by these studies) should be conducted. The roles of university leadership and management – which have activated research functions at the institutional level so far in the Cambodian context despite all the systemic problems – should be critically explored. These exceptional leaders, with capable researchers and research supporters, have important roles to play in creating resources, building competencies and establishing a workable institutional system of research in Cambodia. Also, because research performance is internationally measured by publications, citations and other bibliometric/scientometric indicators, a large-scale baseline survey

of Cambodian faculty members' research outputs should be initiated and implemented. The lack of that empirical dataset makes it hard to engage in serious analytical and predictive research studies on this important topic. An increased focus on research in the business and industrial sectors may also shed new lights for research capacity development in Cambodia. All of these themes are worth exploring in further studies.

References

Eng, N. (2014). Engagement between the state and Cambodian researchers. *Cambodia Development Review*, 18(2), 1-5.

Holton, T. & Fraser, B. (2015). *Generation Z and technology: Constructing tomorrow's boundary spanners.* Defense Research and Development Canada.

Kwok, K.W., Chan, S., Heng, C., Kim, S., Neth, B., & Thon, V. (2010). *Scoping study: Research capacities of Cambodia's universities.* Phnom Penh: CDRI.

McCain, K. (2016). *Nature of scientific knowledge*. Springer International Publishing Switzerland.

Ministry of Education, Youth and Sport & The World Bank. (2015). *Higher Education Quality and Capacity Improvement Project (Development and Innovation Grants): Stocking report*. Phnom Penh. MoEYS.

Pou, S., Sok, S., Work, C., Beban, A., Nouen, K., & Khoun, T. (2016). *Doing research in Cambodia: Making models that build capacity*. Phnom Penh: CICP.

University of Southern California. (2018). *General reference & research help.* Retrieved on 3 April 2018 from http://libguides.usc.edu/writingguide/bookreview/multiple

Vessuri, H. & Teichler, U. (Eds). (2008). *Universities as centres of research and knowledge creation: An endangered species?*. Sense Publishers.

Appendix: Matric Summary of the Four Studies[10]

	Kwok et al. (2010)	**Eng (2014)**	**MoEYS and the World Bank (2015)**	**Pou et al. (2016)**
Type of document	Special report (i.e. written basically as a research report)	Article (i.e. written in an opinion essay style)	Stocking report (i.e. written as a program evaluation report)	Project report (i.e. written as a report for donor)
Scope of study's contents	- Comprehensive coverage on states of research capacities of universities - An exploratory study - Unspecified disciplines of research	- Specific focus on political influence on research engagement in Cambodia in general - An argumentative essay - Only social research disciplines	- Specific focus on lessons learnt from implementing research promoting program and the DIG scheme for universities - A practical and quasi-evaluative study - Unspecified disciplines of research	- Comprehensive coverage on states of research capacities in Cambodia in general - An exploratory, explanatory and capacity-improving project - Only social research disciplines
Scope of study's samples	- 19 key informant interviewees from 15 selected universities - 8 experts from different institutions who experience in and with Cambodian higher education sector	- No primary data collected	- 37 HEQCIP grant subproject managers (with 35 completing questionnaire survey) from 24 higher education institutions - 16 higher education institution leaders - 7 key informant interviewees	- 183 survey respondents - Interviews and focus group discussions
Research methods	Semi-structured key informant interviews and	An opinion essay or a discussion paper	Multiple methods (i.e. survey, interviews, and	Multiple methods (i.e. survey, interviews and

[10] This matric summary aims to highlight just the key points emphasized by authors of the four texts. Where possible, the researcher used *in vivo* wordings exactly from the original text.

	document reviews		document reviews)	action-research training and reflection)
Key arguments on the state of Cambodian research capacities	- Acknowledged low engagement and performance of research in Cambodia due to systemic gaps and limitations - Offered evidence that research is in transition through increased number of researchers and by highlighting some positive cases of research-engaged universities in Cambodia	- Acknowledged low engagement and performance of research in Cambodia, basically due to political influences - Offered evidence that donors' funding and some non-governmental research institutes are factors pushing research in Cambodia	- Acknowledged low engagement and performance of research in Cambodia to due systemic gaps and limitations, but highlighted research competencies as one key challenge - Offered evidence that current support from government through the DIG scheme has influenced research capacities at universities (increasing resources, raising capacities, sprouting research cultures, etc.)	- Acknowledged low engagement and performance of research in Cambodia due to systemic gaps and limitations - Offered some positive opinions that interest and values in research exist in Cambodia
Key arguments on factors influencing Cambodian research capacities	- Missing generation - Academic profession - Research facilities - Academic leadership and management - Long-term goals for research - Academic salaries - Brain drain - Funding package - Research not a core mission	- Patronage network in career promotion - Political decision as the root or frame of all institutional phenomenon - Not much concern on expert knowledge - Institutional resources and infrastructure allocated based on political decisions	- Research competencies of faculty members - Demotivation of researchers' commitment (due to more workloads and no incentives) - Complicated standards, administration, financial management, and procurement procedures by the donors and the internal	- Financial system (funding, academic salaries and incentives) - Capacity to conduct research and language competencies - Workloads - Retention - Research quality mechanisms - Access to data - Political sensitivity

		- Researchers co-opted into serving political agenda with the - expectation of lucrative benefits in returns - Donors as key actors in pushing research engagement	system of the university - Shallow and sporadic capacity-building training - Lack of communication between donors and grant recipients - University research-support teams and platforms are not strong	- Access to academic resources
Key points of *recommendations*	- Clarifying what is at stake and championing university research - Planning for a differentiated higher education sector - Making research a core mission of universities - Establishing long-term goals - Extending Development Research Forum - Working with stakeholders of this study to follow up further development	- Establishing an academic or research support system that ensures researchers' freedom, creativity and appreciation	- Long-term goals in research promotion - Balancing workloads - Institutional and public recognition of research outputs and researchers - Salary scheme - Public and donor-based financial resources to fund research performance and research supports - Intense research supports - Linkage between Cambodian and international scholars - Financial compensation and incentives	- Adequate funding to incentivize researchers - Access to academic journals and resources - Collaboration across universities, stakeholders and between local and international researchers - Setting standards and regulations by the state - Training and capacity-building by stakeholders

Key** recommendation **on specific model of capacity-building training	Development Research Forum (DRF)	N/A	Higher Education Quality and Capacity Improvement Project (HEQCIP) and Development and Innovation Grants (DIG)	Action research (i.e. training or capacity building along the way of researching)

Education Research Council
ERC Office, Level 2, MoEYS Administration Building,
St 380, Boeng Kengkang 1, Phnom Penh, Cambodia