Ministry of Education, Youth and Sports
Kingdom of Cambodia

Kingdom of Cambodia
The Project for Establishing
Foundations for
Teacher Education College

Project Completion Report

January 2023

JAPAN INTERNATIONAL COOPERATION AGENCY

PADECO Co., Ltd.
INTEM Consulting, Inc.

Ministry of Education, Youth and Sports
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Abbreviations and Acronyms

ACC	Accreditation Committee of Cambodia
BTEC	Battambang Teacher Education College
CDPF	Cambodia Capacity Development Partnership Fund
CFW	Curriculum Framework
CPD	Continuous Professional Development
DGE	Directorate General of Education
DGHE	Directorate General of Higher Education
DP	Development Partner
ERC	Education Research Council
ESP	Education Strategic Plan
ESWG	Educational Sector Working Group
E-TEC	The Project for Establishing Foundations for Teacher Education College
EU	European Union
FD	Faculty Development
GEIP	General Education Improvement Project
GPE	Global Partnership for Education
HEI	Higher Education Institution
ICT	Information Communication Technology
INSET	In-Service Training
IQA	Internal Quality Assurance
JCC	Joint Coordination Committee
JICA	Japan International Cooperation Agency
MoEYS	Ministry of Education, Youth and Sports
NGO	Non-Governmental Organization
NIE	National Institute of Education, Cambodia
PDCA	Plan-Do-Check-Action
PDM	Project Design Matrix
PO	Plan of Operation
PRESET	Pre-Service Training
PTEC	Phnom Penh Teacher Education College
PTTC	Provincial Teacher Training College
R/D	Record of Discussion
RTTC	Regional Teacher Training Centre
RUPP	Royal University of Phnom Penh

SEIP	Secondary Education Improvement Project
SIDA	Swedish International Development Cooperation Agency
S-NIE	National Institute of Education International, Singapore
STEPSAM1	Secondary School Teacher Training Project in Science and Mathematics
STEPSAM2	Science Teacher Education Project
STEPSAM3	The Project for Educational Resource Development in Science and Mathematics at the Lower Secondary Level
TCP	Teacher Career Pathways
TEC	Teacher Education College
TEPS	Teacher Education Provider Standard
TP	Teacher Policy
TPAP	Teacher Policy Action Plan
TTC	Teacher Training College
TTD	Teacher Training Department
UBB	University of Battambang
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VSO	Voluntary Service Overseas
VVOB	Vlaamse Verenigin voor Ontwikkelingshulp en Technische Overseas / Flemish Association for Development Cooperation and Technical Assistance
WALS	The World Association of Lesson Studies

1.   Overview

1.1   Background of the Project

(1)   Previous JICA Technical Cooperation Projects for Primary and Secondary Education

The first technical cooperation project on science and mathematics education, known as the Secondary School Teacher Training Project in Science and Mathematics 2000-2005 (STEPSAM1), was initiated in the context of Cambodia's recovery from civil war. STEPSAM1 contributed to strengthening the capacity of science and mathematics teachers at the National Institute of Education (NIE) and improving the science and mathematics knowledge and skills of higher secondary school science and mathematics teachers through in-service teacher trainings.

The Secondary School Teacher Training Project in Science and Mathematics 2008-2012 (STEPSAM2) strengthened the capacity of all science teachers in primary and lower secondary school teacher training schools (24 schools in total), with the previous NIE teachers as mentors. The "lesson study" and "inquiry-based teaching" introduced in STEPSAM2 have since been disseminated throughout the country by the Ministry of Education, Youth and Sports (MoEYS).

The Project for Educational Resource Development in Science and Mathematics at the Lower Secondary Level 2013-2016 (STEPSAM3), which was followed by STEPSAM2, developed a teacher's guidelines for lower secondary school science and mathematics teachers. A total of 17,000 teachers participated in a series of trainings conducted by STEPSAM3 at lower secondary teacher training schools, and approximately 50,000 instructional materials were distributed.
Each project has been deeply involved in the education policy. STEPSAM2 involved the development of the Teacher Policy (TP, approved by MoEYS in May 2013) and STEPSAM3 devised the Teacher Policy Action Plan 2015-2020 (TPAP), which incorporates the TP into a concrete plan.

In its "National Development Strategic Plan 2014-2018", Cambodia has set a goal of becoming an upper-middle-income country by 2030 and announced its "Industrial Development Policy 2015-2025" in August 2015. The policy states the importance of industrial diversification and the creation and development of internationally competitive, high-value-added industries to sustain economic growth. They also pointed out the importance of developing industrial human resources. In response, MoEYS has been pushing educational reforms forward to foster industrial human resources and has implemented major reforms in the primary and secondary education, higher education, and technical education subsectors.

In a series of educational reforms, the Education Strategic Plan 2014-2018 (ESP) positioned teachers as an important component towards the quality of education. Also in 2015, the TPAP was released, which involved comprehensive teacher reform. One of the main pillars of the TPAP was to raise teacher qualification requirements to improve the quality of education, and after curriculum development for the 12+4 and BA+1 programs, these programs were implemented in two Teacher Education Colleges (TECs), which were established in Phnom Penh and Battambang in 2018. Additionally, in parallel, TPAP promoted the conversion of in-service teachers to bachelor's degrees so that all teachers will be qualified for a bachelor's degree or higher.

Based on this background, MoEYS requested the Japanese government to provide the technical cooperation necessary to convert the current two-year teacher training programme to a four-year programme, as well as grant assistance for the construction of the necessary facilities to accommodate the increase in the number of students. In response to these requests, this technical cooperation project started supporting the process of TECs becoming a four-year university that

produces high-quality teachers by formulating a teacher training strategy, developing and supporting the implementation of a four-year curriculum and syllabus, and supporting university administration as an institution of higher education.

(2)   Issues to be Cleared for TEC Establishment

While TPAP stipulates that a pilot 12+4 programme will start in 2 TECs in Phnom Penh and Battambang, there remains a lot of preparatory work as listed in the table below.

Table 1-1   Issues to be Cleared for TEC Establishment

#	Tasks to be done for TEC establishment	Schedule
1	Approval of Sub-Decree for 2 TECs	To be approved in Mar. 2017
2	Development of a strategic plan for teacher education, including: • Sub-sector situation analysis report • TEC strategic plan	Analysis Report To be developed by Aug. 2017 TEC Strategic Plan To be developed by Dec. 2017
3	Budget allocation to TECs for 2018	To be discussed in Mar. 2017 between MoEYS and MEF
4	Organizing a committee tentatively named as "Accreditation Committee for Teacher Quality (ACTQ)" • Preparing the TOR of ACTQ • Setting up the Committee based on a Prakas	To be done by Apr. 2017 To be done in Apr.-May 2017
5	Selection of staff and students • Decision on the selection criteria and process ➢ Preparing the criteria for the selection of directors and lecturers ➢ Selecting/shortlisting the candidates • Selection of TEC students ➢ Making decision on the coverage of each TEC ➢ Admission announcement to the public	To be developed by May 2017 To be done in Jun.-Jul. 2017 To be done by Jan. 2018 To be done in Feb.-Mar. 2018
6	Development and approval of Teacher Career Pathways	TBD
7	TEC curriculum framework development	To be completed in Mar. 2017
8	TEC syllabus and materials development	To be completed by Sep. 2018
9	Capacity development of TEC directors and lecturers	To be done by Sep. 2018

The Project for Establishing Foundations for Teacher Education College, or the E-TEC project (hereinafter referred to as "the Project"), has supported MoEYS to complete these tasks on time.

(3)   Issues to be Cleared during the Project

As noted above, MoEYS policy and policy towards the establishment of TECs has been uncertain from the beginning. Details will be given in the following chapters, but this required the Project to take a steady approach, such as developing a roadmap and managing progress one by one; from the planning of the number of TEC lecturers and staff required, to the timing and method of appointment, and the number of students and target areas to the procedures required for the establishment of TECs. Especially in the first six months of the Project, the TPAP task team had too much work to do and was not functioning adequately, so they teamed up with Dr. Dy Samsideth, DDG of the Directorate General of Education and others to create a Teacher Development Committee (TDC) chaired by the Minister by ministerial decree, and under this TDC, the PRESET, CPD and School Management sub-committees were created. Although, the TDC has not become very active as a result, it led to the subsequent establishment of the Teacher Development Resource Committee (TDRC), which is currently working on a revised TPAP. The revised TPAP, which will include a teacher qualification upgrade plan, is scheduled for completion around March 2023.

With regard to the teacher qualification upgrade as stated in the ESP 2014-2018, the MoEYS has also been discussing whether to prioritise TEC teacher training (Pre-Service Training, hereafter

PRESET) or in-service teacher training (In-Service Training, hereafter INSET), whether the policy is to expand TECs or not, etc. The Project consulted with the MoEYS Minister, Secretary of State and other relevant senior officials in a timely manner while preparing for the establishment of TECs, considering policy priorities and gradually and carefully making proposals for the overall strategic plan for teacher qualification upgrade. In parallel, a teacher education sub-sector research report was prepared based on teacher supply and demand projections and the results were shared with the MoEYS Minister and other key stakeholders.

Throughout the 1st term of the Project, policies for teacher education, including TECs, gradually began to take shape in MoEYS. Finally, specific policy targets were set in ESP 2019-2023, such as '7% of primary school teachers to have a bachelor's degree by 2023, 15% of lower secondary school teachers to have a bachelor's degree by the same year'. Later, in the 2nd term of the Project, plans for Continuous Professional Development (CPD), which had been slow to be discussed since the TPAP was formulated, in line with these plans, the Project supported in the development of a teacher qualification upgrade. The development of a mid-term plan has also progressed in line with these plans. Discussions on Teacher Career Pathways (TCP) are also progressing. Furthermore, at the end of the 3rd term of the Project, activities that the development partners (DPs) and MoEYS implemented related to the Project are shown in the table below.

Table 1-2　Activities Done by DPs and MoEYS Related to the Project

Areas	Activities	Implementer and Supporting DPs
TEC	TEC Syllabus Materials Development	CDPF, USAID, VVOB, NGOs
	TEC teacher capacity building training	CDPF, VVOB, NGOs
	Employment of TA to support TEC	CDPF
Teacher Qualification Upgrade	Bachelor's degree for secondary school teachers through SEIP (about 2,000 teachers, implemented at RUPP)	World Bank
	Bachelor's degree for PTTC teachers through STEPCam (about 70 teachers, implemented in PTEC)	GPE3/UNESCO
	Establishment of New Generation Pedagogical Resource Centre (NGPRC) within NIE to start MEd in Mentoring for in-service teachers	KAPE (Educational contents)
CPD	CPD Master Plan formulated by STEPCam, development of handbook, establishment of implementation system, etc.	GPE3/UNESCO
TCP	Develop Teacher Career Pathways Framework (English and Khmer) and TCP Implementation Guidelines (Khmer)	GPE3/UNESCO, MoEYS
Others	Teacher Career Pathways development (The latest version will be available in July 2020) TPAP revision (expected completion March-Jun 2023) Establishment of new BA+1 for secondary school teacher training BA+2 training for upper secondary school teachers in NIE	MoEYS UNICEF, UNECO, JICA, NGOs MoEYS

(4)　Impact of COVID-19

With the worldwide spread of COVID-19 (coronavirus disaster), educational institutions were repeatedly closed and reopened in Cambodia after March 2020. In this situation, MoEYS has made significant effort to ensure students' learning at school doesn't stop by using online lessons during classroom closures, and a hybrid model of online and on-site lessons after reopening. As a result, the TEC administration and faculty have been busy dealing with these new circumstances since the coronavirus disaster occurs.

The new school year began in November 2020, and in-person classes were held, but soon after, educational institutions, including TEC, were again forced to close schools due to a city-wide infection at the end of November of the same year, during which online classes were once again

held. After the city-wide outbreak settled down, face-to-face classes resumed at the beginning of January 2021, and the curriculum was implemented while taking care to reduce the density of students on campus through the combination of in-person and online classes. However, unfortunately on February 20, 2021, a large-scale city-wide outbreak occurred and schools in Phnom Penh and Kandal Provinces were closed again for two weeks. Under these circumstances, TEC was required to flexibly change its teaching methods and schedule based on instructions from MoEYS, and as a result, the activities of the Project had to be changed and its content and methods modified.

The project team members suspended their travel after March 2020. During these two years, from the second half of the 2nd term to the first half of the 3rd term of the Project, it proceeded with a combination of on-site travel and remote implementation. The remote teaching system established through a series of teleconferences in the second half of the 2nd term was functioning well, where technical shortcomings were corrected through trials of remote class observations connected to Japan[1]. Thus, the Project also continued and utilized these class observations in the 3rd term. However, during the online meetings that were held while TEC was closed, when TEC lecturers participated from their homes via smartphones, the Internet connection was not stable, and the audio and video were often cut off. This unstable internet connection prevented efficient training. Therefore, in the 3rd term, the Project also supported improvement the Internet infrastructure at TECs.

The Cambodian government was aware of the fragility of its medical system in the face of the coronavirus disaster, and it focused its efforts on border control measures at airports, along with the use of face masks and hand sanitizing. Although these efforts led to the suppression of the pandemic, there were still several city-wide outbreaks, and schools closed and suspended their workshops and training programs from two weeks to a month each time. The outbreaks also affected the Project, and the planned activities had to be changed or postponed several times, making the project management difficult. Field assignment restarted in April 2022 after the city-wide outbreak had calmed down and immigration restrictions had been eased. From then until the end of the Project, all activities were quickly revitalized by combining on-site and online inputs for more than six months.

1.2   Project Framework

1.2.1   Project Objectives

"The Project for Establishing the Foundations of Teacher Training Colleges" achieved the expected results by implementing the work based on the Technical Cooperation Project Agreement between the governments (Record of Discussion, hereinafter referred to as R/D). The project purposes are shown in the table below.

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[1] For example, "carefully observing the instructor's movements and instructions", "checking students' notes", "listening to group discussions", and other actions that are only possible in a face-to-face class.

Table 1-3   Project Purposes

Overall Goal	TEC graduate teachers contribute to improving the performance of primary and lower secondary school students.
Project Purpose	High quality primary and lower secondary school teachers will be produced from TEC.
Expected Outputs	(1) A comprehensive strategic plan for baccalaureate education will be developed. (2) A management structure and operating mechanism for TEC will be established. (3) Curriculum, syllabus and teaching materials for the four-year primary and lower secondary school teacher training program are developed. (4) A cycle of class improvement will be established in science and math subjects. (5) Through research activities by TEC faculty, knowledge and educational practices related to "TEC student learning" will be accumulated and updated.

1.2.2   PDM Revision

The Project Design Matrix ("PDM") for this Project was revised in July 2018 (PDM Version 3), with changes to the scope, Outputs 1, 2, 4 and their indicators, and Activities 4-3 (first revision). It was then revised again in September 2021 (PDM Version 4) after an interim review[2] and all indicators and Outputs 1, 2, 4, 5 outcomes and activities were changed (second revision) as shown in the table below.

Table 1-4   Main Changes in the PDM 2nd Revision

Overall Goal	Indicators
TEC graduates contribute to learning output of students.	New: More than 80% of schools (including students, principals and other teachers) positively evaluate performance of TEC graduates. (Old: Statistically higher test scores of students taught by TEC graduates)
Project Purpose	**Indicators**
Quality teachers are produced from TEC.	New: 1. Test scores of subject knowledge and teaching methodology for the primary and lower secondary at the end-line survey is improved by 10 % points in average compared with those of the baseline survey. 2. Students can develop a lesson plan based on their reflection during Year 4 practicum. (Old: 80% of TEC graduates meet the teacher professional standards)
Outputs	**Indicators**
(1) New: Overarching strategic plans for teacher qualification upgrade are developed. (Old: Overarching strategic plan for expanding TEC is formulated.)	New: Overarching strategic plans for teacher qualification upgrade are developed. (Old: Developed and revised strategic plan.)
(2) New: TEC management framework and operational mechanism are established. (Old: TEC is well managed.)	New: 1. Progress report of a TEC strategic plan is prepared semi-annually. 2. All of TEC management documents for TEPS accreditation are prepared. (Old: Full TEPS accreditation.)

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[2] The interim review, originally scheduled to be conducted in the 2nd term of the Project, was rescheduled for May-June 2021 due to the COVID-19 outbreak.

(3) Curriculum, syllabi and course materials are prepared for B.Ed. (12+4) PRESET for both primary and lower secondary levels.	New: Curriculum, syllabi and course materials are developed and refined. (Old: Developed and refined curriculum, syllabi, and course materials.)
(4) New: Cycle for lesson improvement is established in Math and Science subjects. (Old: B. Ed (12+4) PRESET for primary level and lower secondary level is in operation in STEM stream.)	New: Tools for reflective process including reflection sheet, mini-test for formative assessment and assessment rubric for practicum, are developed and implemented. (Old: Reports of course evaluation.)
(5) New: TEC teacher educators accumulate and update their knowledge and practices related to TEC student teachers' learning in classrooms through research activities. (Old: Practice oriented teacher education is strengthened.)	New: All research groups produce research papers. (Old: The number of articles published by teacher educators.)

Outputs	Activities (Extract only amended activities)
1	1-3 Develop a legal framework that stipulates a standard for teacher education at the bachelor level. 1-4 Develop a mid-term plan for teacher qualification upgrade. 1-5 Develop a long-term strategic plan for teacher qualification upgrade.
2	2-3 Prepare a TEC strategic plan. 2-6 Periodically review and improve the management system to assure the quality of teaching and learning. 2-7 Provide technical input for IQA offices to ensure lesson improvement through PDCA cycle. 2-8 Monitor the allocation of TEC teacher educators. 2-9 Implement continuous professional development programmes for TEC teacher educators such as lesson study.
3	3-4 Review and revise the course syllabi and course materials through reflective process. 3-5 Develop and refine final subject exams.
4	4-3 Develop tools for reflective process. 4-4 Implement reflection with the developed tools. 4-5 TEC teacher educators check Lesson Plans developed by TEC students for the practicum and provide technical advice for their improvement with the technical support from Japanese experts. 4-6 Provide opportunities for capacity building of teacher educators.
5	5-1 Analyze the needs of educational research in TECs. 5-2 Provide technical inputs for TEC teacher educators on how to conduct action research. 5-3 Each TEC teacher educator prepares a research paper/report on their lessons/courses. 5-4 Present the research outputs in academic conferences.

1.2.3   Target Areas

The target areas are Phnom Penh and Battambang where TECs were newly established by integrating the Provincial Teacher Training College (PTTC) and Regional Teacher Training Centre (RTTC). TECs student teachers have been coming from all provinces in Cambodia and therefore, TECs student teachers will be dispatched to both primary and lower secondary schools in their home provinces in Cambodia after graduation.

Figure 1-1   Project Target Areas

1.2.4   Counterparts

The counterpart organization of the Project is the Teacher Training Department (TTD) and Ministry of Education, Youth and Sports (MoEYS). In addition, the Project was managed in collaboration with a wide range of relevant agencies within MoEYS, including the MoEYS Minister, the Secretary of State, the Directorate General of Education and Teacher Training, as well as the Royal University of Phnom Penh (RUPP) and the Directorate General of Higher Education. In parallel, the Project exchange information with development partners involved in the education sector, such as the European Union (EU), UNICEF, the World Bank, the Asian Development Bank (ADB), UNESCO, USAID, VVOB and other NGOs, and cooperate with each other to promote cooperation in the field of teacher education in Cambodia.

1.2.5   Beneficiaries

The expected beneficiaries are as follows:

- Student teachers in 4-year teacher training (PRESET) course at TECs (150 primary student teachers per TEC, 100 lower secondary student teachers per TEC, i.e., 250 student teachers per year in total); and
- TEC directors and the lecturers (160 in total at PTEC and BTEC).

1.2.6   Scope of Works

The work was carried out within the framework of the "The Project for Establishing Foundations for Teacher Education College" which was agreed upon based on the R/D signed by JICA and MoEYS Cambodia on October 13, 2016.

1.3   Implementation Structure

1.3.1   JICA Project Team

The JICA Project Team was formed with 20 Japanese members (5 from PADECO, 4 from INTEM Consulting, and 11 from university) in the first term of the Project. In the second year, some members were replaced and there were 21 members in total (4 from PADECO, 3 from INTEM Consulting, and 14 from university). In the third year, the team consisted of 21 members (3 members from PADECO, 4 members from INTEM Consulting, and 14 university). The project team members are listed in the table below.

Table 1-5   Project Team Members List (1st Year)

No.	Names	Positions	Responsibilities
1	Mr. Koji Takahashi	Team Leader / Teacher Education Advisor	Overall project management, supervision and quality control.
			Technical input into overall project activities (TEC management, TEC syllabus and material development, TEC strategic plan development).
			Policy recommendations to MoEYS and TPAP TT.
			Support for TEC curriculum framework development.
			Organizing and coordinating the JCC.
			Attend project progress meetings (in Japan), report to and discuss with JICA headquarters and Cambodian offices.
			Providing information and cooperation with other JICA programmes.
			Conducting a project closing seminar.
2	Ms. Megumi Nabeshima (Shiota)	Deputy Team Leader / Aid Coordination Specialist	Assist in overall project management, supervision and quality control.
			Assist with technical input to overall project

No.	Names	Positions	Responsibilities	
			activities.	
			Consultation with TPAP TT and report at TPAP SC.	
			Assistance and coordination with DPs.	
			Gathering and providing information in ESWG.	
			Organizing and coordinating various meetings with MoEYS and related organizations.	
			Monitoring of the teacher policy implementation process.	
			Assist in organizing and coordinating the JCC.	
			Assist in providing information and cooperation with other JICA programmes.	
			Assist in conducting a project closing seminar.	
3	Ms. Masayo Otani (Kojima)	TEC Planning & Management Advisor	Analysis of TEC faculty standards and presentation of analysis results.	
			Formulation of TEC management plan.	
			TEC management plan review workshop	
			Formulation of TEC management capacity building programme.	
			Conduct TEC management capacity building workshops.	
			Implementation of action research induction training.	
			Preparatory meeting for the TEC opening.	
			Preparation and workshops for practicum.	
			Implementation of TEC monitoring and mentoring.	
			Organize TEC annual meeting.	
			Collaboration with Overseas Training Coordinator for preparation of training in Japan for TEC managers.	
4	Dr. Yoshikazu Ogawa	Teacher Education Policy Specialist 1	Analysis and recommendations on Cambodia's teacher training policy in comparison with ASEAN, western countries, etc.	
5	Ms. Akiko Hanaya	Teacher Education Policy Specialist 2	Interviews and information gathering for teacher demand analysis and compilation of policy recommendations.	
6	Ms. Tomoko Tanaka (Masuda)	Teacher Education Policy Specialist 3	Teacher demand analysis, teacher demand forecasting.	
	Ms. Kyoko Iwasaki (Yoshikawa) →Mr. Hiromasa Hattori	Project Assessment Specialist	Plan, conduct, and report on baseline survey.	
			Plan, conduct, and report on endline survey.	
			Transfer the technics of survey methodology to MoEYS and TTD.	
7	Mr. Yudai Nishiyama →Ms. Miho Yoshida (Ito)	TEC Curriculum Development Coordinator	Organize TEC syllabus development workshops.	
			Organize TEC syllabus consultation workshops	
			Organize TEC syllabus and teaching material development workshops.	
			Check on progress of development of TEC syllabus and teaching materials.	
			Collaboration with subject experts.	
			Collaboration with Overseas Training Coordinator for implementation of training in Japan for TEC lecturers.	
8	Prof. Yutaka Kondo	Mathematics Education Advisor	Mathematics education in primary school.	Carry out the following tasks in the areas of responsibility listed on the left.
			Mathematics education in lower secondary school.	
9	Dr. Koichi Morimoto	Science Education Advisor 1	The 1st field for science education in primary and lower secondary school.	− Teaching at TEC syllabus development workshops.
10	Dr. Motohiko Nakamura	Science Education Advisor 2	The 2nd field for science education in primary and lower secondary school.	− Teaching at TEC workshops on the development of teaching materials.
11	Dr. Wakio Oyanagi	ICT/Media Education Advisor	ICT and media theory education.	− Supporting the

No.	Names	Positions	Responsibilities	
12	Prof. Yoriko Hirose (Hashizaki)	Pedagogy Advisor 1	General pedagogy education.	development of TEC syllabus and teaching materials.
13	Prof. Takuhiko Deguchi	Pedagogy Advisor 2	Psychology education, educational evaluation.	
14	Dr. Rintaro Sato	Language Education Advisor	English (language) education.	– Hosting of training for TEC teachers in Japan.
15	Dr. Yasushi Maruyama	Faculty Development Advisor 1	Advice to TEC management capacity building programme.	
16	Dr. Machi Mochizuki (Sato)	Faculty Development Advisor 2	Advice to TEC management capacity building workshops.	
17	Dr. Hiroyoshi Kinoshita	Faculty Development Advisor 3	Action research implementation.	
18	Ms. Naoko Ono	Overseas Training Coordinator	Planning, implementation (accompanying), and reporting of training in Japan.	
20	Ms. Yuki Akasaki (Ohashi) →Ms. Mayumi Kitabayashi	Project Coordinator	Assist in managing the overall progress of project activities.	
			Various contracting and administrative procedures.	
			Budget management of the project.	
			Public relation of the project.	

Table 1-6   Project Team Members List (2ⁿᵈ Year)

No.	Names	Positions	Responsibilities
1	Mr. Koji Takahashi	Team Leader / Teacher Education Advisor	Overall project management, supervision and quality control.
			Technical input into overall project activities (TEC management, TEC syllabus and material development, TEC strategic plan development).
			Developing evaluation tool to assess the project overall goal.
			Organizing and coordinating the JCC.
			Attend project progress meetings (in Japan), report to and discuss with JICA headquarters and Cambodian offices.
			Providing information and cooperation with other JICA programmes.
2	Ms. Megumi Nabeshima (Shiota)	Deputy Team Leader / Aid Coordination Specialist	Assist in overall project management, supervision and quality control.
			Assist with technical input to overall project activities.
			Assistance and coordination with DPs.
			Organizing and coordinating various meetings with MoEYS and related organizations.
			Assist in organizing and coordinating the JCC.
			Assist in providing information and cooperation with other JICA programmes.
			Supervision on various contractual procedures, budget management and public relations activities.
			Plan, conduct, and report on endline survey.
			Transfer the technics of survey methodology to MoEYS and TTD.
3	Ms. Masayo Otani (Kojima)	TEC Planning & Management Advisor	Monitoring the implementation of the TEC management plan.
			Conducting workshops on revision of the TEC management plan.
			Conducting TEC management capacity building workshops (IQA).
			Implementation of action research induction training.
			Support for implementation of lesson study.
			Organize TEC annual meeting.

No.	Names	Positions	Responsibilities	
4	Ms. Miho Yoshida (Ito)	TEC Curriculum Development Coordinator	Organize TEC syllabus development workshops.	
			Check on progress of development of TEC syllabus and teaching materials.	
			Supporting classroom improvement through reflection.	
			Collaboration with subject experts.	
			Collaboration with Overseas Training Coordinator for implementation of training in Japan for TEC lecturers.	
5	Mr. Hiromasa Hattori	Project Assessment Specialist	Plan, conduct, and report on midline survey.	
			Transfer the technics of survey methodology to MoEYS and TTD.	
6	Prof. Yutaka Kondo	Mathematics Education Advisor 1	Mathematics education in primary school.	Carry out the following tasks in the areas of responsibility listed on the left.
7	Dr. Taketo Shimomura	Mathematics Education Advisor 2	Mathematics education in lower secondary school.	− Teaching at TEC syllabus development workshops.
8	Dr. Koichi Morimoto	Science Education Advisor 1	The 1st field for science education in primary and lower secondary school.	− Teaching at TEC workshops on the development of teaching materials.
9	Dr. Motohiko Nakamura	Science Education Advisor 2	The 2nd field for science education in primary and lower secondary school.	− Supporting the development of TEC syllabus and teaching materials.
10	Dr. Wakio Oyanagi	ICT/Media Education Advisor 1	ICT and media theory education.	− Hosting of training for TEC teachers in Japan.
11	Dr. Tsuyoshi Kitagawa	ICT/Media Education Advisor 2	ICT and media theory education.	
12	Prof. Yoriko Hirose (Hashizaki)	Pedagogy Advisor 1	General pedagogy education, education research (qualitative).	
13	Prof. Takuhiko Deguchi	Pedagogy Advisor 2	Psychology education, educational evaluation (quantitative).	
14	Dr. Rumiko Nakayama	Pedagogy Advisor 3	Education research (quantitative)	
15	Dr. Rintaro Sato	Language Education Advisor 1	English (language) education in lower secondary school.	
16	Dr. Koji Maeda	Language Education Advisor 2	English (language) education in primary school.	
17	Dr. Yasushi Maruyama	Faculty Development Advisor 1	Advice to TEC management capacity building programme.	
18	Dr. Machi Mochizuki (Sato)	Faculty Development Advisor 2	Advice to TEC management capacity building workshops.	
19	Dr. Hiroyoshi Kinoshita	Faculty Development Advisor 3	Action research implementation.	
20	Ms. Naoko Ono	Overseas Training Coordinator	Planning, implementation (accompanying), and reporting of training in Japan.	
			Collaboration with TEC Planning & Management Advisor.	
			Collaboration with TEC Curriculum Development Coordinator.	
21	Ms. Mayumi Kitabayashi →Ms. Chizu Sakamoto →Ms. Kanako Ishihara (Suzuki)	Project Coordinator	Assist in managing the overall progress of project activities.	
			Various contracting and administrative procedures.	
			Budget management of the project.	
			Public relation of the project.	

Table 1-7   Project Team Members List (3rd Year)

No.	Names	Positions	Responsibilities	
1	Mr. Koji Takahashi	Team Leader / Teacher Education Advisor	Overall project management, supervision and quality control.	
			Technical input into overall project activities (TEC management, TEC syllabus and material development, TEC strategic plan development).	
			Developing evaluation tool to assess the project overall goal.	
			Organizing and coordinating the JCC.	
			Attend project progress meetings (in Japan), report to and discuss with JICA headquarters and Cambodian offices.	
			Providing information and cooperation with other JICA programmes.	
2	Ms. Megumi Nabeshima (Shiota)	Deputy Team Leader / Aid Coordination Specialist / Project Assessment Specialist 1	Assist in overall project management, supervision and quality control.	
			Assist with technical input to overall project activities.	
			Assistance and coordination with DPs.	
			Organizing and coordinating various meetings with MoEYS and related organizations.	
			Assist in organizing and coordinating the JCC.	
			Assist in providing information and cooperation with other JICA programmes.	
			Supervision on various contractual procedures, budget management and public relations activities.	
			Plan, conduct, and report on endline survey.	
			Transfer the technics of survey methodology to MoEYS and TTD.	
3	Ms. Masayo Otani (Kojima)	TEC Planning & Management Advisor	Monitoring the implementation of the TEC management plan.	
			Conducting workshops on revision of the TEC management plan.	
			Conducting TEC management capacity building workshops (IQA).	
			Implementation of action research induction training.	
			Support for implementation of lesson study.	
			Organize TEC annual meeting.	
4	Ms. Miho Yoshida (Ito)	TEC Curriculum Development Coordinator	Organize TEC syllabus development (including a draft of final (module) examinations) workshops.	
			Check on progress of development of TEC syllabus and teaching materials (including improvement of students' lesson plans).	
			Supporting classroom improvement through reflection.	
			Collaboration with subject experts.	
			Collaboration with Overseas Training Coordinator for implementation of training in Japan for TEC lecturers.	
5	Prof. Yutaka Kondo	Mathematics Education Advisor 1	Mathematics education in primary school.	Carry out the following tasks in the areas of responsibility listed on the left.
6	Dr. Taketo Shimomura	Mathematics Education Advisor 2	Mathematics education in lower secondary school.	
7	Dr. Koichi Morimoto	Science Education Advisor 1	The 1st field for science education in primary and lower secondary school.	− Teaching at TEC syllabus development workshops.
8	Dr. Motohiko Nakamura	Science Education Advisor 2	The 2nd field for science education in primary and lower secondary school.	− Teaching at TEC workshops on the development of teaching materials.
9	Dr. Wakio Oyanagi	ICT/Media Education Advisor 1	ICT and media theory education.	− Supporting the

No.	Names	Positions	Responsibilities	
10	Dr. Tsuyoshi Kitagawa	ICT/Media Education Advisor 2	ICT and media theory education.	development of TEC syllabus and teaching materials.
11	Prof. Yoriko Hirose (Hashizaki)	Pedagogy Advisor 1	General pedagogy education, education research (qualitative).	
12	Prof. Takuhiko Deguchi	Pedagogy Advisor 2	Psychology education, educational evaluation (quantitative).	– Hosting of training for TEC teachers in Japan.
13	Dr. Rumiko Nakayama	Pedagogy Advisor 3	Education research (quantitative)	
14	Dr. Rintaro Sato	Language Education Advisor 1	English (language) education in lower secondary school.	
15	Dr. Koji Maeda	Language Education Advisor 2	English (language) education in primary school.	
16	Dr. Yasushi Maruyama	Faculty Development Advisor 1	Advice to TEC management capacity building programme.	
17	Dr. Machi Mochizuki (Sato)	Faculty Development Advisor 2	Advice to TEC management capacity building workshops.	
18	Dr. Hiroyoshi Kinoshita	Faculty Development Advisor 3	Action research implementation.	
19	Ms. Kurumi Nonaka	Overseas Training Coordinator (management)	Planning, implementation (accompanying), and reporting of training in Japan.	
			Collaboration with TEC Planning & Management Advisor.	
			Collaboration with TEC Curriculum Development Coordinator.	
20	Ms. Nagisa Takatsuki	Overseas Training Coordinator (monitoring)	Monitoring and implementation (accompanying) of training in Japan.	
21	Ms. Kanako Ishihara (Suzuki)	Project Coordinator / Project Assessment Specialist 1	Assist in managing the overall progress of project activities.	
			Various contracting and administrative procedures.	
			Budget management of the project.	
			Public relation of the project.	
			Plan, conduct, and report on endline survey.	

1.3.2 Cambodian Side

The Project was implemented under the responsibility of the Ministry of Education, Youth and Sports (MoEYS), directed by H.E. Dr. Nath Bunroeun. The Joint Coordination Committee (JCC) supervised the project implementation, and the progress of the Project was reported at JCC, where MoEYS and Developing Partners (DPs), including JICA, discuss on the issues related to teacher education. TTD supervised the whole project activities, and PTEC and BTEC. Additionally, JCC members were as listed below.

1. Secretary of State, MoEYS (Project Director)
2. Director, TTD, MoEYS (Project Manager)
3. Director, Phnom Penh Teacher Education College, MoEYS
4. Director, Battambang Teacher Education College, MoEYS
5. Representatives from JICA

1.4   Flow of the Activity

The Project was implemented over a period of approximately 72 months, from January 2017 to January 2023, for a total of three phases. The implementation period for each phase is as follows.

- First Year: January 2017 to April 2019
- Second Year: May 2019 to April 2021
- Third Year: May 2021 to January 2023

The work process for each period is shown in Appendix 2.

2.   Inputs

2.1   Summary of the Inputs

Inputs from Japan and Cambodia are as summarized below.

Table 2-1   Summary of the Inputs

Countries	Achievements	Details
Japan	Short-term experts: 31 experts (26 positions) 219.39 person-months dispatched in total.	Team Leader / Teacher Education Advisor Deputy Team Leader / Aid Coordination Specialist Teacher Education Policy Specialist 1,2,3 Project Assessment Specialist 1,2 TEC Curriculum Development Coordinator Mathematics Education Advisor 1,2 Science Education Advisor 1,2 ICT/Media Advisor 1,2 Pedagogy Advisor 1,2 Language education Advisor 1,2 Faculty Development Advisor 1,2,3 Overseas Training Coordinator 1,2 Project coordinator
	Equipment: equivalent to US$372,655[3] was provided in total.	Laser printers, laptop PCs, projectors, multifunction copy machines, etc.
	Local operation costs: equivalent to US$994,945[4] was provided in total.	Interpretation/translation costs, training implementation costs, book costs, printing costs, re-commissioning costs, etc.
Cambodia	Counterpart (Project Management): Secretary of State, MoEYS, Director of Teacher Training Department (TTD).	
	Project office and facilities.	Providing office space and training venues.
	Local costs	Contributions for rent, electricity, etc.

2.2   Inputs of Human Resources

2.2.1   Inputs from JICA Project Team

A total of 12 short-term experts were dispatched for 94.11 person-months (including travel days) in Cambodia, and for 125.28 person-months out of Cambodia. Thus, the total input of the JICA Project Team was 219.39 person-months as shown in Appendix 3.

2.2.2   Inputs from the Cambodian Side

The table below shows the actual deployment of Cambodian working members for TEC management, administrative documentation, syllabus development and Action Research.

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[3] JPY was converted into USD by the using the official exchange rate of JICA as of December 2022. 1USD=113.393JPY.

[4] As this report is written before the Project completes, the cost in the 3rd year includes some estimation as of December 2022. JPY was converted into USD by the using the official exchange rate of JICA as of December 2022. 1USD=113.393JPY.

Table 2-2   Working Group Members

Areas	Subjects	Persons in Charge
TEC Management	Management	TEC Director, Deputy directors, Head of department
	Administrative documentation	TEC Director, Deputy directors, Head of department, IQA office
Syllabus Development	Mathematics	TEC teacher educators
	Science	TEC teacher educators
	ICT	TEC teacher educators
	English	TEC teacher educators
	Pedagogy	TEC teacher educators
	Psychology	TEC teacher educators
	Education Research	TEC teacher educators
Action Research	Action Research	TEC Deputy directors, TEC teacher educators

2.3   Local Cost

Local cost spent by the JICA Project Team is as listed below. As the Project is still underway, the local cost of the 3rd term includes some estimations as of December 2022.

Table 2-3   Breakdown of Local Operation Expenses

Terms	General Operations	Equipment	Local Reconsignment Fee
1st Year	39,219,000 yen ($283,206[5])	5,111,000 yen ($36,907)	0 yen ($0)
2nd Year	34,785,000 yen ($251,188)	3,844,000 yen ($27,758)	554,000 yen ($4,001)
3rd Year	63,778,000 yen ($460,551)	8,543,000 yen ($61,690)	586,000 yen ($4,232)
Total	137,782,000 yen ($994,945)	17,498,000 yen ($372,655)	1,140,000 yen ($291,439)

2.4   Equipment

Equipment purchased by the JICA Project Team is summarized in the following list. The equipment in the following list were used for the project activities and handed over to TTD and TECs after project completion.

Table 2-4   Equipment List

No.	Equipment	Qty Purchased			Total
		Main Office	Liaison Offices	TECs	
1	Laser Printer	1	2	-	3
2	Laptop PC	2	13	20	35
3	Projector	1	3	16	20
4	Copier	1	2	2	5
5	Desktop PC for Server	1	-	-	1
6	Digital Video Camera	1	2	6	9
7	Air conditioner	1	2	-	3
8	Desktop PC for Library	-	2	-	2
9	Software for Library Management System	-	-	2	2
10	Books[6]	-	-	4	4
11	SPSS	-	-	6	6

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[5] JPY was converted into USD by the using the official exchange rate of JICA as of December 2022. 1USD=113.393JPY. All other columns are the same.
[6] Only books of which unit price exceeded 50,000JPY are listed as equipment.

3.   Project Activities

3.1   Summary of the Activities

The Project implemented the activities as shown in the Table below.

Table 3-1   Major Project Activities

No.	Tasks	Results
The First Term		
1.1	Preparation of the work plan	Completed as originally planned.
1.2	Establishment of project implementation system (on-site)	Completed as originally planned.
1.3	Forecast demand for schoolteachers and develop TEC strategic plan	The report was completed by January 2019 and policy recommendations were made at the MoEYS meeting in February of the same year. The process will now move on to incorporate them into MoEYS' strategic plan.
1.4	Development of TEC curriculum and syllabus	Progress on the JICA subjects is on schedule and completed instructional planning (lesson titles) up to Year 4, syllabus preparation up to Year 2, and even instructional design for Year 1.[7]
1.5	Formulating TEC operational capacity development program	Completed as originally planned.
1.6	Conducting TEC management capacity building workshops	Completed with the changed duration and frequency of the program from the original plan.
1.7	Conducting training to introduce action research	Completed with the changed duration and frequency of the program from the original plan.
1.8	Preparation for teaching practice	Completed in coordination with VVOB.
1.9	Conducting training in Japan	Completed the TEC directors' training one week shorter than planned due to budgetary constraints.
1.10	Preparatory meeting for the opening of TEC	The program was conducted in December 2018 - January 2019 after the school opens.
1.11	Implementation of TEC monitoring and mentoring	Conducted by the specialist in charge of each area. Educational practice monitoring is conducted after the second year.
1.12	Baseline survey planning and implementation	Conducted December 2018-January 2019 at the start of the TEC/TTC; data analysis in January-February and reporting in March.
The Second Term		
2.1	Preparation of the work plan	Completed as originally planned.
2.2	Conducting TEC monitoring	Conducted by specialists in charge of each area. Educational practice monitoring is conducted in the third year.
2.3	TEC operation and management support	All of the administrative documents required by TEPS have already been prepared except for the TEC Teacher Evaluation Guidelines, which has taken the longest to develop. The said documents are also scheduled to be finalized once in March 2021, both in Khmer and English.
2.4	Development of TEC syllabus and teaching materials	The JICA subjects are progressing as planned, with the preparation of syllabi up to the 4th grade and the preparation of instructional plans for the 3rd grade completed.
2.5	Action research implementation support	For 2019, implementation support was provided as originally planned; for 2020, due to difficulties in data collection. at the classroom level due to the corona disaster, the research design was reviewed, and technical guidance was focused on improving the plan.

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[7] As for the subjects not supported by JICA, TECs are proceeding on their own, and the progress overview is not yet available. Therefore, the Project recommends that MoEYS create a common progress management sheet for each.

No.	Tasks	Results
2.6	Conducting training in Japan	The September 2019 event was conducted as originally planned; the September 2020 event was conducted online, connecting Japan and the local area, changing the period, location, and number of days from the original plan.
2.7	Support for planning and implementation of teacher education	Assisted MoEYS in developing a mid-term plan for teacher qualification upgrade and completed the final draft.
2.8	Midline survey planning and implementation	TEC/TTC started in July 2020 and December 2020-February 2021; data analysis in September-October 2020 and February 2021; final report in March 2020.
The Third Term		
3.1	Preparation of the work plan	Completed as originally planned.
3.2	TEC monitoring	The respective experts held regular consultations with TTD and TEC regarding the following: • Confirmation of TEC operational management status • Check progress of TEC syllabus and teaching material development • Checking the progress of the class improvement process • Monitoring of teaching practice Resolving issues identified in monitoring
3.3	Support to TEC management	The expert in charge of the Project provided implementation support for the following: • Workshops related to FD for TEC management, IQA staff, and various subject deans • TEC Annual Meeting • class meeting • Improvement of learning and research environments through book purchases and librarian training. Discussions with MoEYS on TEC's faculty recruitment, conversion to an institution of higher learning, treatment of graduates, and strategies for recruiting top students.
3.4	Development of TEC course syllabi and materials	TEC Year 4 Syllabus and Materials Development. Revision of TEC Year 1-4 syllabus and teaching materials Strengthening the knowledge of TEC lecturers through syllabus discussions
3.5	Lesson improvement to enhance TEC student teachers' skills	Evaluate and reinforce students' subject contents and teaching methodology knowledge through mini tests. Support for TEC lecturers to improve their teaching skills through monthly reflections and utilization of Rubrics for assessing lesson plans.
3.6	Support for action research	Administrative support for the implementation of the action research, including hiring local consultants and organizing progress reports. Subject-specific professional advice, suggestions, and guidance in action research. Support for TEC faculty to present their research at international conferences.
3.7	Conducting training in Japan	Syllabus and teaching material development and class preparation for Year 4 modules (online implementation, September 2021). Revision of syllabus and teaching materials through reflection on the previous year's classes (Nara University of Education, September 2022).
3.8	Evaluation design for measuring the impact of TECs	Discussions with MoEYS regarding evaluation design for measurement of the Project's top goals.
3.9	Endline survey planning and implementation	Survey of TEC 12+4 students and TEC faculty regarding attitudes, subject knowledge, and teaching methods. Comparison and analysis with BLS and MLS results.

3.2 Teacher Policy

3.2.1 Teacher Supply and Demand Analysis

Teacher education in Cambodia has been faced with various problems related to both quality and quantity of teachers as shown in the table below. Only upper secondary school teachers were required to take a one-year training course for bachelor's degree holders (BA+1), while pre-school, primary, and secondary school teachers were basically required to take a two-year training course for upper secondary school diploma holders (12+2). As mentioned in the introduction, MoEYS, under the strong leadership of Minister H.E. Dr. Hang Chuon Naron, has been promoting education reform since 2013, placing particular emphasis on improving the quality of teachers. In the Teacher Policy Action Plan (TPAP) formulated in 2015, the government set the goal of shifting the teacher training program from a two-year to a four-year program and increasing the number of teachers with a bachelor's degree.

Table 3-2   Challenges of Teacher Education at the Project Commencement

Category	Sub-category	Problems frequently raised
Teacher quality	Candidates	Quality of candidates are low
		Teaching profession is not attractive enough for high calibre students
		University students/graduates only apply for upper secondary teachers
	PRESET	Standards of PRESET curriculum is low
		Practicum is weak
		Professional knowledge and skills of teacher educators are low
	In-service teachers	Continuing Professional Development (CPD) opportunities are limited
		Teacher status and salary is not high
		Teacher behaviour problems (e.g. absenteeism)
		Lack of proper career structure
		Outflow of teachers to upper level of schools
Teacher quantity	Teacher shortage	Shortage in specific subjects
		Shortage in rural and remote areas
		Double shift and contract teachers to compensate shortage
		Oversize classes
	Teacher surplus	There are surplus teachers in some areas (e.g. Phnom Penh) and subjects (e.g. Khmer), but re-deployment is extremely difficult
	Teacher supply	PRESET plan is not based on the precise data of teacher shortages
		Teacher supply is not based on a long-term analysis and plan
	Deployment	There is not an effective strategy to improve the state of teacher deployment

Source: "TEACHER EDUCATION SUBSECTOR ANALYSIS REPORT" (E-TEC, 2019), Page 8.

Table 3-3   Goals of Teacher Qualification Upgrade (Bachelor's Degree) Indicated in TPAP 2015

	Programs		Activities	Indicators	Deadline
3.1.2	Revise PRESET curriculum across all levels	3.1.2.1	Create B.Ed. (12+4) PRESET curriculum for Grade 12 graduates to become Basic Education teachers in RTTCs focussing on Psycho pedagogy, ICT, methodology, foreign languages, Maths and Science	Curriculum Completed	2017 Q3
		3.1.2.2	Create BA+1 PRESET curriculum for BA holders to become Basic Education teachers in RTTCs focussing on Psycho-pedagogy, ICT, methodology, foreign languages, Maths and Science	Curriculum Completed	2017 Q3
3.1.3	Introduce upgraded PRESET programs based on TEPS	3.1.3.1	Pilot B.Ed. (12+4) PRESET at two RTTCs with technical support from HEIs	- Develop Pilot Plan - Pilot commences in PP and BB	2018 Q3
		3.1.3.2	Pilot BA+1 PRESET at two RTTCs with technical support from HEIs	- Develop Pilot Plan - Pilot commences in PP and BB	2018 Q3

Source: TEACHER EDUCATION SUBSECTOR ANALYSIS REPORT" (E-TEC, 2019), Page 12.

However, as of January 2017, when the Project began, nothing concrete had been determined for the introduction of a four-year teacher training program: the quality and content of the education, the legal basis for its establishment and operation, and the process for its future qualification upgrade.

Therefore, the Project first analyzed the supply and demand for primary and lower secondary school teachers who are required to be bachelor's degree holders and projected the number of teachers needed by 2030. Using data on students and teachers as of 2017-18 and demographic statistics, the Project estimated the number of primary and lower secondary school teachers needed over the next 10 years to achieve a total enrollment rate of 100% specified by the ESP, along with a breakdown by subject and region. In estimating the number of pupils/students, the following five patterns were used to generate projections based on the number of pupils/ students per teacher specified by the government (primary schools "1 : 1.1", i.e., number of pupils per a classroom is 35 students in grades 1-3 and 40 students in grades 4-6, and lower secondary schools "1: 1.8333", i.e., number of students per a classroom is 40 students).

①   Estimates future enrollment based on historical total enrollment.
②   Estimates of future enrollment based on trends in school-age enrollment and overage enrollment.
③   Estimates future enrollment using population projections and net enrollment rate (NER) projections based on net enrollment rate trends.
④   Estimates of future enrollment based on population projections and the condition that the net enrollment rate will be 100% in FY 2029/30.
⑤   Estimates future enrollment based on population projections and the condition that the net enrollment rate will be 100% in FY 2017/18 (ESP 2014-18 target).

The analysis for ④, one of the realistic options, concluded that it is necessary to produce 2,000 bachelor's degree teachers each year in primary schools and 3,500 bachelor's degree teachers each year in lower secondary schools, where the number of students is expected to increase significantly according to our estimation. On the other hand, in order to increase the number of bachelor teachers based on this estimate, it is necessary to establish additional TECs and to

provide additional training in teaching methods for those with a bachelor's degree or higher related to teaching subjects (BA+1) and to provide short-term and medium-term in-service teacher training for existing teachers (BA+2).

The Project compiled the results and recommendations of the teacher supply and demand analysis into the "Teacher Education Sub-Sector Analysis Report" and held a Consultative Workshop in February 2019 for the MoEYS Minister and other stakeholders involved in teacher education reform and related DPs. A Consultative Workshop was held in February 2019 to share the contents of the above report and to discuss the future of teacher education in more depth.

3.2.2   Setting Numerical Targets for Teacher Qualification Upgrade (ESP 2019-2023)

In order to include numerical targets for teacher qualification improvement in the Education Strategic Plan (ESP) 2019-2023, the Project calculated the targets for February to March 2019, based on the results of the teacher supply and demand analysis described above and the number of teachers that can be trained at TEC. The calculations were discussed with the Department of Planning and MoEYS several times. As a result, it was agreed that 7% of all primary school teachers and 15% of all lower secondary school teachers will be bachelor's degree holders by 2023, as shown in the figure below (However, the subsequent COVID-19 pandemic made these numerical targets difficult to achieve).

Sub-sector Objective 2: Improve the availability of quality inputs in primary education			
18. Pupil-to-qualified-teacher ratio	Ratio	61.0	40.0
19. Percentage of primary teachers qualified according to national standards (upper secondary certificate +2)	%	73.0	78.0
20. Number of primary teachers trained on:			
EGR package	Number	1,430	18,930
EGM package	Number	147	14,997
Other training	Number	250	15,250
21. Percentage of primary teachers who complete BA through teacher education courses	%	0.0	7.0
22. Percentage of primary school students receiving one set of textbooks	%	90.0	100
23. Number of primary schools with a computer per room for students	Number	20	500
24. Number of primary schools with a standard library	Number	1,500	2,500

Source: ESP 2019-2023, Page 28 (English version)

Sub-sector Objective 2: Improve the quality of teaching and learning in line with 21st century skills			
20. Percentage of lower secondary qualified teachers according to national standards (upper secondary certificate+2)	%	86.0	96.0
21. Number of secondary teachers who have received in-service training	Number	1,691	6656
22. Percentage of upper secondary schools using ICT as a tool to support teaching and learning	%	5.0	25.0
23. Percentage of lower secondary teachers who complete BA through teacher education courses	%	3.0	15.0

Source: ESP 2019-2023, Page 34 (English version)

Figure 3-1   Numerical Targets (%) of Teachers to Be Upgraded to Bachelor's Degrees (ESP 2019-2023)

3.2.3   Mid-term Plan for Teacher Qualification Upgrade (MTP-TQU 2021-2025)

After receiving approval from the education minister to develop a 5-year plan to promote teacher qualification upgrade (January 2020), the TTD Deputy Director General, together with teacher training institutions (NIE, TEC, RUPP) and major DPs (UNESCO), drafted the "Mid-term Plan for Teacher Qualification Upgrade 2021-2025: Accelerating the upgrade of basic teacher qualifications to degree level". This plan explains the necessity for Cambodia to upgrade its teacher qualifications to a bachelor's degree level, against the backdrop of the international trend of upgrading teacher qualification requirements and presents an action plan on how to promote bachelor's degree upgrading using both teacher training programs and in-service teacher training programs. The process of teacher qualification upgrade is divided into four types as shown in the figure below, in line with the previous proposals.

Model A   60 credits of in-service teacher training for teachers who have completed 12+2 and have a bachelor's degree in a subject other than the subject of instruction

Model B   30 credits of in-service teacher training for teachers who have completed 12+2 and have a bachelor's degree in the subject of instruction

Model C   Conduct 12+4 teacher training programs

Model D   30 credits of BA+1 training for bachelor's degree holders in the subject of instruction
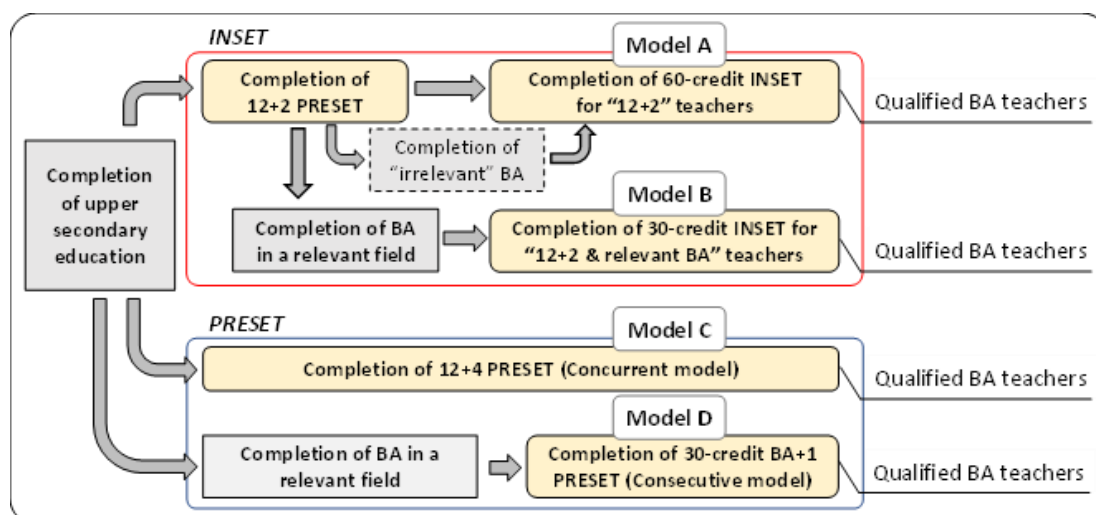
Source: "Master Plan for Teacher Qualification Upgrade 2021-2025" (MoEYS, 2022), Page 10.

Figure 3-2   Process of Teacher Qualification Upgrade

Furthermore, the Project tried to include concrete measures for implementation such as:

- Number of credits and structure required for each training of Model A-D;
- Target number of students for bachelor's degree in primary and lower secondary schools;
- Schedule for the development and implementation of each training program; and
- Number of subjects and training institutions in charge of each training course.

Subsequently, in March 2021, H.E. Dr. Nath Bunroeun, Secretary of MoEYS, chaired an online consultative workshop for convening teacher training institutions and major DPs. At that time, it was agreed to cover not only primary and lower secondary school teachers, but also all teachers and staff from pre-school to upper secondary school, and the title was changed to "Master Plan

on Educational Staff Qualification Upgrading". After the workshop, the TTD proceeded to finalize the Khmer version, which was officially approved by the Minister of MoEYS in January 2022.

3.2.4   Support for Long-term Strategy Development

After August 2021, one JICA long-term expert was assigned to MoEYS for the purpose of developing further long-term strategies based on the Mid-term Plan for Teacher Qualification Upgrade and conducted needs assessments with student teachers of teacher training institutions. The Education Sector Working Group (ESWG), consisting of major DPs, has been working to revise the Teacher Policy Action Plan (TPAP), which was formulated in January 2015. The JICA long-term expert has been involved in the revision process as a core member together with UNICEF to support finalizing the TPAP revision by March 2023 with realistic and concrete details on baccalaureate education for teachers.

3.3   TEC Operation and Management

3.3.1   Conducting Workshops for TEC Management Capacity Building

In addition to the training, workshops and meetings held in Japan on TEC management capacity building as shown in the figure and table below. The 6th to 16th sessions were held at a different time, since the local sessions planned to be held after March 2020 had to be canceled or postponed due to the Corona Disaster and were held by connecting local participants with experts in Japan online, utilizing online conference tools (Zoom and Skype). From the 17th meeting onward, the meetings were held in person at the site.

Activities	'17 IV	2018 I	II	III	IV	2019 I	II	III	IV	2020 I	II	III	IV	2021 I	II	III	IV	2022 I	II	III	IV
1 Intensive training in Japan	■(blue)																				
2 Workshop on Faculty Development		■(green)	■		■	■	■		■	■		■	■		■	■	■		■	■	■
3 Annual Review meeting				■(orange)				■(orange)					■(red)		■(red)					■(red)	
4 Symposium																				■(cyan)	
5 Closing Seminar																					■(purple)

**Figure 3-3   Schedule of Training and Meetings on
TEC Management Capacity Building**

**Table 3-4   Objectives and Contents of TEC Administrative Capacity Building
Workshops and Meetings**

No.	Schedule	Purposes and Contents
Training in Japan	November 25-December 24, 2017 (30 days)	**TEC Management Operational Management Capacity Enhancement: Hiroshima University** ・ Acquisition of Faculty Development (FD) knowledge and skills ・ Drafting of various documents for TEC operation and management ・ Development of FD plans, methods, and tools at TEC
1st	August 2-3, 2019 (2 days)	**Operations Management Workshop** ・ TEC Program Monitoring and Evaluation Survey Results Sharing and Discussion ・ Strategies for Strengthening TEC Faculty Capacity ・ Development and revision of TEC faculty evaluation guidelines

No.	Schedule	Purposes and Contents
2nd	October 28-29, 2019 (2 days)	**Program Review Annual Meeting** ・ Review of course syllabi after program implementation ・ Sharing of experiences and lessons learned after program implementation ・ Discussed improvements and effective implementation of course syllabi
3rd	November 5, 7, 14, 2019 (PTEC) (3 days) 18-19, BTEC (2 days)	**Operation and Management Monitoring Meetings** ・ Check progress of TEC operational management ・ Program Monitoring and Evaluation Findings Review ・ Exchange of opinions on faculty evaluation ・ Check the progress of the Action Research Plan
4th	May 22, 2020 (1 day)	**Operations Management Workshop** ・ TEC faculty evaluation criteria discussed
5th	July 1, 2020 (1 day)	**Operations Management Workshop** ・ Discussion on TEC faculty evaluation criteria and faculty evaluation system
6th	July 7, 2020 (1 day)	**Operations Management Workshop** ・ Confirmation of progress of TEC management plan and discussion of issues to be addressed ・ Faculty and student evaluation and support systems at universities
7th	August 4, 2020 (1 day)	**Operations Management Workshop** ・ Issues to be improved through IQA and their solutions ・ Faculty Development Planning
8th	October 19-20, 2020 (2 days)	**Program Review Annual Meeting** ・ Review of course syllabi after program implementation ・ Sharing of experiences and lessons learned after program implementation ・ Improve course syllabi and curriculum frameworks
9th	Year 2020 November 30-December 1 (2 days)	**Operations Management Workshop** ・ Revised TEC Professional Development (CPD) Guidelines ・ Consultation on effective implementation of CPD
10th	February 3-4, 2021 (3 days)	**Operations Management Workshop** ・ Finalization of Teacher Evaluation Criteria and Guidelines ・ Consensus building on teacher evaluation system
11th	February 17-18, 2021 (2 days)	**Operations Management Workshop** ・ Discussion and conceptualization of constructivist view of teaching ・ Discussion of TEC operational and administrative perspectives for fostering a constructivist view of leadership
12th	August 26-27, 2021 (2 days)	**Operations Management Workshop** ・ IQA survey report by each TEC ・ Progress sharing of ACC standards achievement
13th	October 11-13, 2021 (3 days)	**Program Review Annual Meeting** ・ Review of course syllabi after program implementation ・ Sharing of experiences and lessons learned after program implementation ・ Improve course syllabi and curriculum frameworks
14th	October 18-20, 2021 (3 days)	**Operations Management Workshop** ・ Review and Revision of TEC Teaching Practice Guidelines
15th	October 25-26, 2021 (2 days)	**Operations Management Workshop** ・ Consultation, development and revision of TEC teacher evaluation guidelines and tools
16th	December 20-21, 2021 (2 days)	**Operations Management Workshop** ・ Progress report on IQA at each TEC ・ Discussion regarding the investigation report to be submitted to ACC ・ Guidance on how to compile an IQA report

No.	Schedule	Purposes and Contents
17th	April 20-21, 2022 (2 days)	**Operations Management Workshop** · Confirmation of progress of TEC management plan and discussion of issues to be addressed · Conduct a mid-term review of the TEC Operating Plan and discuss revisions · Information sharing on CPD, role and organization as an institution of higher education
18th	April 25-26, 2022 (2 days)	**Workshop on Classroom Research** · Training on basic concepts, objectives, and procedures for lesson study · Planning of semester-long lesson study for each subject area
19th	August 16-17, 2022 (1 day PTEC 15-16) (BTEC 17 days, 1 day)	**Operations Management Workshop** · Identification of issues related to operation and management at each TEC as a summary of the four-year period · Discussed future direction of TEC operational management and its role
20th	September 1-2, 2022 (2 days)	**Operations Management Symposium & Workshop** · Panel discussion on the future of TEC and its role in Cambodian education · Discussion of the responsibilities and roles of each position
21st	October 6-7, 2022 (2 days)	**PTEC Annual Meeting** · Course syllabus review and improvement · Presentation of classroom research practices and sharing of experiences and lessons learned · IQA Survey Report · Educational Practice Report · Planning for the new semester in each subject department and office
22nd	October 13-15, 2022 (3 days)	**Lesson Study Review Workshop** · Reporting and sharing of classroom training practices conducted last year · Planning of new semester's lesson study for each subject area
23rd	October 17-18, 2022 (2 days)	**BTEC Annual Meeting** · Course syllabus review and improvement · Presentation of lesson study practices and sharing of experiences and lessons learned · IQA Survey Report · Educational Practice Report · Planning for the new semester in each subject department and office
24th	November 25, 2022 (1 day)	**Closing Seminar** · Presentation of the status of accomplishment of each of the Project's outputs and challenges · Presentation of TEC's planning policy for the future

From the second year (May 2019 – April 2021), the participation in the operational management workshops was expanded to include not only TEC managers (Director and Deputy Director), but also subject department heads, who are the heads of each subject teacher, and Internal Quality Assurance (IQA) office staff. From the latter half of the second year, Japanese experts and TEC management began to collaborate in the planning of workshops, with TEC management leading subject department heads and IQA office staff during the training, and Japanese experts providing technical support. The leadership of the TEC management was a major factor in the smooth implementation of the training, even when the training was conducted online and without Japanese experts on site.

3.3.2   Training in Japan (for TEC Managers)

As shown in the table, the Japanese training for TEC managers was conducted at the Hiroshima University Educational Vision Research Center (EVRI) for approximately one month from November 25 to December 26, 2017. For more details, see the report on the completion of training operations (submitted in January 2018).

Table 3-5   Summary of Training in Japan

Period	November 25 - December 26, 2017 (30 days: including travel days)
Hosts	Center for Educational Vision Research, Hiroshima University (Educational Vision Research Institute: EVRI)
Participants	1 PTEC Director, 4 Deputy Directors 1 BTEC Director, 3 Deputy Directors Total 9 members

Objectives	1. To acquire knowledge and skills in Faculty Development (FD) necessary for the operation of the new teacher training college and to develop the capacity of TEC administrators.
	2. Draft the following various documents for TEC's FD
	  - TEC Strategic Plan
	  - TEC Professional Development Framework
	  - TEC Internal Quality Assurance (IQA) Guideline
	3. Develop FD plans, methods and tools in TEC.

Contents	• Lectures (Japanese teacher education system, teacher training philosophy and curriculum, university administration and management, IQA, teaching practice, etc.) • Practical training (drafting of TEC operational plan, job development plan, and IQA guidelines) • Observations and tours (classes at the Faculty of Education, classes at affiliated schools, educational workshops at primary and lower secondary schools, training for new teachers, etc.)
Outputs	1. Draft TEC Operating Plan 2. Draft TEC Internal Quality Assurance Guidelines 3. Draft Framework for Strengthening TEC Professional Capacity 4. Draft of official logo mark for each TEC

3.3.3   Assistance in Organizing TEC Annual Meetings

A total of four TEC Program Review Annual Meetings were held at the end of each academic year (October) from 2019 to 2022.

The first session was held on October 28-29, 2019, bringing together PTEC and BTEC with a total of 142 participants including; TEC management, lecturers from various subject departments, academic office staff, and IQA office staff. It was the first annual meeting after the TEC commencement since November 2018, at the timing of the first-year education program was completed. The participants reviewed the Year 1 course syllabi developed to date, discussed the practice and challenges over the year and areas for improvement on the curriculum and syllabi for the next year, and formulated the plans of respective subject divisions and offices.

The second meeting (October 19-20, 2020) was held at each campus due to the difficulty of traveling outside of the city and prefecture due to COVID-19. The TEC Planning and Management Japanese experts conducted it online and participated from Japan.

The third meeting (October 11-13, 2021) was jointly conducted by PTEC and BTEC, with each participant connecting online using the Zoom application, as it was difficult to conduct the meeting in person due to COVID-19. The Japanese experts participated from Japan, and the program was planned and held under the leadership of TEC management with Japanese experts advising. Slide presentations were made by representatives of each subject department on the year's achievements and survey results. In addition, using the room breakout function on Zoom,

the participants were divided into groups to share their experiences and issues, and discuss how to improve for the next year.

In 2022, when the fourth meeting was held, each TEC held the meeting face-to-face rather than jointly with two TECs (PTEC: October 6-7, 2022; BTEC: October 17-18, 2022), as each TEC had experienced a full four-year educational program and produced its first graduates. While the three previous annual meetings have mainly focused on the review and improvement of educational programs, such as course syllabi and teaching practices; the fourth meeting, in addition to these, has seen many TEC research and quality improvement efforts, such as the sharing of practical experiences in lesson study and action research, IQA survey reports, and reports on participation in international conferences. The themes of the discussions were also expanded, as many TEC research and quality improvement initiatives were discussed.

3.3.4   Support for Conducting Lesson Studies

Lesson study began at TEC since May 2022 (the Second Semester) as part of the improvement of teaching at TEC and the Professional Learning Community (PLC), a policy for teachers' professional development that MoEYS is introducing at each school level. Since there are several TEC administrators and science lecturers who were involved in the JICA Science Education Improvement Planning Project (STEMSAM2), which was the first opportunity to introduce lesson study in Cambodia, and who have practiced lesson study through subsequent activities, they took the lead in planning and implementation. The Project supported them in their planning and implementation.

A two-day workshop on lesson study was held on April 25-26, 2022, for TEC subject department heads and deputy directors. Since many of the lecturers had no previous experience in lesson study, after training on the basic concepts, objectives, and procedures of lesson study, each subject division was asked to develop a plan for the semester beginning in May 2022. As shown in the figure below, each subject division designates the 1st and 3rd Friday afternoon of each month during the second semester (May-September) as PLC time to practice lesson study activities and held a three-day lesson study review workshop in October 2022, where each TEC subject division presented its practices and shared issues and discussed and decided on a plan for the next fiscal year (2022/2023). The workshop was held for three days in October, where each TEC subject department presented their practices, shared issues, and made plans for the next fiscal year (FY2022/2023).

Activity/Month		May 2022				June 2022				July 2022				Aug. 2022				Sep. 2022				Oct. 2022			
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1	Planning: by creating LS group and planning the lesson collaboratively		▓	▓																					
2	Doing: by conducting and observing the lesson						▓	▓																	
3	Checking: by reflecting the lesson										▓	▓													
4	Action: Improving lesson based on the lesson learnt														▓	▓									
5	Writing: Final report																			▓	▓				
6	Presentation: Sharing information & Planning for the next cycle																							▓	

Figure 3-4   Schedule of Lesson Study Implementation

3.4   Development of TEC Course Syllabi and Materials

3.4.1   Development of TEC Curriculum Framework

The development of the TEC syllabus materials began with the development of the TEC Curriculum Framework (CF). The initial assumption was that it would be completed before the project team members arrived in the field in late January 2017, but no progress was made at all. Therefore, immediately after the Project started, the Japanese experts worked with Wim, a TTD advisor hired by UNICEF, to develop a localized TEC-CF draft. This draft was generally approved at the MoEYS workshop on February 18-19, 2017, and was subsequently approved by the Minister on December 5, 2017, although it took some time to produce the Khmer version. Since then, the TEC-CF has been revised with annual reviews by TEC with modules such as Education and Research and ICT added in response to demand, and as of the preparation of this report, the October 2021 version is the most recent.

3.4.2   Development of TEC Course Syllabi and Materials

(1)   TEC Syllabus and Materials Development Schedule

Since the syllabus development has not commenced by the time the Project started in January 2017, several meetings were held among TTD Advisor Mr. Wim, VVOB, and the project members as mentioned above immediately after the TEC-CF development was completed and based on a draft syllabus prepared by the Project with reference to the graduate school syllabus in the UK, a common syllabus format for all courses was created by May 2017.

Due to the delay in appointing TEC lecturers, the syllabus outlines for JICA-supported subjects were developed by the project subject experts (mathematics, science, ICT, English, pedagogy, and educational psychology). After the TEC lecturers were appointed around August 2018 (prior to the opening of TEC) the syllabus for each subject was developed and improved through discussions with TEC lecturers. The syllabus and teaching materials (lesson plans, worksheets etc.) for each subject were basically developed in time for the first class of students entering in November 2018, with the goal of having the syllabus and teaching materials for that grade completed by the time they started a particular grade.

In February 2019, a syllabus development workshop was held with Singapore NIE lecturers. Since the TEC-CF was based on the Singapore NIE curriculum, it was an opportunity to learn about teacher education in Singapore, the content and assessment standards for each course, and how to apply them to the Cambodian market.

The timing of the various activities related to the development of the TEC syllabus and teaching materials described so far is shown in the figure below.
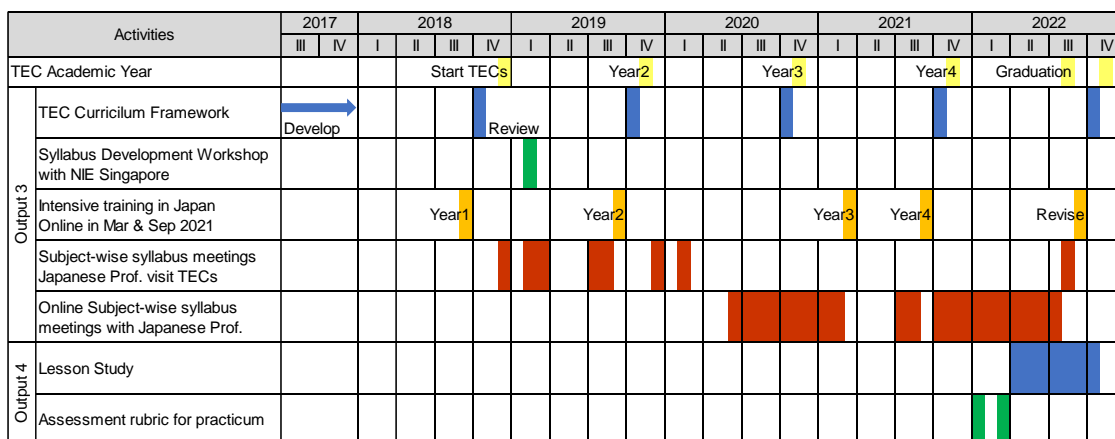
Figure 3-5   Schedule of Activities Related to TEC Syllabus Development

(2)   Details of Activities Related to the Development of Syllabi and Teaching Materials

In the development of syllabi and teaching materials for JICA-supported courses, the following three main activities were undertaken.

①   Preparation of syllabi, instructional plans, and worksheets for Year 1-4 modules
②   Improvement of syllabus, instructional plans, and worksheets for Year 1-4 modules through reflection
③   Prepare draft exam questions for each module (including module core content as appropriate)

In ① and ②, TEC lecturers were the main development actors, but since the appointment of TEC lecturers was delayed and most of them had no experience in creating syllabi for higher education institutions, the development process required considerable time and effort. In the process of development, training in syllabus content including subject knowledge and teaching methods, was also necessary. Therefore, in addition to training in Japan, various opportunities were provided, including face-to-face training and syllabus discussions with subject specialists when they traveled to Cambodia, and online training and syllabus discussions remotely by connecting Cambodia and Japan via the online conferencing application Zoom, so that the content of each training was seamlessly connected.

On the other hand, regarding ③, there was a discussion on whether the final examination questions for the modules that the TEC lecturers were preparing were appropriate for TEC students to graduate with a bachelor's degree. From the third year of the Project, subject specialists provided advice on the draft exam questions for the modules prepared by TEC lecturers to ensure that they reflected the important parts of the syllabus content, and for math and science, subject specialists were also involved in the preparation of the draft exam questions to encourage a focus on the learning content. Focus was encouraged.

As shown in the table below, the development of syllabus and teaching materials for each grade level was conducted through training in Japan and face-to-face training with subject matter experts when they traveled to Cambodia for the first and second grade modules. However, the third-grade module was still under development when the outbreak of the new coronavirus occurred in March 2020, so training and syllabus discussions had to be finished online, and the Year 4 module development was conducted entirely online, including the training in Japan.

Table 3-6   Actual Activities for Developing TEC Year 1-4 Syllabi and Materials

Materials	Training in Japan	Face-to-face Training/Meeting	Online Meeting
Syllabus, lesson plan and worksheets for Year 1 modules	First Training in Japan: September 2018 (Face-to-Face)	-	-
Syllabus, lesson plan and worksheets for Year 2 modules	Second Training in Japan: September 2019 (Face-to-Face)	December 2018 (Math, Science, ICT, English, Pedagogy, Psychology) February – March 2019 (Math, Science, ICT, English, Psychology) July – August 2019 (Science, English, Pedagogy, Psychology)	-
Syllabus, lesson plan, and worksheets for Year 3 modules	Third Training in Japan: March 2021 (Online)	December 2019 (Math, Science, ICT, Pedagogy) February – March 2020 (Math, ICT, English, Pedagogy, Psychology)	June 2020 – February 2021*.

Materials	Training in Japan	Face-to-face Training/Meeting	Online Meeting
Syllabus, lesson plan and worksheets for Year 4 modules	Fourth Training in Japan: September 2021 (Online)	-	July 2021 – March 2022**
Finalization of Year 1-4 modules	Fifth Training in Japan: September 2022 (Face-to-face & Online)	August 2022 (Math, ICT, English, ER)	April – November 2022

Note: *Year 3 modules were firstly commenced since November 2020 and all the necessary materials for Semester 1 were developed before the commencement.
** Year 4 modules were firstly commenced since November 2021 and all the necessary materials for Semester 1 were developed before the commencement.

The face-to-face and online training and syllabus discussions between the Japanese experts in each subject area and TEC lecturers not only led to the development of syllabus and teaching materials and the drafting of module exam questions (Output 3), but also to the review of lessons and mini tests for the improvement of teaching (Output 4). In particular, the online syllabus consultation became an essential training and communication tool for the development of syllabi and teaching materials as planned for the Corona disaster and was continued after, along with the face-to-face training. The status of the subject-specific online syllabus consultation and training (excluding the online Japanese training in March and September 2021) is shown in the table below.

Table 3-7   Schedule for Subject-Specific Online Syllabus Meetings (June 2020-November 2022)

2020	June	July	August	September	October	November	December
Mathematics			14	Support for lesson plans by e-mails			
Science		4	9	8		4	9
ICT	25	29	Support for lesson plans		9	25	29
English			27	Support for WALS			
Pedagogy*		15	10			15	10
Psychology	29	28	25	15	29	28	25
ER		30	9,26,29	3,7,14		30	9,26,29

2021	January	February	July	August	October	November	December
Mathematics		15	28	9-11,31	14	15	28-29
Science	14	20	22	12		11	24
ICT	20	25	23	20	29	26	24
English		8					
Pedagogy*	18	24		6		25	
Psychology	21	24	27	17	22	30	21
ER	12	26-27		5,19	21,28		8-10 (Dr.Sitha)

2022	January	February	March	April	May	June	July	August	October	November
Mathematics	25	8	16,17	19	16	21	4	(Field)		
Science	22	24	30		28	25	22	22		
ICT	21	25	3,24	28	31	20,21,29		3 (Field)		
English						24	22	(Field)		
Pedagogy*	28		10	31			11		28	
Psychology	11,18		15,31	1	30	13	12	9,10 22-24	24	14
ER		P:14-16 B:21-23 (Dr.Sitha)	21-22 (Dr.Sitha)		30	27		(Field)		P:21 B:29

Note: * Education Studies includes six modules. The responsibilities of each are listed below.
Classroom management (2 modules) = Teaching and managing learners at the lower secondary level (Part 1, Part 2) Responsible for: TEC → pedagogy faculty, E-TEC → pedagogy specialists
Educational Psychology (3 modules) = Educational Psychology I & II, Assessing learning and performance
Contact: TEC -> Educational Psychology Faculty, E-TEC -> Educational Psychology Specialist

Educational Research (1 module) = Educational Research (ER)
Contact: TEC → ER faculty, E-TEC → pedagogical specialists
** Online training by subject matter experts on October 13, 2020, and in-person training by Dr. Sitha on October 21-23, 2020

The table below shows the number of half-day online syllabus consultations and one-day training sessions conducted online from June 2020 to November 2022. There were 111 half-day online syllabus consultations and 27 one-day online training sessions. This continuous and even closer collaboration between Japanese experts and TEC lecturers during the Corona disaster contributed greatly to the achievement of Outputs 3 and 4.

Table 3-8   Number of Online Syllabus Meetings and Trainings

Subject	Half-day Meeting	1-day Training
Math	11	8
Science	19	0
ICT	18	4
English	6	0
Pedagogy	14	0
Psychology	26	4
ER	17	11
Total	**111**	**27**

Note: Exclude online intensive training March and September 2021, and in September 2022.

■ Half-day syllabus meeting   ■ 1-day Training   ■ Half-day syllabus meeting & 1-day Training

(3)   Training in Japan (for TEC Lecturers)

A total of five Japan-based training sessions were conducted between 2018 and 2022 for PTEC and BETC teachers in charge of each subject area supported by the Project (mathematics, science, ICT, English, pedagogy, educational psychology, and education research). While the main purpose of these Japan training programs was to develop syllabi and teaching materials, the following three points were particularly emphasized.

① To be able to revise and improve the syllabus and teaching plan of the TEC teacher training program by reviewing the previous year, and to have a better outlook for future classes.
② To understand the ideas and perspectives necessary for creating syllabi and instructional plans through discussions with instructors, mock classes, and interaction with students.
③ To acquire the skills necessary for classroom practice through mock classes and classroom observation.

Initially, the first training in Japan was to be held at Nara University of Education in September every year after the first training in September 2018, but due to the corona disaster, the third training in September 2020 was held six months later in March 2021 as an online training between Japan and Cambodia via Zoom. The fourth training session in September 2021 was also held online, and since online syllabus discussions for each subject were conducted regularly from the first half of 2020 to the first half of 2022, the third and fourth training sessions in Japan were more intensive online discussions. Subsequently, with the relaxation of border entry measures in Japan, in September 2022 we were able to conduct face-to-face training at Nara University of Education for the first time in three years.

The results of these five training sessions are summarized in the table below. The participants invited to Japan were selected each time based on the requests of both TECs and subject specialists. The participants invited to Japan were selected each time based on the requests of both TECs and subject matter experts, so there were changes in participants for some subjects. For more details, please refer to the completion reports (1st: submitted in November 2018, 2nd: submitted in

November 2019, 3rd: submitted in April 2021, 4th: submitted in November 2021, and 5th: submitted in October 2022).

Table 3-9   Training Programs in Japan (for TEC Lecturers)

No.	Periods[1]	Hosts and Methods	Participants (Subjects)	Objectives and Contents
1st	September 10-29, 2018 (20 days)	Nara University of Education (Face-to-face)	18 (Mathematics, Science, ICT, English, Pedagogy, Educational Psychology)	• Preparation of syllabus, instructional plans, and teaching materials for TEC Year 1/2 • Classroom visits, observation tours, and interaction with students
2nd	September 1-28, 2019 (28 days)	Nara University of Education (Face-to-face)	18 (Mathematics, Science, ICT, English, Pedagogy, Educational Psychology)	• Reflection and improvement of TEC Year 1 syllabus, teaching plans and teaching materials • Preparation of syllabus, instructional plan, and teaching materials for TEC year 2 • Classroom visits, observation tours, and interaction with students
3rd	March 2-27, 2021 (26 days)	Online	111 (Mathematics, Science, ICT, English, Pedagogy, Educational Psychology) (*2)	• Reflection and improvement of TEC Year 2 syllabus, teaching plan and teaching materials • Preparation of syllabus, instructional plan, and teaching materials for a class for TEC Year 3
4th	August 30 - October 1, 2021 (32 days)	Online	169 (Mathematics, Science, ICT, English, Pedagogy, Educational Psychology) (*2)	• Reflection and improvement of TEC Year 3 syllabus, teaching plans, and teaching materials • Preparation of syllabus, instructional plan, and teaching materials for TEC Year 4
5th	September 12-30, 2022 (19 days)	JICA Tokyo, Nara University of Education (hybrid)	Online training: 61; face-to-face training: 18 (Mathematics, Science, ICT, Pedagogy, Educational Psychology, Education Research (ER))[2][3]	• Reflection and improvement of TEC Year 4 syllabus, instructional plans, and teaching materials • Finalize syllabi, instructional plans, teaching materials, etc. for all grades prepared to date • Classroom observation and interaction with students

Note: *1 Training period includes weekends, holidays, and travel days.
*2 All TEC lecturers of the assigned subject areas were convened whenever possible for the online implementation.
*3 In the 5th session in 2022, English subject was excluded from the subjects of the training in Japan, since the subject experts visited the site in July and August of the same year and the syllabus development was completed at that time. On the other hand, since PTEC and BTEC on the Cambodian side had expressed a strong desire to hold the ER training in Japan from the planning stage of the same training session, the ER training was held in addition to the five subjects of math and mathematics, science, ICT, pedagogy, and educational psychology, excluding the English subject.

3.4.3   TEC Syllabus Development for Non-JICA Support Subjects

As of 2017, syllabus development for other subjects was not started mainly due to lack of MoEYS budget, so the Project lobbied the Minister to start TEC syllabus development and TEC teacher selection promptly, and in February 2018, MoEYS departments, universities, DPs and NGOs involved in TEC gathered together at the TTD for a kick-off meeting. This meeting was followed by a TEC syllabus development workshop, which was funded by the CDPF budget, and other activities to develop the syllabus for each TEC faculty member.

In parallel with these efforts, the Project has been working to encourage more DPs to become involved in TEC support by providing information and building bridges between TTD/TEC. The table below lists the subjects supported by these DPs and their progress.

Table 3-10   Support for TEC Syllabus Development

No.	Subjects	Organizations	Status
1	All subjects	CDPF (UNICEF, EU, SIDA)	Syllabus - Completed
2	Teaching Khmer Language (for primary)	USAID (RTI)	Syllabus - Completed Training - Ongoing（Early Grade Reading)
3	Environment education	NGO Nature Center RISEN	Syllabus - Completed Training - Completed
4	Career education (for lower secondary)	NGO Finn Church Aid	Syllabus - Completed

5	Health education	Tokyo Gakugei University with NGO KIZUNA, Funded by Nippon Foundation	Syllabus
			  Primary - Completed
			  Lower Sec. - Ongoing
			Training - Ongoing

6	Art education (for primary)	Cambodian Living Arts (Syllabus) NGO JHP (Training)	Syllabus - Completed Training - Ongoing
7	Reading literacy	NGO KIZUNA	Syllabus - Completed Training - Completed
8	General topics (Inclusive Education)	MoEYS TEC (Abeerden Scotland)	Syllabus - Completed (BTEC: Training - Completed)

3.5   TEC Lesson Improvement

3.5.1   Improving Teaching and Learning of TEC Through Reflection

As shown in Figure 3-6, TEC lecturers are required to establish a cycle in which they first develop syllabi and teaching materials, observe and analyse student learning in their own classes, learn what and how much students learn in TEC by observing how they prepare and conduct classes during their teaching practice, and use all of this information to improve their own classes and syllabi and teaching materials. The cycle of "what students learn in TEC" is required to be established.

During the syllabus discussions between Japanese specialists in each subject area and TEC lecturers, the status of classes at TEC was shared, and syllabi and instructional plans were created by reviewing the issues that arose. In terms of teaching techniques, the lecturers seemed to focus only on how to teach and felt difficulty in structuring classes from the viewpoint of how the students are learning, which is the most important aspect.

Figure 3-6   Activity Cycle for Syllabus Development and Classroom Improvement

In the third year of the Project (the TEC school year 2021-2022) as an activity for Output 4 "A cycle of class improvement is established in science and mathematics subjects", the developed teaching materials were used in TEC classes, and a reflection sheet was created for each hour of class to reflect on student learning (how much students understood and where they struggled), and focused especially on student errors.

In mathematics, the module exam question plans, and quizzes were developed through online training with Japanese experts. In preparing the questions, we reviewed many "good problems"[8] presented by the Japanese experts and encouraged them to reflect on their own teaching, asking "How can we improve our teaching methods to enable students to solve these problems?" As a result, the TEC lecturers decided to incorporate them into their own classes as evaluation questions.

In science, worksheets were created in which TEC students reflected on what they had learned in class and they predicted what their pupils/students may get some problems wrong, so that TEC lecturers could check the TEC students' level of understanding. In the syllabus discussion, TEC lecturers presented their own science class practices and provided many opportunities for students to reflect on their classes while asking questions of each other.

Table 3-11   Results of Workshops on Instructional Planning and Classroom Evaluation

Titles	Schedule	Target Group
Session 1: Teaching Plan and Classroom Evaluation Workshop for Educational Practice	January 12, 2022	For TEC Mathematics
	January 17, 2022	For TEC Science
Session 2: Workshop for sharing evaluation results of TEC student teaching proposals	March 17, 2022	For TEC Mathematics
	March 16, 2022	For TEC Science

Table 3-12   Rubrics for Mathematics

	Criteria		*Descriptor*		*Descriptor*	
		1	2	3	4	5
1	Understanding of the goal of a lesson and the aspects to be focused in the lesson "**Aspects**" of math lessons include: "conceptual understanding", "skill mastery", and "problem solving (application).		The lesson plan sets a clear goal for a whole lesson with a focus on certain aspects.		The lesson plan is purposefully designed to achieve a clear goal at each step/stage of the lesson with a focus on certain aspects.	
2	Choice of instructional methods and activities		The instructional methods and activities chosen for the lesson are mostly consistent with the above aspects.		The instructional methods and activities chosen for the lesson are fully consistent with the above aspects.	
3	Consistency between the lesson objective, activities, and assessment		Students are assessed in relation to if the lesson objective is achieved; the activities are mostly conducive to achieve the lesson objective in accordance with the above aspects.		Students are assessed based on whether the lesson objective is achieved; all the activities are designed to help students develop the above aspect in accordance with the lesson objective.	
4	Proactive planning based on expected students' response		The lesson is planned not only with a focus on the teacher's actions (Lv.1), such as explanations, questions, instructions, etc., but also with some attention to mistakes and misconceptions students might make.		The lesson is planned not only based on careful forethought about students' ways of thinking, reactions, mistakes and misconceptions, but also with concrete and accurate ideas to respond to and support those above.	
5	Students' engagement in learning		The lesson provides students with an opportunity to do some individual tasks under instructions from the teacher.		The lesson is designed to facilitate students to independently think over and collaboratively complete given tasks with support from the teacher.	

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[8] These "good problems" are problems that increase students' interest in mathematics and deepen their thinking, such as open-ended problems with multiple correct answers, problems with various solutions, problems that change the conditions of the original problem for further development, problems that follow the mathematical modeling process, problems in which students use critical thinking to express their ideas about the data, and problems in which students create problems. Problems in which the students have to think critically and express their ideas, problems in which they have to create problems, and so on.

Table 3-13   Rubrics for Science

	Criteria	Descriptor		Descriptor		
		1	2	3	4	5
1	Consistency between the key question and the objective and content of the lesson		The lesson objective is related to the key question, and most activities are prepared to answer the key question.		The lesson objective can be easily inferred from the key question, and all the activities are purposefully designed to answer the key question.	
2	Lesson planning and implementation focusing on the students' ideas and response		The lesson is planned and carried out not only with a focus on the teacher's actions (e.g., explanation, question, instruction, etc.), but also with some attention to the response that students would give.		The lesson is planned and carried out with a particular focus on the students' ideas and response inferred from careful and continuous observation about students.	
3	Participation of learners in making a prediction and conducting an experiment		The lesson provides the students with some opportunities to think about the key question and observe the process to implement an experiment.		The lesson provides the students with opportunities to discuss and predict the answer to the key question, to think how they can show that their prediction is true, and to participate in the implementation of an experiment (not as quiet observers).	
4	Accuracy and success of the experiment (*This criterion is not applied to assess lesson plans)		The procedures and measurement in the experiment are mostly accurate. The results obtained in the experiment are mostly close to those in the preliminary experiment (of the teacher).		The procedures and measurement in the experiment are accurate. The results obtained in the experiment agree with those in the preliminary experiment (of the teacher).	
5	Participation of learners in the process leading to a conclusion through discussion on the result of experiment		The lesson provides the students with some opportunities to participate in the process to reach a conclusion.		The lesson provides the students with opportunities to compare the result of the experiment with their prediction, and to draw a conclusion themselves.	
6	Consistency between the conclusion and the key question as well as the lesson objective		The above students' conclusion partly answers the key question and contributes to the fulfilment of the lesson objective to a certain extent.		The above students' conclusion clearly answers the key question, and directly leads to the fulfilment of the lesson objective.	

3.5.2   Improving Classroom Design Skills through the Development and Use of a Rubric for Evaluating Instructional Plans

Rubrics were developed to assess the instructional plans developed by TEC students during their fourth-year teaching practice and were used as part of the reflection to TEC lecturers. Specifically, the science and mathematics specialists of the Project first created rubrics for math and science, respectively, and then revised and completed them with input from TEC administrators and teachers. Subsequently, the evaluation perspectives (i.e., teaching perspectives during the educational practice) were explained at the first "Teaching Plan and Class Evaluation Workshop for Educational Practice" conducted with TEC science and mathematics lecturers before the start of the fourth-year educational practice. In addition, the Project analyzed several teaching plans prepared in the middle of the 10-week teaching practice and shared the results of the analysis at the second "Workshop for Sharing Evaluation Results of TEC Student Teaching Plans" to share the areas that could be improved in the students' teaching plans. In this second workshop, 21 instructional plans from two TEC schools were arbitrarily selected and the results of a somewhat rigorous evaluation of the instructional plans by Japanese experts were used.

3.6   TEC Research Capacity Building

3.6.1   Support for Action Research

From 2018 to 2022, various activities were carried out to support the implementation of Action Research (AR), as listed below. The timing of the events is shown in the figure below.

- AR Workshop
- Participation in the World Association for the Study of Teaching (WALS) International Conference
- Participation in other international conferences
- Research Promotion Regular Meeting

- TEC Academic Conference Held

Due to the Corona Disaster, the conference was held from March 2020 to July 2022, utilizing online conference tools (Zoom, Skype, etc.) to connect local participants with experts staying in Japan online.

Activities	2018				2019				2020				2021				2022			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1 Workshop on AR			■			■	■			■	■		■		■			■		
2 WALS Conference											■			■			■			
3 International Conference									■										■	■
4 Research promotion meeting														■	■	■				
5 TEC Academic Conference																		■		

Figure 3-7   Schedule of AR Workshops and Meetings

(1)   Holding AR Workshops

Workshops on action research were held for TEC management and TEC faculty and are summarized in the table below. The workshops were not limited to the five project-supported subject areas but were extended to other subject areas as well. The number of participants was not limited to teachers of the five project-supported subjects but was expanded to include teachers of other subjects. The 6th through 13th workshops were held online, connecting Japan and the region, as travel to the region was restricted due to the Corona disaster.

Table 3-14   Achievements of Workshops on AR

No.	Schedule	Purposes and Contents
1st	September 2-4, 2018 (3 days)	• Purpose and significance of implementing AR • Basic knowledge, techniques and methods • Data collection method • Examples in Japan and other countries • AR planning exercise
2nd	October 1-3, 2018 (3 days)	<Management Staff • Importance of setting up a research environment • Evaluation and Assurance of Education and Research <For teachers • AR implementation planning
3rd	March 7, 2019 (BTEC) March 14, 2019 (PTEC)	<Follow-up training • Review of AR Implementation Plan • Preparation for AR implementation
4th	June 3-5, 2019 (3 days)	• Progress check of action research plan and guidance and advice • Guidance and development of questionnaires and other survey tools • Create an annual action research plan
5th	July 30-August 1, 2019 (3 days)	• Progress check of action research plan and guidance and advice • Data Analysis Methodology • How to compose an action research paper

No.	Schedule	Purposes and Contents
6th	August 2, 2020 (1 day)	• Lessons learned and improvements from previous action research • Discussion of action research topics to be conducted this quarter
7th	October 12, 2020 (1 day)	• Progress check of action research plan and guidance and advice • Review and improve planning and implementation • Introduction of a good example of an action research plan
8th	December 7, 2020 (1 day)	• Progress check of action research plan and guidance and advice • Sharing of International Conference on Classroom Research (WALS) 2020 presentations (3 teams) • Checklist and good practices
9th	January 29, 2021 (1 day)	• Progress check of action research plan and guidance and advice
10th	February 19, 2021 (1 day)	• Progress check of action research plan and guidance and advice
11th	March 31 and April 2, 2021 (2 days)	• Progress check of action research plan and guidance and advice • Research presentations and improvements from each subject team
12th	November 1-2, 2021 (2 days)	• Conduct rehearsals and provide guidance and advice for WALS 2021 conference presentations (6 teams)
13th	March 28-30, 2022 (3 days)	• Action Research Writing Assistance
14th	August 15, 2022 (PTEC) August 17, 2022 (BTEC)	• Presentation of new topics for action research plan and guidance and advice
15th	September 5, 2022 (1 day)	• Conduct rehearsals and provide guidance and advice for WALS 2022 conference presentations (3 teams)

Since most of the TEC lecturers had no experience in survey research or writing papers, the first three workshops focused on the purpose and significance of action research and a series of technical inputs from planning to implementation and writing papers, and much time was spent learning basic knowledge, techniques, and methods for survey research. In particular, action research was introduced through a variety of case studies so that participants could understand it with a concrete image.

In the fourth workshop training, each lecturer spent three days writing an action research plan, presenting it, and revising it based on the advice of others, all the while completing the final plan. Since it is difficult for each lecturer to carry out his/her own research, action research teams were formed for each subject area at each TEC, and research was conducted in each subject area as a research project, which was supported by the leadership of the TEC Vice President for Research. In the process, Japanese experts checked the progress as necessary and provided necessary advice and comments, which they followed and revised as they completed their papers.

(2) Technical Assistance by Local Consultants

However, there was a period when Japanese experts could not travel to the site due to the impact of COVID-19. Therefore, Dr. Chhinh Sitha, who holds a Ph.D. in education from Hiroshima University and is a lecturer at the Royal University of Phnom Penh (RUPP) and other universities, was appointed as a local consultant for three terms from August 2020 to March 2022 to provide continuous technical assistance to TEC lecturers and direct instruction in Khmer to teachers with limited English proficiency. The employment period, number of days of activities, and details are shown in the table below.

Table 3-15   Duration of Local Consultant Employment and Activities

No.	Employment (Days)	Activities
1	August 20 - October 31, 2020 (15 days)	• Complementary technical guidance on AR • Complementary technical guidance to TEC supervisors in charge of education and research (ER) modules • Instructors in online workshops
2	December 8, 2020 - April 2, 2021 (25 days)	• Complementary technical guidance on AR • Complementary technical guidance to TEC supervisors in charge of education and research (ER) modules • Instructors in online workshops
3	June 22, 2021 - March 31, 2022 (40 days)	• Conduct AR workshops and provide technical guidance • Conduct ER workshops and provide technical guidance • ER technology instruction for TEC students
Total	80 days	

Dr. Sitha was a technical advisor for TEC faculty in planning and conducting action research and for Education Research (ER) modules for TEC Year 3-4 students and served as a mentor for TEC lecturers who could consult directly with him in Khmer on their research projects. He also served as a mentor for TEC lecturers who could consult directly with him in Khmer on their research projects. He had previously participated in the activities of this project as an action research training instructor and local advisor and was responsible for providing guidance in the field based on his understanding of the Project's methodology, direction, and so on.

(3)   Holding Regular Meetings for Research Promotion

During the period when Japanese experts were unable to travel to the site due to the impact of the COVID-19, in parallel with the aforementioned complementary technical support by local consultants, regular online meetings were held nine times from November 2021 to July 2022 with two vice presidents of each TEC in charge of research promotion, a local consultant, and three Japanese experts (general manager, TEC Administration, and Syllabus Development) as members, regular monthly online meetings were held a total of nine times from November 2021 to July 2022. The main objectives are as follows.

- Share information on AR implementation status of TEC faculty, check progress, and identify issues
- Report and share research-related activities (WALS international conferences, workshops, etc.)
- Discussion of countermeasures for issues
- Confirmation of each member's activity plan and role until the next meeting

3.6.2   Support in Attending International Conferences

In the course of conducting the workshop on AR described above in 3.6.1, TEC lecturers provided support for writing research papers with the goal of presenting it at international conferences. The support also included internal TEC selection for the submission of research abstracts to the conference, administrative procedures for abstract submission and registration to the conference, guidance and advice on presentation drafts, and conducting rehearsals.

For example, with the immediate goal of presenting at the World Association of Lesson Studies (WALS) international conference in December 2020, nine action research papers submitted by TEC lecturers were evaluated by professional development specialists, TEC management specialists, and project managers. The top four teams with the best papers were invited to prepare proposals and submit them to the WALS meeting secretariat. As a result, three teams (PTEC English and biology teaching team and BTEC English teaching team) were approved and invited

to present their papers at the WALS meeting. Prior to the conference presentation, the Japanese experts had several online meetings with the three presenting TEC teams, checked their presentation drafts, rehearsed their presentations, and provided technical support. The English and science subject specialists in charge of syllabus development also provided individual guidance and advice via online or e-mail, and the entire project (Japanese specialists and TEC management) provided support.

3.7   Baseline, Midline and Endline Survey

3.7.1   Survey Design

The baseline, midline, and endline surveys were conducted according to the schedule shown in the table below. The baseline survey was administered in 2018-19 for both the 4-year and 2-year programs on a paper basis to students entering in 2018. The midline survey was administered two years later, in 2020-21, with a face-to-face questionnaire on subject knowledge and an online response method using Google Form for the questionnaire on teaching knowledge and teaching perspectives. The endline survey was administered to the baseline and midline survey participants in June-August 2022, just prior to the completion of the four-year program by the students who entered in 2018. The two-year program was conducted in August 2021, just prior to the completion of the two-year program, for students entering in 2019 instead, as data for the 2018 program was not available due to COVID-19. This completion report details only the survey results for teacher training students. For results related to faculty at each teacher training institution, please refer to the respective survey reports.

Table 3-16   Schedule and Targets of Surveys

Titles	Schedule	Contents	Target Schools	Target Groups	Survey Items[1]
Baseline Survey	July 2018	Pre-test	PTEC BTEC P/RTTC	① 12+4/12+2 students[3] ② 12+4/12+2 teacher educators ③ 12+4 management members	Subject knowledge (①②) Knowledge of teaching methods (①②) Behavior and attitude (③)
	November-December 2018	Survey Preparation			
	December 2018-January 2019	Face-to-face survey conducted			
	March 2019	Report Submission			
Midline Survey	July 2020	Survey Preparation	PTEC BTEC P/RTTC	① 12+4/12+2 students[3] ② 12+4/12+2 teacher educators ③ 12+4 management members	Subject knowledge (①②) Knowledge of teaching methods (①②) Behavior and attitude (③) Guidance perspective (①②)
	July-September 2020	Online survey conducted[2]			
	January 2021	Face-to-face survey conducted			
	March 2021	Report Submission			
Endline Survey	August 2021	Online survey conducted[2]	P/RTTC	① 12+2 students[3] ② 12+2 teacher educators	Subject knowledge (①②) Knowledge of teaching methods (①②)
	June 2022	Survey Preparation	PTEC BTEC P/RTTC	① 12+4 students[3] ② 12+4 teacher educators ③ 12+4/12+2 management members	Subject knowledge (①②) Knowledge of teaching methods (①②) Behavior and attitude (③)
	July-August 2022	Face-to-face survey conducted			
	December 2022	Report Submission			

Note: (*1) parentheses refer to the subjects for each survey item.
(*2) During the period when face-to-face testing was not possible (2020-21) due to the coronavirus, the "Teaching Methods" and "Views on Teaching" tests with multiple-choice questions were administered online, while the "Subject Knowledge" test with essay questions was administered face-to-face as a measure to prevent infection.

(*3) The student cohorts for the baseline and midline surveys were students enrolled in December 2018 for 12+4 programs and December 2018 for 12+2 programs, while the student cohorts for the endline survey were students enrolled in December 2018 for 12+4 programs and December 2019 for 12+2 programs.

The purpose of this survey was to determine the extent of the respondents' knowledge on the subject matter and teaching methods and found:

① Better survey results at graduation for TEC students in 4-year programs than at matriculation (pre-post analysis); and
② Better survey results at graduation for 4-year TEC students (experimental group) compared to 2-year TEC/TTC students (control group) (with-without analysis)

The former is to verify the results of the Project, and the latter is the output indicator 1 of the project goals. Note that since the midline survey was conducted to verify progress from the baseline survey and to improve subsequent activities, the pre-post comparison above refers to the comparison between the baseline and endline surveys. The experimental and control groups are as follows.

- Experimental group: 1st year students of P/BTEC's 4-year primary and lower secondary school teacher training program (enrolled in 2018)
- Control group: 2-year primary and secondary school teacher training students from BTEC and P/RTTC in Prey Veng and Kandal provinces (baseline survey: 2018 enrollment; endline survey: 2019 enrollment)

The experimental group (12+4 student cohort) was the same December 2018 entering students in all surveys, while the control group (12+2 student cohort) was December 2018 entering students in the baseline and midline surveys, and in the endline survey, due to the COVID-19 pandemic, data for 2018 entering students were not available, so data for students enrolling in December 2019 were used instead.

The surveys conducted in the endline survey are as follows, with Survey A supplemented by Surveys B and C.

A) Questionnaire survey of TEC students (experimental group) and TTC students (control group) to determine their knowledge of subject content and teaching methods
B) Questionnaire survey of TEC lecturers (experimental group) and TTC teachers (control group) to determine their knowledge of subject content and teaching methods
C) Questionnaire survey of TEC faculty/managers (experimental group) and TTC faculty/managers (control group) on attitudes and behaviors toward their jobs

The number of students who participated in Survey A is as follows.

Table 3-17   Number of Survey Participants (Students)

Subject Knowledge

Groups	Institutes	Primary Course	Lower Secondary Course			
			Mathematics	Physics	Chemistry	Biology
Experimental Group	BTEC 12+4	150 (99)	24 (11)	25(16)	25 (17)	24 (19)
	PTEC 12+4	146 (93)	20 (12)	22(7)	23 (11)	24 (17)
Control Group	BTEC 12+2	69 (44)	0 (0)	0 (0)	0 (0)	0 (0)
	Kandal PTTC	79 (57)	18 (7)	10(6)	0 (0)	4 (1)
	Prey Veng PTTC	91 (62)	5 (2)	0 (0)	0 (0)	0 (0)
	Total	535 (355)	67 (32)	57(29)	48 (28)	52 (37)

Teaching Methodology

Groups	Institutes	Primary Course		Lower Secondary Course	
		Mathematics	Science	Mathematics	Science
Experimental Group	BTEC 12+4	150 (99)	150 (99)	24 (11)	72 (50)
	PTEC 12+4	146 (93)	146 (93)	20 (12)	71 (37)
Control Group	BTEC 12+2	69 (44)	69 (44)	0 (0)	0 (0)
	Kandal RTTC	80 (58)	79 (57)	18 (7)	14 (7)
	Prey Veng RTTC	91 (62)	91 (62)	5 (2)	0 (0)
	Total	536 (356)	535 (355)	67 (32)	157 (94)

Note: Figures in parentheses are the number of women.

The same questionnaire was consistently used in the series of surveys. The questionnaire used in Surveys A and B, which questioned knowledge of subject content and teaching methods, consisted of multiple-choice questions (partially descriptive), and the number of questions and the number of students surveyed (students) are shown in the table below. The questionnaire on attitudes and behavior consisted of two-choice questions (yes/no) for awareness and choice questions (partially descriptive) for attitudes.

Table 3-18   Number of Questions in the Questionnaires

Courses	Subject Knowledge		Teaching Methodology	
	Subjects	Number of Questions	Subjects	Number of Questions
Primary Teacher Training Course	Mathematics	43	Mathematics	22
	Science	34	Science	15
Lower Secondary Teacher Training Course	Mathematics	20	Mathematics	17
	Physics	27	Science	15
	Chemistry	33		
	Biology	34		

3.8   Others

3.8.1   JCC and Closing Seminar

A total of 11 Joint Coordinating Committee (JCC) meetings were held, as shown in the table below.

Table 3-19   List of JCC Meetings

No.	Dates	Contents	Remarks

1	2017 February 28	• Background of E-TEC implementation, activity plan and details
		• Progress and Challenges in Preparation for Establishment of TEC
		  - TEC-CFW Development
		  - TEC Management Selection
		  - Overview of Teacher Education Subsector Analysis
			Agreement on project evaluation framework

No.	Dates	Contents	Remarks
2	2017 August 25.	- E-TEC Progress Report - Forecast and analysis of primary school teacher supply and demand for the next 10 years - Activities and Tasks for the Next Six Months - TEC Syllabus Development - Faculty Selection Schedule - Student Selection Process	*Operational guidance survey available
3	2018 February 21	- E-TEC Progress Report - Supply and Demand Projections and Analysis of Secondary School Teachers for the Next 10 Years - Activities and Tasks for the Next Six Months - Faculty Selection Schedule - TEC Operational Management Document Development - TEC syllabus development in courses without DP support	Agreement on PDM Revision *Operational guidance survey available
4	2018 October 11	- E-TEC Progress Report and Activities and Tasks for the Next Six Months - Appointment of TEC faculty - Preparation for opening of TEC (finalization of syllabus, collaboration with HEI, etc.) - When and how the TEC opening ceremony will be held - Teacher Education Subsector Analysis Report and Future Plans and Policies	Exchange of views with the Minister prior to the JCC *Operational guidance survey available
5	2019 March 4	- E-TEC Progress Report - Baseline survey report and sharing of issues - Challenges Faced Short-term - TEC faculty shortage - Low 12th grade graduation exam results for new TEC students - Absence of TEC syllabus development progress management mechanism Medium-term - Absence of policy goals regarding the teacher qualification upgrade	Discussions with Minister after JCC on mid- and long-term strategies *Operational guidance survey available
6	2019 November 1	- E-TEC progress report and activity plan for the next six months - publication of results - Presentations by international students from Hiroshima University (PTEC lecturers Mr. Chea Soth and Ms. Kim Boryphal) - Presentation of syllabus materials prepared for the training in Japan - Issues to be resolved in the short to medium term - Delays in filling the TEC faculty, developing faculty evaluation criteria, accrediting higher education institutions, and developing TEC administrative and management documents	
7	Year 2020 March 13	- E-TEC progress report and activity plan for the next six months - publication of results - Presentation at the international conference Cam TESOL by BTEC teacher Mr. Lang Borath - Progress of the mid-term plan for Teacher Qualification Upgrade - Issues to be resolved in the short to medium term - Discussion on incentivizing faculty and budget planning for the mid-term plan for Teacher Qualification Upgrade; discussion on the status of TEC managers and TEC graduates	-

No.	Dates	Contents	Remarks
8	Year 2020 October 9	• E-TEC progress report and activity plan for the next six months • Presentation of results under the remote system 　- Mid-term plan for Teacher Qualification Upgrade 　- Strengthening TEC operational management capacity 　- Development of TEC syllabus materials • Issues to be resolved in the short to medium term • Impact of COVID-19, Resolving Issues Related to Teacher Qualification Upgrade, Sufficiency of BTEC Management and Faculty	Held online
9	Year 2021 June[9]	• E-TEC Progress Report • Presentation of results under the remote system 　- Mid-term plan for Teacher Qualification Upgrade 　- Strengthening TEC operational capacity 　- midline survey 　- Development of TEC syllabus materials and online training in Japan • Issues to be resolved in the short to medium term • Fulfillment of BTEC management and faculty, to achieve the project goals (head up discussion on PDM revision)	Held online
10	Year 2022 January	• E-TEC Progress Report • Presentation of results under the remote system 　- Mid-term plan for Teacher Qualification Upgrade 　- Strengthening TEC operational capacity 　- Endline survey 　- Development of TEC syllabus materials and online training in Japan • Issues to be resolved in the short to medium term • Fulfillment of BTEC management and faculty to achieve the project goals	Held online
11	Year 2022 August	• E-TEC Progress Report • Presentation of results 　- Mid-term plan for Teacher Qualification Upgrade 　- Strengthening TEC operational capacity 　- Endline survey 　- Development of TEC syllabus materials and online training in Japan • Issues to be resolved in the short to medium term • Filling BTEC management and faculty positions, strengthening research capacity, accreditation of TEC by ACC, and achieving the project goals	Online and in-person

Of these, the 8th-10th were held online in response to the Corona disaster. All JCCs were chaired by MoEYS Secretary H.E. Dr. Nath Bunroeun and solutions regarding the challenges faced were discussed. The second year JCC was unique in that presentations on outputs were made by TEC members. The JCC also included presentations by international students in the Master's program at Hiroshima University and the sharing of presentations at international conferences (Cam TESOL and WALS) as part of the results of the action research.

In addition to these JCCs, a closing seminar was held on November 25, 2022, to summarize the project activities. As shown in the table below, this seminar was divided into two parts: the first part was to present the results of the activities, summarize issues, and discuss the future, and the second part was a ceremony to mark the end of the Project. He played a very important role in the first part of the seminar, answering questions from the participants. In addition, the presence of

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[9] The program was scheduled to be conducted in March-April 2021, but due to the spread of COVID-19 in the city, it became difficult for the Cambodian side to adjust the schedule. Therefore, the plan was rescheduled to be implemented around June 2021, after the start of the third year of the program.

representatives from the Ministry of Economy and Finance, and the Ministry of Civil Service[10], both of which are members of PTEC's Board of Directors, throughout the day was very important in making the relevant ministries and agencies aware of this project and TEC's achievements. During the closing ceremony, which was held in the presence of Minister, H.E. Dr. Hang Chuon Naron, the Minister thanked the participants for their contribution to the Project and congratulated them on the success of the Project.

Table 3-20   Closing Seminar

Time	Programme
08:30-09:10	**Opening** • Brief Report of E-TEC project • Welcome address • Opening speech
09:10-12:30	**Achievements of the E-TEC project** • Output 1 • Output 3 & Output 4 • Output 2 & Output 5 • Project Survey
12:30-13:30	*Lunch Break*
13:30-14:50	**Challenges and the Way Forward**
14:50-15:15	**Visions for the future teacher education**
15:30-16:30	**Closing Ceremony** • Summary of achievements of MoEYS and the E-TEC project • Remarks from JICA • Address and official closing

3.8.2   Survey of TEC Student Teachers' Recruitment

Three TEC entrance exams were conducted during the project implementation period: 2018, 2019, and 2021 (conducted online); in 2020 and 2022, the lack of financial resources due to the Corona disaster resulted in new hiring of not only teachers, but also civil servants in general being held back.

The table below shows the numbers for the 2018 and 2019 TEC 12+4 program enrollments divided by Grade 12 examination results[11]. According to the TTD Director, this is not a problem, as the TTD is taking students with good grades on the TEC entrance exam, regardless of the results of the grade 12 exam, and furthermore, since each state needs to have a certain number of lecturers, the TTD Director believes that the number of students with low grades is not a problem, and that the TTD is not a problem. In addition, because of the need to secure a certain number of teachers in each state, some states require that even students with lower grades be accepted as TEC students.[12]   Therefore, in order to change the composition of the number of students by grade level, it will be necessary in the long run to make a steady effort to increase the number of students with high grades on the Grade 12 exam, especially in the lower grades in the states. In parallel, preferential treatment for high achievers in these states (e.g., allowing top scorers in certain states to pass the TEC without taking the Grade 12 exam) should be considered.

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[10] The Chief of Social Affair Budget Office from the Ministry of Economy and Finance and the Under Secretary from the Ministry of Civil Service attended the meeting.

[11] Information on the results of these studies was obtained at the time of the baseline survey. However, it was based on students' self-reports.

[12] The TEC entrance examination, whose eligibility requirement is passing the 12th grade National Graduation Qualifying Examination, does not admit students according to a certain standard, but rather it recruits a state-assigned number of students from that state from among the top applicants for the entrance examination. Thus, it is possible for a good student from one state to be rejected and a bad student from another state to be accepted.

**Table 3-21   Comparison of G12 Results of Students Enrolled in
TEC 12+4 Primary Teacher Training Course**

G12 Results	2018 Entrants	(%)	2019 Entrants	(%)
A	2	0.7%	4	1.3%
B	31	10.4%	39	13.0%
C	76	25.5%	86	28.8%
D	107	35.9%	86	28.8%
E	82	27.5%	80	26.8%
Non-response	0	0.0%	4	1.3%
Total	298	100.0%	299	100.0%

**Table 3-22   Comparison of G12 Results of Students Enrolled in
TEC 12+4 Lower Secondary Teacher Training Course**

G12 Results	2018 Entrants	(%)	2019 Entrants	(%)
A	6	3.2%	11	5.5%
B	59	31.2%	62	31.0%
C	52	27.5%	57	28.5%
D	49	25.9%	34	17.0%
E	23	12.2%	36	18.0%
Total	189	100.0%	200	100.0%

3.8.3   Employment of Project Staff

The Project employed three staff as shown in the table below.

Table 3-23   Project Staff List

Positions	Number	TOR
Senior Project Officer (Male, resident in Main Office)	1	Coordination and information gathering within MoEYS, coordination with relevant agencies, translation and interpretation, logistics
PTEC Officer (Female, stationed at PTEC)	1	Support for implementation of PTEC-related activities, interpretation, information gathering, logistics
BTEC Officer (Female, stationed at BTEC)	1	Support for implementation of BTEC-related activities, interpretation, information gathering, logistics

The Senior Project Officer has been engaged in the JICA education project since the previous two phases (STEPSAM2) and is well versed in the inner workings of MoEYS and is able to handle logistics tasks with ease. He is also well versed in what JICA technical experts can and cannot do and can be trusted to respond to requests and consultations from his counterparts. The other two officers, who required training under the Senior Project Officer in their first year, became accustomed to their duties in their second year and smoothly carried out their support for the implementation of activities, interpretation, information gathering, and logistics at PTEC and BTEC. In particular, since March 2020, when the Japanese experts stopped working in the field due to the corona disaster, workshops and training sessions were conducted remotely between Japan and Cambodia via videoconferencing system, and the support of the two women was indispensable.

3.8.4   Outsourcing

In this Project, fixed costs are reduced by outsourcing some of the interpretation, translation, and research work. For the translation of documents between Khmer and English, the Senior Project Officer mentioned above translates short documents of 1-2 pages, but for larger documents, the translation is done by a translation company and then checked by the same officer for final confirmation. The three above mentioned project staff are also in charge of Khmer-English interpretation for regular work, while a specialized interpreter is hired for workshops for TEC

faculty and other occasions where technical terms are often used. In addition, a Khmer-Japanese interpreter is hired as needed to provide more accurate technical guidance. For the baseline, midline, and endline surveys, a staffing agency dispatched a person to conduct the survey under the remote supervision of a Japanese expert, and the staffing agency inputted the data obtained from the survey. The production of the TEC introduction video was also outsourced to a video production company under the direction and supervision of a Japanese expert, from filming to video editing.

3.8.5   Procurement of Equipment

The Project procured the equipment and other items listed in the table below. At the completion of the Project, the equipment has transferred to PTEC, BTEC, and TTD, respectively.

Table 3-24   Main Procurement Equipment

No.	Items	Qty	Purposes
1	Laser printers	3	To prepare documents and other materials for the main office and the two TEC offices
2	Laptop PCs	35	For documentation of 3 project staff and 9 TEC managers (14 units) For use by project staff in the main office (1 unit) To produce class videos and teaching materials for teachers (and some students during their training) at each TEC (20 units)
3	Projectors	20	To be used at each TEC by teachers (during training of some students) to practice teaching video materials and for use in training and workshops
4	Multifunction Copying Machines	5	To duplicate materials at the main office and two TEC offices (3 units) For TEC faculty and students to use the books delivered to the TEC library to facilitate instructional planning, action research, etc. (2 units)
5	Server PC	1	For data management in the main office
6	Desktop PCs (for TEC books)	2	To manage the library collection at TEC
7	Library Management System Software	2	To manage the library collection at TEC
8	Digital Video Cameras	10	Main office, two TEC offices, and each TEC to film class videos
9	Air Conditioners	3	For cooling in the main office and two TEC offices
10	SPSS	6	To strengthen TEC's education and research (both qualitative and quantitative research)
11	Books	4	To strengthen TEC's syllabus and materials development and educational research (both qualitative and quantitative research)

3.8.6   TEC Library Management

A total of 2,222 books (Mathematics, Science, ICT, English, Educational Psychology, Pedagogy, and Educational Research) have been procured by the Project to date, with each subject specialist and TEC faculty member selecting books for use in classes, training, and syllabus development at PTEC and BTEC[13]. All books procured are managed in each TEC library. To manage these books and prevent loss or theft, a TEC book management system was introduced in the first year[14].

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[13] Procured 1,348 books for the first year, 192 books for the second year, and 682 books for the third year.

[14] The Project looked for a company in Cambodia that was already providing the system service in 2019, but could not find one, and there were two options: 1) contract with a company in another country that provides a book management system (Cronos), or 2) develop a new system in the form of a request to a company in Cambodia that the Project purchased for the books. The former was chosen due to the need to quickly set up a system to ensure that the purchased books will not get lost (the system was installed in March 2019 with a one-year maintenance service included).

In order to improve the operation of this system, we had planned to renew the maintenance service contract and to provide training for librarians in the third year, but we found that the book management system developed in English was not easy to use and the quality of the maintenance service was not sufficient, since the number of books in the Khmer collection had increased since its introduction in the 1st year. After consultation with TEC management, it was decided not to renew the maintenance service contract for the TEC book management system and not to provide training for the librarian.

4.   Achievements

4.1   Achievement of the PDM

4.1.1   Project Purpose

The project purpose "Quality teachers are produced from TEC." is achieved as shown in the table below.

Table 4-1   Status of Achievement of Project Goals

Indicators	Results
1. Test scores of subject knowledge and teaching methodology for the primary and lower secondary at the endline survey are improved by 10 % points in average Test scores of subject knowledge and teaching methodology for the primary and lower secondary at the endline survey are improved by 10 % points in average.	Compared to the baseline survey, the endline survey confirmed that the mean test scores for subject knowledge and teaching methods for students in the TEC primary teacher training and lower secondary teacher training programs increased by more than 10 percentage points.
2. Students can develop a lesson plan based on their reflection during Year 4 practicum.	In the P/BTEC practicum reports of the Year-4 students, it was confirmed that TEC students reflectively improved their lesson plans and lessons week by week with the guidance of TEC and school mentors.

4.1.1.1   Output Indicator 1

As shown in Table 4-2, where the numbers indicate the percentage of correct answers, while the improvement in the score of Subject Knowledge of 12+4 primary was only +6.2% points, the target of +10% points was achieved in all other categories and the overall improvement was +13.2% points. In particular, Teaching Methodology of lower secondary course student teachers has shown a significant growth of +31.9% points.

Table 4-2   The Correct Answer % of TEC Student Teachers in Subject Knowledge and Teaching Methodology Questions: Baseline/Endline Comparison (Overall)

Course	Subject Knowledge			Teaching Methodology			Difference in all questions
	BLS	ELS	Difference	BLS	ELS	Difference	
12+4 Primary	58.7	64.9	**+6.2**	31.1	44.7	**+13.6**	**+9.9**
12+4 Lower secondary	58.7	75.0	**+16.3**	24.1	56.0	**+31.9**	**+24.1**
All 12+4 student teachers	58.7	67.3	**+8.6**	28.3	47.4	**+19.1**	**+13.8**

*The numbers in the table represent the percentage of correct answers.

Table 4-3 shows the percentage the student teachers in each course answered the Subject Knowledge questions correctly. As can be seen in the table the primary course student teachers got 75.4% correct answers in Mathematics Subject Knowledge, although the growth was less than 10% points. In addition, out of 43 questions, the number of questions in which the percentage of correct answers exceeded 80% was increased significantly from 13 questions at baseline to 20 questions at the endline, indicating the success of technical inputs. On the other hand, primary course students showed the poorest growth in Science Subject Knowledge, which was +4.9% points. However, when comparing the baseline to the endline for each of the 34 questions, the number of questions with less than 30% correct responses decreased from 11 to 7, and the number of questions with 60% or more correct responses increased from 8 to 13. The low percentage of correct answers in certain units in both math and science affected the overall average percentage of correct answers.

Table 4-3   The Correct Answer % of TEC Student Teachers in the Questions of Subject Knowledge: Baseline/Endline Comparison (Course-wise)

Primary Course

Subject Knowledge	Mathematics			Science		
	BLS	ELS	Growth	BLS	ELS	Growth
BTEC 12+4	71.9	77.4	**+5.5**	49.3	56.4	**+7.1**
PTEC 12+4	64.3	73.3	**+9.0**	49.7	52.3	**+2.6**
All 12+4	68.1	75.4	**+7.3**	49.5	54.4	**+4.9**

Lower Secondary Course

Subject Knowledge	Mathematics			Physics			Chemistry			Biology		
	BLS	ELS	Growth	BLS	ELS	Growth	BLS	ELS	Growth	BLS	ELS	Growth
BTEC 12+4	52.2	68.8	**+16.6**	40.4	59.4	**+19.0**	61.1	80.4	**+19.3**	69.6	81.5	**+11.9**
PTEC 12+4	55.8	79.5	**+23.7**	56.5	64.6	**+8.1**	63.1	81.8	**+18.7**	70.7	84.4	**+13.7**
All 12+4	53.8	73.6	**+19.8**	48.1	61.9	**+13.7**	62.1	81.1	**+19.0**	70.2	83.0	**+12.8**

Table 4-4 shows the percentage the student teachers in each course answered the Teaching Methodology questions correctly. As can be seen in the table, all but PTEC primary mathematics showed more than +10% growth. The percentage of correct answers in the primary mathematics teaching methodology was also lower than the others, which was 40.7%. However, out of 22 questions in the primary mathematics teaching methodology, the number of questions that the percentage of correct answers exceeding 50% was increased from 2 questions in the baseline to 9 questions in the endline. It should be noted that the BTEC scores were higher than the PTEC scores in the category of Teaching Methodology.

Table 4-4   The Correct Answer % of TEC Student Teachers in the Questions of Teaching Methodology: Baseline/Endline Comparison (Course-wise)

Knowledge of Teaching Methods: Primary School Teacher Training Course]

Teaching Methodology	Mathematics			Science		
	BLS	ELS	Growth	BLS	ELS	Growth
BTEC 12+4	30.9	42.0	**+11.1**	31.6	54.3	**+22.7**
PTEC 12+4	30.3	39.3	**+9.0**	31.5	42.8	**+11.3**
All 12+4	30.6	40.7	**+10.1**	31.5	48.6	**+17.1**

Knowledge of Teaching Methods: Lower Secondary School Teacher Training Course

Teaching Methodology	Mathematics			Science		
	BLS	ELS	Growth	BLS	ELS	Growth
BTEC 12+4	25.1	56.1	**+31.0**	21.7	58.9	**+37.2**
PTEC 12+4	27.4	50.0	**+22.6**	25.4	54.6	**+29.2**
All 12+4	26.1	53.3	**+27.2**	23.5	56.8	**+33.3**

4.1.1.2 Output Indicator 2

The TEC practicum modules were carried out as show in Table 4-5. As seen in the table, the content and required level of training differ from year to year.

Table 4-5   TEC Practicum Modules

	Year 1 Students	Year 2 Students	Year 3 Students	Year 4 Students	Total
Number of credits (weeks)	2	5	5	10	22
Contents	School experience	Teaching assistantship	Practicum I	Practicum II	

The TEC Practicum Report Annex submitted by two TECs on their fourth-year teaching practice (conducted for 10 weeks from late January to early April 2022) indicate that this system is beginning to work well. Specifically, the feedback from TEC and school mentors helped TEC student teachers focus more on learners' thinking and provide more opportunities for students to find answers on their own. Through such reflection and improvement, the reports indicate that their lesson plans and lessons improved week by week. From these results, it can be said that Output Indicator 2, "Students can develop a lesson plan based on their reflection during Year 4 practicum," was achieved. In addition to the above, the Practicum Report Annex also lists the following as outputs of the educational practice.

(1) Introduction and use of methods learned in the course

   • Most of the student teachers used the knowledge and skills learned in the course in their lesson plans and lessons.
   • In addition, many student teachers incorporated the perspectives of gender and inclusive education into their lesson plans.
   • In actual classes, they flexibly changed his teaching methods to suit the learners well.

(2) Efforts to encourage learner participation in the classroom

   • They made efforts to draw learners into the class by using (visual) materials and games.
   • They gave lessons by revising the lesson plan to encourage more learner participation in the activities.
   • Some student teachers changed activities according to the level of the learners or helped slow learners collectively by the practicum group.

(3) Prepare instructional plans that anticipate learner misinterpretations and misconceptions

   • Many student teachers tried to create lessons in which learners would not make mistakes, for example, by using methods learned in the course.
   • Some student teachers were seen to respond flexibly to learners' errors that could not be predicted in the lesson plan.
   • Some trainees were trying to understand how learners learn.

(4) Growth in attitude and behaviour

   • As the 10-week-long practicum went on, the student teachers developed stronger relationships with their TEC and school mentors, and gradually gained confidence not only in the classroom teaching, but also in classroom management.
   • The cooperative schools also reported that the student teachers were kind, had a moral compass, followed rules and order, showed respect to schoolteachers, and were punctual in their work.

While these good results were observed, several issues were pointed out in the TEC Practicum Report Annex. For example, a certain number of students had yet to master the contents learned in the course and were therefore unable to apply those in their teaching practice, time management in the classroom was not good enough, lesson objectives and activities lacked consistency, and learners' misconceptions and misinterpretations were not taken into consideration. On the other hand, the report also cited the problem that some teachers (school mentors) at the schools did not provide guidance to the trainees because they were too busy, and that schoolteachers did not know the teaching methods that the student teachers learned in TEC, so they were unable to provide guidance.

Some of these issues, such as time management, will be resolved as they gain experience as schoolteachers. However, those issues related to lesson design should be addressed by revising

TEC lesson plans, for example, by introducing more concrete examples of "good lessons" in lesson planning. In addition, the gap in knowledge of teaching methods between some schoolteachers and student teachers may lead to the inability of schoolteachers to provide proper instruction to TEC student teachers and properly evaluate their work. Therefore, it is important to take care of student teachers before and during their practicum, for example, by providing opportunities to share TEC course contents with school mentors before the practicum, or by having TEC lecturers work closely with school mentors in some TEC activities. It should be noted that, when the practicum was required to implement remotely, there were occasions when TEC student teachers shared their ICT knowledge with schoolteachers and helped them introduce ICT in their classes. It would be ideal if TEC lecturers could facilitate this kind of mutual learning so that the student teachers and schoolteachers could strengthen their relationship.

4.1.2   Results

The status of achievement for each output is shown in the table below.

Table 4-6   Status of Achievements by Outputs

Output	Indicators	Results
1	Overarching strategic plans for teacher qualification upgrade are developed.	• Teacher Education Subsector Analysis Report for the strategic upgrade of basic teacher qualifications to the degree level, with a number of proposals based on an analysis of teacher supply and demand, and presented to the Minister of MoEYS (February 2019) • Based on the above report, a Master Plan on Educational Staff Qualification Upgrading (5-year plan) was developed jointly with MoEYS/TTD. (Approved by MoEYS in January 2022) • A long-term expert (Education Policy Advisor) has taken over this task and is in the process of revising the TPAP including the future plan for teacher qualification upgrade.
2	Progress report of a TEC strategic plan is prepared semi-annually.	• Progress on the TEC Strategic Plan was reviewed at the regular meeting and revised as needed.
	All of TEC management documents for TEPS accreditation are prepared.	• All operational and administrative documents required for accreditation by the Accreditation Committee of Cambodia (ACC) were completed. • Instead of TEPS accreditation, the assessment of ACC was resumed, and PTEC and BTEC passed it in October and November 2022, respectively.
3	Curriculum, syllabi and course materials are developed and refined.	• A TEC Curriculum Framework was developed and revised as needed. (First edition approved by MoEYS December 2017. Latest edition October 2021) • Syllabi, lesson plans, and worksheets were developed for the six fields of study for which the project were responsible and were revised through reflection (including 1,563 lesson plans for 50 modules in both primary and lower secondary, and 842 worksheets for science and mathematics).
4	Tools for reflective process including reflection sheet, mini-test for formative assessment and assessment rubric for practicum, are developed and Tools for reflective process	• Reflection sheets, quizzes, and worksheets for science and mathematics lessons were developed to encourage not only TEC students to reflect on their learning, but also TEC lecturers to reflect on and improve their teaching. • A rubric for the assessment of science and mathematics lesson plans developed by student teachers in practicum was developed and used to improve instruction to students.
5	All research groups produce research papers.	• Not only JICA supported subject groups, such as mathematics, science, ICT, English, pedagogy, and educational psychology, but also PTEC's Social Studies and Khmer Language subject groups, wrote research papers on action research and published them as TEC bulletins. Some of these papers were presented at international conferences.

4.1.2.1 Output 1: Overarching strategic plans for teacher qualification upgrade are developed

For Output 1, the Project was responsible for the first two phases (January 2017 to April 2021), while the third phase was the responsibility of a policy advisor from JICA.

As described in Chapter 3, the first phase of the Project concentrated on collecting the statistical data about teachers and students, conducting supply-demand analysis on teachers until around 2030, and preparing the "Teacher Education Subsector Analysis Report". The MoEYS initially intended to expand TEC as soon as possible after 2023, however, after seeing the shortage of teacher educators in BTEC, MoEYS decided to re-think the vision for expansion, which led to a large revision in the report. The debriefing session with the Minister of MoEYS was held on 2 February, 2019, and the difficulties of teacher qualification upgrade through both PRESET and INSET was explained based on actual figures.

In the second phase of the Project, the contents of the above subsector analysis report were further fleshed out in collaboration with TTD, and a "Master Plan on Educational Staff Qualification Upgrading" was prepared, which was a mid-term plan with an implementation plan and budget plan including: concrete measures to promote upgrading programs, the number of teachers to be produced during this five-year plan, the institutions to provide upgrading programmes (e.g., two TECs, NIE, and Faculty of Education of RUPP), and an Action Plan Matrix with preparatory tasks, estimated schedule, necessary expenses, responsible departments, and possible funders (DPs, etc.) for the implementation of upgrading programmes. This mid-term plan was prepared in Khmer by the TTD and approved by MoEYS on 25 January 2022.

These achievements were continued by a JICA advisor to develop a succeeding plan by revising and updating the Teacher Policy Action Plan (TPAP) to include a plan to establish new TECs and further upgrade primary and lower secondary teachers to BA. The TPAP revision is slated to be completed by March 2023.

4.1.2.2 Output 2: TEC Management framework and operational mechanism are established.

The tasks included in Output 2 can be divided into several areas. In addition to strengthening the capacity of TEC management, which will be discussed later in this report, and supporting the preparation of documents for accreditation from the Accreditation Committee of Cambodia (ACC), Internal Quality Assurance (IQA), and lesson study, the E-TEC project provided support in the areas related to personnel as well as laws and regulations. Table 4-7 shows the results of such support[15].

Table 4-7   The Project's Support on Personnel as well as Laws and Regulations

Areas	Dates	Support
Selection of TEC directors	8 October, 2017	Prepare selection methods and criteria and evaluate the candidates through essays and interviewers.
Consultation on the selection of TEC teaching staff (Chaired by the Minister)	11 January 2018	Compile a list of P/RTTC trainers in Phnom Penh and Battambang, identify the number of teaching staff qualified for TEC, calculate the number of teaching staff needed to implement the TEC curriculum, prepare criteria for the selection of teaching staff, and propose selection methods.

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[15] In fact, we have been involved in the formulation of several other ministerial ordinances, but we omit them because they have since been superseded by the ordinances shown here or were formulated, but no longer function.

Areas	Dates	Support
Ministerial Order on the rank of TEC lecturers (Prakas 963)	Approved on 18 June 2018	Establish criteria for appointing Assistant Lecturers, Associate Lecturers, and Full Lecturers.
Ministerial Order on the number of credits for teacher qualification upgrade (Prakas 1870)	Approved on 26 November 2019	Establish the number of credits and fields/areas of study to upgrade the qualification of pre-school, primary, and lower secondary teachers from 12+2 to BA equivalent.

In addition, the Cambodian government has issued the following Sub-decree (signed by the Prime Minister) and Royal Decree (signed by the King) in relation to the establishment of TEC.

- Sub-Decree on the establishment of BTEC and PTEC (Sub-decree 72&73, approved on 22 May 2017)
- Sub-Decree on upgrading BTEC and PTEC to higher education institutions (Sub-decree 202&203, approved on 19 October 2021)
- Royal Decree on the upgrade of the rank of BTEC and PTEC Rectors to the rank of Director General (DG) (Royal Decree 116&117, signed on 8 February 2022)

Together with the ACC accreditation described below, TECs are officially recognized as higher education institutions based on these laws and regulations. The followings are the details related to Output 2.

(1) TEC Management Capacity Enhancement

In the early stages of this project, the following three objectives were set forth: to acquire the knowledge and skills of TEC managers in university administration and management; to develop and revise official documents necessary for the operation of a higher education institution; and to strengthen their own sustainable management skills to ensure the continued delivery of quality educational programmes. A management capacity development programme was developed at the early stage of the Project to cover the 6-year project period.

The programme divided the project period into two phases, "Management capacity enhancement" and "Sustainable self-development", with the first phase lasting two years and four months from June 2017 to September 2019, which was until one year after the opening of TEC, and the second phase lasting three years after October 2019 until the first TEC students graduated. In developing the programme, we collected information on university administration in Cambodia and other countries, focusing on the concepts of Faculty Development (FD) and Internal Quality Assurance (IQA). The Project also reviewed the actual situation of university administration and management in Cambodia, as well as the official procedures, regulations of official documents, and ministerial ordinances required for university accreditation, and used those documents as reference.

Throughout the project period, the E-TEC supported a total of 10 TEC managers (5 from PTEC and 5 from BTEC[16]) in terms of management capacity development in accordance with the above programme. In fact, until the end of the second term (May 2019 - April 2021), the Project focused on developing their understanding about; the roles and responsibilities of university managers through the development of documents for TEC administration and management, the legal

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[16] The former BTEC President (Mr. Chum Sophal) resigned in October 2019 and Mr. Bin Chhom became the new BTEC President on November 5, 2019. In addition, the BTEC Deputy Director (Mr. Sok Hing) resigned in June 2019 and two new BTEC Deputy Directors (Mr. Huot Sinuon and Mr. Chhit LiengIeang) were appointed in September 2021. In addition, one BTEC Deputy Director (Mr. Tep Vandy) is currently studying in the doctoral program at Hiroshima University by JDS from October 2021 to May 2025.

framework as a higher education institution, higher education programme accreditation and qualification standards as a teacher education institution; university operational management methods and tools, methods and tools to assess the students and the teaching staff, IQA system, methods and tools for faculty development, practicum, and so on. In parallel with these technical inputs, the TEC strategic plan was also reviewed through monitoring activities and regular review meetings (such as the TEC Annual Meeting) to check the progress in the strategic plan and to encourage the management team's reflection and improvement. In its third term (May 2021- December 2022), the Project focused on providing specific guidance and advice through discussions with a professional development management expert to address the challenges faced by TEC managers as they utilized the developed TEC management documents in operating the institution.

Each TEC also reviews the TEC Strategic Plan (2019-2023) on a regular basis, and a progress report is prepared by each TEC. The English translation of each progress report (original in Khmer) is attached as an indicator document for Output 2.

Table 4-8   Progress Reports of the TEC Strategic Plan

TEC	Reports	Date
PTEC	Progress Report (2018)	20 November 2018
	Progress Report (2018/19)	2 December 2019
	Progress Report (2019/20)	23 December 2020
	Progress report (2021/22 first semester)	15 February 2022
	Progress report (late 2021/22)	4 October 2022
BTEC	Progress Report (2018/19)	30 April 2019
	Progress Report (2019/20)	27 August 2020
	Progress Report (2020/21)	15 February 2021
	Progress Report (2021/22 first semester)	1 April 2022
	Progress report (late 2021/22)	31 October 2022

In this series of activities, identity building as TEC managers was also promoted, but differences can be seen between PTEC, whose members had not been changed from the initial preparation stage in 2017-18, and BTEC, whose director and deputy directors had been changed after the opening. Those new BTEC managers have not participated in the project activities to prepare themselves as management staff, such as a one-month training in Japan in December 2017 that was conducted to collaboratively develop management documents before the opening of the TEC.

It is noteworthy that PTEC has developed not only the identity of each manager, but also the collective identity of the management team. At the individual level, they showed an attitude of trust towards each other and confidence in their capacity to make appropriate decisions. As a group, they shared the same values and goals that TEC aims to achieve, understood each other's roles, and deepened mutual understanding through dialogue. In addition, it has been confirmed that, while they were previously concerned about the evaluations of training providers and/or development partners during discussions, they gradually developed a sense of ownership towards TEC and began to tackle the issues they identified.

On the other hand, we observed that BTEC was still on their way to develop a collective identity. The timing of appointment of the new BTEC director and deputy directors coincided with the period when the COVID-19 had a significant impact on TEC, and they had to start the management work of BTEC before sufficient face-to-face communication with the faculty and staff. In 2022, the BTEC management team planned and conducted various workshops on administration and management, and experienced the assessment of ACC, through which the BTEC management team developed collective identity and self-confidence as managers.

(2)   TEC Operational Management Document Development

As mentioned earlier, the Project supported the development of TEC management documents in accordance with the capacity development programme. The TEC management documents developed in the project period are listed in Table 4-9 below. All the documents listed below were written in English, and those that have been revised as necessary in the course of actual use by TEC are available only in Khmer. The Khmer version will be the official document in Cambodia.

Table 4-9   List of TEC Management Documents

No.	Titles	Development Status[1]	Revision Status[1]	Status of Implementation[1]
1	TEC Curriculum Framework	Completed (2019), MoEYS approved	Revised in September (PTEC) and October (BTEC) 2021.	Courses are implemented accordingly.
2	TEC Strategic Plan (2019-2023)	Completed (2018) MoEYS approved	Reviewed in April 2022 and revised in July 2022.	Plans are carried out accordingly with checking the progress biannually.
3	TEC Internal Quality Assurance (IQA) Guideline	Completion (2020) MoEYS approved	Revised to include TEC programme monitoring and evaluation criteria, TEPS standards, teacher evaluation criteria and indicators, IQA report format.	A survey is conducted, and a report is prepared in each semester.
4	TEC Continuous Professional Development (CPD) Guideline	Draft (October 2020)	Being revised based on the new MoEYS CPD guidelines. To be completed in January 2023.	To be utilized after the completion of the document.
5	TEC Teacher Educator Assessment Guidelines (Including assessment criteria)[2]	Completed (2021) MoEYS approved the assessment criteria.	Revised to include indicators and assessment criteria in the Khmer version. Assessment procedures and formats were discussed in September 2022 and are currently being revised.	Partially conducted as an IQA survey. Facing difficulties in implementing teacher assessment due to Covid-19. To be implemented in new semester in November 2022.
6	TEC Student Teacher Assessment Guideline (including TEC student assessment standards)[3]	Completed (2018) Student Assessment Standards (2021)	To be revised in January 2023.	Used in the orientation for students in the new semester. Assessment was conducted accordingly.
7	TEC Practicum Handbook	Completion (2020) Pending MoEYS approval.	Information is updated and revised annually. A toolbook for TEC supervisors and student teachers were developed.	Information is updated annually and used in practicum orientation
8	TEC Student Teacher Handbook	Completed (2018)	Consultations were held in September 2022 and are currently being revised.	Information is updated annually and distributed to students. Utilized during new semester orientation.
9	TEC Staff Handbook	Completed (2018)	Consultations were held in September 2022 and are currently being revised.	Information is updated annually and distributed to staff.
10	TEC Program Monitoring and Evaluation Guidelines	Completed (2018) MoEYS approved	Questionnaire on distance education already inserted (2020)	Utilized in IQA survey.
11	TEC Student Teacher Credit & Workload Guidelines	Completed (2018) MoEYS approved	-	Used in orientation for students during the new semester.

No.	Titles	Development Status[1]	Revision Status[1]	Status of Implementation[1]
12	TEC Action Research Implementation Guidelines	Completion (2020)	Scheduled to be revised in January 2023.	Utilized by the TEC Research Department. Also used for student guidance during education and research modules.
13	TEC Student Teacher Wellbeing Services	Completion (2021) Pending MoEYS approval.	-	Used primarily in academic offices, science, and health education. Utilized during new semester orientation for students.

Note:
[1] As of November 30, 2022
[2] Including "Professional Standard for Teacher Educators (PSTE)" (TEC)
[3] Including "TEC Student Teacher Education Competencies (STEC)

The TEC management team proceeded with their tasks in accordance with the above documents. The Project supported to hold periodic workshops for the TEC management teams and the heads of subject departments to facilitate them to check the progress of work and review the management documents and provided technical inputs in the process of revising those documents based on the reviews.

It took more time to complete the preparation of these documents than originally planned. The main reason for this delay was the language issue. The drafts were prepared by referring to examples written in English, and technical support was provided by Japanese experts and a Dutch technical advisor affiliated with TTD, so the documents were basically prepared in English. This was then translated into Khmer, discussed by key members of the management team and the heads of subject departments, and finalized after all the members shared the same understanding. Some TEC managers and heads of departments were not proficient in English, so the Khmer version had to be used as a basis for discussion. In addition, the official documents to be submitted to MoEYS were also in Khmer, and the TEC management members with high English proficiency were responsible for the translation of these documents in order to assume responsibility for the products.

In this process, the TEC directors and deputy directors developed those official documents from scratch after learning about the methods, standards, etc., through the introduction of various examples from Japan and other countries under the instruction of Japanese experts. Those 10 TEC managers who were selected and appointed in the beginning had no previous experience as university lecturers, and so it was a very difficult task to discuss, collect opinions, and create an operational management document, which took more than twice the expected amount of time. It was a very time-consuming process as each draft was created with great difficulty, discussed again with everyone, and rewritten after receiving advice and comments from experts. However, this experience enabled them to build an administrative and managerial foundation for TEC and develop self-confidence that they had developed those documents on their own.

It should be noted that "#4. TEC Continuous Professional Development (CPD) Guidelines" in the table above was developed with reference to the example of Hiroshima University, where the TEC management teams had training in the first year of the Project, but it was suspended at the draft stage because MoEYS released a new CPD guidelines in 2020, which caused the need for another revision of the draft. The revision of this document is ongoing in TEC.

In addition, the development of "#5. TEC Teacher Educator Assessment Guidelines" required a lot of time, due in no small part to the interruption of workshops and other activities due to the COVID-19 pandemic. First, it was necessary to develop TEC teacher standards compliant with 4-year teacher education. The Project supported gathering documents, such as teacher evaluation

standards of MoEYS for each school category, and teacher professional standards of the Singapore NIE and other ASEAN countries, so as to draft the TEC teacher standards. After the draft was discussed at a number of workshops and meetings, the TEC management teams moved to the next issue of how to proceed with teacher educator assessment based on the TEC teacher standards. Since teacher educator assessment had not been systematically implemented in TTCs, it was anticipated that there would be strong protest from teacher educators against this new mechanism. Thus, the TEC management teams decided to focus on self-evaluation and feedback from students to help lecturers improve their own careers and abilities, and to introduce teacher portfolios and interviews with managers. Finally, the Khmer version of the TEC Teacher Educator Assessment Guidelines (including the above standards) was completed in a workshop held in January 2021, with the TEC management and the heads of departments reaching consensus on the draft. The implementation of teacher educator assessment according to the guidelines was planned to start in the new semester of 2021/2022 but was postponed due to the excessive workload of lecturers, particularly preparation for increased online classes caused by the COVID-19 pandemic. The Guideline is supposed to be introduced in the new semester of 2022/2023.

The above "#12. TEC Action Research Implementation Guidelines" was developed as a new management document. It is a compilation of technical inputs provided during the training and workshops on action research that the Project has conducted for the TEC management team and lecturers, and will be used as the "Action Research Implementation Manual" of the TEC Research Department.

(3)   Accreditation as an Institution of Higher Education

The Project provided technical support to develop TEC management documents in line with the accreditation standards of the Accreditation Committee of Cambodia (ACC) and the Teacher Education Provider Standard (TEPS) of Cambodia for higher education institutions offering education training programs. The ACC accreditation review criteria are shown in the table below.

Table 4-10   ACC Assessment Criteria

No	ACC Standards	Eligibility Criteria
1	Vision, Missions and Goals (3 indicators)	HEI clearly defines its vision, mission and educational goals.
2	Governance and Management (6 indicators)	HEI has a good governance and management system.
3	Academic Staff (11 indicators)	HEI has adequate and competent academic staff both teaching and supporting staff.
4	Academic Program (7 indicators)	HEI achieves and maintains the quality of its academic programs.
5	Student Service (13 indicators)	HEI provides good quality of student services that contributes to their cultural, social, moral, intellectual, and physical development.
6	Learning Resources (14 indicators)	HEI's learning resources and services are adequate and appropriate for the degree programs offered.
7	Physical Resources (6 indicators)	HEI has a physical capacity to serve its mission, academic programs, and activities.
8	Financial Resources (7 indicators)	HEI has financial stability to accomplish its mission and to ensure the sustainability of its operation, academic programs and services.
9	Internal Quality Assurance (6 indicators)	HEI is committed to continuous quality improvement.

The ACC accreditation review at each TEC was conducted in two phases in 2022. First, ACC reviewed the reports prepared by each TEC by the end of September 2022, and then a team of ACC reviewers (10 reviewers) visited PTEC and BTEC to conduct additional document reviews, and interviews with stakeholders (TEC management team, teaching staff, student teachers, and

alumni) on 17-21 October 2022 and 21-24 November 2022, respectively. The ACC reviewers reported their findings on the last day of the review, generally confirming that all criteria were met. The ACC reports have provided to MoEYS in early December 2022 and the official certificates signed by the Minister on 8 December 2022 have provided to PTEC and BTEC respectively (refer to Figure 4-1). The ACC reports included some suggestions for improvement, so the management teams of 2 TECs will need to take actions to tackle the issues pointed out.

Figure 4-1   ACC Certificates for PTEC and BTEC

(4)   Internal Quality Assurance (IQA) System

The Project also supported the implementation of an internal quality assurance (IQA) system as part of the assistance to the institutional management practice.

First, the Project encouraged TECs to introduce the IQA system as one of the deliverables in the TEC Strategic Plan (2019-2023), and to establish an IQA office within the TEC organization structure with dedicated staff. Currently, PTEC has six IQA staff (originally seven, but one left to become a BTEC deputy director) and BTEC has eight IQA staff. Below are the organizational charts of the TEC.
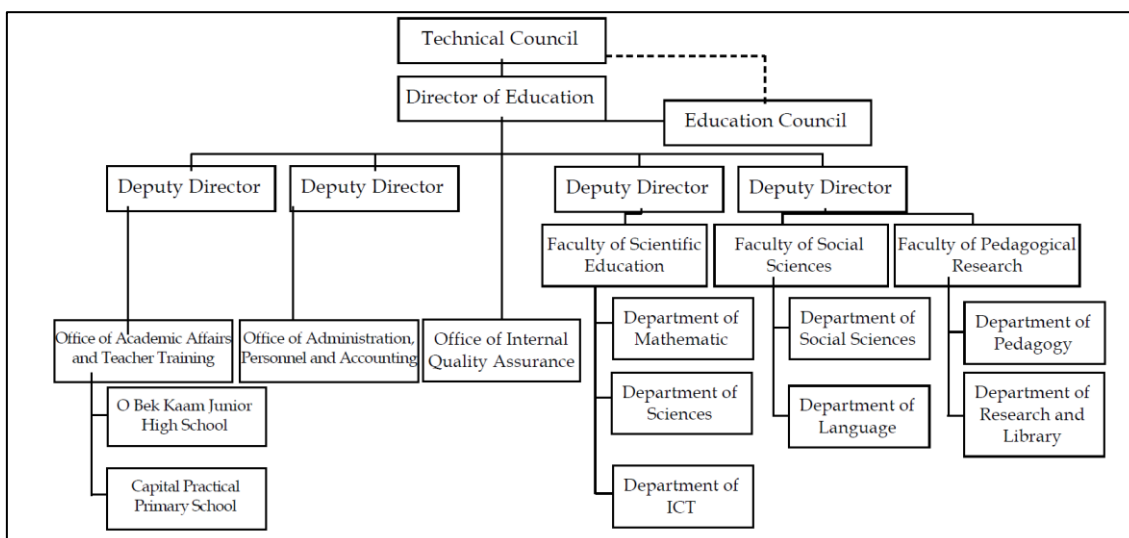
Figure 4-2   TEC Organization Chart
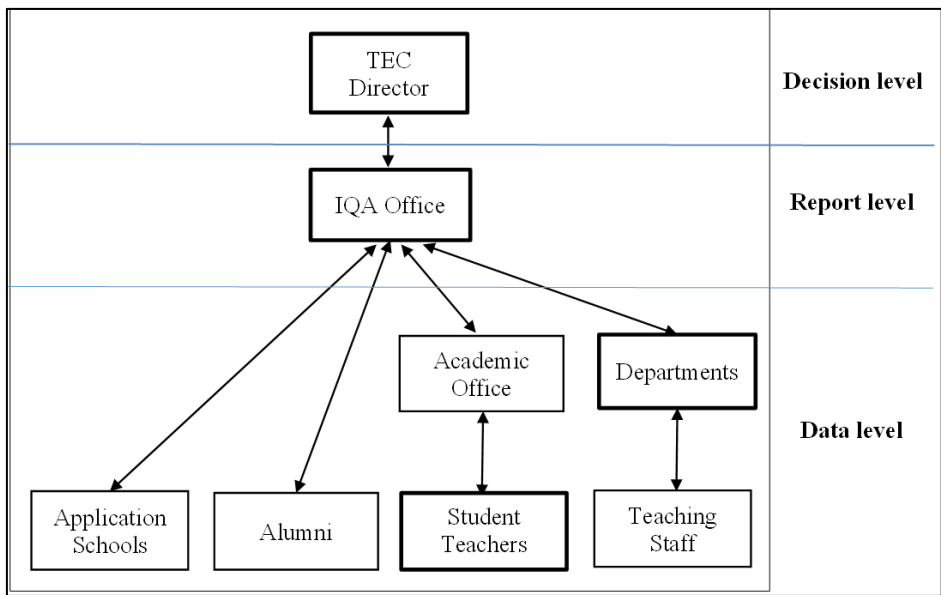
Figure 4-3   IQA Office in the TEC Organizational Structure
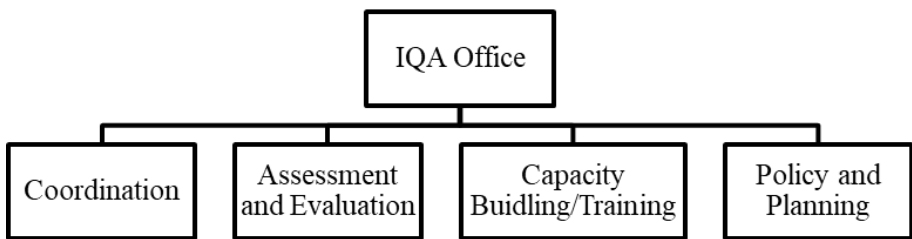
Figure 4-4   IQA Office Organization Chart

In addition, as mentioned earlier, workshops for TEC management teams were held regularly starting in 2017 to enhance their knowledge about IQA and to support the development of the TEC IQA guidelines. The table of contents of the guidelines is as follows (see IQA Guidelines for details).

```
1.    Introduction
2.    IQA Policy in TEC
3.    IQA Aims in TEC
4.    IQA System in TEC
5.    Functions of TEC Internal Quality Assurance
6.    IQA Mechanism
      6.1.   IQA assessment tool development
      6.2.   Self-assessment of each department and office
      6.3.   Monitoring and evaluation
      6.4.   Program Monitoring & Evaluation (P M&E)
      6.5.   TEC Alumni Evaluation
      6.6.   IQA Annual Report
      6.7.   Dissemination
      6.8.   Preparation for the external accreditation
7.    IQA Organization and Management
      7.1.   Coordination
      7.2.   Assessment and Evaluation
      7.3.   Capacity Development and Training
      7.4.   Policy and Planning
8.    IQA Standards
      8.1.   Institutional Leadership and Management
      8.2.   Student Teacher Learning Outcomes
      8.3.   Education Program
      8.4.   Staff Quality and Support
      8.5.   Student Teacher Quality and Support
      8.6.   Teaching and Learning
      8.7.   Learning and program resources
      8.8.   Physical Infrastructure
8.9.  Public Information.
8.10. Graduate Quality
```

Figure 4-5   Table of Contents in the IQA Guidelines

From the second term, the Project expanded its targets of the technical inputs on IQA to include IQA staff and chiefs of departments and offices and supported the development of tools such as questionnaires for IQA survey evaluation, the knowledge acquisition about the ways of writing survey reports, and the development of a report format. In addition, in order to fully implement the enhancement of TEC educational capacity through "reflection", the Project checked the progress in accordance with the TEC strategic plan (5-year plan), identified the issues to be addressed, and discussed countermeasures for those issues. In order for the reflection cycle to take root in TEC, it is essential to smoothly implement programme monitoring and evaluation through the IQA system and to create a mechanism to assess the teacher educators based on self-evaluation and feedback from student teachers. Therefore, Japanese experts have given much time in sharing various good practices and reference examples with advice and suggestions.

Other important tasks of the IQA office included the preparation for the ACC assessment, in which IQA office staff took the lead in collecting official documents and compiling and submitting the reports.

(5) Lesson Study

In May 2022, each TEC launched lesson study as part of establishing a "Professional Learning Community (PLC)" to improve teaching and learning. Table 4-11 shows the status of achievement at each TEC as of the end of November 2022.

The reason for the smaller number of subjects in BTEC compared to PTEC is that there are fewer people in BTEC with experience in lesson study. However, BTEC has learnt a lot from the experience of PTEC and from the subject groups that have already implemented lesson study and has developed an annual plan in all the departments so that they will implement lesson study in the new academic year (2022/2023).

Table 4-11   Status of Lesson Study at TECs

	Activity	Achievement	
		PTEC	**BTEC**
1	Planning	16 lesson plans prepared by 16 groups in 11 subjects.	14 lesson plans prepared by 11 groups in 7 subjects.
2	Demonstration lessons	121 lecturers, 296 student teachers participated.	79 lecturers, 229 student teachers participated.
3	Post-lesson discussion	16 groups of 121 lecturers reviewed and discussed the lesson.	11 groups of 79 lecturers reviewed and discussed the lesson.
4	Lesson improvement	121 lecturers participated.	79 lecturers participated.
5	Report writing	Report prepared in 11 subjects	Report prepared in 7 subjects
6	Presentation & Planning for the next year	Presentation by 11 subjects, followed by planning	Presentation by 7 subjects, followed by planning

Table 4-12   Number of Participants and Number of Classes Related to Lesson Study at TECs

	Subject	Number of Teachers (female)		Number of Student Teachers (female)		Number of Lesson Plans		Number of Demonstration Lessons	
		PTEC	**BTEC**	**PTEC**	**BTEC**	**PTEC**	**BTEC**	**PTEC**	**BTEC**
1	Chemistry	8(5)	-	25(16)	-	1	-	1	-
2	Physics	7(1)	-	25(20)	-	1	-	1	-
3	Biology	4(4)	22 (10)	25(20)	25(19)	1	1	1	1
4	Earth science	4(3)	-	25(16)	-	1	-	1	-
5	Mathematics	11(1)	7(1)	25(17)	25(18)	1	1	1	1
6	Pedagogy	25(11)	11(2)	25(20)	50(38)	3	2	1	2
7	ICT	7(0)	5(0)	23(09)	29(14)	1	6	1	3
8	Education research	6(2)	3(0)	25(17)	25(17)	1	1	1	1
9	Khmer language	11(9)	17(7)	148(107)	50(40)	1	2	1	1
10	English	14(5)	-	148(107)	-	1	-	1	-
11	Social study	24(13)	14(4)	25 (17)	25(20)	4	1	1	3
	Total	**121(54)**	**79(24)**	**296(173)***	**229(166)**	**16**	**14**	**11**	**12**

Note: Total number excluding duplicates in the same grade.

4.1.2.3 Output 3: Curriculum, syllabi and course materials are prepared for B.Ed (12+4) PRESET for both primary and lower secondary levels.)

The TEC Curriculum Framework (CF) was approved by the Minister MoEYS on December 5, 2017. Since then, the TEC-CF has been revised annually by the TEC itself, with the October 2021 version being the most recent as of the preparation of this report. The main achievements are listed below.

(1) Development of Syllabus and Teaching Materials for Year1-4 Modules and It Improvement through Reflection

The development status of syllabi, lesson plans, and worksheets for year 1-4 modules in each subject area is shown in the table below. During the project period, a total of 50 modules, 142 units, 1,563 instructional plans, and 842 worksheets, a very large number of materials were developed.

Table 4-13   Number of the Developed Modules, Credits, Lesson Plans, and Worksheets

	Primary				Lower Secondary (Non-foreign language course)				Lower Secondary (Foreign language course)		
	Module	Credit	Lesson plan	Worksheet	Module	Credit	Lesson plan	Worksheet	Module	Credit	Lesson plan
Math	4	9	135	135	4	12	180	180	-	-	-
Science	4	12	107	99	16	48	428	428	-	-	-
ICT	4	8	120	-	*(4)	*(8)	*(120)	-	**3+(2)	**16+(4)	**148+(60)
English	4	12	170	-	-	-	-	-	4	12	164
Pedagogy	-	-	-	-	2	3	30	-	***(2)	***(3)	***(30)
Psychology	3	4	60	-	*(3)	*(4)	*(60)	-	*(3)	*(4)	*(60)
ER	2	6	21	-	*(2)	*(6)	*(21)	-	*(2)	*(6)	*(21)
Total	21	51	613	234	22	63	638	608	7	28	312

Note: * Primary and Lower Secondary courses are the same modules.
** 3 modules are for this course only, 2 modules are the same as other courses.
*** Lower Secondary courses are the same modules.

The main outputs for each subject area are shown in the Table 4-14. At the beginning of the Project, many lecturers had no experience in developing syllabi as an institution of higher education and thought that teaching according to textbooks was sufficient. In addition, there was a large gap between the level required by an institution of higher education and the abilities of TEC lecturers, making it difficult for them to learn the new syllabus content while referring to English literature. However, through frequent training sessions in Japan and in Cambodia among the Japanese subject experts and the TEC lecturers in Japan through face-to-face and online communication, each subject team has been developing as a learning community through the process of developing many syllabus and teaching materials. As they came together as a team, they shared their knowledge and experiences with each other and learned together, and the training attitude of the TEC lecturers became more proactive. This was due in large part to the efforts of the Japanese subject experts who understood the Cambodian situation and continued to provide appropriate training according to the abilities of TEC lecturers, as well as their persistent support for the development of syllabus and teaching materials.

Table 4-14   Main Outputs by Subjects

Subjects	Outputs
Mathematics	- TEC lecturers learned of many "good problems" in mathematics that develop students' thinking skills. - Through the improvement of test questions, they reviewed their own educational perspectives. - The syllabus newly included a statement that "students will set and research a theme related to mathematics education" and research presentations were given at TEC in the form of poster presentations for the primary school course and research reports and oral presentations for the lower secondary school course.

Subjects	Outputs
Science	- TEC lecturers improved their knowledge and skills in science experiments and observations. - They learned inquiry-based learning, in which hypotheses are tested, and incorporated it into actual classes. - The teaching materials were improved to fit the Cambodian context.
ICT	- The syllabus was developed based on the TPACK (Technological Pedagogical Content Knowledge) framework through discussions with the Japanese subject experts from the syllabus development stage. - With this experience, TEC lecturers prepared the lesson plans by themselves. They were also able to revise the syllabus smoothly because of their understanding of the syllabus structure. - They gained a better understanding of how to incorporate pedagogical knowledge, such as assessment, into ICT modules and how to use ICT skills in their respective subject areas.
English	- The TEC lecturers were able to organize and systematically learn in depth about teaching methods and language acquisition theories, which are necessary professional knowledge as an English teacher in the process of preparing syllabus and lesson plans. - They were able to design a very well-balanced class that emphasized knowledge transfer and activities. - The syllabus was developed through discussions with the Japanese subject experts. With this experience, TEC lecturers prepared lesson plans by themselves.
Pedagogy	- The TEC lecturers deepened their understanding of classroom management, problem-based learning, and inclusive education, that were new concepts in Cambodia. - Because the concepts are philosophical, it was difficult to create a common concept and the TEC lecturers had a lot of discussions with the Japanese subject experts. Since some ideas are international and some are context-dependent, and it is not always possible to use international ideas and examples in classroom management, and so forth. So, a "case study" was considered to make the teaching plan suitable for the Cambodian context.
Psychology	- Aiming to improve basic knowledge about educational psychology and to acquire a "framework" for self-training, the TEC lecturers developed syllabi and other materials based on international frameworks and systems, so that they can share the same academic background as the literature on educational psychology published in Europe, the U.S., and other countries. - They acquired basic knowledge of research methods and improve skills in educational psychology - In order to investigate the effectiveness of the classes based on the developed syllabus, the TEC lecturers conducted action research using a longitudinal method by creating "test questions," and prepared a manuscript for submission to the Bulletin of Nara University of Education (submission was postponed until the end of this fiscal year). Through this experience, they were able to acquire basic knowledge and skills not only on how to create "test questions" but also on how to analyse them using Excel and SPSS, how to interpret variance results (how to read the results and how to utilize them in "class review"), and so on.
ER	- From almost no knowledge or experience in educational research, many trainings and workshops were conducted by the Japanese subject experts and Cambodian research specialists, and a syllabus and teaching plan for TEC was completed. - All Year 4 students submitted a research paper as their graduation thesis.

One of the plus factors contributing to the development of the outcomes was the large number of syllabus discussions and training sessions conducted both face-to-face and online. Face-to-face trainings are often more effective for training that involves interactive dynamism, such as exercises, experiments, and workshops with activities, but face-to-face trainings could only be held twice a year during field trips in this project. Since the COVID-19 outbreak, online trainings were done monthly and participants could gradually work through the content of the previous session without forgetting what was done the previous time, which supplemented the limited face-to-face opportunities (although the online training also has limitations in its ability to accommodate training involving exercises). In addition, the online training was suitable for activities that should be conducted continuously and for content that should be recorded and

listened to repeatedly, so the flow in the last few months of the Project (first online discussions, second the Japanese experts' field trip, and third the training in Japan) worked very effectively.

(2)   Development of Draft Module Examination Questions

Exam questions were developed for each module in mathematics and science. In the development process, the Japanese subject experts first drafted the exam questions for each module, and then reviewed the content with TEC lecturers during online syllabus discussions. The Japanese subject experts provided advice to the TEC lecturers to ensure that the exam questions for their modules reflected the important aspects of the syllabus content, so that the TEC lecturers could learn about educational assessment, the relationship between the syllabus and exam questions, and how to develop exam questions. In the JCC and other opportunities, the Project has pointed out that there has been a concern about the consistency between the contents of teaching at TEC and of the final examination (which also serves as the civil service examination) that is administered by MoEYS/TTD. In response to this concern, MoEYS has ensured consistency by having TTD-appointed subject teachers finalize the exam questions, but the TEC lecturers prepare the draft questions of each subject.

4.1.2.4 Output 4: Cycle for lesson improvement is established in Math and Science subjects.

The activities of Output 3 and 4 are linked, so that the syllabus and teaching materials developed in Output 3 are used in the TEC lessons, and from there the resolution of issues found in the course improvement in Output 4 leads to syllabus improvement in Output 3. The activity cycle and its deliverables are illustrated in the diagram below. Here, the indicators were achieved by developing various tools such as mini tests, worksheets, reflection sheets, and assessment rubrics to encourage reflection.
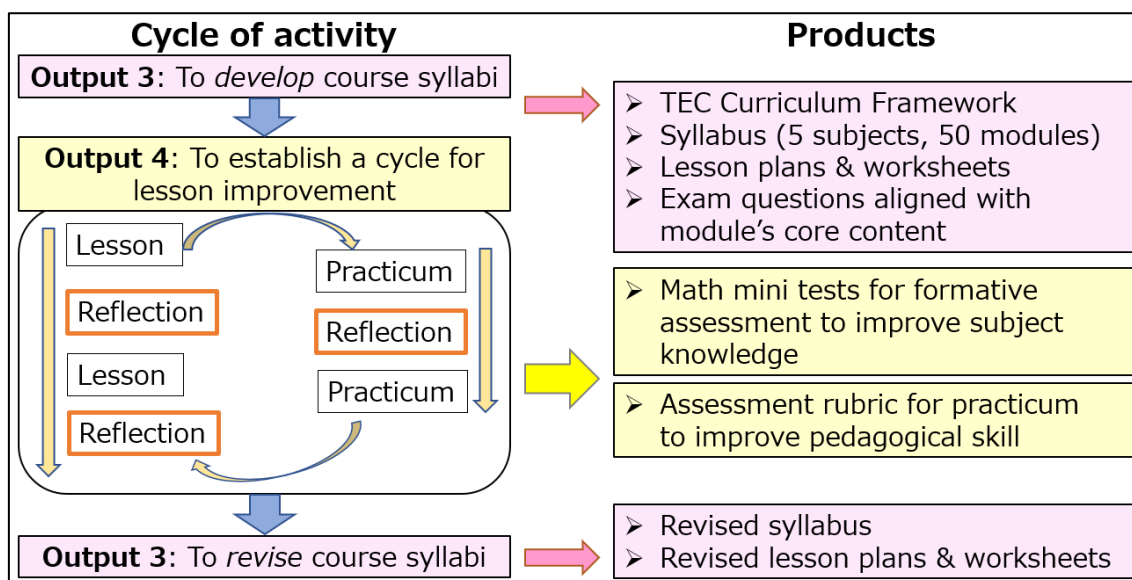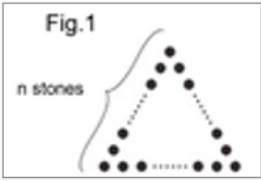
Figure 4-6   Cycle of Activities and Products Related to Syllabus Development and Lesson Improvement

(1)   Mathematics Mini Tests

In mathematics, mini test problems were created in the online training that would increase students' interest in mathematics and deepen their thinking. An example is a problem that asks the meaning represented by a mathematical expression such as the one shown in the figure below.

This is a mathematics problem to find the number of stones used to form an equilateral triangle with "n" stones per side, and there are various ways of thinking and answering the problems. Textbooks for Cambodian students in mathematics mainly contain calculation problems and basic text problems, and there are no problems to develop such thinking skills. For this reason, the TEC lecturers were able to broaden their ideas by being exposed to many types of "good problems" that have not been covered much in Cambodia.
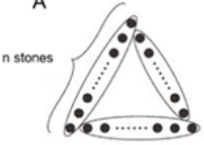
As shown in Fig.1, arrange n stones on each side to make an equilateral triangle.
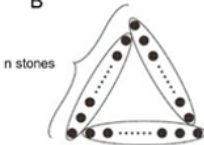
(1) The number of stones used at this time is given by the expression 3(n − 1). Choose a diagram that represents the idea of this expression.
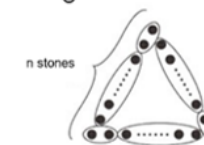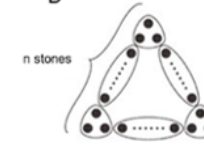
(2) Student F considers the total number of stones in Fig. 1 with the expression 3+3(n-2). Explain this student F's thinking with a diagram.

Figure 4-7   Example of Mathematics Mini Tests Problems

The mini tests and worksheets developed by the TEC lecturers were actively incorporated into their lessons to improve their own teaching, so it has highly expected they will continue this initiative on their own after the Project ends.

(2)   Reflection Sheets

The Project created a reflection sheet for each lesson (Figure 4-8) and encouraged TEC lecturers to reflect their lessons. However, in practice, it was difficult for busy TEC lecturers to write their reflections on the reflection sheet for each lesson. Therefore, for the case of mathematics, TEC lecturers created and used another reflection sheet (Figure 4-9) for students to reflect on their own teaching when they prepare module exam and mini tests problems, asking how they could improve their teaching methods to enable their students to solve these problems.

Figure 4-8   Reflection Sheet (General)

Reflection sheet
(*14. Oct, 2021 E-TEC On Line (ZOOM) All Math Members Meeting) Y.Kondo*

Name: _____

How do you develop your teaching to help your students perform better on small tests?

1. Various ways of solving, Various ways of answering (Open-ended approach), Various kinds of questions (Developed thinking of questions): Especially, how do you make students understand the educational significance of these approach?

2. Analysis of the student's wrong answers, Educational guidance to these students for improvement
   What do you think is the most important point to pay attention to in these lessons?

Figure 4-9   Mathematics Reflection Sheet

The specific steps here are: (1) TEC mathematics lecturers try to solve the questions first and confirm the solutions, (2) analyse and discuss the educational significance of such questions and the expected wrong answers, (3) fill out a reflection sheet, and (4) improve subsequent lessons. The discussion in (2) includes, for example, "How can we help TEC students understand the educational significance of questions that can have multiple solutions and answers?" and "What kind of wrong answers are likely to be given by TEC students and what are the causes of such wrong answers?" "What are the things we need to pay attention to in this lesson if we assume that the students will answer incorrectly?". These discussions provided an opportunity to consider "teaching based on learners' thinking" (see following section), which is a particular weakness of Cambodian teachers.

Figure 4-10   Examples of Science Worksheet

In Science, the worksheets were improved by incorporating content in the worksheet that encourages student reflection and encourages students to imagine children's mistakes while teaching. For example, as Figure 4-10 shows, by having students write "What did you learn in today's class?" at the end of the worksheet, TEC lecturers can see whether students are grasping the points of the lesson and whether they understand the content of the lesson, while encouraging TEC students to reflect on the lesson. In addition, the presentations and class reflections by TEC science lecturers during the online syllabus discussion for science classes were very stimulating, not only because they provided advice from Japanese subject specialists on key points and points

to keep in mind, but also because they enabled the sharing of class ideas among the lecturers. As a result, the TEC lecturers began to proactively comment on how to improve their classes, saying, "I want to do this experiment and I want you to teach me how to do it," and this led to a change in the TEC lecturers' classes to incorporate experiments and observations.

Through various training programs, the idea of improving lessons through reflection has been gradually gaining ground among TEC lecturers. In the future, it is expected that lesson improvement through reflection will be carried out in a sustainable manner if it is carried out in conjunction with lesson study and IQA, which TEC is engaged in.

(3) Rubric for Assessing Lesson Plans and Improvement of Lesson Design Skills through Its Use

In this activity, a rubric was created to assess lesson plans made by TEC students during the practicum. Through the assessment of the students' lesson plans together with the TEC lecturers, the aim is for the TEC lecturers themselves to improve their ability to assess and analyze their own lessons (e.g., "When I taught like this, I got this lesson plan from TEC students. This is probably the problem caused by my teaching, so I would need to improve this."). The Project supported this process and provided some points to keep in mind when TEC lecturers teach during and after the practicum.

The lowest scores in mathematics and science were shared by the two groups in terms of "anticipating learners' responses and organizing instruction". This is related to "Rublic-No.4: Proactive planning based on expected students' responses" in mathematics and "Rublic-No.2: Lesson planning and implementation focusing on the students' ideas and responses" in science. Specifically, in almost all of the lesson plans, students were expected to give correct or expected answers, with no expectation of wrong answers or misconceptions. This means that the teacher comes to class unprepared for such errors and, moreover, that there are no situations in which the teacher intentionally "shakes" the learner by making mistakes or asking negative questions. These points were explained over time at the second meeting and were used to guide the teacher from then on.

These rubrics can be used by TEC instructors to teach students how to write lesson plans and prepare for classes prior to educational practice. During the teaching practice, the rubrics can be used as guidelines to show students important points to keep in mind when preparing instructional plans and conducting classes, and after the teaching practice, the rubrics can be used by students to reflect on their own classes, and TEC lecturers and students can look back with the same lesson assessment criteria. In addition, these perspectives will be incorporated in the science and mathematics "lesson planning (instructional plan preparation)" classes when the lesson plan revision is conducted after the development of this rubric. Although it will take some time for TEC students to actually improve their lesson design, this rubric has been referenced in the WALS2022 presentation by the PTEC mathematics group and at the Lesson Study Review Meeting (October 2022) and is expected to gradually become more widespread.

4.1.2.5 Output 5: TEC teacher educators accumulate and update their knowledge and practices related to TEC student teachers' learning in classrooms through research activities.

Activities related to Output 5 have included technical assistance through AR workshops for TEC management and lecturers, promotion of participation in international conferences of international research societies, and development of syllabi and teaching materials for educational research modules for TEC Year 3-4 students and technical assistance to the lecturers (supervisors) in charge. The main results are listed below.

(1) TEC Research Bulletins

The action research planned and conducted by each subject team of TEC lecturers and completed as articles were compiled and published in each TEC as a research bulletin (No. 1) in March 2021 and a research bulletin (No. 2) in August 2022. The following is a summary of the articles published in each bulletin.

Figure 4-11   Covers of Research Bulletin (No. 1)

Table 4-15   Research Bulletin (No. 1) Paper Titles and Abstracts

No.	Teams	Paper Titles	Abstracts	International Conferences
1	PTEC English	Using Role Play to Improve Student Teachers' Competence in Speaking English	Examining the learning effectiveness of speaking classes incorporating role-plays	WALS 2020 Presentation (Sep 2020)
2	PTEC Biology	Study on Effective Teaching Method to Minimize Misunderstanding about insects' Characteristics for pre-service lower secondary teachers in TECs	Comparison of learning effects between classes using textbooks and classes incorporating nature observation on understanding insect concepts	WALS 2020 Presentation (Sep 2020)
3	PTEC Earth Sciences	Project-Based Learning (PBL) in Improving Students' Learning Output on Rock Identification and Classification	Examining the effectiveness of learning about how to identify stones using project-based learning	-
4	PTEC Khmer Language	Comparative Method in Identifying Parts of Speech in Texts of Khmer Language for Pre-Service Teachers	Verification of the effectiveness of teaching methods to promote understanding of the meaning of words in sentences	-
5	PTEC Mathematics	Elimination the Missed-Understanding Mix-Number and Product Operation	Examining the effectiveness of learning about the concept of zonal fractions and fraction products using an inquiry-based learning method.	-
6	PTEC ICT	Developing Effective Teaching Method to Introduce the Touch Typing	Verification of learning effectiveness regarding the teaching of computer typing skills	-

No.	Teams	Paper Titles	Abstracts	International Conferences
7	BTEC English	Effects of visual aids in learning grammar: Action research on students' grammar learning with the help of pictures	Verification of the learning effect of lessons on English grammar using pictures	WALS 2020 Presentation (Sep 2020) CamTESOL Presentation (Feb 2020)
8	BTEC Chemistry	The Effects of Student Teachers' Critical Thinking	Verification of learning effects on the improvement of critical thinking skills through lessons incorporating experiments.	-

PTEC

BTEC
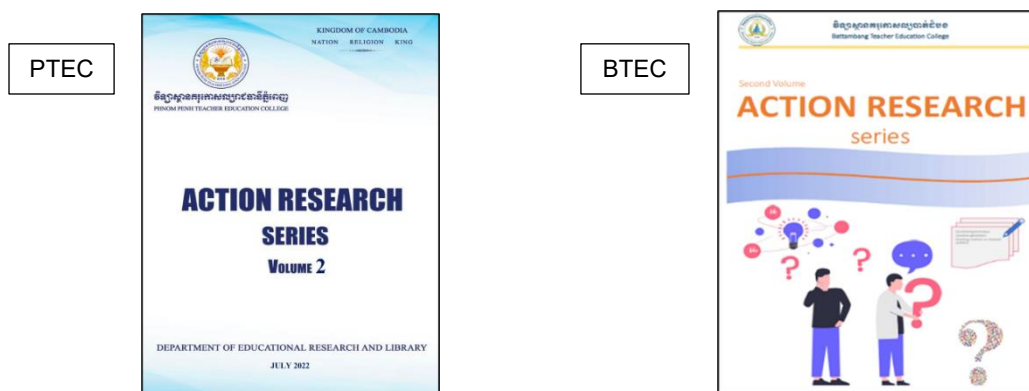
Figure 4-12   Covers of Research Bulletin (No. 2)

Table 4-16   Research Bulletin (No. 2) Paper Titles and Abstracts

No.	Teams	Paper Titles	Abstracts	International Conferences
1	PTEC Mathematics	The Influences of Reflective Conversation on Teaching Practicum: A Case Study of Mathematics Student Teachers at Phnom Penh Teacher education College	Verification of whether the discussion between teachers and students focused on reflection improves students' teaching plans and lessons during the teaching practice.	WALS 2022 Presentation (Sep 2022)
2	PTEC English	Using guided writing to improve student teachers' Expository Paragraph Writing at Phnom Penh Teacher Education College: A Action Research Study	Tested whether a five-step writing guide would improve students' English writing skills	WALS 2021 Presentation (Sep 2021) VietTESOL 2022 Poster Presentation (Sep 2022)
3	PTEC Educational Research	Teaching educational research using a cooperative learning approach in a virtual classroom setting: small group reading in Google Classroom	To promote understanding among third-year TEC students by teaching each other in reading materials related to educational research in which they have difficulties.	WALS 2021 Presentation (Sep 2021)
4	PTEC Khmer Language	Improving Primary Pre-Service Teachers' Teaching Competency Using Microteaching	Examining how incorporating mock classes improves students' teaching skills	WALS 2021 Presentation (Sep 2021) VietTESOL2022 Poster Presentation (Sep 2022)

No.	Teams	Paper Titles	Abstracts	International Conferences
5	PTEC ICT/Biology	Exploring the effects of augmented reality on the Teaching and Learning Process: A Case Study of Biology Lessons	Examining the effects of using augmented reality teaching materials in biology classes.	WALS 2021 Presentation (Sep 2021)
6	PTEC IQA/Social Studies	Improving teaching effectiveness via peer's observation: A Case of a Teacher Educator of social studies at Phnom Penh teacher education College	Examining how effectively teachers can improve their teaching by observing each other in social studies classes.	WALS 2021 Presentation (Sep 2021)
7	BTEC English	Questioning Techniques in Learning English Grammar: A case of primary education student teachers at Battambang Teacher Education College	Test the effectiveness of the introduction of three different question formats on the acquisition of English grammar	WALS 2021 Presentation (Sep 2021)
8	BTEC Science	Question Generation: An analysis of student teachers' practicum at Battambang Teacher Education College	Survey of the types of questions (Bloom's Taxonomy 5-step classification) that are most frequently used in students' science subject teaching plans.	WALS 2022 Abstract passed (Jul 2022)
9	BTEC Education (Educational Research)	The use of lecture-based and discussion-based teaching methods to generate research questions: a case study of student teachers at Battambang Teacher Education College	Examining whether lecture-style or discussion-style teaching is most effective in formulating research questions for educational research.	WALS 2022 Abstract passed (Jul 2022)

In addition, the following are the abstracts of papers that were not published in the research bulletin because the final papers were not completed in time for the deadline but passed the review process at the international conference and papers of joint research between the Japanese subject experts (Psychology) of Nara University of Education and TEC lecturers.

Table 4-17   Titles and Abstracts of Papers Published Outside of Research Bulletins

No.	Teams	Paper Titles	Summaries	International Conferences
1	BTEC Psychology	Does Working in Collaboration Support Student Teachers' Memory Retrieval? A Comparison of Collaborative and Individual Learning	Examining how collaborative learning works in memory retrieval for TEC students	WALS 2022 Presentation (Sep 2022)
2	BTEC ICT/ Mathematics	The Effects of Using GeoGebra on the Student teachers' Mathematics Achievement: Geometric Transformations	Verification of whether the use of the mathematical software GeoGebra facilitates students' understanding of geometric transformations.	WALS 2022 Abstract passed (Jul 2022)
3	BTEC Education Research	Teacher Educators' Conception and Difficulties in Doing Action Research at Battambang Teacher Education College (BTEC)	Survey of what difficulties and feelings TEC faculty have about conducting action research	WALS 2022 Presentation (Sep 2022)
4	P/BTEC Psychology	Effects of Lessons about Educational Psychology on Students' Academic Knowledges and Adjustments to the College	Research and verification of the effectiveness of classes on educational psychology	Considering publication in the research bulletin of Nara University of Education

The table below shows the number of research articles published in the two research bulletins listed above and the number of other research articles that are currently in the process of being finalized, by subject area.

Table 4-18   Number of Research Papers Per Subject

Subjects		PTEC	BTEC
JICA Support Subjects	Mathematics	2	1 (Joint research with ICT)
	Science	3 (One is joint research with ICT)	2
	ICT	2 (One is joint research with science)	1 (Joint research with Mathematics)
	Educational Research	1	2
	Psychology	1 (Joint research with BTEC and Japanese experts)	1
	English	2	2
Others	IQA / Social Studies	1	-
	Khmer language	2	-
Total		**13** (Counted the joint research of ICT/Biology as one)	**8** (Counted the joint research of ICT/Mathematics as one)

(2)   Research Presentations at International Conferences

A total of 20 research abstracts were approved and accepted for presentation at a total of six international conferences during the two-year period from 2020 to 2022, as shown in the table below, and a total of 16 research presentations were made.

Table 4-19   International Conferences at which Research was Presented

No.	Titles of Conference	Schedule	Themes	Locations	Number of Presentation and Participants
1	CamTESOL	February 7-9, 2020	21st Century ELT: Approaches for Effective Practices	Phnom Penh, Cambodia	1 research paper presentation (3 participants)
2	WALS 2020 (World Association for the Study of Teaching)	December 2-4, 2020	Elevating Student Equity through Effective Research-based Lesson Study	Online (San Francisco, USA)	3 research paper presentations (7 participants)
3	WALS 2021	November 29 - December 3, 2021	Revisiting Lesson and Learning Studies: Accessibility, Quality, and Sustainability	Online (Macau, Hong Kong)	6 research paper presentations (14 participants)
4	VietTESOL	September 16-18, 2022	Digital ELT: Approaches and Innovations	Nha Trang, Vietnam	2 research poster presentations (3 participants)
5	WALS 2022	September 20-23, 2022	Creating Lesson Study in Sustaining Community and Providing Quality Education	Kuala Lumpur, Malaysia	3 research paper presentations (6 participants)
6	SEAMEO RIHED Research Symposium	November 24-25, 2022	Sustainable Learning in Higher Education: Towards Sustainable Development	Bangkok, Thailand	1 research paper presentation (1 participant)

The first, CamTESOL, is an annual international conference on English education held in Phnom Penh, Cambodia, where three English teachers from PTEC and BTEC presented a joint research project. A Japanese expert in charge of English language subject gave technical advice on the presentation manuscript and observed the presentation at the site; it was the first international conference debut as a TEC faculty member, and although it was a very nervous presentation, it

was well attended by the audience, which motivated us to conduct further educational research and present at the next conference.

The second, WALS International Conference 2020, was held online instead of in San Francisco, California, USA, as originally planned due to the global corona disaster, which made it possible for not only the presenters, but also the TEC management to watch research presentations by researchers from around the world, which was a very valuable opportunity for them. The presentation at WALS, which had been a major goal of the TEC, was a great experience, not only for the Japanese experts who had supported TEC, but also for the TEC management and faculty, boosting their confidence. In addition, the presenter's reproduction and sharing of his presentation with other lecturers at the TEC workshop that followed gave him a sense of self-esteem, which in turn motivated other lecturers to do their own educational research next time. On the other hand, the three teams that presented at the conference (PTEC English, PTEC Biology, and BTEC English) had relatively high English proficiency and were able to write and present their papers in English, and they were able to consult directly with our Japanese experts, making it easy for us to provide support. We have tried to reduce the language hurdles by hiring Khmer interpreters for the workshops, translating training materials into Khmer, and asking local consultants to provide on-site support, but there are still hurdles for many subject teachers in writing and presenting papers in English. This is one of the issues to be addressed in the future.

The third WALS International Conference 2021 was also held online: six TEC teams (PTEC English, Pedagogy, Khmer, ICT/Biology, IQA/Social Studies, and BTEC English) were invited as presenters and a total of 36 participants, including TEC managers, presenters, and experts, registered and participated online. Following the presenters of the same international conference in 2020, six paper proposals were submitted and all were approved and accepted as presenters.

The fourth, VietTESOL, is an international conference for English lecturers held in Vietnam. Three PTEC lecturers (two English and one Khmer) participated in the international conference held there with financial support from the U.S. Embassy and gave well-received presentations.

The fifth WALS International Conference 2022 was held at a university in Kuala Lumpur, and this was the third time to participate in a local presentation. 6 TEC faculty teams submitted paper proposals, which were all approved and accepted, but because the dates of the conference overlapped with the training in Japan for this project and 3 of the team leaders were members of this training program, only the other 3 teams (PTEC Mathematics, BTEC Psychology, and Pedagogy) traveled to Japan to present their papers. However, due to the schedule conflict with the training in Japan for this project, only the other three teams (PTEC Mathematics, BTEC Psychology, and Pedagogy) traveled to Japan to present their papers at the conference.

The sixth was a research symposium organized by SEAMEO (Southeast Asian Ministers of Education Organization). PTEC lecturers who provide financial support for this project and supervise educational research traveled to the region to present their research. According to the organizers, approximately 90 research abstracts were submitted, of which 35 were selected as presenters. Three were from Cambodia and the other two were researchers from CDRI (Cambodia Development Resource Institute).

Due to COVID-19, after March 2020 schools were closed and switched to online classes making it difficult for most TEC faculty to conduct the planned data collection at the classroom level, and the research itself remained unfeasible. Therefore, we reviewed the design from scratch, from problem setting to data collection methods, and provided support focusing on basic technical guidance with the aim of improving the research plan. In addition, TEC lecturers themselves continued to devise ways to conduct research, such as switching the research method itself to

online classes and online teaching practice. It is highly expected that the results of these efforts led to this presentation at an international conference.

The next challenge is to establish a financial mechanism within TEC that allows for the budgeting and expenditure of expenses for research and participation in conferences, and a career advancement mechanism that links research achievements to faculty evaluation, so that they can continue to participate as presenters at the annual WALS International Conference, TESOL, SEAMEO, and other international conferences in the future. The next task is to develop a system within TEC to allow for the budgeting and spending of expenses for research and participation in conferences so that lecturers can participate in international conferences as presenters.

(3) Research Paper Submission by TEC Graduates

The TEC educational curriculum offers credits for educational research in the third and fourth years. Supervisors for educational research seminars (50 PTECs and 30 BTECs) are appointed from each TEC subject to provide guidance in classes and a graduation thesis related to educational research. In addition, completion and submission of a graduation thesis is a requirement for graduation.

In addition to supporting the development of syllabi, teaching plans, and teaching materials for the education and research modules, the Project provided technical support to the TEC supervisors by organizing training in Japan and local workshop trainings by Japanese experts in charge of education and research subjects. The local consultants also provided direct and complementary technical guidance to TEC supervisors and third- and fourth-year students.

As a result, as shown in the table below, all of the students from the first graduating class of October 2022 conducted educational research and submitted their work as their graduation theses.

Table 4-20   Number of Thesis Submitted by TEC's First Graduates

No.	Courses	Number of Thesis	Number of Graduates (Female)
1	PTEC Primary Teacher Training Program	146	146 (93)
2	PTEC Secondary School Teacher Training Program	88	88 (46)
3	BTEC Primary Teacher Training Program	150	150 (99)
4	BTEC Secondary School Teacher Training Program	97	97 (62)
	Total	**481**	**481 (300)**

The following photos shows the fourth-year students' paper presentation and oral examinations conducted in the second semester of 2022. All Year 4 students were eligible and TEC supervisors served as examiners.

Figure 4-13   Oral Examination at TECs

4.1.3   Baseline and Endline Study Results

(1)   Pre-Post Analysis of TEC Students' Subject Knowledge and Teaching Methodology Knowledge

The tables below summarize the average percentage of TEC students' correct responses to the questions on subject and teaching method knowledges in the baseline and endline surveys. The overall increase of 13.8% points meets the Output Indicator 1 of 10% points increase. The largest increase by "Course x Field" was 31.9 % points in "Lower Secondary x Teaching Methodology," while "Primary x Subject Knowledge" increased by only 6.2 % points. The percentage of correct responses at the endline was higher for subject knowledge than for teaching method knowledge.

Table 4-21   TEC Students' Correct Answer Rates on Subject Knowledge and Teaching Methodology: Baseline-Endline Comparison

Courses	Subject Knowledge			Teaching Methodology			Average Increase
	BLS	ELS	Increase	BLS	ELS	Increase	
12+4 Primary School Course	58.7	64.9	**+6.2**	31.1	44.7	**+13.6**	**+9.9**
12+4 Lower Secondary School Course	58.7	75.0	**+16.3**	24.1	56.0	**+31.9**	**+24.1**
Total	58.7	67.3	**+8.6**	28.3	47.4	**+19.1**	**+13.8**

On the other hand, as shown in the Table below, the results for subject knowledge show that the primary teacher training program showed poor growth, while the lower secondary school teacher training program showed strong growth. The results of the analysis by program are presented below.

- Although "Primary x Math Subject Knowledge" increased by only 7.3 percentage points, the percentage of correct answers itself was 75.4%, which is higher than the other questions. In addition, the number of questions in which the percentage of correct answers exceeded 80% out of 43 questions increased significantly from 13 questions at the baseline to 20 questions at the endline, indicating the success of the input program. However, the fact that 5 of the 43 questions had a correct response rate of less than 50% and that the growth in scores between the two surveys was also poor lowered the overall average correct response rate.

- The "Primary x Science Subject Knowledge" category had the worst growth, increasing by only 4.9 percentage points. However, when comparing the baseline and endline results the number of questions with less than 30% correct responses decreased from 11 to 7, while the number of questions with 60% or more correct responses increased from 8 to 13. In science, the overall average correct response rate was affected by certain units (e.g., primary school 'Heat and Matter'), which had a lower correct response rate than the baseline.

- In the "Lower Secondary x Subject Knowledge" category, the PTEC Physics category had a slightly lower increase of 8.1 percentage points, but all other categories had an increase of 10 percentage points or more, and in the discipline category (except for Physics) the percentage of correct responses exceeded 70% at the endline. Even in Physics Subject Knowledge, the percentage of correct answers exceeding 70% out of 27 questions increased significantly from 5 questions in the baseline to 14 questions in the endline.

Table 4-22   TEC Students' Correct Answer Rates on Subject Knowledge: Baseline and Endline Comparisons

Primary School Teacher Training Course

Subject Knowledge	Mathematics			Science		
	BLS	ELS	Increase	BLS	ELS	Increase
BTEC 12+4	71.9	77.4	**+5.5**	49.3	56.4	**+7.1**
PTEC 12+4	64.3	73.3	**+9.0**	49.7	52.3	**+2.6**
Whole 12+4	68.1	75.4	**+7.3**	49.5	54.4	**+4.9**

Lower Secondary School Teacher Training Course

Subject Knowledge	Mathematics			Physics			Chemistry			Biology		
	BLS	ELS	Increase	BLS	ELS	Increase	BLS	ELS	Increase	BLS	ELS	Increase
BTEC 12+4	52.2	68.8	**+16.6**	40.4	59.4	**+19.0**	61.1	80.4	**+19.3**	69.6	81.5	**+11.9**
PTEC 12+4	55.8	79.5	**+23.7**	56.5	64.6	**+8.1**	63.1	81.8	**+18.7**	70.7	84.4	**+13.7**
Whole 12+4	53.8	73.6	**+19.8**	48.1	61.9	**+13.7**	62.1	81.1	**+19.0**	70.2	83.0	**+12.8**

With regards to teaching methods as shown in the table below, while PTEC math increased by only 9.0% points in the primary teacher training programs, the other programs generally increased by more than 10% points. The following is an analysis of the results by program.

- In the perspective of "Primary x Math Teaching Methodology" the percentage of correct responses in the endline survey was 40.7% and the growth from baseline was 10.1%, which is lower than the others. However, of the 22 questions, the percentage of correct answers exceeding 50% increased from 2 questions in the baseline to 9 questions in the endline. The overall average percentage of correct answers was lower for the four questions where the percentage of correct answers was below 10%, which is lower than at baseline.
- In the perspective of "Primary x Science Teaching Methodology", both PTEC and BTEC increased by more than 10% points as the average of correct responses, but the percentage of correct responses itself remained below 50%. On the other hand, in 7 of the 15 questions, the growth from the baseline was over 20% points, and the number of questions with a correct response rate over 60% increased from one question in the baseline to five questions in the endline. In science, the one question (movement of the sun) where student responses were below 10% also caused the overall percentage of correct answers to drop.
- In the perspective of "Lower Secondary x Teaching Methodology", there was a large increase of around 30% points in both mathematics and science. However, the percentage of correct answers itself remained in the 50% range.

Table 4-23   TEC Students' Correct Answer Rates on Teaching Methodology: Baseline and Endline Comparisons

Primary School Teacher Training Course

Courses	Mathematics			Science		
	BLS	ELS	Increase	BLS	ELS	Increase
BTEC 12+4	30.9	42.0	**+11.1**	31.6	54.3	**+22.7**
PTEC 12+4	30.3	39.3	**+9.0**	31.5	42.8	**+11.3**
Whole12+4	30.6	40.7	**+10.1**	31.5	48.6	**+17.1**

Lower Secondary School Teacher Training Course

Courses	Mathematics			Science		
	BLS	ELS	Increase	BLS	ELS	Increase
BTEC 12+4	25.1	56.1	**+31.0**	21.7	58.9	**+37.2**
PTEC 12+4	27.4	50.0	**+22.6**	25.4	54.6	**+29.2**
Whole12+4	26.1	53.3	**+27.2**	23.5	56.8	**+33.3**

Overall, the input from the Project has been generally successful, but there were some areas where instruction to students was insufficient, including content that should have been acquired through

science experiments and other activities. However, the syllabus and teaching materials developed in the first half of the Project will be revised at the September 2022 training session in Japan, and the above issues will be gradually resolved as they are applied to future instruction at TEC, and as TEC lecturers themselves become familiar with the new content and teaching methods.

(2) With-Without Analysis of Subject Knowledge and Teaching Methodology of 12+4 and 12+2 Students

The comparison of the percentage of correct answers for students in 4-year (12+4) and 2-year (12+2) programs is shown in the table below. As can be seen from this table, overall, the correct response rates for 12+4 students were higher than for 12+2 students in both subject matter knowledge and teaching methodology knowledge. However, while 12+4 students outperformed 12+2 students by more than 20 percentage points in the lower secondary school teacher training program, there was no significant difference in the primary school program.

Table 4-24 Students' Correct Answer Rates on Subject Knowledge and Teaching Methodology: Comparison of 12+4 and 12+2

Courses	Subject Knowledge			Teaching Methodology		
	BLS	ELS	Increase	BLS	ELS	Increase
12+4 Primary Teacher Training Course [a].	58.7	64.9	**6.2**	31.1	44.7	**13.6**
12+2 Primary Teacher Training Course [b].	58.2	56.4	**-1.8**	27.6	40.3	**12.7**
Difference (a-b)	0.5	8.5	-	3.5	4.4	-
12+4 Lower Secondary School Teacher Training Course [c].	58.7	75.0	**16.3**	24.1	56.0	**31.9**
12+2 Lower Secondary School Teacher Training Course [d].	55.8	52.3	**-3.5**	24.8	33.6	**8.8**
Difference (c-d)	2.8	22.6	-	-0.7	22.4	-

Comparisons of the results for "Course x Subject Knowledge" are shown the tables below. In the lower secondary school teacher training courses, the 12+4 students showed a large advantage with a 27.1% points difference in Biology, while in the primary school teacher training program, the difference was only less than 10% points. As noted above, this is due to the slower growth of the 12+4 students' performance.

Table 4-25 Students' Correct Answer Rates on Subject Knowledge: Comparison of 12+4 and 12+2

Primary School Teacher Training Course

Course	Mathematics			Science		
	BLS	ELS	Increase	BLS	ELS	Increase
12+4 (a)	68.1	75.4	**+7.3**	49.5	54.4	**+4.9**
12+2 (b)	68.5	67.1	**-1.4**	48.0	45.7	**-2.3**
Difference (a-b)	-0.4	8.3	-	1.5	8.7	-

Lower Secondary School Teacher Training Course

Course	Mathematics			Physics			Chemistry			Biology		
	BLS	ELS	Increase	BLS	ELS	Increase	BLS	ELS	Increase	BLS	ELS	Increase
12+4 (a)	53.8	73.6	**+19.8**	48.1	61.9	**13.7**	62.1	81.1	**19.0**	70.2	83.0	**12.8**
12+2 (b)	51.7	58.7	**+7.0**	45.2	36.3	**-8.9**	52.2	N/A	**-***	65.4	55.9	**-9.6**
Difference (a-b)	2.1	14.9	-	3.0	25.6	-	9.8	N/A	-	4.7	27.1	-

Note: *Data not collected because there were no chemistry majors for the 12+2 2019 intake among those surveyed.

Comparisons of the results for "Course x Teaching Methodology" are shown in the following tables. The 12+4 students had a higher percentage of correct answers than the 12+2 students in "Lower Secondary x Teaching Methodology", with a 22.5% points difference in science and a

20.1% points difference in mathematics. As with subject knowledge, the 12+4 students outperformed the 12+2 students in "Primary x Teaching Methodology", but the difference was not large.

Table 4-26   Students' Correct Answer Rates on Teaching Methdology: Comparison of 12+4 and 12+2

Primary School Teacher Training Course

Course	Mathematics			Science		
	BLS	ELS	Increase	BLS	ELS	Increase
12+4 (a)	30.6	40.7	**10.1**	31.5	48.6	**17.1**
12+2 (b)	28.3	38.7	**10.4**	26.8	41.9	**15.1**
Difference (a-b)	2.3	2.0	-	4.7	6.7	-

Lower Secondary School Teacher Training Course

Course	Mathematics			Science		
	BLS	ELS	Increase	BLS	ELS	Increase
12+4 (a)	26.1	53.3	**27.2**	23.5	56.8	**33.3**
12+2 (b)	26.0	33.2	**7.2**	24.2	34.3	**10.1**
Difference (a-b)	0.1	20.1	-	-0.7	22.5	

(3)   Survey of Teacher Educators' Knowledge of Subject and Teaching Methodology

The results overview of the survey on the teacher educators' subject knowledge and teaching methodology knowledge are described below. For detailed reports, see the endline survey report.

Pre-Post Analysis

- The average correct answer rates of TEC 12+4 teacher educators on subject knowledge and teaching methodology knowledge in the endline survey was generally higher than at baseline, with 11.1% points increase for "primary x subject knowledge", 6.1% points increase for "Primary x Teaching Methodology", 8.8 % points increase for "Lower Secondary x Subject Knowledge", increased by 12.4 % points.
- Only in "Lower Secondary Biology x Subject Knowledge" was the mean percentage of correct responses 1.1% points lower than at baseline. This was due to an increase in the number of survey participants from 2 at baseline to 11 at endline, and the lower performance of the newer teacher educators. The changes in scores for teachers who received both baseline and endline were 82.4 to 94.1 and 88.2 to 88.2, indicating that there was no decline.

With-Without Analysis

- TEC 12+4 teacher educators had higher percentages of correct answers in both subject knowledge and teaching methodology knowledge than TTC 12+2 teacher educators. The difference was 23.6% points for primary x subject knowledge, 10.1 % points for "Primary x Teaching Methodology", 9.3% points for "Lower Secondary x Subject Knowledge", and 1.1 % points for "Lower Secondary x Teaching Methodology".
- The fact that no difference occurred in the "Lower Secondary x Teaching Methodology" category was due to the low percentage of correct responses, especially in science, where the percentage of correct responses by TEC science teacher educators was 8.2% points lower than that of the TTC science teacher educators. This is because the 33 TEC and 13 TTC science faculty surveyed in this study had the same low percentage of correct responses (24% (8) and 23% (3), respectively) below 40%, but the top performers (21% (7) and 54% (7), respectively) with correct responses of 70% or higher, with the TEC

teacher educators having the highest. This is due to the fact that TEC has fewer top-performers and a larger number of middle-performers (40%-70% correct).

TEC Teacher Educators vs. TEC Students

- The average percentage of correct responses by TEC teacher educators was higher than that of TEC students.
- However, in several subjects and areas, students outperformed faculty, e.g., 2.3% points in "Lower Secondary x Chemistry Subject Knowledge", 3.0% points in "Lower Secondary x Mathematics Teaching Methodology", and 1.1% points in "Lower Secondary x Science Teaching Methodology", where TEC students answered the questions correctly. Furthermore, for some questions, TEC students outperformed the TEC teacher educators by more than 20% points, and this was also the case for several teaching methods questions where TEC teacher educators have had the advantage.
- In particular, TEC teacher educators seemed to struggle with questions that they had not studied sufficiently or that had not been covered in past curricula. In addition, questions with low percentages of correct answers by students tended to have low percentages of correct answers by lecturers.

(4) Changes of Attitudes and Behavior of TEC Managers and Lecturers Toward Their Jobs

The results overview of the survey on changes in Attitudes and Behavior of TEC managers and lecturers toward their jobs are presented below. For details, please refer to the endline survey report. The "Attitudes" questions asked whether the respondents were aware that it was their role and responsibility to perform the task "---", while the "Behavior" questions asked whether they were performing the task "---".

Lecturers

- [Attitudes] There was no noticeable difference between TEC and TTC faculty on all questions.
- [Behaviour] Compared to TTC lecturers, a higher percentage of TEC lecturers indicated that they have been particularly engaged in syllabus development and improvement, writing and presenting research reports on action research, and using handbooks and evaluation tools in their teaching practice. This may be the result of TEC lecturers' research activities as educators in higher education institutions and their own efforts to improve educational content.

Managers

- [Attitudes] Compared to TTC managers, TEC managers were more likely to identify themselves with all of the administrative and technical areas required of higher education and teacher training institutions (developing and reviewing their own operational plans, developing and reviewing syllabi, promoting action research, promoting CPD, improving teaching, and supervising curriculum implementation). The degree to which they recognized these as their roles was high in all areas.
- [Behaviour] TEC managers were more likely than TTC managers to report that they perform tasks that are particularly demanding of higher education institutions, particularly the development and review of operational plans and the promotion of action research.
- [Behaviour] Based on the analysis of responses to the descriptive questions, it is noticeable that TTC managers gave positive responses without understanding the meaning (e.g., responses that considered "lesson study" to be "studying lesson content", responses that seemed to consider action research to be regular technical group meetings

or individual research, etc.), suggesting that the degree to which these were actually implemented may be lower than the results indicate. On the other hand, many of the responses from TEC managers seemed to indicate that they understood the questions accurately, and therefore tended to give a slightly lower rating of "not as good as I thought" even though they had more experience in this area.

From the above. As a result of the project's interventions (administrative documents, job development, syllabus material development, course improvement, and support for action research as an institution of higher education),

[1] The experimental group of TEC students and teachers in the 12+4 program, while still having problems with some subject areas, increased their overall understanding of subject and teaching method knowledge and generally improved their abilities compared to the control group (students and teachers in the 12+2 program).

[2] The TEC managers and faculty in the experimental group understood and steadily practiced their duties as an institution of higher education compared to the TTC managers and faculty in the control group.

(5)   Supplement

The endline survey was also supplemented by a 10-question questionnaire based on the OECD (2008) Teaching and Learning International Survey (TALIS) questions on teachers' views of teaching. The results were interpreted from the three perspectives of "the views of teachers", "the views of the learners", and "the views of classroom" and showed that TEC students and teacher educators, like teachers in other countries, hold both direct transmission views and constructivist views of teaching in all three perspectives. Considering these results together with the results of the teaching methodology, it can be inferred that the views of teaching held by TEC teacher educators and students are not necessarily connected to their educational practices.

In order to link the view of teaching and practice, it is essential for TEC teachers' educators and students to acquire specific knowledge of constructivist teaching methods and to accumulate classroom practice based on this knowledge. On the other hand, several surveys have shown that in Cambodia, the role of teachers has traditionally been to "pass on knowledge to the next generation", and this idea is very compatible with the direct transmissionism view of teaching, which is likely the reason why teachers and students are quickly swayed away from the constructivist view of teaching even if they learn it. One way to likely solve this problem is to conduct lesson study and action research, which this project has also supported. It would be effective to systematically implement such efforts to promote awareness at the top-level by having teachers check each other's teaching methods to see if they are "merely teaching" and "what can be done to encourage learners' discoveries".

4.2   Other Notable Achievements

The Project has achieved a variety of results in addition to the indicators shown in the PDM. A summary is given below.

4.2.1   High Percentage of Female Students at TEC

Information on the number of TEC students as of the start of the new semester in November 2022 is summarized in the box on the follow page[17]. As can be seen from the this, the first term of TEC students who entered in 2018 there were many withdrawals after passing the entrance exam, while

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[17] These tables were prepared by the Project in November 2022 based on information on the number of students obtained from each TEC.

the number of students enrolled in the second and third terms remained stable. The first term students graduated in August 2022, and all of those who took the final exam (which also serves as the civil service exam) passed and will be teaching in primary and lower secondary schools across the country starting in January 2023. Of the TEC graduates, 8 from the primary teacher training program and 23 from the lower secondary schoolteacher training program were hired by both TECs as assistant lecturers[18] and will start teaching at their respective TEC-affiliated schools in January. After a few years, they will be prioritized for master's programs in their respective fields, after which they are expected to become Associate Lecturers and then Lecturers in their TECs.

The percentage of female TEC students has increased over the years, from 64.5% of the first-term students, 71.8% of the second-term students, and 76.0% of the third-term students in the primary teacher training program, and from 58.4% of the first-term students to 66.3% of the second-term students and 69.0% of the third-term students in the secondary teacher training program. In particular, the ratio of women to men in the primary teacher training program in the third cohort was 3.17, more than three times the ratio of the first cohort.[19] These figures will not continue to rise, of course, but it should be noted that TEC has greatly encouraged the participation of women in higher education, and is one of the hidden achievements of the establishment of TEC.

4.2.2   TEC as a Specialized Educational Institution for Primary Education

It should be emphasized that PTEC and BTEC are the first "higher education institutions with specialized courses in primary education" in Cambodia.[20] Primary education is very different from secondary education in that it requires a deep understanding of subject teaching methods and the supporting educational and psychological aspects, and thus requires specialists. In fact, most of the TEC lecturers and PTTC trainers, with the exception of older teacher educators, are NIE graduates, meaning that they were trained as primary school teachers only after having received training as high school teachers. However, if graduates of the TEC primary teacher training course gain experience as primary school teachers and earn a master's degree or higher in primary education, they will become "primary education specialists" in both name and practice. In this sense, the first graduates hired by TEC will be "Cambodia's first experts in primary education". We look forward to seeing them when they start teaching at TEC in a few years.

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[18] First, applications for Assistant Lecturer positions are advertised, and those who wish to remain in TEC apply for the positions. The board of directors of each TEC selects the applicants, and the final decision is made based on academic performance and other factors. At BTEC, 12 students were initially hired in the lower secondary school process, but one student later withdrew, leaving a total of 11.

[19] According to data for Cambodia in the Global Gender Gap Report 2022 (https://www3.weforum.org/docs/ WEF_GGGR_2022.pdf) on pages 113-114, the ratio of women to men (female to male) for higher education as a whole is 0 .87.

[20] PTEC and BTEC are the only institutions of higher education that offer secondary teacher training, but NIE is also such an institution of higher education in the sense that it "specializes in secondary education.

BOX: Information on TEC students [1]

First cohort (enrolling in 2018, graduating in 2022) ----------------------

- **Primary School Teacher Training Course**

TEC	Number of Students Admitted	Number of Year4 Students	Final Examination Successful Applicants	Remarks
PTEC (Female)	147 (93)	146 (92)	146 (92)	One female student took a year off due to pregnancy and childbirth and transferred to the second term.
BTEC (Female)	150 (99)	150 (99)	150 (99)	
Total Amount (Female)	297 (192)	296 (191)	296 (191)	Percentage of female students = 64.5%, women/men = 1.82

- **Lower Secondary School Teacher Training Course**

	Subject Courses	Number of Students Admitted	Number of Year4 Students	Final Examination Successful Applicants	Remarks
PTEC	**Mathematics (Female)**	20 (12)	20 (12)	20 (12)	
	Physics (Female)	22 (7)	22 (7)	21 (6)	One student withdrew from the final exam.
	Chemistry (Female)	23 (11)	23 (11)	23 (11)	
	Biology (Female)	24 (17)	24 (17)	24 (17)	
BTEC	**Mathematics (Female)**	25 (11)	24 (11)	24 (11)	One student withdrew in the second year (2019). He received a scholarship to study in the United States.
	Physics (Female)	25 (16)	25 (16)	25 (16)	
	Chemistry (Female)	25 (17)	25 (17)	24 (16)	One student withdrew from the final exam.
	Biology (Female)	25 (20)	24 (19)	24 (19)	One student withdrew in the first year (2018). He received a scholarship to a university in Phnom Penh.
Total Amount (Female)		189 (111)	187 (110)	185 (108)	Percentage of female students = 58.4%, women/men = 1.40

- **The First Students Hired by TEC as Assistant Lecturer**

Primary School Teacher Training Course	PTEC	(Female)	BTEC	(Female)	Total	(Female)
Enrollment (Female)	5	(4)	3	(1)	8	(5)

Lower Secondary School Teacher Training Course	PTEC	(Female)	BTEC	(Female)	Total	(Female)
Mathematics (Female)	3	(1)	2	(1)	5	(2)
Physics (Female)	3	(1)	4	(2)	7	(3)
Chemistry (Female)	3	(1)	2	(1)	5	(2)
Biology (Female)	3	(2)	3	(3)	6	(5)
Total (Female)	12	(5)	11	(7)	23	(12)

BOX: Information on TEC students [2]

Second cohort (enrolling in 2019, scheduled to graduate in 2023) --------------------

- **Primary School Teacher Training Course**

TEC	Students Admitted	(Female)	Year 4 Students	(Female)	Remarks
PTEC	148	(107)	149	(108)	One student transferred from the first term for the reasons mentioned above.
BTEC	150	(106)	148	(105)	One student withdrew in the second year (2019) and received a scholarship to study in China. Another student died in a car accident in December 2022.
Total	298	(213)	298	(214)	Percentage of female students = 71.8%, female/ male = 2.55

- **Lower Secondary School Teacher Training Course**

TEC	Subject Courses	Students admitted	(Female)	Year 4 Students	(Female)	Remarks
PTEC	Mathematics	25	(17)	25	(17)	
	Physics	23	(13)	23	(13)	
	Chemistry	25	(17)	25	(17)	
	Biology	25	(19)	25	(19)	
BTEC	Mathematics	25	(12)	24	(11)	One student withdrew in the first year (2018). He received a scholarship to a university in Phnom Penh.
	Physics	25	(12)	25	(12)	
	Chemistry	25	(21)	25	(21)	
	Biology	25	(20)	24	(20)	One student died suddenly in November 2022.
	Total	198	(131)	196	(130)	Percentage of female students = 66.3%. Female/Male=1.97

Third cohort (enrolling in 2021, scheduled to graduate in 2025) --------------------

- **Primary School Teacher Training Course**

TEC	Students Admitted	(Female)	Year2 Students	(Female)	Remarks
PTEC	150	(110)	150	(110)	
BTEC	150	(118)	150	(118)	
Total	300	(228)	300	(228)	Percentage of female students = 76.0%, female/ male = 3.17

- **Lower Secondary School Teacher Training Course**

TEC	Subject Courses	Students Admitted	(Female)	Year 2 Students	(Female)	Remarks
PTEC	Mathematics	26	(15)	26	(15)	
	Physics	25	(17)	25	(17)	
	Chemistry	25	(22)	25	(22)	
	Biology	24	(21)	24	(21)	
BTEC	Mathematics	29	(14)	29	(14)	
	Physics	24	(12)	24	(12)	
	Chemistry	24	(18)	24	(18)	
	Biology	23	(19)	23	(19)	
	Total	200	(138)	200	(138)	Percentage of Female Students = 69.0 Female/Male=2.23

4.2.3   Number of TEC Applicants

As can be seen from the table below, the number of applicants to the 12+4 programs has been increasing every year, and in 2021, grew 30 times for the secondary school teacher training program, probably since the exam was taken online. On the other hand, as the next table shows, the number of applicants for 12+2 programs has been declining. Although it is necessary to look at trends over the next few years to be precise, these figures suggest that TEC, which offers a bachelor's degree with no tuition fees and the opportunity to work locally after graduation (especially for women), is gaining recognition as a reasonable alternative to TTC for Cambodian high school students and their families.

Table 4-27   Number of Applicants for TEC 12+4 Programs

2018	Applicants	Capacity	Competitive Rate (%)
Primary Teacher Training Course	2,452	300	8.2
Lower secondary School Teacher Training Course	2,899	200	14.5
2019			
Primary Teacher Training Course	4,490	300	15.0
Lower secondary School Teacher Training Course	4,854	200	24.3
2021 (Online Exam)			
Primary Teacher Training Course	5,399	300	18.0
Lower secondary School Teacher Training Course	6,359	200	31.8

Source: Based on data obtained from TTD

Table 4-28   Number of Applicants for 12+2 Programs

Courses	2018	2019	2021 (Online Examination)
Primary Teacher Training Course	38,574	32,003	28,542
Lower secondary School Teacher Training Course	43,776	21,109	23,327

Source: Based on data obtained from TTD

4.3   Deliverables

4.3.1   Technical Documents

The table below lists the documents and materials prepared by the Project for technology transfer and their main distribution points.

Table 4-29   List of Technical Documents

Year	Titles	Language	Submission
First Year	TEC Strategic Plan (Teacher Education Subsector Analysis Report)	English	JICA, MoEYS
	TEC Management Training Plan	English	JICA, MoEYS
	TEC Operational Plan	English	JICA, MoEYS
	TEC Instructor Evaluation Guidelines	English	JICA, MoEYS
	TEC Internal Quality Assurance Guidelines	English	JICA, MoEYS
	Syllabus for the Bachelor's Courses of Primary and Lower Secondary School Teacher Training	English	JICA, MoEYS
	Teaching Materials for the Bachelor's Courses of Primary and Lower Secondary School Teacher Training	English	JICA, MoEYS
	TEC Handbook of Educational Practice	English	JICA, MoEYS
	Baseline Survey Report	English	JICA, MoEYS
Second Year	Draft Mid-Term Plan for Teacher Qualification Upgrade 2021-2025	English	JICA, MoEYS
	TEC Teacher Educators' Assessment Guidelines	English	JICA, MoEYS
	TEC Internal Quality Assurance (IQA) Guidelines	English	JICA, MoEYS
	TEC Practicum Handbook	English	JICA, MoEYS
	Syllabus for the Bachelor's Course in Primary and Lower Secondary School Teacher Training	English	JICA, MoEYS

Year	Titles	Language	Submission
	Teaching materials the Bachelor's Course in Primary and Lower Secondary School Teacher Training	English	JICA, MoEYS
	Midline Survey Report	English	JICA, MoEYS
Third Year	Master Plan for Teacher Qualification Upgrade 2021-2025	English	JICA, MoEYS
	TEC Teacher Educators' Assessment Guidelines (Revision)	English	JICA, MoEYS
	TEC Internal Quality Assurance (IQA) Guidelines (Revision)	English	JICA, MoEYS
	TEC Practicum Handbook (Revision)	English	JICA, MoEYS
	Syllabus for the Bachelor's Course in Primary and Lower Secondary School Teacher Training	English	JICA, MoEYS
	Teaching materials for the Bachelor's Course in Primary and Lower Secondary School Teacher Training	English	JICA, MoEYS
	Endline Survey Report	English	JICA, MoEYS

4.3.2   Reports

The Project prepared and submitted the reporting documents to MoEYS and JICA in the table below.

Table 4-30   List of Reports

Year	Titles	Language	Submission
First Year	Work Plan (First Year)	Japanese, English	JICA, MoEYS
	Monitoring Sheet No. 1	Japanese, English	JICA, MoEYS
	Monitoring Sheet No. 2	Japanese, English	JICA, MoEYS
	Monitoring Sheet No. 3	Japanese, English	JICA, MoEYS
	Monitoring Sheet No. 4	Japanese, English	JICA, MoEYS
	Completion Report	Japanese	JICA
Second Year	Work Plan (Second Year)	Japanese, English	JICA, MoEYS
	Monitoring Sheet No. 5	Japanese, English	JICA, MoEYS
	Monitoring Sheet No. 6	Japanese, English	JICA, MoEYS
	Progress Report 1	Japanese	JICA
	Monitoring Sheet No. 7	Japanese, English	JICA, MoEYS
	Progress Report 2	Japanese	JICA
	Completion Report	Japanese	JICA
Third Year	Work Plan (Third Year)	Japanese, English	JICA, MoEYS
	Monitoring Sheet No. 8	Japanese, English	JICA, MoEYS
	Progress Report 3	Japanese	JICA
	Monitoring Sheet No. 9	Japanese, English	JICA, MoEYS
	Monitoring Sheet No. 10	Japanese, English	JICA, MoEYS
	Endline Survey Report	English	JICA, MoEYS
	Project Completion Report	Japanese, English	JICA, MoEYS

The Project submitted each annual work completion report to JICA and the final completion report to JICA and MoEYS with the documents in the table below.

Table 4-31   List of Attached Documents to the Completion Reports

Year	Titles	Submission
First Year	Project Design Matrix (PDM)	JICA
	Tasks Flowchart	JICA
	Plan of Operation (PO)	JICA
	Expert Dispatch Achievements	JICA
	Acceptance of Trainees	JICA
	Equipment and Supplies	JICA
	Minutes of Joint Coordination Committee (JCC)	JICA
Second Year	PDM	JICA
	Tasks Flowchart	JICA
	PO	JICA

Year	Titles	Submission
	Expert Dispatch Achievements	JICA
	Acceptance of Trainees	JICA
	Equipment and Supplies	JICA
	Minutes of JCC	JICA
	TEC Curriculum Framework (Revision)	JICA
	TEC Student Assessment Guidelines	JICA
	Program Monitoring and Evaluation Guidelines	JICA
	TEC Action Research Implementation Guidelines	JICA
	PTEC Research Bulletin 1 (Action Research)	JICA
	BTEC Research Bulletin 1 (Action Research)	JICA
Third Year	PDM	JICA, MoEYS
	Tasks Flowchart	JICA, MoEYS
	PO	JICA, MoEYS
	Expert Dispatch Achievements	JICA, MoEYS
	Equipment and Supplies	JICA, MoEYS

In addition to this, the Project submits the data documents in the table below as a part of Project Completion Report.

Table 4-32   List of Data Submitted with the Project Completion Report

Titles	Notes	Language	Submission
Acceptance of Trainees		Japanese	JICA
Minutes of Joint Coordination Committee Meeting	JCC1-11	English	JICA
TEC Curriculum Framework for Bachelor of Arts (Education)		English	JICA
TEC Student Teacher Assessment Guideline		English Khmer	JICA
TEC Program Monitoring and Evaluation		English	JICA
TEC Guideline on Implementation of Action Research		English	JICA
TEC Research Bulletin 2 (Action Research)	PTEC 1, BTEC 1	English	JICA
TEC Practicum Report	PTEC 1, BTEC 1	English Khmer	JICA
TEC Planning and Management Progress Report	PTEC 5, BTEC 5 (2018-2019, 2019-2020, 2020-2021, 2021-2022)	English	MoYES JICA
TEC Continuous Professional Development (CPD) Guideline		English Khmer	JICA
TEC Student Teacher Handbook	PTEC 1, BTEC 1	English	JICA
TEC Staff Handbook	PTEC 1, BTEC 1	English	JICA
TEC Credit and Workload Student Teachers Guideline		English	JICA
TEC Student Teacher Wellbeing Service Guideline		English	JICA
Book list		English	JICA
Reference list		Japanese	JICA

5.   Lessons Learnt and Suggestions

5.1   Lessons Learned in Project Implementation and Management

5.1.1   Project Implementation and Management Structure

The Project has been operated and managed by three groups as in Figure 5-1: [1] Project Management and Teacher Education Policy, [2] TEC Management Capacity Building, and [3] TEC Course Syllabus and Material Development and Lesson Improvement. In Groups [2] and [3], the members of "TEC planning and management advisor" and "TEC curriculum development coordinator" played a central role in planning and implementing activities together with members from Hiroshima University and Nara University of Education. The team leader and deputy team leader closely communicated with these members and checked the progress of each group and gave necessary instructions for further implementation.

On the other hand, the counterpart of Group [1] was the entire MoEYS, headed by the Minister, and regularly talked with the Secretary of State, the Directorate General of Education, Teacher Training Department, RUPP and the Directorate General of Higher Education. JICA's past experience in the field of teacher education helped the E-TEC project collaborate with and get support from them.

In order to establish TEC, it was necessary to carry out a wide range of tasks in parallel as described in Chapters 3 and 4. Therefore, this project gave discretion to the core members of Groups [2] and [3], or "TEC planning and management advisor" and "TEC curriculum development coordinator" so that they could plan and quickly carry out the activities. This approach worked well in this project as all the members closely communicate with each other through weekly meetings, especially during the COVID-19 pandemic.
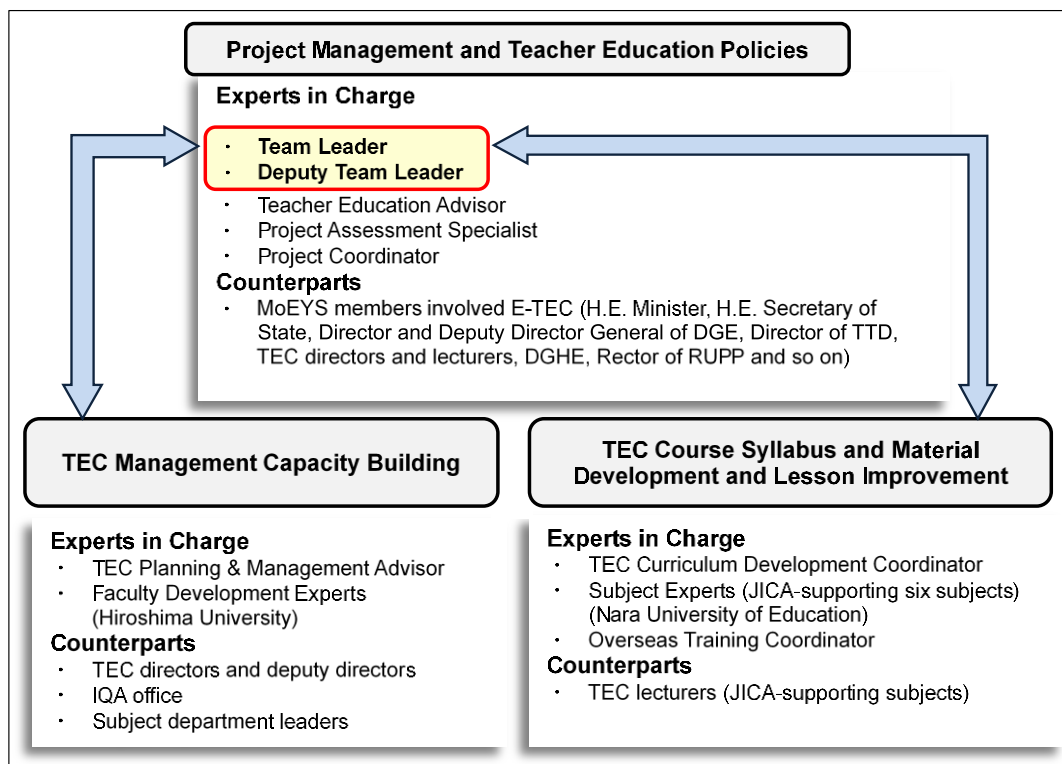

Figure 5-1   Project Management Structure

5.1.2   Communication during the COVID-19 Pandemic

Due to the COVID-19 pandemic, the project team members did not travel to Cambodia and conducted activities remotely for more than 2 years from mid-March 2020 to April 2022, By May 2020, a system for conducting activities remotely was generally in place, and meetings and training sessions that had previously been conducted face-to-face were converted to online sessions using various teleconferencing tools.

Regarding communication with counterparts, E-TEC, TTD, and TEC management held regular online tripartite meetings after May 2020 to share, discuss and resolve the issues around TEC and the progress of E-TEC activities. This created more opportunities for all the 3 parties to meet and work together than pre-COVID-19. In addition, the project's subject experts have regularly held online discussions with the TEC lecturers of their subjects and have completed the syllabus on time by conducting intensive online training. Some large-group workshops were also held online, in which instruction was provided remotely from Japan.

This online communication continued even after Japanese experts resumed their on-site activities in May 2022. In particular, online and onsite input were effective to develop course syllabi and materials. The same can be said for the TEC, where the SNS (Telegram) groups very actively and effectively worked to communicate with each other among and between lecturers and student teachers even after the full resumption of face-to-face classes. In this respect, it can be said that the experience of the COVID-19 pandemic contributed to strengthening communication and facilitating project implementation and changed the way of inputs of technical projects in the future.

5.2   Lessons Learnt in the TEC Establishment Process

5.2.1   Lessons Learnt in Establishing Foundations for TEC

When the Project started in 2017, it faced a gap between the awareness of the people surrounding the project and the reality. What was often heard in MoEYS was that TEC was "just a merger of RTTC and PTTC with the addition of two more years", and to be established with the very optimistic expectation that "hundreds of upper secondary teachers with master's degrees would apply". However, this view gradually disappeared as people recognized a number of challenges facing both TECs. In particular, securing qualified lecturers remains a major issue for both TECs. On the other hand, TEC faced many administrative challenges that cannot be solved by the Project and TEC itself, such as "Official recognition of TEC's as a higher education institution", "Upgrade of the status of 12+4 teachers", and so on. Many of which have been resolved or are in the process of being resolved by MoEYS and the Government of Cambodia. Needless to say, the strong relationship of cooperation and trust between MoEYS and JICA has been the foundation for these results.

Another very vexing problem that has plagued TEC management teams since its inception, but that many lecturers are not even aware of, is the "Mindset" (or Mentality) of TEC lecturers. TEC lecturers are required to have sufficient academic background and expertise as "higher education" lecturers, conduct their own research activities, and be evaluated according to their achievements. However, many of the existing TEC lecturers continuously hired from PTTC and RTTC still have a mindset of trainers of "post-secondary training" with insufficient English and ICT skills, limited research skills, and a belief that they should be evaluated based on the years of experience as shown in Figure 5-1. For this reason, in establishing TEC, we should:

- Define the lecturers as "teachers of a higher education institution" from the very beginning to make it clear that "post-secondary training trainers" will not be evaluated by TEC in the future and stick to this policy.

- Bring in a TTC director and some deputy directors from outside of P/RTTC so as to make a clear departure from the old mindset.

Table 5-1   Comparison between TTC and TEC

Viewpoints	Post-Secondary Training	Higher Education
Representative institutions	TTCs	TECs
Curriculum standard	Secondary plus	Higher education
Curriculum development	By/with outside experts	By TEC itself
Qualification required for teaching staff	BA (BA+1)	MA in a relevant field, plus ICT and English skills
Research of teaching staff	Not compulsory	Compulsory
Assessment of teaching staff	Based on teaching experience	Based on the capacity and the outputs of work
Learning	Mostly completed in classroom	More demanding course work (1 credit = 45 hours)
Graduation research project	Not compulsory	Compulsory

While MoEYS has been discussing the establishment of new TECs in the future to fully shift from the current 12+2 system to the 12+4 system, the two preceding TECs can be the pathway for new TECs by sharing knowledge, experience, various documents and materials. However, it is the new TEC who are responsible for changing the mindset of teaching staff and make them understand their roles and responsibilities as "teachers in a higher education institution". It is desirable to hire those who still show strong determination to be TEC management and teaching staff after they are informed of their duties.

5.2.2   Syllabus and Material Development and Lesson Improvement

(1)   Professional Competencies of TEC Lecturers

A major challenge throughout the project period was the limited professional knowledge and skills of TEC lecturers, which was very critical in the development of syllabi and teaching materials, and most of the lecturers had a large skill discrepancy from the "higher education level". Especially in the early stages of the Project, it was very difficult to develop syllabi and teaching materials with them. In some subjects, some lecturers had no choice but to give lessons according to lesson plans without understanding the contents well. Given these circumstances, the Project held discussions with the TEC directors and agreed not to lower the standard of syllabi and materials to the level of lecturers but keep it at the higher education standards even though they cannot teach currently but expecting them to be able to teach in 10 years' time. As the Project went on, the TEC lecturers' understanding of the contents improved and they became more actively involved in the development of the syllabus and teaching materials, but only with persistent and patient instructions from Japanese subject experts.

On the other hand, there is a possibility that the gap between the required level and the current lecturers' professional knowledge and skills has not yet been filled in a number of areas, particularly in the areas that the project's inputs are not sufficient. Therefore, Continuous Professional Development (CPD), as described below, is essential for TEC lecturers to develop their expertise and skills based on what they have learned through this project.

(2)   Creating a Mechanism for Sustainable Implementation of Training

In the early stage of this project, training and other activities were led by Japanese experts. As the Project went on, the TEC lecturers showed more initiative, and improved the syllabus and lesson plans themselves. On the other hand, it would have been more effective if the TEC lecturers themselves could have planned the monthly syllabus meetings and determined the contents, even if for one semester at the end of the Project. In addition, it would have also been effective if the dean of the faculty was involved in the syllabus meetings to proceed with lesson improvement

within the IQA mechanism. In the future, if each subject group prepares a list of challenges and points to be improved in each module, and share it with the head of department, the dean of faculty, and the directors, TEC would be able to plan and manage the trainings more smoothly and effectively.

(3) Collaboration Among the Stakeholders

Collaboration between stakeholders is indispensable to take advantage of the assets that each subject team has developed as a learning community through many activities, to continue to utilize and improve the syllabus and lesson plans, and to bridge the gap in professional knowledge between lecturers. Collaboration between each subject group and the IQA office will facilitate lesson improvement at an organization-wide level. Collaboration between each TEC and its application/cooperative schools also contributes to improving lessons for both student teachers and schoolteachers.

The educational research conducted at TEC is a good opportunity to think about lesson improvement in each subject area. Ideally, TESs should have a mechanism in which learning needs observed in daily lessons should be tackled through lesson study and deeply looked into through action research. The findings of those research activities should be used to improve the course syllabi and materials through a reflective process. Those learning needs and measures taken by lecturers should be reported to the department, to the faculty and to the IQA office to see the progress of improvement. It would be highly recommended to involve application schools in this this mechanism to reflect the voices from actual classrooms.

5.2.3 TEC Management Capacity Development

5.2.3.1 TEC Management

In establishing PTEC and BTEC, we had to complete a wide range of tasks within a short period of time. After the selection and appointment of TEC directors in October 2017, the Project and the TEC management teams did the following:

- restructured the organization
- equipped directors with the knowledge of university administration and management
- developed TEC administrative documents
- selected lecturers
- developed the course syllabi and materials for first-year students and selected new students.

However, the time was too short to construct genuine relationship between the management team and the lecturers. Nevertheless, PTEC was greatly helped by the individual qualities and efforts of its management team, but BTEC did not function well because of the changes with TEC directors and deputy directors, for which they had to start playing the role of directors without the time for rapport building. In establishing the next new TEC, MoEYS and the high-level bodies, RTTC and PTTC are required to give sufficient time for preparation before the opening with maximum use of the experiences of PTEC and BTEC.

The following are suggestions for future TEC operations.

(1) Discussion on the TEC Directors' Tenure

Currently, TEC managers do not have term limits. While this has advantages in terms of a stable management structure, there are also issues such as concerns about the abuse of rights and authority, and difficulties in timing the development of the next generation of managers. While

higher education institutions in Japan, Europe, and the United States have a system in which managers have fixed terms and are elected by the members, it is difficult to introduce the same system in Cambodia, where becoming a manager is part of the promotion process within MoEYS. Therefore, it will be necessary to carefully discuss what kind of mechanism will be more effective in managing higher education institutions in Cambodia.

(2) Mechanisms to Increase the Engagement of Student Teachers

In discussions in the field of higher education (e.g., College Impact Study), it has been noted that increasing student involvement is important for improving the quality of teaching and learning. In both TECs, student teachers already provide operational support for campus cleaning, gatekeeping, libraries, and student dormitories. This is significant in the sense that students are involved as members of the TEC community with certain roles to play, and that they also acquire social skills through these so-called extracurricular activities. In addition, it is expected that the voices of students actually involved in various activities on campus will be collected and utilized to promote student-led management in TEC, which would strengthen the connection between TEC and student teachers even after graduation.

(3) Review of the Job Description of the Heads/Chief of Departments

The Vice Dean of Faculty or Department Head have two roles: one as an academic leader (e.g., teaching) and the other as an administrative leader. The former includes coordination of the overall curriculum, review of syllabus content, monitoring of student teachers and teaching staff, support for lecturers' professional development, and so on. The latter includes managing the budget, internal quality assurance initiatives, formulating annual plans, and participating in executive meetings. These roles should have a different level of effort than ordinary teaching staff and require periodic review of job descriptions and structure. In addition, evaluation items should be set for administrative positions that are different from those of ordinary teaching staff. Currently, the head of each department shoulders the same burden in teaching as other teaching staff have, which is likely to be excessive. While this is unavoidable due to the limited budget and human resources, it is important to continuously discuss an appropriate work and time distribution for those leaders for sound TEC management.

(4) Promoting Continuing Professional Development (CPD)

For effective CPD, it is necessary to link classroom lessons with action research, lesson study, and IQA surveys so that lecturers can get a hint of professional development in a classroom and develop an idea through research activities, and check the achievements within the IQA mechanism, and that they recognise these tasks as part of a cyclic process that never ends. Although all of these activities aim to improve the quality of teaching and learning in TEC, many lecturers are not yet aware of the importance of implementing them in conjunction with each other. From this academic year (2022/2023 semester), a system in which each subject department has a research theme for the entire team is being established, and action research and lesson study are planned and carried out as a PLC initiative. Recommendations for improving the IQA system are discussed in the next section.

(5) Consideration of Post-Graduation Survey

In order to verify the effectiveness of a 12+4 system, it is necessary to periodically conduct post-graduation surveys. A platform for this should be established, and surveys using qualitative methods, such as periodic interview surveys, should also be considered. In particular, it will be necessary to establish a system to verify how the educational programs learned at TEC are being applied and are useful in practice for schoolteachers, whether there is any gap between the current situation at the classroom level and the content of TEC modules, and how TEC reflects these findings in its education. Various other ideas could be considered, such as setting up meetings

where graduates are invited to share their experiences with TEC student teachers, and using this as evidence for quality assurance. It also seems to be effective to provide post-graduation care for TEC graduates by bringing them together at TEC to share their school experience, create a network among them for collaboration, etc.

5.2.3.2 Internal Quality Assurance (IQA)

Related to TEC management, a major issue concerning the qualitative improvement of education at TEC is the improvement of the internal quality assurance (IQA) system. Generally, the mission of higher education institutions is "education, research, and social contribution," and this is true for TEC as well, However, there still is much room for improvement in TEC management in terms of quality. The current IQA mechanism is as shown in Figure 5-2, starting by the IQA office requesting faculties and departments to collect information. However, in this mechanism:

Figure 5-2   Current IQA Structure

- Most of the information gathering and reporting work is left to the IQA office, which is burdensome.
- The report only collects only sketchy information, especially at the classroom level, and so the feedback to the classroom teaching and learning is also very limited.
- As a result, the IQA system is not well connected with lesson improvement and educational evaluation.

These problems are not a surprise since the lecturers respond to the request only when they are asked to provide information about their classes once a year.

How should TEC improve its IQA structure to address these challenges? One solution is as shown in Figure 5-3.

The main difference between this diagram and the previous one is that the TEC lecturers are at the center of the IQA system, which begins with their daily review of lessons including the record of observations of learners in each lesson and module. These observation records are very useful not only for lesson study, action research, and syllabus improvement, but also for IQA to identify qualitative issues in detail at the level of each department and faculty. By setting annual goals for the resolution of each of these issues at each level, the individual tasks will become clear, and the technical feedback from senior lecturers will become more detailed and specific. As these efforts progress, the IQA system will be useful for actual improvement of teaching and learning.
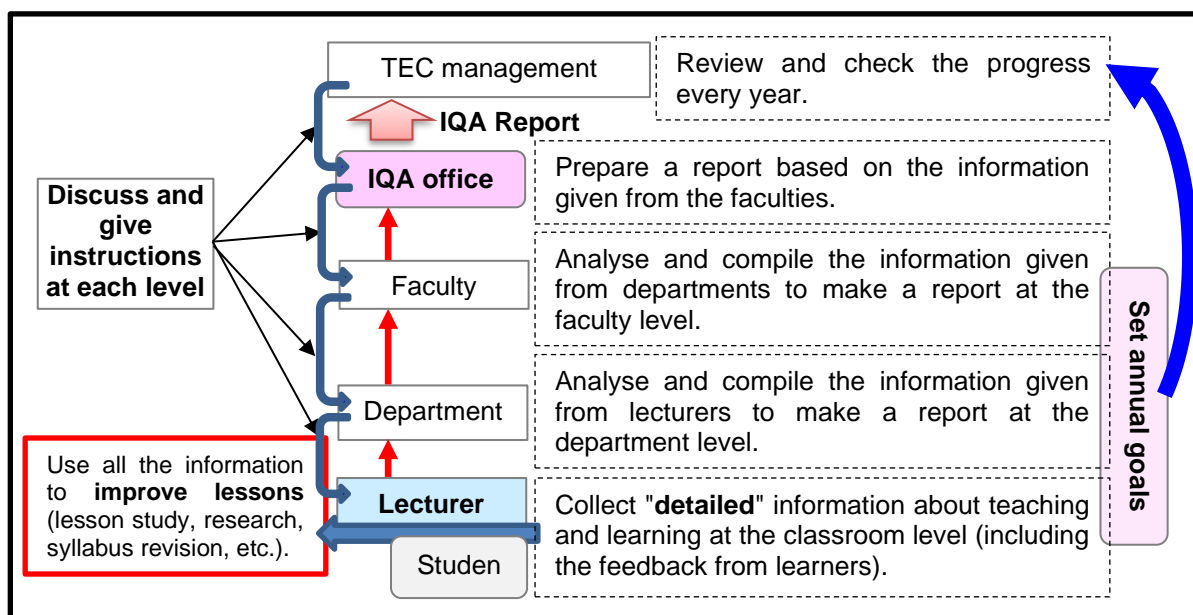
Figure 5-3   IQA Structure to Be Established by TEC in the Future

5.2.4   Education and Research

One of the ultimate goals of this project is to establish the concept of "education that places children's learning at the center" by having both TEC faculty and students engage in action research and educational research. For TEC lecturers in particular, the capacity-building program that included (1) input of basic knowledge of education research and (2) output by presentations/publications seems to have worked effectively.

The structure of the activities in this project was multi-layered: TEC lecturers actually engaged in action research, deepened their understanding of what action research means, learned how to teach it, and then worked with administrators to build the structure to institutionalize action research. Initially, many lecturers viewed action research as simply a survey of their classes. However, over the course of the training, this changed as they began to understand student learning and set appropriate research questions. At the same time, through the supervision of TEC student teachers in their educational research, the understanding of TEC lecturers about the vision of TEC, or idea about "what kind of teachers TEC should produce", has been deepened. Those TEC lecturers who have returned from a JICA's MA programme in Hiroshima University and those who have obtained master's and doctoral degrees from overseas universities have facilitated the introduction of research, which is a great strength of these scholarship programmes, and advantageous to TECs.

On the other hand, issues regarding data collection and analysis still remains. There is a tendency to conduct t-tests and analysis of variance without understanding the meaning, with little awareness of "conducting analysis to clarify (something)". Thus, there are many studies that simply "apply a statistical test to the results of a pre-post test conducted in a classroom before and after using a certain method". However, there is a risk that this will result in keeping the learning process in a black box and make it unclear what is happening with individual learners. During the last workshop the Project conducted, we received many questions regarding the interpretation of test results and discourse analysis methods, which suggests that TEC lecturers are beginning to become aware of this as an issue. Based on the above, we propose the following goals over the next three to five years.

The future of TEC will be greatly affected by how we can continue our research and CPD, and how we carry on the meaning and value of action research even as experienced lecturers are retired and new lecturers are hired. In order to keep the motivation for research, it is important that the research outputs are consistent with the researcher's hypothesis (or feelings), that the research outputs lead to the development of learners' professional competencies (and that the researcher feels so), and that the research outputs contribute to the improvement of his/her own research and teaching skills (and that the researcher feels so). However, at present, some TEC lecturers seem to be obliged to do action research because they have to do it. It is important for them to "feel" the effects of action research for it to be most effective, for example, to hold a casual meeting after the research to exchange information on the effects and benefits of the research.

Another aspect could be (1) the use of application schools and (2) the creation of a distinctive features for each TEC. Regarding (1), it is necessary to share not only the recognition within TEC that they are experimental schools, but also the mission that TEC and application schools together lead to the development and dissemination of new teaching and learning, involving new methodology and teaching materials, the use of ICT, etc. This will also demonstrate and enhance the significance of TECs both domestically and internationally. For (2), for example, the research of PTEC focuses on global educational issues, and BTEC focuses on local issues. Global efforts could include active exchanges with overseas universities, mutual observation of action research, and joint research activities in their institution. Local initiatives could focus on action research on themes that they are highly affected by (e.g., education in remote areas, teaching in multi-level classes, etc.).

5.3   Recommendations for Achieving the Overall Goal

5.3.1   Path to Achieving Overall Goals

This project has completed its role in achieving the project purpose of "producing quality teachers from TEC". According to the E-TEC Project Design Matrix, MoEYS and TECs are supposed to achieve the following Overall Goal:

"TEC graduates contribute to the learning output of students."

The company will walk towards the achievement of the following goals. The indicators for the top goals are defined on the PDM as follows, and these will be confirmed in a post-evaluation in a few years.

- **Objectively Verifiable Indicators:**
  More than 80% of schools (including students, principals and other teachers) positively evaluate performance of TEC graduates.

- **Means of Verification:**
  Questionnaire survey and interviews for (i) principals of schools where TEC graduates work and (ii) students TEC graduates in charge of. (Target score: More than 4 out of 5 scale points)

As a preliminary step to this questionnaire survey, a "mechanism" is needed to connect TECs with alumni, and each TEC is ready to exchange information through social networking services such as Telegram, and in the future, an online platform could be set up to conduct surveys to measure achievements of the overall goal.

This overall goal, of course, cannot be achieved by the efforts of individual 12+4 teachers. Sound school management and the understanding of headteachers and other teachers are necessary for

the only one "12+4 teacher" in the school to work effectively. In the schools where discipline is loose and students are restless and/or where many students change their attitudes depending on the teacher, new teachers face problems that must be solved before teaching. In such an environment, it is more likely that "the 12+4 teachers will be isolated in the school and follow the old ways of teaching due to the fear of isolation". To prevent this from happening, it is essential for each TEC to use the "mechanism" described above to carefully monitor graduates and, if necessary, directly or indirectly approach headteachers to facilitate the achievement of the overall goal. However, it would be a big burden if each TEC communicates with the schools where graduates have been appointed. Therefore, MoEYS should continuously send a strong message nationwide that each school should closely work with 12+4 teachers and make full use of them to create a better education environment.

5.3.2   Recommendations for Post-Project Evaluation

In order to see how much the overall goal is achieved, JICA is supposed to carry out a post-project survey around 2025. The survey will be conducted by visiting schools in person since the target population includes school children, and a certain number of primary and secondary schools (where 12+4 teachers have been appointed) will be selected. [21] Table 5-2 shows a draft questionnaire for headteachers and schoolteachers closely working with 12+4 teachers. These questions include: (1) their attitudes as teachers, (2) their professional competence, and (3) their achievements (contribution to the improvement of learners' academic achievement). In some cases, interviews with the 12+4 teachers could be conducted at the same time to supplement the above survey by providing details on school management, relationships with the headteacher and other teachers, and the gap between expectations and reality.

On the other hand, Table 5-3 shows sample questions for the school children taught by 12+4 teachers, and they are supposed to answer these questions subjectively. Although the questions could be added or changed depending on the age of students, it is difficult for primary and lower secondary students to answer questions that ask about the quality of teaching at a top-level, such as "The teacher tries to help us learn through activities in the classroom".

In addition, in a face-to-face survey with students, it is important to collect information that are not represented on the scale of 1 to 5. For example, if a student strongly disagrees with the statement "his/her lessons are not boring", we can ask him or her about specific situations in a lesson. Then he or she may say "the teacher talks all the time", "reading the textbook all the time" and so on. Those pieces of information obtained from the students helps us understand the teaching and learning in the classroom of 12+4 teachers from a perspective different from teachers.

It should be noted that those questionnaires were prepared in consultation with the Director of the TTD and the Director of PTEC by reflecting their comments and suggestions.

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[21] When restricted to the first two TEC terms, it is assumed that approximately 600 primary school teachers (approximately 300 x 2 years) and 400 lower secondary schoolteachers (approximately 200 x 2 years) are assigned to the schools. Under this assumption, if the survey is conducted with a confidence coefficient of 95% and a 5% margin of error, a sample of 234 and 196 principals, respectively, would be required for statistical purposes. On the other hand, if the confidence coefficient is 95% and the margin of error is reduced to 15%, a sample of 40 and 39 principals would be needed, respectively. The sample size would be reduced to a small one without regard to statistical rigor, because it would take too much time and effort to visit a total of 80 schools for an actual post-evaluation survey. If a telephone or Internet survey is conducted with one principal and one teacher at each school, it would be possible to conduct a statistical analysis with a somewhat larger sample size, while excluding students from the survey.

Table 5-2   Questionnaire for the Headteacher and Teachers Closely Work with 12+4 Graduated Teachers

Viewpoints for assessment	Circle the number 1 = not agree at all 2 = partly disagree 3 = neutral 4 = partly agree 5 = fully agree
[A] Attitude toward work	
The 12+4 teacher in my school ...	
1) Is collaboratively working with other teachers.	1 2 3 4 5
2) Is not late or absent without notice.	1 2 3 4 5
3) Is active in meetings and school activities.	1 2 3 4 5
4) Has constructed a good relationship with students.	1 2 3 4 5
5) Makes a reflection on their teaching to improve it.	1 2 3 4 5
6) Has an influence on our teachers' attitude toward teaching and learning.	1 2 3 4 5
Comments on their attitude toward work	
[B] Professional knowledge and skills	
The 12+4 teacher in my school ...	
7) Has a good knowledge on the subjects they teach.	1 2 3 4 5
8) Has a good knowledge on teaching and learning.	1 2 3 4 5
9) Has good classroom management skills.	1 2 3 4 5
10) Prepares for their lessons well.	1 2 3 4 5
11) Plans and conducts lessons with their ideas to attract students for learning.	1 2 3 4 5
12) Plans and conducts lessons that meet the students' learning needs.	1 2 3 4 5
13) Has a good knowledge and skills to improve their lessons based on reflection.	1 2 3 4 5
Comments on their professional knowledge and skills	
[C] Outputs	
The students to whom the 12+4 teacher teaches...	
14) Participate more actively in learning activities.	1 2 3 4 5
15) Show positive attitude toward study.	1 2 3 4 5
Comments on the outputs of their teaching	

Table 5-3   Questions for Interview with Students Taught by
12+4 Graduated Teachers

Viewpoints for assessment	Circle the number 1 = not agree at all 2 = partly disagree 3 = neutral 4 = partly agree 5 = fully agree
1) His/her lessons are easy to understand.	1 2 3 4 5
2) His/her lessons are not boring.	1 2 3 4 5
3) He/she helps you if you face difficulty in learning.	1 2 3 4 5
4) He/she treats students fairly and equally.	1 2 3 4 5
5) He/she does not come late to and leave early from the lesson.	1 2 3 4 5
6) Students in your class are attentive in his/her lessons.	1 2 3 4 5
7) You like to study with him/her.	1 2 3 4 5
Descriptions of students' statements related to the above questions	
(e.g., reasons why they think his/her lesson is not boring, examples of his/her help in a lesson, reasons why they like to study with him/her, etc.)	

5.3.3   Recommendations for the Independent Development of TEC

The establishment of TEC is, of course, the first step in the process of teacher qualification upgrade to the BA level, but it is not a solution to the problems facing teacher education in Cambodia. For example, the TEC budget is overwhelmingly insufficient to allow each teacher to conduct "research", to "contribute to society" organizationally, and to continuously improve "education". On the other hand, TEC cannot charge tuition fees for regular courses. Even if TEC launches a new fee-based CPD program, it cannot make money without sufficient demand. Therefore, for TEC to become financially self-sustaining, it is necessary to work at the policy level. For example, if MoEYS requires teachers in private schools to complete 12+4 or BA+1, the demand for TEC's fee-based programs increase, and the budgetary problem would be solved if TEC could get hundreds of fee-based students every year. It is expected that the education policy advisors dispatched by JICA will make suggestions not only for teacher qualification upgrade, which it is currently being worked on, but also for self-sustaining development of TEC after its establishment based on the overall landscape of teacher education.

6.   Conclusion

Before this project was launched in January 2017, TEC was an institution that existed only on paper under TPAP, a policy of MoEYS. In other words, although MoEYS said that teacher education should be a four-year program, but it had not been officially approved by the Cambodian government, and therefore there was no curriculum, no staff, and no idea whether it could offer a bachelor's degree as a higher education institution. However, during the six years of the Project, TEC was born, grew up, successfully sent its 1st-batch students to the school, and established a strong presence in MoEYS. In view of these results, it can be said that this project has sufficiently achieved the project purpose "establishing the foundations".

One of the factors that has led the Project to success is that the E-TEC project has thought of TECs as higher education institutions since inception and has consistently made efforts to realize an ideal state, such as "management and quality assurance as a higher education institution", "development of curriculum and course syllabi and materials at the higher education level", and "employment of educators to deal with those university-level contents". For this purpose, the Project has worked with professors of Hiroshima University on TEC management as well as with professors of Nara University of Education on syllabi and materials development, developed the TEC curriculum framework based on that of Singapore NIE, set out the selection criteria for TEC educators. This has not been an easy task, and there has been a battle against the preconceptions of Cambodian people. While TTCs are a technical institution that provides "post-secondary training" for teachers, TECs are often considered as an extension of TTCs, by saying "upgrading TTC to TEC" and "transforming TTC to TEC". Therefore, against our efforts to keep TEC's operation, syllabus, and human resources at the higher education level, there were always forces working downward to "post-secondary training". In fact, due to the overwhelming shortage of human resources, we had to compromise to some extent on the English skills of teacher educators. However, the project team and the TEC management team continued to work together to make TEC a higher education institution, which led to success in ACC accreditation in the final stages of the Project.

Another thing that must not be forgotten is that the number of people who embrace the value and significance of establishing TEC as a higher education institution has increased within MoEYS. In this regard, we are very grateful to H.E. Dr. Hang Chuon Naron, the minister of MoEYS, and H.E. Dr. Nath Bunroeun, the Secretary of State, MoEYS, for their continuous, multifaceted support for the establishment of TEC. It should not be overlooked that the concept of "TEC as a higher education institution" was spread by their words in MoEYS.

Through this project, TEC has taken shape and begun to stand on its own. From now on, more than ever, TEC itself needs to work harder in cooperation with MoEYS. There are many issues to be considered, such as continuing educational research, improving the IQA mechanism, promoting lesson study, revising course syllabi and materials, and working with the application schools. However, there are many institutions in Cambodia, blessed with development partners, who are willing to support PTEC and BTEC, and we believe that they will successfully resolve these issues in some form, even if partially.

This project is a result of continuous JICA support to teacher education in Cambodia. The human resources developed through STEPSAM 1 to 3 have been deeply involved in the Project as the TTD director, TEC director and deputy directors, and teacher educators; Lesson Study and Inquiry-Based Lessons introduced in STEPSAM2 have been re-introduced to TECs; and the trust between JICA and MoEYS, which had been built up through past projects, has been a strong pillar of support for the Project and TECs. The two TECs will play a central role in changing not only teacher education in Cambodia, but also the field of education, and will play a leading role in the

establishment of new TECs in the future. We hope that the new generation of teachers who have learned at these TECs will lead the next generation of children, and that these children will contribute to Cambodia's industrial development in the near future.

Appendices

Appendix 1

Project Design Matrix
(the Latest Version)

Monitoring Sheet I: Project Design Matrix

Project Title: The Project for Establishing Foundations for Teacher Education College (E-TEC) | **Version: 13**

Implementing Agency: Teacher Training Department, Directorate of Education, MoEYS | **Dated: 19 January 2023**

Target Group:

1. PRESET Students of TEC: approx. 250 students per year per college (approx. 150 for primary and 100 for lower secondary teacher training programmes)

2. Teacher educators of Teacher Education Colleges: approx. 160 in total

Period of Project: 1 January 2017 – 31 December 2022 (six years)

Project Site: Phnom Penh, Battambang

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption	Achievement	Remarks
Super Goal Quality of basic education is improved.	Academic achievement of primary and lower secondary students is improved.	G3, 6, and 8 National student assessment			
Overall Goal TEC graduates contribute to the learning outcome of students	More than 80% of schools (including students, principals and other teachers) positively evaluate performance of TEC graduates.	Questionnaire survey and interviews for (i) principals of schools where TEC graduates work and (ii) students TEC graduates in charge of. (Target score: More than 4 out of 5 scale points)			
Project Purpose Quality teachers are produced from TEC.	1. Test scores of subject knowledge and teaching methodology for the primary and lower secondary at the endline survey is improved by 10 % points in average compared with those of the baseline survey. 2. Students can develop a lesson plan based on their reflection during Year 4 practicum.	1. Baseline/endline survey 2. Summative report for Year 4 practicum by Practicum Committee with information of evaluation by TEC mentors* (*) Modified, if necessary, after observation of the practicum result on Year 3		- TEC student teachers' endline scores of content knowledge and teaching methodology were increased from baseline(Primary content knowledge as +6.2% points, Primary methodology as +13.6% points, LS content knowldge as +16.3% points, and LS methodology as +31.9%). - TEC Year 4 practicum reports by each Department were submitted.	
Outputs 1 Overarching strategic plans for teacher qualification upgrade are developed.	Overarching strategic plans for teacher qualification upgrade are developed.	Developed overarching strategic plans and mid-term plan for teacher qualification upgrade		- The minister approved the Master Plan on Educational Staff Qualification Upgrading on 25 Jan. 2022.	- MoEYS set out a policy to revise the TPAP and develop a plan up to 2030, and teacher qualification upgrade are expected to be included in it (to be supported by JICA long-term expert).
2 TEC management framework and operational mechanism are established.	1. Progress report of a TEC strategic plan is prepared semi-annually. 2. All of TEC management documents for TEPS accreditation are prepared.	1. Progress report of a TEC strategic plan 2019-2023 2. TEC management documents for the TEPS accreditation		- P/BTEC were accredited by ACC in Dec.2022. - The TEC strategic plan 2019-2023 was reviewed as part of document preparation for ACC accreditation. - P/BTEC were accredited as CPD providers in Jul.2021 and Feb.2022 respectively.	
3 Curriculum, syllabi and course materials are prepared for B.Ed (12+4) PRESET for both primary and lower secondary levels.	Curriculum, syllabi and course materials are developed and refined.	Developed Curriculum, syllabi and course materials		- The development of course syllabi and materials up to Year 4 was completed. - Module exams for Year 3-4 Math and Year 1-4 Science were drafted. - Translation of Year 4 syllabi and teaching materials (English to Khmer) were done by TEC lecturers.	- Translation of Year 3 syllabi and teaching materials (English to Khmer) need to be done by TECs in next academic year.
4 Cycle for lesson improvement is established in Math and Science subjects.	Tools for reflective process including reflection sheet, mini-test for formative assessment and assessment rubric for practicum, are developed and implemented.	Developed tools for reflective process including reflection sheet, mini-test and final subject tests for formative assessment and assessment rubric for practicum.		- Rublics for assessment of Math and Science lessons were developed and used for assessing Year 4 student teachers lesson plans. - Reflection on teaching and learning was promoted, taking the opportunities of online training, on-site instruction, and training in Japan.	
5 TEC teacher educators accumulate and update their knowledge and practices related to TEC student teachers' learning in classrooms through research activities	All research groups produce research papers.	Research papers for each subject (Mathematics, Science, ICT, and English)		- TEC Year 4 student teachers successfully submitted research reports. - P/BTEC Bulletin Vol.2 were published. - 7 TEC teams were accepted and 3 of them made presentations in WALS 2022 (Malaysia). 2 TEC teams made poster presentation on their research in VietTESOL (Viet Nam). - 1 PTEC lecturer was selected to make a presentation in SEAMEO RIHED conference (Thailand).	

Activities	Inputs		Important Assumption
	The Japanese Side	The Cambodian Side	
1 Overarching strategic plans for teacher qualification upgrade are developed. 　1 Conduct analytical review on supply and demand, including private schools, for teacher education in Cambodia. 　2 Prepare mid and long-term (-2030) teacher education demand projection based on the analysis. 　3 Develop a legal framework that stipulates a standard for teacher education at the bachelor level. 　4 Develop a mid-plan for teacher qualification upgrade. 　5 Develop a long-term strategic plan for teacher qualification upgrade. 　6 Design the framework for evaluating the impact of TEC **2 TEC management framework and operational mechanism are established.** 　1 Prepare professional development program for TEC managers. 　2 Conduct professional development program for TEC managers. 　3 Prepare a TEC strategic plan. 　4 Prepare teacher evaluation plan. 　5 Prepare internal quality assurance guideline. 　6 Periodically review and improve the management system to assure the quality of teaching and learning. 　7 Provide technical input for IQA offices to ensure lesson improvement through PDCA cycle. 　8 Monitor the allocation of TEC teacher educators. 　9 Implement continuous professional development programmes for TEC teacher educators such as lesson study. **3 Curriculum, syllabi and course materials are prepared for B.Ed (12+4) PRESET for both primary and lower secondary levels.** 　1 Analyze the revised teacher competency standard and curriculum framework. 　2 Analyze existing curricula and model curricula. 　3 Develop draft curricula, syllabi and course materials. 　4 Review and revise the course syllabi and course materials through reflective process. 　5 Develop and refine final subject exams. **4 Cycle for lesson improvement is established in Math and Science subjects.** 　1 Prepare induction program for teacher educators. 　2 Conduct induction training for teacher educators. 　3 Develop tools for reflective process. 　4 Implement reflection with the developed tools. 　5 TEC teacher educators check Lesson Plans developed by TEC students for the practicum and provide technical advice for their improvement with the technical support from Japanese experts. 　6 Provide opportunities for capacity building of teacher educators. **5 TEC teacher educators accumulate and update their knowledge and practices related to TEC student teachers' learning in classrooms through research activities** 　1 Analyze the needs of educational research in TECs. 　2 Provide technical inputs for TEC teacher educators on how to conduct action research. 　3 Each TEC teacher educator prepares a research paper/report on their lessons/courses. 　4 Present the research outcomes in academic conferences.	- Dispatch of Japanese experts (Team members are subject to the availabilities of human resources. The following members are possible members.) * Team Leader / Teacher Education * Deputy Team Leader / Aid Coordination Specialist * TEC Planning and Management Advisor * Project Assessment Specialist * TEC Curriculum Development Coordinator * Experts in some major disciplines (Math, Science, ICT/Media, Pedagogy, Faculty Development) * Overseas Training Coordinator * Project Coordinator /Planning Management - Provision of necessary equipment - Short term training in Japan or other countries 【Outside of the project】 - Scholarship to study in Japan	- Staff assignment according to implementation structure * TEC directors * TEC teacher educators * TEC non teaching staff - Operational cost for TEC - Office space at MoEYS - Running cost of office	- TEC is approved as HEI. - TEPS is in operation. - Teacher professional standards are revised. - Appropriate number of new students enter TEC. **Pre-Conditions** - College staff are nominated. - TEC curriculum framework is approved. - National policy on student admission and recognition of prior learning for upgrading is approved. **<Issues and countermeasures>** The COVID-19 outbreak has put off the field assignment since Mar.2020, but the Project has telecons to revise the implementation plan and the approaches, and have discussions with TEC management teams about how and when to implement the activities and provide technical inputs.

Appendix 2

Tasks Flowchart

Project Schedule — TEC (Teacher Education College) Cambodia

	2017	2018	2019	2020	2021	2021	2022	2023
	1st Term		2nd Term			3rd Term		

School Calendar in Cambodia: Exam, Term 2, Holiday, New School Term Starts, Term 1, Temr 2, etc.

Preparation for project commencement/ completion

Project Commencemen
- Decide Suport Subjects Area by Checking new Curriculum

Task 1-1

Task 1-1 Preparation for the Project (in Japan)
- 1-1-1 To draft a project work plan for the 1st term
- 1-1-2 To communicate with the local partners (MOYES、TPAP TTC、DPs)
- 1-1-3 To start discussion on the methodology ofproject

Task 1-2 Starting-up the Project
- 1-2-1 To update the information about TPAP and TEC
- 1-2-2 To finalise the project work plan through discussion with MoEYS and relevant DPs
- 1-2-3 To procure necessary equipment
- 1-2-4 To finalise the project evaluation framework through discussion with MoEYS in JCC

Task 1-12 Planning & Implementation of Baseline S
(Collect & Compare information of competence of TEC edu & Students)
- 1-12-1 To prepare for the survey though discussion with TTD
- 1-12-2 To design the survey to analyse gender differences
- 1-12-3 To revise the survey design and questionnaire based on the results
- 1-12-4 To communicate with the TECs and TTCs involved in the survey
- 1-12-5 To implement the baseline survey in TECs and TTCs

Baseline Survey Report

Method & Group to compare
- TEC directors—P/RTTC directors (Questionnaire)
- TEC Lectures—P/RTTC trainers (Questionnaire)
- TEC Student teachers—R/RTTC trainees (Questionnaire/Test/Practicum report)

Task 2-1 Preparation of the work plan

Comparison of Baseline, Midline and Endline Survey Results (with the Same Indicators)

2-8 Midline Survey
(Collect & Compare data of TEC educators and students competicies)
- 2-8-1 To prepare for the survey
- 2-8-2 To analyse data
- 2-8-3 To present outcomes of survey

Midline Survey Report

3.8 Evaluation design for measuring the impact of TECs

3.9 Endline Survey 1

3.1 Work plan

3.9 Endline Survey 2
(Collect & Compare data of TEC educators and students compitencies)
- Research design and prepare the questionnaire
- To prepare for the survey
- To analyse date
- To present outcomes of survey

Endline Survey Report

Preparation toward the end of the Project

【Output 1】 Overarching strategic plan for expanding TEC is formulated.

Task 1-3 Formulation of a TEC Curricula & Syllabi
- 1-3-1 To collect the statistical data about teachers and students and update the information related to the government policy on teacher education
- 1-3-2 To analyse the demand and supply of

TEC Strategic Plan

Revision of TEC Strategic Plan and Policy Recommendations on Teacher Education

Task 2-7 Support to development of teacher education policies
- 2-7-1. To support MoEYS to develop a legal framework for all the teacher qualification upgrade programmes
- 2-7-2. To work with TTD to develop mid/long-term plans for teacher qualificatoin upgrade in line with ESP 2019-23
- 2-7-3. To provide technical inputs for MoEYS to implement BA+1/CPD programmes to meet the 5-year targets

【Output 2】 TEC is well managed.

Task 1-5 Preparation of TEC Management Development Programme

Plan a training for TEC managers

Task 1-6 Implementation of TEC Management Development

Task 1-9 Training in Japan

TEC Management Plan

TEC Quality Assurerance Guidline

(1) Training for TEC managers in Japan

2-3 Spport to TEC management
- 2-3-1. To hold workshops for TEC management teams
- 2-3-2. To hold a TEC annual meeting after the completion of each school year
- 2-3-3. To support the process of TEC lecturers selection and appointment

Continuous TEC Management Capacity Building

TEC Annual Meeting

3-3 Support to TEC management
- To hold workshops for TEC management teams, IQA staffs and subject department leaders on faculty management
- To hold lesson study sessions.
- To hold TEC annual meetings
- To improve the learning and research environment through the purchase of books and librarian training
- To support MoEYS on TEC lecturer selection and appointment, accreditation of TECs as higher teacher education institution, graduates, and the strategies to attract good high

TEC Annual meeting

【Output 3】 Curriculum, Syllabi and Course materials are prepared for B.Ed (12+4) PRESET for both primary and lower secondary level.

1st period : Develoypt TEC Syllabi & Materilas

Task 1-4 Development of TEC Curricula & Syllabi
- 1-4-1 To support the formulation of TEC Curriculum Framework
- 1-4-2 To help TTD divide the responsibilities for curriculum development among DPs
- 1-4-3 To develop the syllabi for the JICA-supported subjects of TEC
- 1-4-4 To develop lesson plans and teaching materials for the 1st year students in

Syllabi for B.Ed (12+4) PRESET & Upgrading INSET

Materials for B.Ed (12+4) PRESET & Upgrading

Task 1-9 Training in Japan

Task 1-10 Preparatory meeting for TECs

(2) Training for TEC

Development of TEC Year2 Syllabi

Development of TEC Year3 Syllabi

Development of TEC Year4 Syllabi

Task 2-4 Development of TEC course syllabi and materials

Workshop for TEC teaching material development

Task 2-6 Training in Japan

3rd training for TEC

4th training for TEC

Syllabi for B.Ed (12+4) PRESET

Course Materials for B.Ed (12+4) PRESET Pri. LS

Development of TEC Year4 Syllabi

Improving TEC syllabi for all year Development of final subject exams

3-4 Development of TEC course syllabi and materials

Workshop for teaching material development

3-7 Training in Japan
- To develop and improve the course syllabi and teaching materials for TEC Year 4
- To improve the subject materials from 1st to 4th year including drafting final subject exams.
- To provide technical inputs for TEC lecturers.

Syllabi for B.Ed (12+4) PRESET Pri. LS

Course Materials for B.Ed (12+4) PRESET Pri. LS

【Output 4】 B.Ed (12+4) PRESET for primary level and lower secondary level is in operation in STEM stream.

【Output 5】 Practice oriented teacher education is strengthen.

Task 1-7 Implementation of Workshop on Action

Task 1-8 Preparation for Practicum
- 1-8-1 To select practicum schools
- 1-8-2 To scrutinise the existing practicum programme
- 1-8-3 To develop practicum handbo
- 1-8-4 To have workshop for practi

TEC Practicum Workshop

Task 1-11 Implementation of TEC monitoring & mentoring
- (1) Monitoring Teacher
- (2) Technical Inputs to TEC
- (3) Monitoring Practicum
- (4) Supporting Action Research of
- (5) Staff Meeting

Task 2-5 Support for action research
- 2-5-1. To discuss and carries out the strategies to promote action research in TECs
- 2-5-2. To jointly provide technical supports about research design and methodology with TEC management teams
- 2-5-3. Support for making presentation at international conferences of reserch

Task 2-2 TEC monitoring
- 2-2-1. To monitor the status of TEC management
- 2-2-2. To monitor the progress of TEC course syllabi and materials deelopment
- 2-2-3. To monitor the lesson improcement process

Monitoring TEC management / Problem Solving / TEC syllaus/material development / Monitoring practicum

3-6 Support for action research
- To provide administrative support for the implementation of the action research.
- To provide subject-specific expert advice, suggestions, and guidance on action research.
- To support TEC lecturers to present their research outcomes at the international academic conferences

3-5 Lesson improvement to enhance TEC students' skills
- To assess and strengthen TEC students' "subject knowledge" and "pedagogical knowledge" by mini-tests.
- To improve TEC lessons by reviewing monthly lessons with the results of the mini-tests.
- To develop rubrics to evaluate lesson plans and their use to improve students' lesson design

3-2 TEC monitoring
- To have a regular meeting with TTD and TECs
- To monitor the status of TEC management
- To monitor the progress of TEC course syllabi and teaching material development

Monitoring TEC management / Problem Solving / Monitoring TEC syllabi/material development / Monitoring practicum

Joint Coordination Committee (JCC)

JCC 1, JCC 2, JCC 3, JCC 4, JCC 5, JCC 6, JCC 7, JCC 8, JCC 9, JCC 9, JCC 10, JCC 11

Periodical Meeting in Japan

Deliverables

- Project Work Plan (First Term)
- Work Plan (First Term)
- Monitoring Sheet No.1
- Monitoring Sheet No.2
- Monitoring Sheet No.3
- Monitoring Sheet No.4
- 1st Term Completion Report
- Project Work Plan (2nd Term)
- Work Plan (2nd Term)
- Monitoring Sheet No.5
- Progress Report 1
- Monitoring Sheet No.6
- Progress Report 2
- Monitoring Sheet No.7
- 2nd Term Completion Report
- Project Work Plan (3rd Term)
- Work Plan (3rd Term)
- Monitoring Sheet No.8
- Progress Report 3
- Monitoring Sheet No.9
- Project Completion Report
- Monitoring Sheet No.10

Appendix 3

Plan of Operation

Project Monitoring Sheet II: Revision of Plan of Operation

Version 12.0

Dated 19 January 2023

Project Title: The Project for Establishing Foundations for Teacher Education College (E-TEC)

Inputs	Year	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	Remarks	Issue	Solution
		I II III IV	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV	Monitoring		
Expert (subjective to the availabilities)								Due to outbreak of COVID-19, JICA project team had to stop dispatching experts since the mid-Mar.2020, but restarted dispatching experts after Apr.2022.		
Team Leader / Teacher Education Advisor	Plan / Actual									
Deputy Team Leader / Aid Coordination Specialist	Plan / Actual									
TEC Planning & Management Advisor	Plan / Actual									
Teacher Education Policy Specialist 1	Plan / Actual									
Teacher Education Policy Specialist 2	Plan / Actual									
Teacher Education Policy Specialist 3	Plan / Actual									
Project Assessment Specialist 1	Plan / Actual									
Project Assessment Specialist 2	Plan / Actual									
TEC Curriculum Development Coordinator 1	Plan / Actual									
TEC Curriculum Development Coordinator 2	Plan / Actual									
Mathematics Education 1	Plan / Actual									
Mathematics Education 2	Plan / Actual									
Science Education 1	Plan / Actual									
Science Education 2	Plan / Actual									
ICT/Media Education 1	Plan / Actual									
ICT/Media Education 2	Plan / Actual									
Pedagogy 1	Plan / Actual									
Pedagogy 2	Plan / Actual									
Pedagogy 3	Plan / Actual									
Language Education 1	Plan / Actual									
Language Education 2	Plan / Actual									
Faculty Development 1	Plan / Actual									
Faculty Development 2	Plan / Actual									
Faculty Development 3	Plan / Actual									
Overseas Training Coordinator	Plan / Actual									
Project Coordinator / Planning Management 1	Plan / Actual									
Project Coordinator / Planning Management 2	Plan / Actual									
Project Coordinator / Planning Management 3	Plan / Actual									
Project Coordinator / Planning Management 4	Plan / Actual									
Equipment								Opening of 2 liaison offices were postponed from Oct.2017 to Aug.2018.	- Project provided temporary support for providing internet access limited to the rooms where project activities are conducted (Nov.2021-Jun.2022).	- P/BTEC allocated budget for the internet provider after Jun.2022.
Project office equipment	Plan / Actual									
Liaison offices equipment	Plan / Actual									
TECs	Plan / Actual									
Training in Japan								Training in Japan in Sep.2020 was postponed to Mar.2021 and was conducted online based. Training in Japan in Sep.2021 was also conducted online based. Training in Japan in Sep.2022 was conducted face-to-face and online.		
Teacher Education	Plan / Actual									
In-country/Third country Training								- 3 trainees (TEC management team) were participated in Third country training in Laos (Sep.2017) - In-country trainings have been continuously conducted at TECs.		
	Plan / Actual									

Activities		Year	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	Responsible Organization		Achievements	Issue & Countermeasures
	Sub-Activities		I II III IV	I II III	IV I II III	IV I II III	IV I II III	IV I II III IV	Japan	GOC		

[New] Output 1: Overarching strategic plans for teacher qualification upgrade are developed.
TEC 1st year TEC 2nd year TEC 3rd year TEC 4th year

1.1	Conduct analytical review on supply and demand, including private schools, for teacher education in Cambodia.	Plan / Actual	
1.2	Prepare mid and long-term (-2030) teacher education demand projection based on the analysis.	Plan / Actual	
1.3 [New]	Develop a legal framework that stipulates a standard for teacher education at the bachelor level.	Plan / Actual	
1.4 [New]	Develop a mid-term plan for teacher qualification upgrade.	Plan / Actual	
1.5 [New]	Develop a long-term strategic plan for teacher qualification upgrade.	Plan / Actual	
1.6	Design the framework for evaluating the impact of TEC	Plan / Actual	

Achievements (Output 1):
- [New 1.4] MoEYS had finalized the draft "Master Plan on Educational Staff Qualification Upgrading" (previously called as MTP-TQU) with support by the Project, and got approval by the Minister (Jan.2022). TTD completed both Khmer/English version (Oct.2022).
- [1.6] Discussed with MoEYS regarding evaluation design for measurement of the project's overall goal.

Issue & Countermeasures (Output 1):
- [New 1.4] The completed version is not disclosed yet but to be consolidated to the long-term plan.
- [New 1.5] Long-term expert conducted the surveys to start developing the long-term plan with MoEYS.

[New] Output 2: TEC management framework and operational mechanism are established.
TEC 1st year TEC 2nd year TEC 3rd year TEC 4th year

2.1	Prepare professional development program for TEC managers.	Plan / Actual
2.2	Conduct professional development program for TEC managers.	Plan / Actual
2.3 [New]	Prepare a TEC strategic plan.	Plan / Actual
2.4	Prepare teacher evaluation plan.	Plan / Actual
2.5	Prepare internal quality assurance guideline.	Plan / Actual
2.6 [New]	Periodically review and improve the management system to assure the quality of teaching and learning.	Plan / Actual
2.7 [New]	Provide technical input for IQA offices to ensure lesson improvement through PDCA cycle.	Plan / Actual
2.8 [New]	Monitor the allocation of TEC teacher educators.	Plan / Actual
2.9 [New]	Implement continuous professional development programmes for TEC teacher educators such as lesson study.	Plan / Actual

Achievements (Output 2):
- [New 2.7] IQA Symposium&Workshop (Sep.2022) and TEC annual review workshop (Oct.2022) was conducted.
- [New 2.8] xx lecturers and xx lecturers were newly assiend (Feb.2022-Oct.2022).
- [New 2.9] The lesson study by Japanese experts were conducted (Jul-Aug.2022). Lesson plans prepared by Y4 student teachers were examined (Aug.2022). P/BTEC joint workshop on lesson study review was conduceld (Oct.2022).

Issue & Countermeasures (Output 2):
- [New 2-8] The lack of TEC lecturers, particularly in BTEC, is still a big issue. MoEYS need to allocate appropriate human resources, by assigning lecturers from outside including private universities; supporting in-service TEC teaching staff in obtaining MAs in their teaching subjects; and supporting the selected TEC graduates in obtaining teaching experience and MAs to be qualified TEC lectuires.

Output 3: Syllabi and course materials are prepared for B.Ed (12+4) PRESET for both primary and lower secondary levels.
TEC 1st year TEC 2nd year TEC 3rd year TEC 4th year

3.1	Analyze the revised teacher competency standard and curriculum framework.	Plan / Actual
3.2	Analyze existing curricula and model curricula.	Plan / Actual
3.3	Develop draft curricula, syllabi and course materials.	Plan / Actual
3.4 [New]	Review and revise the course syllabi and course materials through reflective process.	Plan / Actual
3.5 [New]	Develop and refine final subject exams.	Plan / Actual

Achievements (Output 3):
- [3-3] All course syllabi and materials for Year3-4 have been developed through contiouous monthly online discussions with Japanese professors and the training in Japan.
- [New 3-5] Project provided TEC lectures on how to develop the subject exams and evaluate them and comments on the existing exams. Final subject exams for Math Year 3-4 and Science Year 1-4 have been developed.
- [3-3] [New 3-4] [New 3-5] Training in Japan were conducted via online and face-to-face (Sep.2022).

Issue & Countermeasures (Output 3):
- [3-3][New 3-4] Translation of Y4 syllabi and materials from Khmer to English will be completed by Nov.2022. Translation of Y3 syllabi and teaching materials need to be completed by TECs budget in next academic year.

[New] Output 4: Cycle for lesson improvement is established in Math and Science subjects.
TEC 1st year TEC 2nd year TEC 3rd year TEC 4th year

4.1	Prepare induction program for teacher educators.	Plan / Actual
4.2	Conduct induction training for teacher educators.	Plan / Actual
4.3 [New]	Develop tools for reflective process.	Plan / Actual
4.4 [New]	Implement reflection with the developed tools.	Plan / Actual
4.5 [New]	TEC teacher educators check Lesson Plans developed by TEC students for the practicum and provide technical advice for their improvement with the technical support from Japanese experts.	Plan / Actual
4.6 [New]	Provide opportunities for capacity building of teacher educators.	Plan / Actual

Achievements (Output 4):
- [New 4.3] Project developed mini-tests and reflection sheets of limited subjects for reflective process. Project developed the Rubric for assessing practicum lesson plans (Nov.2021-Jan.2022).
- [New 4-4] Reflective process is ongoing through lesson delivery.
- [New 4-5] Lesson plans prepared by TEC Year 4 student teachers during their practicum are evaluated by using a lesson plan assessment rubric and Japanese experts provided technical advice to TEC lecturers (Mar 2022).
- [New 4.6] Subject-based monthly meetings and training in Japan contributed to the capacity building of TECs.

Issue & Countermeasures (Output 4):
- For further step, TECs are required to strengthen the relationship with its application schools to improve teaching and learning. Digital platform that MOEYS had supported should be utilized to get ideas, needs, and opinions from the schools.

[New] Output 5: TEC teacher educators accumulate and update their knowledge and practices related to TEC student teachers' learning in classrooms through research activities
TEC 1st year TEC 2nd year TEC 3rd year TEC 4th year

5.1 [New]	Analyze the needs of educational research in TECs.	Plan / Actual
5.2 [New]	Provide technical inputs for TEC teacher educators on how to conduct action research.	Plan / Actual
5.3 [New]	Each TEC teacher educator prepares a research paper/report on their lessons/courses.	Plan / Actual
5.4 [New]	Present the research outcomes in academic conferences.	Plan / Actual

Achievements (Output 5):
- [New 5.2] Local consultant continuously mentored TEC lecturers' research (Jun.2021 to Sep.2022). Meetings and workshops to promote action research were conducted (May,Jun, Aug. 2022).
- [New 5.3] TEC lecturers prepared research papers (including research plan) by subject groups, and research quality was improved.
- [New 5.4] P/BTEC academic conference were conducted (May.-Jun. 2022). P/BTEC Bulletin Vol.2 were published (Aug.2022). BTEC ER, Psychology, and PTEC Math lecturers made presentations at WALS conference (Sep.2022), PTEC ER lecturer made a presentation at the SEAMEO RIHED Research Symposium (Nov. 2022).

Issue & Countermeasures (Output 5):
- Ibid.

Duration / Phasing	Plan	Preparation Stage	First academic year	Second academic year	Third academic year	Fourth academic year
	Actual					

Monitoring Plan	Year	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	Remarks	Issue	Solution
		I II III IV	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV			

Monitoring

Joint Coordinating Committee	Plan / Actual	11th JCC was held on 4th Aug. 2022.
Submission of Monitoring Sheet	Plan / Actual	Monitoring Sheet No.9 (Apr.2022) and No.10 (Oct.2022) were submittted.
Monitoring Mission from Japan	Plan / Actual	Monitoring mission from Japan was conducted in Oct. 2022.
Post Monitoring	Plan / Actual	3 years after the end of project. / Tentative assessment items will be included in a project completion report.

Reports/Documents

Inception Report	Plan / Actual
Progress Report	Plan / Actual
Training Materials	Plan / Actual
Project Completion Report	Plan / Actual

Public Relations

TEC brochures and handbooks	Plan / Actual
TEC promotion video	Plan / Actual
Facebook articles	Plan / Actual

Appendix 4

Person-Month Dispatched to Cambodia

Kingdom of Cambodia, The Project for Establishing Foundations for Teacher Education College (1st term)

1. Field Work

Name (Title)		No. of travel	2017–2019 (Jan–May)	Day Count Total	Person Months Total
Koji Takahashi (Team Leader / Teacher Education Advisor)	Plan	10		345	11.50
	Actual	12		345	11.50
Megumi Nabeshima (Shiota) (Deputy Team Leader / Aid Coordination Specialist)	Plan	12		273	9.10
	Actual	12		283	9.43
Masayo Otani (Kojima) TEC Planning & Management Advisor	Plan	10		228	7.60
	Actual	11		228	7.60
Yoshikazu Ogawa (Teacher Education Policy Specialist 1)	Plan	3		21	0.70
	Actual	3		21	0.70
Akiko Hanaya (Teacher Education Policy Specialist 2)	Plan	2		78	2.60
	Actual	2		78	2.60
Hiromasa Hattori (Project Assessment Specialist)	Plan	4		120	4.00
	Actual	4		120	4.00
Yudai Nishiyama (TEC Curriculum Development Coordinator 1)	Plan	7		228	7.60
	Actual	5		150	5.00
Miho Yoshida (Ito) (TEC Curriculum Development Coordinator 2)	Plan	0		0	0.00
	Actual	2		78	2.60
Yutaka Kondo (Mathematics Education Advisor)	Plan	6		76	2.53
	Actual	6		76	2.53
Koichi Morimoto (Science Education Advisor 1)	Plan	7		86	2.87
	Actual	7		73	2.43
Motohiko Nakamura (Science Education Advisor 2)	Plan	0		0	0.00
	Actual	2		13	0.43
Wakio Oyanagi (ICT/Media Education Advisor)	Plan	6		49	1.63
	Actual	6		49	1.63
Yoriko Hirose (Hashizaki) (Pedagogy Advisor 1)	Plan	4		31	1.03
	Actual	4		30	1.00
Takuhiko Deguchi (Pedagogy Advisor 2)	Plan	6		54	1.80
	Actual	6		54	1.80
Rintaro Sato (Language Education Advisor)	Plan	6		46	1.53
	Actual	6		46	1.53
Yasushi Maruyama (Faculty Development Advisor 1)	Plan	4		25	0.83
	Actual	4		20	0.67
Machi Mochizuki (Sato) (Faculty Development Advisor 2)	Plan	4		19	0.63
	Actual	3		16	0.53
Hiroyoshi Kinoshita (Faculty Development Advisor 3)	Plan	0		0	0.00
	Actual	1		5	0.17
Yuki Ohashi (Project Coordinator 1)	Plan	8		189	6.30
	Actual	5		106	3.53
Mayumi Kitabayashi (Project Coordinator 2)	Plan	0		0	0.00
	Actual	1		14	0.47
Field Work Subtotal				1868	62.25
				1805	60.15

2. Work in Japan

Name (Title)		No. of travel	2017 — 2018 — 2019 (monthly schedule)	Day Count Total	Person Months Total
Koji Takahashi (Team Leader / Teacher Education Advisor)	Plan			14	0.70
	Actual			20	1.00
Megumi Nabeshima (Shiota) (Deputy Team Leader / Aid Coordination Specialist)	Plan			11	0.55
	Actual			10	0.50
Masayo Otani (Kojima) TEC Planning & Management Advisor	Plan			8	0.40
	Actual			8	0.40
Yoshikazu Ogawa (Teacher Education Policy Specialist 1)	Plan			8	0.40
	Actual			8	0.40
Akiko Hanaya (Teacher Education Policy Specialist 2)	Plan			4	0.20
	Actual			4	0.20
Tomoko Tanaka (Masuda) (Teacher Education Policy Specialist 3)	Plan			36	1.80
	Actual			36	1.80
Hiromasa Hattori (Project Assessment Specialist)	Plan			12	0.60
	Actual			12	0.60
Yudai Nishiyama (TEC Curriculum Development Coordinator 1)	Plan			8	0.40
	Actual			26.4	1.32
Miho Yoshida (Ito) (TEC Curriculum Development Coordinator 2)	Plan			0	0.00
	Actual			0.0	0.00
Yutaka Kondo (Mathematics Education Advisor)	Plan			40	2.00
	Actual			40	2.00
Koichi Morimoto (Science Education Advisor 1)	Plan			90.0	4.50
	Actual			90.2	4.51
Motohiko Nakamura (Science Education Advisor 2)	Plan			0	0.00
	Actual			0	0.00
Wakio Oyanagi (ICT/Media Education Advisor)	Plan			30	1.50
	Actual			30	1.50
Yoriko Hirose (Hashizaki) (Pedagogy Advisor 1)	Plan			10	0.50
	Actual			10.6	0.53
Takuhiko Deguchi (Pedagogy Advisor 2)	Plan			20	1.00
	Actual			20	1.00
Rintaro Sato (Language Education Advisor)	Plan			40	2.00
	Actual			40	2.00
Yasushi Maruyama (Faculty Development Advisor 1)	Plan			12	0.60
	Actual			12	0.60
Machi Mochizuki (Sato) (Faculty Development Advisor 2)	Plan			12	0.60
	Actual			10	0.50
Hiroyoshi Kinoshita (Faculty Development Advisor 3)	Plan			0	0.00
	Actual			3.8	0.19
Naoko Ono (Overseas Training Coordinator)	Plan			74	3.70
	Actual			74	3.70

Remark:

- Work Engagement Actual ■ (black)
- Work Engagement Plan ▬ (blue)
- In-House Payments □

	Day Count Total	Person Months Total
Work in Japan Subtotal	429.0	21.45
	455.0	22.75
Total	83.70	
	82.90	

Kingdom of Cambodia, The Project for Establishing Foundations for Teacher Education College (2nd term)

1. Field Work

Name (Title)		No. of travel	Day Count Total	Person Months Total
Koji Takahashi (Team Leader / Teacher Education Advisor)	Plan	7	117	3.90
	Actual	7	117	3.90
Megumi Nabeshima (Shiota) (Deputy Team Leader / Aid Coordination Specialist)	Plan	5	99	3.30
	Actual	5	99	3.30
Masayo Otani (Kojima) TEC Planning & Management Advisor	Plan	4	102	3.40
	Actual	4	102	3.40
Hiromasa Hattori (Project Assessment Specialist)	Plan	0	0	0.00
	Actual	0	0	0.00
Miho Ito (TEC Curriculum Development Coordinator)	Plan	3	73	2.43
	Actual	3	73	2.43
Yutaka Kondo (Mathematics Education Advisor 1)	Plan	2	14	0.47
	Actual	2	14	0.47
Taketo Shimomura (Mathematics Education Advisor 2)	Plan	2	14	0.47
	Actual	2	14	0.47
Koichi Morimoto (Science Education Advisor 1)	Plan	2	15	0.50
	Actual	2	15	0.50
Motohiko Nakamura (Science Education Advisor 2)	Plan	1	7	0.23
	Actual	1	7	0.23
Wakio Oyanagi (ICT/Media Education Advisor)	Plan	2	14	0.47
	Actual	2	14	0.47
Takeshi Kitagawa (ICT/Media Education Advisor)	Plan	0	0	0.00
	Actual	0	0	0.00
Yoriko Hirose (Hashizaki) (Pedagogy Advisor 1)	Plan	2	13	0.43
	Actual	2	13	0.43
Takuhiko Deguchi (Pedagogy Advisor 2)	Plan	2	14	0.47
	Actual	2	14	0.47
Rintaro Sato (Language Education Advisor1)	Plan	2	14	0.47
	Actual	2	14	0.47
Koji Maeda (Language Education Advisor2)	Plan	2	14	0.47
	Actual	2	14	0.47
Yasushi Maruyama (Faculty Development Advisor 1)	Plan	1	4	0.13
	Actual	1	4	0.13
Machi Mochizuki (Sato) (Faculty Development Advisor 2)	Plan	1	6	0.20
	Actual	1	6	0.20
Machi Mochizuki (Sato) (Faculty Development Advisor 2) (Individual)	Plan	0	0	0.00
	Actual	0	0	0.00
Hiroyoshi Kinoshita (Faculty Development Advisor 3)	Plan	1	6	0.20
	Actual	1	6	0.20
Mayumi Kitabayashi (Project Coordinator)	Plan	2	56	1.87
	Actual	2	56	1.87
Chizu Sakamoto (Project Coordinator)	Plan	0	3	0.10
	Actual	1	3	0.10

Field Work Subtotal	Plan	585.00	19.51
	Actual	585.00	19.51

2. Work in Japan

Name (Title)		No. of travel	Day Count Total	Person Months Total
Koji Takahashi (Team Leader / Teacher Education Advisor)	Plan		130.0	6.50
	Actual		130.0	6.50
Megumi Nabeshima (Shiota) (Deputy Team Leader / Aid Coordination Specialist)	Plan		144.0	7.20
	Actual		144.0	7.20
Masayo Otani (Kojima) TEC Planning & Management Advisor	Plan		92.0	4.60
	Actual		92.0	4.60
Tomoko Tanaka (Masuda) (Teacher Education Policy Specialist)	Plan		0.0	0.00
	Actual		0.0	0.00
Hiromasa Hattori (Project Assessment Specialist)	Plan		36.0	1.80
	Actual		36.0	1.80
Miho Ito (TEC Curriculum Development Coordinator)	Plan		63.0	3.15
	Actual		63.0	3.15
Yutaka Kondo (Mathematics Education Advisor 1)	Plan		40.0	2.00
	Actual		40.0	2.00
Taketo Shimomura (Mathematics Education Advisor 2)	Plan		28.0	1.40
	Actual		28.0	1.40
Koichi Morimoto (Science Education Advisor 1)	Plan		50.0	2.50
	Actual		50.0	2.50
Motohiko Nakamura (Science Education Advisor 2)	Plan		28.0	1.40
	Actual		28.0	1.40
Wakio Oyanagi (ICT/Media Education Advisor 1)	Plan		14.0	0.70
	Actual		14.0	0.70
Takeshi Kitagawa (ICT/Media Education Advisor 2)	Plan		16.0	0.80
	Actual		16.0	0.80
Yoriko Hirose (Hashizaki) (Pedagogy Advisor 1)	Plan		40.0	2.00
	Actual		40.0	2.00
Takuhiko Deguchi (Pedagogy Advisor 2)	Plan		35.0	1.75
	Actual		35.0	1.75
Rintaro Sato (Language Education Advisor1)	Plan		34.0	1.70
	Actual		34.0	1.70
Koji Maeda (Language Education Advisor2)	Plan		31.0	1.55
	Actual		31.0	1.55
Yasushi Maruyama (Faculty Development Advisor 1)	Plan		18.0	0.90
	Actual		18.0	0.90
Machi Mochizuki (Sato) (Faculty Development Advisor 2)	Plan		0.0	0.00
	Actual		0.0	0.00
Machi Mochizuki (Sato) (Faculty Development Advisor 2)(Individual)	Plan		8.0	0.40
	Actual		8.0	0.40
Hiroyoshi Kinoshita (Faculty Development Advisor 3)	Plan		17.0	0.85
	Actual		17.0	0.85
Naoko Ono (Overseas Training Coordinator)	Plan		74.0	3.70
	Actual		74.0	3.70
Mayumi Kitabayashi (Project Coordinator)	Plan		20.6	1.03
	Actual		20.6	1.03
Kanako Ishihara (Suzuki) (Project Coordinator)	Plan		60.0	3.00
	Actual		60.0	3.00

Work in Japan Subtotal	Plan	978.60	48.93
	Actual	978.60	48.93

Total	Plan		68.44
	Actual		68.44

Remark:
- Work Engagement Plan ▮ (black)
- Work Engagement Actual ▮ (blue)
- In-House Payments □

Kingdom of Cambodia, The Project for Establishing Foundations for Teacher Education College (3rd term)

1. Field Work

Name (Title)		No. of travel	2021 / 2022 / 2023 Schedule	Day Count Total	Person Months Total
Koji Takahashi (Team Leader / Teacher Education Advisor)	Plan	5		84.00	2.80
	Actual	5	(14) (17) (17) (21) (15)	84.00	2.80
Megumi Nabeshima (Shiota) (Deputy Team Leader / Aid Coordination Specialist)	Plan	4		78.00	2.60
	Actual	4	(3) (16) (8) (7) (12) (9) (10) (13)	78.00	2.60
Masayo Otani (Kojima) TEC Planning & Management Advisor	Plan	4		99.00	3.30
	Actual	4	(5) (22) (25) (4) (28) (10) (5)	99.00	3.30
Megumi Nabeshima (Shiota) (Project Assessment Specialist 1)	Plan	3		21.00	0.70
	Actual	2	(10) (7) (4)	21.00	0.70
Kanako Ishihara (Suzuki) (Project Assessment Specialist 2)	Plan	0		0.00	0.00
	Actual	0		0.00	0.00
Miho Yoshida (Ito) (TEC Curriculum Development Coordinator)	Plan	2		60.00	2.00
	Actual	2	(4) (31) (3) (10) (12)	60.00	2.00
Yutaka Kondo (Mathematics Education Advisor 1)	Plan	1		14.00	0.47
	Actual	1	(14)	14.00	0.47
Taketo Shimomura (Mathematics Education Advisor 2)	Plan	1		9.00	0.30
	Actual	1	(9)	9.00	0.30
Koichi Morimoto (Science Education Advisor 1)	Plan	0		0.00	0.00
	Actual	0		0.00	0.00
Motohiko Nakamura (Science Education Advisor 2)	Plan	0		0.00	0.00
	Actual	0		0.00	0.00
Wakio Oyanagi (ICT/Media Education Advisor 1)	Plan	1		8.00	0.27
	Actual	1	(5) (3)	8.00	0.27
Takeshi Kitagawa (ICT/Media Education Advisor 2)	Plan	0		0.00	0.00
	Actual	0		0.00	0.00
Yoriko Hirose (Hashizaki) (Pedagogy Advisor 1)	Plan	0		0.00	0.00
	Actual	0		0.00	0.00
Takuhiko Deguchi (Pedagogy Advisor 2)	Plan	0		0.00	0.00
	Actual	0		0.00	0.00
Rumiko Nakayama (Pedagogy Advisor 3)	Plan	1		8.00	0.27
	Actual	1	(7) (1)	8.00	0.27
Rintaro Sato (Language Education Advisor1)	Plan	1		8.00	0.27
	Actual	1	(5) (3)	8.00	0.27
Koji Maeda (Language Education Advisor2)	Plan	1		8.00	0.27
	Actual	1	(5) (3)	8.00	0.27
Yasushi Maruyama (Faculty Development Advisor 1)	Plan	1		6.00	0.20
	Actual	1	(6)	6.00	0.20
Machi Mochizuki (Sato) (Faculty Development Advisor 2)	Plan	1		6.00	0.20
	Actual	1	(6)	6.00	0.20
Hiroyoshi Kinoshita (Faculty Development Advisor 3)	Plan	1		6.00	0.20
	Actual	1	(6)	6.00	0.20
Kanako Ishihara (Suzuki) (Project Coordinator)	Plan	2		18.00	0.60
	Actual	2	(9) (9)	18.00	0.60

Field Work Subtotal	Plan	433.00	14.45
	Actual	433.00	14.45

2. Work in Japan

Name (Title)		No. of travel	2021 May–Dec / 2022 Jan–Dec / 2023 Jan (Work Engagement)	Day Count Total	Person Months Total
Koji Takahashi (Team Leader / Teacher Education Advisor)	Plan			151.00	7.55
	Actual		(5)(6.4)(2.6)(4)(10)(19)(9)(4)(4)(3)(8)(3)(9)(10)(18)(9)(6)(5)(5)(1)	151.00	7.55
Megumi Nabeshima (Shiota) (Deputy Team Leader / Aid Coordination Specialist)	Plan			96.00	4.80
	Actual		(5)(7)(6)(5)(5)(6)(7)(2.5)(5)(3)(4)(4)(3)(4.0)(2.5)	96.00	4.80
Masayo Otani (Kojima) TEC Planning & Management Advisor	Plan			94.00	4.70
	Actual		(1)(2)(2)(5)(1)(8)(6)(6)(1)(3)(8)(7)(4)(3)(8)(6)(6)(2)(7)(8)	94.00	4.70
Megumi Nabeshima (Shiota) (Project Assessment Specialist 1)	Plan			32.00	1.60
	Actual		(2)(2)(2)(4)(2)(1)(1)(2)(3)(1)(2)(2)(4)(2)(1)	32.00	1.60
Kanako Ishihara (Suzuki) (Project Assessment Specialist 2)	Plan			46.00	2.30
	Actual		(1)(1)(2)(5)(6)(8)(8)(5)(2)	46.00	2.30
Miho Yoshida (Ito) (TEC Curriculum Development Coordinator)	Plan			86.00	4.30
	Actual		(1)(4)(5)(11)(15)(5)(5)(7)(8)(7)(3)(5)(5)	86.00	4.30
Yutaka Kondo (Mathematics Education Advisor 1)	Plan			36.60	1.83
	Actual		(4)(8)(6)(3)(3)(3)(2)(1)(1)(1)(0.6)	36.60	1.83
Taketo Shimomura (Mathematics Education Advisor 2)	Plan			40.00	2.00
	Actual		(2)(4)(4)(4)(3)(3)(3)(3)(4)(3)(3)(2)	40.00	2.00
Koichi Morimoto (Science Education Advisor 1)	Plan			54.00	2.70
	Actual		(8)(9)(7)(6)(1)(1)(1)(1)(1)(2)(1)(1)(1)(3)(6)(2)(1)	54.00	2.70
Motohiko Nakamura (Science Education Advisor 2)	Plan			38.00	1.90
	Actual		(3)(2)(5)(1)(1)(3)(2)(2)(3.6)(1)(2)(2)(3)(2.4)(4)	38.00	1.90
Wakio Oyanagi (ICT/Media Education Advisor 1)	Plan			36.60	1.83
	Actual		(1)(1)(1)(1)(1)(3)(4)(3)(2)(2)(3)(3)(0.6)	36.60	1.83
Takeshi Kitagawa (ICT/Media Education Advisor 2)	Plan			32.00	1.60
	Actual		(1)(1)(4)(2)(2)(2)(1)(2)(1)(3)(2)(3)(1)(4)	32.00	1.60
Yoriko Hirose (Hashizaki) (Pedagogy Advisor 1)	Plan			46.00	2.30
	Actual		(1.5)(1)(1)(1)(4)(3)(0.5)(3)(8)(8)(8)(7)	46.00	2.30
Takuhiko Deguchi (Pedagogy Advisor 2)	Plan			46.00	2.30
	Actual		(1)(1)(3)(2)(2)(2)(6)(1)(5.6)(2)(2)(4.4)(8.5)(1.5)(1)(2)	46.00	2.30
Rumiko Nakayama (Pedagogy Advisor 3)	Plan			20.60	1.03
	Actual		(2)(2)(1.5)(2.5)(4)(4)(2.5)(2.1)	20.60	1.03
Rintaro Sato (Language Education Advisor1)	Plan			20.60	1.03
	Actual		(1)(1)(1)(1)(2)(3)(2)(2)(2)(2)(1)(2.6)	20.60	1.03
Koji Maeda (Language Education Advisor2)	Plan			20.60	1.03
	Actual		(1)(1)(3)(2)(3)(2)(2)(2)(0.6)	20.60	1.03
Yasushi Maruyama (Faculty Development Advisor 1)	Plan			6.00	0.30
	Actual		(2)(2)(2)(0.5)(0.5)(2)	8.00	0.40
Machi Mochizuki (Sato) (Faculty Development Advisor 2)	Plan			6.00	0.30
	Actual		(0.5)(4)(1.5)	6.00	0.30
Hiroyoshi Kinoshita (Faculty Development Advisor 3)	Plan			6.00	0.30
	Actual		(0.5)(2.5)(1)	4.00	0.20
Kurumi Nonaka (Overseas Training Coordinator 1)	Plan			50.00	2.50
	Actual		(1)(1)(1)(2)(23)(6)(2)(2)(10)(2)	50.00	2.50
Nagisa Takatsuki (Overseas Training Coordinator 2)	Plan			0.00	0.00
	Actual			0.00	0.00
Kanako Ishihara (Suzuki) (Project Coordinator)	Plan			108.00	5.40
	Actual		(4)(7)(7)(8)(8)(7)(7)(8)(9)(9)(9)(9)(6)(2)(2)(2)(2)(1)(1)	108.00	5.40

Remark:

Work Engagement Actual ■ (black)
Work Engagement Plan ■ (blue)
In-House Payments ☐

Work in Japan Subtotal	Plan	1072.00	53.60
	Actual	1072.00	53.60

Total	Plan	68.05
	Actual	68.05

Appendix 5

List of Equipment

List of Equipment

The Project for Establishing Foundations for Teacher Education College
Kingdom of Cambodia

December 2022

Item	Model No./Description	No.	Price	Currency	Date of procurement	Location	Status of equipment	Status after project completion	Date of handover
Laser printer	HP Color Laser MFP-M477fdw	1	786.50	USD	2017/2/6	TTD	Working	Handed over to counterpart	2022/12/14
Laser printer	HP Color Laser MFP-M477fdw	1	649.00	USD	2018/8/29	BTEC office	Working	Handed over to counterpart	2022/12/9
Laser printer	HP Color Laser MFP-M477fdw	1	649.00	USD	2018/9/10	PTEC office	Working	Handed over to counterpart	2022/12/14
Laptop PC	Dell Insiron 5567	1	891.00	USD	2017/2/13	TTD	Working	Handed over to counterpart	2022/12/14
Laptop PC	Dell Insiron 5570	1	911.90	USD	2018/7/18	PTEC office	Working	Handed over to counterpart	2022/12/14
Laptop PC	Dell Insiron 5570	1	957.00	USD	2018/8/24	BTEC office	Working	Handed over to counterpart	2022/12/9
Laptop PC	Dell Insiron 5570	5	1,012.00	USD	2019/1/31	PTEC office	Working	Handed over to counterpart	2022/12/14
Laptop PC	Dell Insiron 5570	4	1,012.00	USD	2019/1/31	BTEC office	Working	Handed over to counterpart	2022/12/9
Projector	LCD Projector Dell 1450	1	544.50	USD	2017/2/13	TTD	Working	Handed over to counterpart	2022/12/14
Projector	LCD Projector Dell 1451	1	533.50	USD	2018/9/5	PTEC office	Working	Handed over to counterpart	2022/12/14
Projector	LCD Projector Dell 1452	1	533.50	USD	2018/9/5	BTEC office	Working	Handed over to counterpart	2022/12/9
Projector	Projector Dell 1650 DLP	1	764.50	USD	2019/1/31	PTEC office	Working	Handed over to counterpart	2022/12/14
Digital copier	Sharp Digital Full Colour Multifunctional MX-3114N	1	5,324.00	USD	2017/2/14	TTD	Working	Handed over to counterpart	2022/12/14
Digital copier	Digital Copier MX-3050V	1	5,324.00	USD	2018/10/12	PTEC office	Working	Handed over to counterpart	2022/12/14
Digital copier	Digital Copier MX-3050V	1	5,324.00	USD	2018/10/12	BTEC office	Working	Handed over to counterpart	2022/12/9
Desktop PC	Desktop Dell Optiplex 7040	1	1,259.50	USD	2017/2/15	TTD	Working	Handed over to counterpart	2022/12/14
Desktop PC	Desktop Dell Optiplex 7050	1	1,017.50	USD	2019/1/24	PTEC office	Working	Handed over to counterpart	2022/12/14
Desktop PC	Desktop Dell Optiplex 7050	1	1,017.50	USD	2019/1/24	BTEC office	Working	Handed over to counterpart	2022/12/9
Digital video camera	Panasonic HC-W850	1	759.00	USD	2017/2/20	TTD	Lost		
Digital video camera	Panasonic HC-W850	1	Paid by PADECO		2017/12/8	TTD	Working	Handed over to counterpart	2022/12/14
Digital video camera	Panasonic HC-W851	1	638.00	USD	2018/9/6	PTEC office	Working	Handed over to counterpart	2022/12/14
Digital video camera	Panasonic HC-W852	1	638.00	USD	2018/9/6	BTEC office	Working	Handed over to counterpart	2022/12/9
Air conditioner	Panasonic S18SKH	1	660.00	USD	2017/2/23	TTD	Working	Handed over to counterpart	2022/12/14
Air conditioner	Panasonic T18SKH	1	650.00	USD	2018/10/12	PTEC office	Working	Handed over to counterpart	2022/12/14
Air conditioner	Panasonic T19SKH	1	650.00	USD	2018/10/12	BTEC office	Working	Handed over to counterpart	2022/12/9
Book	"Handbook of Research on Teaching 5TH HRD", Gitomer, Drew, H. (EDT)/ Bell, Courtney, A. (EDT)	2	577.36	USD	2019/1/26	PTEC library	Working	Handed over to counterpart	2022/12/14
Book	"Handbook of Research on Teaching 5TH HRD", Gitomer, Drew, H. (EDT)/ Bell, Courtney, A. (EDT)	2	577.36	USD	2019/1/25	BTEC library	Working	Handed over to counterpart	2022/12/9
Library system	Cronos Library Standard Package	1	2,950.00	USD	2019/4/10	PTEC library	Other	Handed over to counterpart	2022/12/14
Library system	Cronos Library Standard Package	1	2,950.00	USD	2019/4/10	BTEC library	Other	Handed over to counterpart	2022/12/9
Laptop PC	Dell Inspiron 3000	1	665.00	USD	2020/1/30	BTEC	Working	Handed over to counterpart	2022/12/9
Laptop PC	MSI GF63-Thin-9SCX-021KH	10	986.00	USD	2020/8/11	PTEC	Working	Handed over to counterpart	2022/12/14
Laptop PC	MSI GF63-Thin-9SCX-021KH	10	986.00	USD	2020/8/11	BTEC	Working	Handed over to counterpart	2022/12/9
Digital video camera	Panasonic HC-W585G C-K	3	540.00	USD	2020/8/11	PTEC	Working	Handed over to counterpart	2022/12/14
Digital video camera	Panasonic HC-W585G C-K	3	540.00	USD	2020/8/11	BTEC	Working	Handed over to counterpart	2022/12/9
Projector	NEC NP-VE303XG	8	494.00	USD	2020/8/26	PTEC	Working	Handed over to counterpart	2022/12/14
Projector	NEC NP-VE303XG	8	494.00	USD	2020/8/26	BTEC	Working	Handed over to counterpart	2022/12/9
Laptop PC	Microsoft Surface Pro 7	1	949.00	USD	2021/3/31	TTD	Working	Handed over to counterpart	2022/12/14
Laptop PC	Microsoft Surface Pro 7	1	949.00	USD	2021/3/31	PTEC office	Working	Handed over to counterpart	2022/12/14
Digital copier	SHARP Digital Laser Colour Copier MX-3051	1	5,346.00	USD	2021/8/19	BTEC library	Working	Handed over to counterpart	2022/12/9
Digital copier	SHARP Digital Laser Colour Copier MX-3051	1	5,346.00	USD	2021/8/26	PTEC library	Working	Handed over to counterpart	2022/12/14
SPSS	D0EKZLL IBM SPSS Statistics Standard Authorized User License	3	32,623.80	USD	2021/11/11	PTEC	Working	Handed over to counterpart	2022/12/14
SPSS	D0EKZLL IBM SPSS Statistics Standard Authorized User License	3	32,623.80	USD	2021/11/13	BTEC	Working	Handed over to counterpart	2022/12/9