With support from the Strengthening Teacher Education Programmes in Cambodia (STEPCam), financed by the Global Partnership for Education (GPE) and UNESCO
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List of acronyms and abbreviations

ACC  Accreditation Committee of Cambodia
BA   Bachelor of Arts
BEd  Bachelor of Education
CPD  Continuous Professional Development
CPDMO Continuous Professional Development Management Office
DoPER Department of Personnel
DoE  District Office of Education
DP   Development Partner
ECED Early Childhood Education Department
ESP  Education Strategic Plan
ICT  Information and Communication technologies
INSET In-Service Training for Teachers
MA   Master of Arts
M&E  Monitoring and Evaluation
MoEYS Ministry of Education, Youth and Sport
NGO  Non-Governmental Origination
NIE  National Institute of Education
OECD Organisation for Economic Co-operation and Development
PD   Professional Development
PoE  Provincial Office of Education
PhD  Doctor of Philosophy (Doctorate)
PLC  Professional Learning Community
PTEC Phnom Penh Teacher Education College
PTTC Provincial Teacher Training Centre
STEPCam Strengthening Teacher Education Programmes in Cambodia
TALIS Teaching and Learning International Survey
TCP  Teacher Career Pathways
TD   Technical Department
TPAP Teacher Policy Action Plan
TTD  Teacher Training Department
TQU  Teacher Qualifications Upgrading
UNESCO United Nations Educational, Scientific and Cultural Organisation
UNICEF United Nations Children’s Fund
1. Introduction

This document reports on a Training Needs Assessment (TNA) of teacher educators implemented to inform the Ministry of Education, Youth and Sports (MoEYS) to support reforms postulated in the Teacher Policy Action Plan (TPAP). The TPAP was formulated aiming at providing a clear direction for a systematic reform of teacher policies, including concrete programmes, activities, timelines, expected outcomes, and projected budget for implementation from 2015 to 2020.

Policy 1 in the Cambodian Education Strategic Plan (ESP) 2019-2023 aims to “ensure inclusive and equitable quality education and promote life-long learning opportunities for all” with professional teacher training, capacity development, and staff motivation as some of the key priorities. ESP 2019-2023 (MoEYS, 2019) also emphasises teacher training reform at Teacher Education Institutions to develop teachers’ capacity and teacher education centres with the following strategies:

- Review teacher training programmes at NIEs, TECs and RTTCs, and ensure training equivalence, especially in STEM, ICT and foreign languages
- Strengthen the capacity of trainers on subject-based knowledge, teaching methods and ICT
- Review the operation of provincial TTCs
- Conduct training on school leadership and for school principals
- Improve infrastructure and equip colleges with teaching materials for efficient training
- Develop teachers with quality, competency and accountability in line with the code of conduct, and provide required conditions for effective and efficient performance
- Develop physical infrastructure to meet the requirements of the Teacher Education Professional Standards
- Transform RTTCs into high-quality TECs
- Strengthen the functioning of teacher development centres to provide continuous professional development
- Promote career development by establishing a clear career pathway; promote position and rank based on performance; update the payroll scale through a policy on educational professional development, and a master plan on continuous professional development (systematic INSET / on-service teacher training (ONSET)) prepared in a coordinated manner. The INSET/ONSET budget will be incorporated in the school operational budget.
- Review the criteria for recruiting teachers, following the formula for pre-school teachers 12+2
- Modernize the standards of teacher training programmes to meet national needs and to be competitive regionally and globally by developing teacher education provider standards and teacher educational standard assessments. Develop a policy on TECs; create a master plan on the development of TECs by revising the terms of reference/names, and the mapping of TTCs to become TECs.
- Develop INSET and ONSET at TECs
- Develop a teacher management system and assess teachers’ performance.
The third component of the Strengthening Teacher Education Programmes in Cambodia (STEPCam) aims to provide training to PTTC trainers, develops and implements a BEd programme to upgrade qualification of PTTC trainers from around the country, provide additional INSET training, and develops an MEd curriculum framework. Under Component 2, STEPCam designs and implements In-Service Training (INSET) and Continuous Professional Development (CPD) for primary school teachers, especially those teaching Grades 1, 2, on early grade learning for reading and mathematics, as well as train PTTC teacher educators for early grade learning. Under Component 1, STEPCam develops and implements a CPD credit system based on the CPD Framework for Teachers and School Directors (Teacher Training Department, 2019) to capture all training credits, which will contribute to career progression on the Teacher Career Pathways, all reflected in the Human Resource Management Information System. These components will directly contribute to life-long and life-wide learning in building capacity of Cambodian teachers and teacher educators as professionally competent, motivated and supported human resource who are equipped with sufficient academic content knowledge and pedagogical skills.

As explained in the CPD mapping report (UNESCO, 2020), a joint exercise between UNESCO and MoEYS, INSET in Cambodian context can be part of CPD for teachers and educators across the country. The outcomes of this TNA will strategise the planning and implementation of additional INSET for teacher educators under the STEPCam programme and beyond so as to build teacher educator capacity as part of their CPD of professional knowledge and skills to meet the demands of a 21st century teaching workforce.

2. Methodology of the TNA

After a series of consultations, TTD and UNESCO agreed to use a cross-section survey design plus a semi-structured interview to allow PTTC teacher educators to demonstrate and report their needs for INSET training (see Annex A for the questionnaires and Annex B for the interview questions).

Table 1: TNA timeline

<table>
<thead>
<tr>
<th>TNA activities</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey design</td>
<td>October 2019</td>
</tr>
<tr>
<td>Questionnaire development</td>
<td>November 2019</td>
</tr>
<tr>
<td>Questionnaire field test</td>
<td>Early December 2019</td>
</tr>
<tr>
<td>Questionnaire distribution</td>
<td>Mid December 2019 – Week 1 of January 2020</td>
</tr>
<tr>
<td>Semi structured interviews</td>
<td>Week 2 of January 2020</td>
</tr>
<tr>
<td>Data analysis</td>
<td>February – March 2020</td>
</tr>
<tr>
<td>Writing up the TNA report</td>
<td>March – April 2020</td>
</tr>
<tr>
<td>Disseminating TNA findings</td>
<td>June 2020</td>
</tr>
</tbody>
</table>
Using a questionnaire, the TNA committees aimed to reach as many PTTC teacher educators as possible so that their voices can be fairly represented through the findings of the TNA. The semi-structured interview, following the questionnaire, allowed a follow-up confirmation and a more insightful investigation into more specific training needs to be documented in the report.

2.1 TNA tools

2.1.1 Questionnaire

The questionnaire consisted of four sections: (A) participants’ profile, which includes gender, year of teaching experience, subject(s) of specialisation and subject(s) they are currently teaching and (B) training needs for content knowledge (C) training needs for teaching methodology (D) training needs for Information and Communications Technology (ICT). Four sets of questionnaires were developed for four core subjects – Khmer Studies, Mathematics, Science, and Social Studies. The four sets of questionnaires share the same questions for sections A, C, and D. Section B is subject-specific, and contains different questions to identify training needs specific for each of the four subjects. Sections B, C, and D contain two types of questions – those which measure the participants’ knowledge of specific contents and those which ask participants to rate levels of need for training.

Section B of the Khmer Studies questionnaire (Annex A: Questionnaire set A) contains 12 closed-ended questions, and two open-ended questions for the participants to provide additional comments and requests. Question 5 asks the participants to rate levels of necessity on a scale from 1 (not necessary) to 4 (very necessary) a list of units/modules, including history of Khmer language, literature theories, literary text analysis, Khmer grammar, and strategies to promote Khmer literacy ranked by the four macro language skills. The first sub-section (Questions 1-5) measures content knowledge, while the second sub-section (Questions 6-12) measures knowledge of methodology for teaching Khmer Studies.

*Figure 1: Example item extracted from the Khmer Studies questionnaire*

Please check (√) a box for the following items to indicate the extent of necessity you will need to train in those contents.

<table>
<thead>
<tr>
<th>Content</th>
<th>Not necessary</th>
<th>Of little necessity</th>
<th>Kind of necessary</th>
<th>Very necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Khmer language</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-angkor era</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angkor era</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-angkor era</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Section B of the Mathematics questionnaire (Annex A: Questionnaire set B) contains 20 questions, both open- and closed-ended; arithmetic and geometry, which measure knowledge of content and teaching methodology for teaching mathematics, one question for challenges they face in teaching mathematics, and one question for requests they may have with regard to training needs to help them teach train other teachers in Mathematics more effectively.

Figure 2: Example item extracted from the Mathematics questionnaire

15. Which of the following shapes have the same perimeter?

![Shapes Diagram]

19. One student solved a subtraction question as follows:

\[
\begin{align*}
4h 15mn \\
- 2h 37mn \\
\hline
1h 78mn
\end{align*}
\]

What is the student confused with? What can be done to help the students overcome the confusion?

Section B of the Science questionnaire (Annex A: Questionnaire set C) contains 42 questions, two of which are open-ended for the participants to describe the importance of Science as a subject of study (Question 1) and requests (Questions 42). The other 40 questions all measure knowledge of content as well as knowledge of teaching methodology for science in both open- and closed-ended formats. The questions cover Chemistry (Questions 2-14), Physics (Questions 15-22 – Question 18 has six sub-questions), Biology (Questions 23-32), and Earth science (Questions 33-41).
Figure 3: Example item extracted from the Science questionnaire

A Ca(OH)$_2$ solution has a 60% mass percent composition, and a mass of 180g. What is the mass of Ca(OH)$_2$?

A. 30 g  
B. 108 g  
C. 240 g  
D. 300 g

Figure 4: Example item extracted from the Social Studies questionnaire

Which group of countries does the term “Global South” refer to?
A. Developed countries  
B. Developing countries  
C. Undeveloped countries  
D. Newly industrialised countries

Section B of the Social Studies questionnaire (Annex A: Questionnaire set D) contains 29 questions. The first question asks for a description of what makes Social Studies an important subject to study to identify whether Social Studies is a subject of priority for subsequent INSET training. The items in the questionnaire cover Ethics and civics (Questions 1-3 – Question 1 has three sub-questions, and Question 3 asks PTTC teacher educators to rate levels of necessity for training in seven Ethic and civics lessons), Geography (Questions 4-11 – Question 11 asks PTTC teacher educators to rate levels of necessity for training in five Geography lessons), History (Questions 12-17 – Question 16 asks PTTC teacher educators to rate levels of necessity for training in 14 History lessons) and Home economics (Questions 18-27 – Question 27 asks PTTC teacher educators to rate levels of necessity for training in 14 History lessons). Like Section B of the other questions, the questions aim to measure knowledge and identify levels of necessity, based on self-ratings, for the key content reflective of the four subject areas.

Figure 5: Another example item extracted from the Social Studies questionnaire, surveying the PTTC teacher educators’ needs to train in specific lessons

Please check (✓) a box for the following items to indicate the level of necessity you will need to train in those contents.

<table>
<thead>
<tr>
<th>History of Cambodia</th>
<th>Not necessary</th>
<th>Of little necessity</th>
<th>Kind of necessary</th>
<th>Very necessary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-history</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funan Era</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chenla Era</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angkor Era</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chaktomuk Era</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longvek Era</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In the process of designing the questionnaires, the TNA committees identified key contents of the curriculum, syllabuses, and textbooks approved by MoEYS and currently used for teaching the four subjects. The TNA committee members who designed the questionnaires and interview questions were recruited from the Teacher Training Department, Phnom Penh Teacher Education College, and Royal University of Phnom Penh. All the questionnaire items were developed in the participants’ native language.

The questionnaires were piloted with 21 PTTC teacher educators who were undertaking a Bachelor of Education upgrading programme at the Phnom Penh Teacher Education College, and were revised based on feedback generated through the pilot administration of the questionnaires.

2.1.2 Semi-structured interview

The semi-structured interview was conducted after a preliminary analysis based on the questionnaire responses sent back to the TTD by 4 January 2020. By then, the TNA committee members had compiled a preliminary list of contents to be further investigated or confirmed with selected PTTC teacher educators through the interview (See Annex B). Selection of the PTTC teacher educators was made based on the recommendation of PTTC directors, and consent and availability of the teacher educators themselves.

2.2 Participants

The questionnaire was administered with 312 participants from all the 16 PTTCs. Among them, 10 worked in the office and only taught as a substitute for other teacher educators, while the other 302 had a full-time teaching load in the 2019-2020 academic year. In total, there are 323 teacher educators currently on a teaching roster, 172 office staff, and 43 management team members working at PTTCs across the country (Teacher Training Department, 2020). Twenty-one PTTC teacher educators who participated in a qualification upgrading programme leading to a Bachelor of Education at the Phnom Penh Teacher College, also under the STEPCam programme, completed a pilot questionnaire back in early December 2019 and were excluded from the actual data collection. The other 47 BEd participants, upon their return to their PTTCs, were asked by the PTTC directors to complete the questionnaire, and their responses were included in the analysis.

The committee members travelled to 15 PTTCs to conduct the interview. Preah Vihear PTTC was not included due to the distance and restricted time for travel there. Twenty-four interviews were conducted, and 13 participants granted the TNA committee members permission to audio-record the interviews. Comprehensive notes were taken by the committee members for the rest of the interviews.

The latest figures available to TTD (December 2019) identified 126 (39 females) PTTC staff as Master’s degree holders. 283 (128 females) held a Bachelor’s degree; 147 (74 females) or 26.4% all PTTC staff did not have a Bachelor’s degree yet. It was not specified how many among
the 283 Bachelor’s degree holders had a BA or BEd degree which would meet the requirements in terms of credits earned and subject areas in teacher education required by MoEYS (Prakas 1870), especially for those who obtained a BA or BEd from a private university in Cambodia. It is worth noting that, following an arrangement by MoEYS, the PTTC teacher educators provide training to trainee teachers who train for two years (12+2) to become primary school teachers across the country.

Table 2: Teaching vs non-teaching TNA participants

<table>
<thead>
<tr>
<th>TNA participants</th>
<th>Teaching</th>
<th>Non-teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>312</td>
<td>302</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 3: Total PTTC staff across Cambodia (TTD, 2019)

<table>
<thead>
<tr>
<th>Total PTTC staff currently working</th>
<th>Teaching</th>
<th>Non-teaching</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>5381</td>
<td>323</td>
<td>172</td>
<td>43</td>
</tr>
</tbody>
</table>

Table 4: PTTC staff’s highest education levels (TTD, 2019)

<table>
<thead>
<tr>
<th>PTTC staff’s education level</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA/MEd/MSc</td>
<td>126 (39)²</td>
</tr>
<tr>
<td>BA/BEd</td>
<td>283 (128)</td>
</tr>
<tr>
<td>Lower than BA/BEd</td>
<td>147 (74)</td>
</tr>
<tr>
<td>Total</td>
<td>556</td>
</tr>
</tbody>
</table>

It is worth noting that although the questionnaires target content of the four subjects mentioned above, teacher educators specializing in subjects other than the four were also asked to complete the questionnaires and were asked to skip Section B (the technical content section), and only filled in Section A for their profiles, Section C for teaching methodology, and Section D for ICT training needs. Besides, as Table 6 shows, those teaching other subjects could have been or will be asked to teach one of the subjects as 25.7% of the participants have taught or are teaching subjects different from their areas of specialisation or only working in an office and not teaching in the 2019-2020 academic year.

2.3 TNA data collection procedures

The TNA data collection was conducted from 16 December 2019 to 12 January 2020. First, four sets of questionnaires (See section 2.1.1) with instructions were sent to PTTC directors via Telegram groups by a TTD deputy director. The PTTC directors printed out the questionnaires and distributed them to PTTC teacher educators. By 4 January 2020, TTD received 179 (57.4% of the

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¹ 28 were on leave for further studies and other reasons, including health and transitioning to another work place
² Numbers in parentheses indicate the numbers of female participants.
total number of completed questionnaires collected) hard copies of completed questionnaires. TTD staff then went to PTTCs across the country from 9 to 11 January 2020 to administer additional questionnaires and conduct interview with a number of PTTC teacher educators.

2.4 Data set and analysis

All the 312 PTTC teacher educators’ questionnaire responses were collated by each questionnaire item and sub-item in an Excel spreadsheet by a questionnaire construction committee member. Afterwards, a systematic review was conducted to verify the clarity of the responses and the points awarded, especially for the Mathematics questionnaire items, and other open-ended ones. For the items which were not answered, a value representing a missing response was assigned, allowing the data to be imported into IBM SPSS Statistics software package version 20 for descriptive statistical analyses (such as mean, standard deviation, valid percentages, etc.) and inferential statistical analyses (such as one-way ANOVA).

The audio-recorded interviews were transcribed verbatim in a table in a Microsoft Word document, with one separate row for every turn taken. A thematic analysis of the participants’ responses was conducted, and was compared with comprehensive notes taken for unrecorded interviews. The analysis was cross-checked among the TNA committee members for increased reliability.

3. Findings

This section presents the findings of the Training Needs Assessment in three sub-sections: (1) The PTTC teacher educators’ profiles (2) the participants’ knowledge and reported needs for training in the target content areas (3) the participants’ knowledge and reported needs for training in the target teaching methods/approaches (4) their knowledge and reported needs for training in the target computer and ICT skills. For this TNA report, all the statistical tests use an alpha level of .05 as a significance criterion.

3.1 The PTTC teacher educators’ profiles

Among the 312 participants from the 16 PTTCs who completed the questionnaire, 164 (54.1%) are males, while 139 (45.9%) are females, which is slightly higher than the overall male-female proportion for all PTTC staff (43.3% female) (TTD, 2019). Nine participants did not specify their gender and were excluded in the analysis of gender proportion. A bit over a quarter (26.6%) of the participants specified Khmer Studies as their area of specialisation, while 14.1%, 11.5%, and 16.7% reported to specialise in Mathematics, Science, and Social Studies, respectively. Ninety-seven participants (31.1%) claimed to specialise in subjects other than the four mentioned above. A close investigation reveals some could have been classified in one of the four subjects identified above, for example, Educational Science could be grouped with...
Science, and Geography with Social Studies. However, for this analysis, areas of specialisation were recorded as reported by the participants themselves.

Table 5: Participants’ gender and “reported” areas of specialisation

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants’ gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>164</td>
<td>54.1</td>
</tr>
<tr>
<td>Female</td>
<td>139</td>
<td>45.9</td>
</tr>
<tr>
<td>Unspecified</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Areas of specialisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khmer Studies</td>
<td>83</td>
<td>26.6</td>
</tr>
<tr>
<td>Mathematics</td>
<td>44</td>
<td>14.1</td>
</tr>
<tr>
<td>Science</td>
<td>36</td>
<td>11.5</td>
</tr>
<tr>
<td>Social Studies</td>
<td>52</td>
<td>16.7</td>
</tr>
<tr>
<td>Other subjects</td>
<td>97</td>
<td>31.1</td>
</tr>
</tbody>
</table>

As displayed in Table 6, participants from Kandal (10.26%), Siem Reap (9.94%), and Takeo (9.29%) PTTCs make up the three largest groups of participants (29.49% altogether), while those from Kratie, Banteay Meanchey, and Preah Vihear make up the smallest ones (8.66% altogether)

Table 6: Participants classified by PTTC and areas of specialisation³

<table>
<thead>
<tr>
<th>PTTC</th>
<th>Khmer Studies</th>
<th>Mathematics</th>
<th>Science</th>
<th>Social Studies</th>
<th>Other subjects</th>
<th>Sub-total by PTTC</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kandal</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>16</td>
<td>32</td>
<td>10.26</td>
</tr>
<tr>
<td>Siem Reap</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>14</td>
<td>31</td>
<td>9.94</td>
</tr>
<tr>
<td>Takeo</td>
<td>11</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>10</td>
<td>29</td>
<td>9.29</td>
</tr>
<tr>
<td>Kampong Cham</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>8</td>
<td>26</td>
<td>8.33</td>
</tr>
<tr>
<td>Kampot</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>12</td>
<td>25</td>
<td>8.01</td>
</tr>
<tr>
<td>Svay Rieng</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>9</td>
<td>22</td>
<td>7.05</td>
</tr>
<tr>
<td>Stung Treng</td>
<td>8</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>19</td>
<td>6.09</td>
</tr>
<tr>
<td>Prey Veng</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>18</td>
<td>5.77</td>
</tr>
<tr>
<td>Kampong Speu</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>17</td>
<td>5.45</td>
</tr>
<tr>
<td>Kampong Chhnang</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>0</td>
<td>16</td>
<td>5.13</td>
</tr>
<tr>
<td>Kampong Thom</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>16</td>
<td>5.13</td>
</tr>
<tr>
<td>Pursat</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>15</td>
<td>4.81</td>
</tr>
<tr>
<td>Preah Vihear</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>14</td>
<td>4.49</td>
</tr>
<tr>
<td>Kratie</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>13</td>
<td>4.17</td>
</tr>
<tr>
<td>Banteay Meanchey</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>10</td>
<td>3.21</td>
</tr>
</tbody>
</table>

³ Other subjects of specialisation include, but are not limited to, Psychology and pedagogy, English, IT, Educational science, Plastic arts, Agriculture, Economics, and Physical education.
The PTTC teacher educators reported an average of 16.8 years of work experience (teaching and office work included), indicating a strong commitment to stay in the teaching profession. A look into the range of experience shows a large gap (37 years), with one year as the least experience and 38 years as the most extended work experience reported. However, the skewness of the data stands at 0.36, which is between the -0.5 and 0.5 range, indicating a fairly symmetrical distribution of work experience calculated in years, suggesting that there is a balanced mix of teacher educators with varying years of work experience. The Kurtosis value of -0.99 confirms a normal distribution, with just a few outliers, i.e., those with as few as one year of work experience and those whose experience approaches 38 years.

Table 7: Participants’ years of teaching/work experience

<table>
<thead>
<tr>
<th>Average number of years</th>
<th>Range</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.8 years</td>
<td>37</td>
<td>9.1</td>
<td>.36</td>
<td>-.99</td>
</tr>
</tbody>
</table>

Based on the responses reported by the PTTC participants, nearly one in four PTTC participants (23.2%) surveyed have been or will be teaching a subject different from their area(s) of specialisation, as can be seen in Table 8. The report discusses this finding in Section 4.

Table 8: Match or mismatch between the participants’ areas of specialisation and subjects they have been or will be teaching

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Valid Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is a match between your area of specialisation and subject(s) you are teaching</td>
<td>225</td>
</tr>
<tr>
<td>There is NO match between your area of specialisation and subject(s) you are teaching</td>
<td>68</td>
</tr>
<tr>
<td>Not teaching now</td>
<td>10</td>
</tr>
<tr>
<td>Unspecified</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>312</td>
</tr>
</tbody>
</table>

As asked to select up to two subjects/areas of specialisation they would like to train in, 81 (25.96%) participants expressed no preference, while 231 (74.04%) participants responded to the question, with a number of them reporting more than one preferred subject to train in. Fifty-six (56) participants would like to train in Khmer Studies; 28 for Mathematics, 62 for Science, 55 for Social Studies, and 129 for other subjects, which includes 39 for ICT, 50 for Teaching Methodology, and 18 for Psychology and Pedagogy.
Table 9: Subjects in which the participants wished to train

<table>
<thead>
<tr>
<th>Specific subjects</th>
<th>Number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khmer Studies</td>
<td>NA</td>
</tr>
<tr>
<td>Mathematics</td>
<td>NA</td>
</tr>
<tr>
<td>Science</td>
<td>Science</td>
</tr>
<tr>
<td></td>
<td>Chemistry</td>
</tr>
<tr>
<td></td>
<td>Physics</td>
</tr>
<tr>
<td></td>
<td>Biology</td>
</tr>
<tr>
<td></td>
<td>Earth Science</td>
</tr>
<tr>
<td>Social Studies</td>
<td>Social Studies</td>
</tr>
<tr>
<td></td>
<td>Ethics and Civics</td>
</tr>
<tr>
<td></td>
<td>Home Economics</td>
</tr>
<tr>
<td></td>
<td>History</td>
</tr>
<tr>
<td></td>
<td>Geography</td>
</tr>
<tr>
<td>Other subjects</td>
<td>ICT</td>
</tr>
<tr>
<td></td>
<td>Teaching Methodology</td>
</tr>
<tr>
<td></td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Psychology and Pedagogy</td>
</tr>
<tr>
<td></td>
<td>Sports, Health Education or Physical Education</td>
</tr>
<tr>
<td></td>
<td>others</td>
</tr>
<tr>
<td></td>
<td>Sub-total</td>
</tr>
</tbody>
</table>

3.2 The participants’ knowledge and reported needs for training in the target content areas

As can be seen in Table 10, among the four groups of participants, Mathematics teacher educators had the lowest mean score (40.74%) for all the items measuring content knowledge of their specialisation, while the Khmer studies group had the highest percentage of correct answers (65.28%). For Science, which is sub-divided into Chemistry, Physics, Biology, and Earth science, the participants had an average score of 56% and appeared to struggle the most with Chemistry as they only managed to answer only 42% of the questions correctly. For Social Studies, which is sub-divided into Ethics and civics, Geography, History, and Home economics, the participants had an average score of 51.23% and struggled with Ethics and civics the most having averaged at 33.25%. It is worth noting that, although it is possible to compare participants’ content knowledge within each subject, it is not recommended that mean scores across the four major subjects be compared as the questions’ levels of difficulty may vary from questionnaire to questionnaire. Based on these findings, INSET training should focus on
improving content knowledge in Chemistry (and Physics) for Science, and Ethics and civics (and Geography) for Social Studies.

Figure 6: Subjects the PTTC participants wished to train in

<table>
<thead>
<tr>
<th>Subjects the participants wished to train in</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science</td>
<td>62</td>
</tr>
<tr>
<td>Khmer Studies</td>
<td>56</td>
</tr>
<tr>
<td>Social Studies</td>
<td>55</td>
</tr>
<tr>
<td>Teaching Methodology</td>
<td>50</td>
</tr>
<tr>
<td>ICT</td>
<td>39</td>
</tr>
<tr>
<td>Mathematics</td>
<td>28</td>
</tr>
<tr>
<td>Other subjects</td>
<td>22</td>
</tr>
<tr>
<td>Psychology and Pedagogy</td>
<td>18</td>
</tr>
</tbody>
</table>

3.2 The participants’ knowledge and reported needs for training in the target content areas

Table 10: Average scores and percentages of correct responses obtained by PTTC teacher educators for questions measuring knowledge of content areas

<table>
<thead>
<tr>
<th>Area of specialisation</th>
<th>Average score obtained/ 11</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khmer Studies</td>
<td>7.18</td>
<td>65.28</td>
</tr>
<tr>
<td>Mathematics</td>
<td>8.15</td>
<td>40.74</td>
</tr>
<tr>
<td>Science</td>
<td>22.41</td>
<td>56</td>
</tr>
<tr>
<td>Social Studies</td>
<td>12.81</td>
<td>51.23</td>
</tr>
</tbody>
</table>

---

4 Section B of the Science questionnaire has 45 questions, but only 40 questions which directly measure knowledge of various Science content areas were included in this analysis. The other five were open-ended and were not included.
Table 11: Four content areas for which the Khmer Studies respondents got the least correct answers

<table>
<thead>
<tr>
<th>Specific lesson</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khmer literature in the Post Angkor era</td>
<td>83</td>
<td>29</td>
</tr>
<tr>
<td>Novels or tales based on Buddhism</td>
<td>83</td>
<td>30</td>
</tr>
<tr>
<td>Structure of a descriptive essay</td>
<td>83</td>
<td>46</td>
</tr>
<tr>
<td>Analysis of a novel or tale</td>
<td>83</td>
<td>58</td>
</tr>
</tbody>
</table>

Table 12: Four content areas for which the Khmer Studies respondents got the most correct answers

<table>
<thead>
<tr>
<th>Specific lesson</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targets for teaching Khmer Studies at the primary level</td>
<td>83</td>
<td>92</td>
</tr>
<tr>
<td>Dictation techniques for primary students</td>
<td>83</td>
<td>88</td>
</tr>
<tr>
<td>Procedures for teaching grammar</td>
<td>83</td>
<td>83</td>
</tr>
<tr>
<td>Procedures for teaching early grade reading</td>
<td>83</td>
<td>83</td>
</tr>
</tbody>
</table>

Table 13: Four content areas for which the Mathematics respondents got the least correct answers

<table>
<thead>
<tr>
<th>Specific lesson</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculating a departure time using duration of travel and arrival time</td>
<td>44</td>
<td>10</td>
</tr>
<tr>
<td>How to deal with students’ confusion about sides of a triangle</td>
<td>44</td>
<td>14</td>
</tr>
<tr>
<td>Visually explain how to calculate a surface area of a rectangle to students</td>
<td>44</td>
<td>16</td>
</tr>
<tr>
<td>Visually explain how to deal with confusion regarding the parameter of a rectangle</td>
<td>44</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 14: Four content areas for which the Mathematics respondents got the most correct answers

<table>
<thead>
<tr>
<th>Specific lesson</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creating a subtraction question</td>
<td>44</td>
<td>91</td>
</tr>
<tr>
<td>Characteristics of a rectangle</td>
<td>44</td>
<td>82</td>
</tr>
<tr>
<td>Which (of the six) shapes have the same perimeter?</td>
<td>44</td>
<td>74</td>
</tr>
<tr>
<td>Characteristics of a parallelogram</td>
<td>44</td>
<td>66</td>
</tr>
</tbody>
</table>

Table 15: Four content areas for which the Science respondents got the least correct answers

<table>
<thead>
<tr>
<th>Specific lesson</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
</table>
Bromothymol blue and acidic solution  |  36 |  11  
Helium $^4\text{He}$           |  36 |  14  
Which of the following is not a mixture? |  36 |  25  
Electrolyte solution            |  36 |  31  

### 3.3 The participants’ knowledge of and reported needs for training in the target teaching methods/approaches

For this sub-section, the participants were asked to select answers from a number of choices, which they thought would answer questions correctly related to various teaching methods or approaches.

Overall, in terms of the participants’ performances for questions related to teaching methodology, based on their survey responses, the Science group had the highest performance (10.6 out of 17.5 points on average), followed by the Khmer Studies participants (10.4). Mathematics group (9.3) had the lowest performance. However, the one-way ANOVA test indicates the differences in average performances among participants of different specialisations are not statistically significant ($p = .058$). Despite the differences, one thing various groups shared in common was the average range of performances (52.9 to 60.6%), suggesting that the PTTC participants would need much training for teaching methodology, especially methods and approaches which can be implemented across subjects and disciplines. Sections 4 and 5 further elaborate on this point.

*Table 16: Participants’ knowledge of various teaching methods/approaches, as assessed through their responses to the question items measuring one’s knowledge of teaching methodology*

<table>
<thead>
<tr>
<th>Areas of specialisation</th>
<th>Average score/ 17.5</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khmer Studies</td>
<td>10.4</td>
<td>59.4</td>
</tr>
<tr>
<td>Mathematics</td>
<td>9.3</td>
<td>52.9</td>
</tr>
<tr>
<td>Science</td>
<td>10.6</td>
<td>60.6</td>
</tr>
<tr>
<td>Social Studies</td>
<td>10.0</td>
<td>57.0</td>
</tr>
<tr>
<td>Other subjects</td>
<td>9.6</td>
<td>54.6</td>
</tr>
<tr>
<td>Overall performance</td>
<td></td>
<td>56.72</td>
</tr>
</tbody>
</table>
3.3.1 Familiarity with various teaching methods/approaches

Asked to what extent they are familiar with a number of teaching methods or approaches, the participants rated their responses from 1 to 5, with:

1 being “Never heard of this method”
2 being “Heard of it but have not received training to use it yet”
3 being “Have received training but have not used it”
4 being “Have used it but not confident”
5 being “Skilled in using it and thus need no further training”

The participants reported the highest level of familiarity with Inquiry-Based Learning (IBL) ($M = 3.96$, $SD = .84$, which is close to “having used it but not confident”), followed by questioning techniques ($M = 3.72$, $SD = 1.05$), cooperative learning ($M = 3.48$, $SD = 1.15$), and lecturing/presenting ($M = 3.47$, $SD = 1.22$). The participants have heard of Concept-Based Learning (CBL), Imitation and miming, and Socratic method but reported that they had not received training in them yet. The interview data confirm these findings as many participants have reportedly mentioned a preference for learning-based methods/approaches such as IBL and CBL. The participants were familiar with these methods but lacked confidence to implement them, as reflected in a participant’s own words and echoed by a good number of other participants:

“We have received training in a number of methods and approaches through [DPs’] projects and even training organized by MoEYS. My personal favourite are IBL and CBL. I have attended training twice in these two methods, but when I implement them, I feel that I am not doing it right yet. I need a more experienced trainer to demonstrate it [implementation] to me” (Semi-structured interview, Participant 12)
Table 17: Levels of participants’ familiarity with various methods/approaches (the higher the means, the more the participants thought they were familiar with specific methods/approaches)

<table>
<thead>
<tr>
<th>Methods/approaches</th>
<th>N&lt;sup&gt;5&lt;/sup&gt;</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imitation and miming</td>
<td>279</td>
<td>2.41</td>
<td>1.24</td>
</tr>
<tr>
<td>Concept-Based Learning</td>
<td>281</td>
<td>2.57</td>
<td>1.19</td>
</tr>
<tr>
<td>Questioning techniques</td>
<td>276</td>
<td>3.72</td>
<td>1.05</td>
</tr>
<tr>
<td>Inquiry Based Learning</td>
<td>292</td>
<td>3.96</td>
<td>.84</td>
</tr>
<tr>
<td>Cooperative Learning</td>
<td>290</td>
<td>3.48</td>
<td>1.15</td>
</tr>
<tr>
<td>Socratic Method</td>
<td>282</td>
<td>2.00</td>
<td>1.06</td>
</tr>
<tr>
<td>Scientific Teaching</td>
<td>277</td>
<td>3.15</td>
<td>1.21</td>
</tr>
<tr>
<td>Lecturing and presenting</td>
<td>288</td>
<td>3.47</td>
<td>1.22</td>
</tr>
</tbody>
</table>

These findings were reported by the participants, and yet to be confirmed by another source of data. Observations of lessons taught by PTTC participants themselves to help triangulate the TNA findings were scheduled and cancelled due to the Covid-19 outbreak. This impediment will be discussed in the TNA’s limitations section.

In terms of gender differences, male participants ($M = 3.23$, $SD = .81$) appeared to be more familiar with the teaching methods/approaches listed above, as compared to their female counterparts ($M = 3.01$, $SD = .63$) who would need more training in teaching methodology. A one-way ANOVA test reveals that the difference between the two genders was statistically significant [$F(1, 290) = 6.57$, $p = 0.01$]. This finding will be discussed in Section 4.

Overall, based on responses from 292 participants, with a mean score of 3.13 ($SD = .74$), participants reported that they had received some previous training teaching methodology, but have not applied many of the methods/approaches in their own teaching. Sections 4 and 5 further elaborate on this point.

Table 18: ANOVA test results on levels of participants’ familiarity with various methods/approaches among male and female participants

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>156</td>
<td>3.23</td>
<td>.81</td>
</tr>
<tr>
<td>Female</td>
<td>136</td>
<td>3.01</td>
<td>.63</td>
</tr>
<tr>
<td>Total</td>
<td>292</td>
<td>3.13</td>
<td>.74</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3.48</td>
<td>1</td>
<td>3.48</td>
<td>6.57</td>
<td>.01</td>
</tr>
<tr>
<td>Within Groups</td>
<td>153.76</td>
<td>290</td>
<td>.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>157.24</td>
<td>291</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>5</sup> Number of people who rated their level of familiarity with various teaching methods/approaches
When looking into levels of familiarity with teaching methods/approaches by area of specialization, the Khmer Studies group seemed to be the least familiar ($M = 2.97, SD = .72$) and thus should need training in teaching methodology the most, followed by the Social Studies group ($M = 3.06, SD = .69$). PTTC teacher educators specializing in Science reported the highest level of familiarity ($M = 3.38, SD = .78$). This finding contrasts with that presented in Table 16 and Figure 7 potentially because the participants were skeptical of their knowledge and familiarity, and thus rated too low the level of familiarity for those teaching methods and approaches. Classroom observations would have confirmed the finding.

Table 19: ANOVA test results on levels of familiarity with various methods/approaches among participants with different areas of specialization

<table>
<thead>
<tr>
<th>Area of specialisation</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khmer Studies</td>
<td>80</td>
<td>2.97</td>
<td>.72</td>
</tr>
<tr>
<td>Mathematics</td>
<td>44</td>
<td>3.29</td>
<td>.68</td>
</tr>
<tr>
<td>Science</td>
<td>36</td>
<td>3.38</td>
<td>.78</td>
</tr>
<tr>
<td>Social Studies</td>
<td>49</td>
<td>3.06</td>
<td>.69</td>
</tr>
<tr>
<td>Other subjects</td>
<td>91</td>
<td>3.12</td>
<td>.748</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>3.13</td>
<td>.73</td>
</tr>
</tbody>
</table>

In terms of ability to construct a test, displayed in Table 20, the participants reported a similar level of expertise ($M = 1.13, SD = .34$), as compared to the ability to use a syllabus to guide their teaching ($M = 1.14, SD = .35$), which suggests a necessity for further training. Participants were asked to select number 1, which indicates a “low level of expertise, further training is needed”, or number 2, which indicates a “high level of expertise, no further training is needed”).

Table 20: Need for training in test construction and ability to use a syllabus to guide their teaching

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Construction</td>
<td>312</td>
<td>1.13</td>
<td>.34</td>
</tr>
<tr>
<td>Ability to use a syllabus to</td>
<td>312</td>
<td>1.14</td>
<td>.35</td>
</tr>
<tr>
<td>guide their teaching</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.4 The participants’ knowledge and reported needs for training in the target computer and ICT skills

The PTTC teacher educators were asked to rate a need for training in ICT skills on a scale from 1 to 4, with 1 being “No training is needed”, 2 being “Not that necessary for training
(25% or less)”, 3 being “Quite necessary for training (26-69%)”, and 4 being “Necessary for training (70% and above).” The items were classified into five lessons:

1. Foundational computer skills
2. Computer skills for administration, including key functions in Microsoft Word
3. Spreadsheet, with key functions in Microsoft Excel
4. PowerPoint slide design
5. Internet and media literacy (including YouTube and social media)

Overall, the participants expressed the strongest desire to train in Internet and media literacy (including YouTube and social media), with a reported mean score of 3.47 (SD = .74) out of 4. Foundational computer skills (M = 2.85, SD = .94) ranked the lowest in terms of need for training, indicating that the teacher educators believed to an extent that they need more training in specific ICT skills than foundational ones, which were thought by many to be sufficient. Table 21 displayed reported ratings to represent needs of training in the five lessons, with top three skills listed under each lesson. This finding cements the need to provide the much needed training in technology skills useful for general communication as well as education and training, especially in a situation where face-to-face learning is interrupted such as during the Covid-19 pandemic, and is replaced by E-learning and distant learning currently adopted by MoEYS across the educational system in the country. Training of trainers would also provide facilitative benefit with a ripple effect as the PTTC teacher educators integrate ICT lessons into their teaching and engage their trainee teachers in dynamic, interactive learning through various sources, including digital platforms available to them.

Table 21: Need for training in ICT skills (the higher means, the more the participants thought the ICT training was necessary. The lower the standard deviation, SD, the more homogenous the responses were.)

<table>
<thead>
<tr>
<th>Lesson</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundational computer skills</td>
<td>2.85</td>
<td></td>
<td>.94</td>
</tr>
<tr>
<td>Using Windows Operating System</td>
<td>257</td>
<td>3.07</td>
<td>1.05</td>
</tr>
<tr>
<td>Computer case functions, RAM, CPU, HDD, and motherboard</td>
<td>256</td>
<td>2.93</td>
<td>1.06</td>
</tr>
<tr>
<td>Khmer keyboard</td>
<td>254</td>
<td>2.87</td>
<td>1.12</td>
</tr>
<tr>
<td>Computer skills for administration, including key functions in Microsoft Word</td>
<td>3.17</td>
<td></td>
<td>.86</td>
</tr>
<tr>
<td>Creating an automatic table of contents</td>
<td>259</td>
<td>3.34</td>
<td>.89</td>
</tr>
<tr>
<td>Creating tables and other table-related functions</td>
<td>261</td>
<td>3.23</td>
<td>.99</td>
</tr>
<tr>
<td>Formatting page setup</td>
<td>259</td>
<td>3.22</td>
<td>.98</td>
</tr>
<tr>
<td>Spreadsheet, with key functions in Microsoft Excel</td>
<td>3.27</td>
<td></td>
<td>.83</td>
</tr>
</tbody>
</table>

6 Not all participants responded to these survey items.
Preparing a score tables plus formulas | 256 | 3.39 | .88
Operator symbols to build formulas | 257 | 3.39 | .93
Sorting and filtering data | 251 | 3.35 | .91
PowerPoint slide design | 257 | 3.39 | .87
Inserting text, pictures, shapes, audios, and videos | 259 | 3.47 | .92
Inserting a hyperlink | 256 | 3.39 | .94
Adding an animation | 254 | 3.35 | .92
Internet and (multi) media literacy | 257 | 3.39 | .87
Google Drive, file sharing, and online collaboration | 262 | 3.57 | .84
Using educational applications and smartphone (including YouTube and Telegram group) | 263 | 3.55 | .82
Internet cloud storage | 259 | 3.51 | .83

In terms of gender differences, female participants ($M = 3.30, SD = .85$) appeared to need more ICT skill training than the male participants ($M = 3.15, SD = .65$) although a one-way ANOVA test reveals that the difference between the two genders was not statistically significant [$F(1, 268) = 1.52, p = 0.11$]

**Table 22: ANOVA test results on needs for ICT training among male and female participants (the higher means, the more the participants thought the ICT training was necessary)**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>147</td>
<td>3.15</td>
<td>.85</td>
</tr>
<tr>
<td>Female</td>
<td>123</td>
<td>3.30</td>
<td>.65</td>
</tr>
<tr>
<td>Total</td>
<td>270</td>
<td>3.22</td>
<td>.77</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.52</td>
<td>1</td>
<td>1.52</td>
<td>2.58</td>
</tr>
<tr>
<td>Within Groups</td>
<td>157.78</td>
<td>268</td>
<td>.59</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>159.30</td>
<td>269</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Overall, the participants expressed a strong desire to train in ICT skills ($M = 3.22, SD = .77$). When looking into needs for ICT training by area of specialization, it is found that the Science group would need ICT training the most ($M = 3.45, SD = .64$), followed by the Social...
Studies group ($M = 3.42, SD = .55$). PTTC teacher educators specializing in Mathematics would need ICT training the least ($M = 2.98, SD = .89$).

Table 23: ANOVA test results on needs for ICT training among participants with different areas of specialization (the higher means, the more the participants thought the ICT training was necessary)

<table>
<thead>
<tr>
<th>Area of specialization</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khmer Studies</td>
<td>74</td>
<td>3.22</td>
<td>.79</td>
</tr>
<tr>
<td>Mathematics</td>
<td>37</td>
<td>2.98</td>
<td>.89</td>
</tr>
<tr>
<td>Science</td>
<td>33</td>
<td>3.45</td>
<td>.64</td>
</tr>
<tr>
<td>Social Studies</td>
<td>47</td>
<td>3.42</td>
<td>.55</td>
</tr>
<tr>
<td>Other subjects</td>
<td>85</td>
<td>3.13</td>
<td>.80</td>
</tr>
<tr>
<td>Total</td>
<td>276</td>
<td>3.22</td>
<td>.77</td>
</tr>
</tbody>
</table>

Lying outside of this TNA, but within the same timescale, there is evidence suggesting that an important component of the new BEd programme – Action Research (AR) – has not been well understood by the PTTC participants. Much of the reasoning behind this could be the restricted mobility and gathering due to the COVID 19 outbreak (i.e. less access to classes and students). However early suggestions lean towards a lack of understanding how to approach AR and collaboration with peers among the participants themselves.

4. Discussion based on findings

From the findings, one important insight is that nearly one in four PTTC participants (23.2%) surveyed have been or will be teaching a subject different from their area(s) of specialisation. This issue, together with the teacher educators’ limited knowledge of content areas reflected through the survey responses, is a matter of urgency within institutions as when timetables are being constructed, pre-existing knowledge and skills of teacher educators need to be well known so that upgrading content knowledge necessary for teaching a new subject prior to implementation can be provided proactively.

There is also evidence that there are some potential INSET topics that can be available for all teacher educators, for example, ICT, teaching methodology, and collaborative teacher research to improve their own practices. For all teacher educators, familiarity with research skills using the Internet to update their own knowledge, learn about new teaching methods, preparation of teaching and learning materials is a foundation that cannot be avoided.

In terms of the key area of methodology, it is important to know that there are teacher educators who have been trained in certain methods but never used them. Further investigation is necessary to know if this finding is related to the style of training, the lack of practical opportunities to develop confidence in applying new methods, a culture at the college which
discourages innovative teaching and learning strategies, etc. This type of analysis can help shape new INSET which results in real change in teaching and learning. More of the same may not be effective.

Due to the Covid-19 outbreak, there was a lack of opportunities for observing teacher educators teaching actual lessons in their classes. There is no triangulation of data yet which could testify that, where teacher educators have stated that they know and can apply certain methods, they really are confident in applying those methods.

The significant finding that women have less familiarity with a number of teaching methods begs more analysis on the reasons for this finding and probably some gender responsive management approaches, and whether there is a gender bias, making women less confident and prone to being more self-critical.

There was also evidence that low scores on subject specific topics could also provide motivation to provide INSET on topics that could also be useful in other subject areas, for example, structure of a descriptive essay (useful in Social Studies and some other subjects) and analysis of a novel or tale (useful in Social Studies). The above discussion can inform the most urgent and more widely applicable INSET topics to be developed. These could be called the CORE topics. Even when not mentioned, there will be topics that relate directly to school needs, such as teachers who can apply positive discipline (child protection and reduction of bullying in schools) and know about the most up-to-date strategies for effective learning, such as the new research from neuroscience.

Next would be a selection of specialised topics which may be tailored towards specific subjects such as STEM and Khmer studies. From a closer look at the findings, apart from ICT and teaching methodology the following have been requested or are perceived to be highly needed:

- For mathematics, mathematics teacher educators are likely to be called upon to teach science, so an integrated science INSET focusing on practical science teaching methodology is essential.
- For science, STEM skills, individual skills needed to do science, mathematics, and engineering, and those needed to use technology effectively (including design) will be highly useful. These skills could also be seen as 21st Century skills and would include creativity (innovation) and collaboration (working together to solve problems).
- Some specific literacy (Khmer) topics which can be viewed as generic, so that communication can be improved across subject areas.

5. Next steps

Considering the TNA findings, the following recommendations have been proposed for development and implementation of INSET, qualification upgrading, as well as other CPD activities, both structured and self-directed for teacher capacity building in Cambodia. The recommendations are classified as short-term (within one year) or medium-term (within two to three years).
• Major finding 1: One in four PTTC participants (23.2%) surveyed have been or will be teaching a subject different from their area(s) of specialization.

Colleges need to identify the strengths of teacher educators (content and methodology) before allocating subject teaching responsibilities outside of their initial teacher education, qualifications, and experience. (Short-term)

  - Conduct TNA or at least a review of qualifications and experience. Management must take responsibility for timetabling teacher educators, in terms of their readiness to teach a subject away from their subject of specialization.

  - Consider in-house training (e.g. science department takes on responsibility for training math teacher educators before allocating science sessions for them). Emphasis should also be placed on the teaching and learning processes, not just content.

The other important step forward is the way to teach the subject (pedagogy) although updating of content may be necessary for some teacher educators new to their allocated subject area. This is particularly important in light of 21st Century skills identifying collaboration, cooperation, critical thinking and creativity as being a necessary preparation for all students and their teachers for the future. (Short- and medium-term)

• Major finding 2: ICT skills and diverse non-subject-specific teaching methods such as Inquiry-Based Learning and Concept-Based Method – needed by all PTTC teacher educators.

Design a blended INSET module (partly online and partly face to face) on ICT and teaching methodology, with a dual aim to training PTTC teacher educators in distance learning with ICT and how specific teaching methods can be implemented face-to-face and virtually. ICT needs to be seen as a wider subject, embracing competence aligned to independent and collaborative research, distance learning for updating teaching methods as well as professional development. (Short-term)

• Major finding 3: Identifying modules to raise teacher educators’ content knowledge based on the TNA findings for each subject area, and other core modules for future INSET
MoEYS to identify members of an INSET development committee who can support the creation of needs-addressing modules as well as new and innovative ones. This will be aligned with initiatives under the CPD framework and action plan as well as the Teacher Career Pathways framework. As well as the needs identified by teacher educators through this TNA, there will be other national needs (e.g. inclusive education, formative assessment, play-based learning, etc.) that should be included in the ‘menu’ of INSET modules. (Short-term)

In this respect, the Teacher Qualification Upgrading programmes at various HEIs and TEIs should continue to expand, upgrading PTTC teacher educators in preparation for transformation of Teacher Training Centres into Teacher Education Colleges – a key intervention currently implemented by STEPCam, i.e., to develop and implement a CPD system, provide INSET to EGR and EGM teachers and teacher educators, upgrade teacher educators’ qualification to BEd (in teaching), and development of a curriculum for MEd in teaching. (Short- and medium-term)

- Major finding 4: Teacher educators have been trained but did not apply the content they have been trained in following the training

  - Conduct more research on the reasons why teacher educators cannot implement diverse teaching methods following training. Although quite common, due to the methods used during training, we should explore some of the reasons for a lack of application following training. Were there too many concepts to understand and apply during one training (cognitive overload)? Were the topics too advanced/difficult/theoretical to be easily applied in the class without support through mentoring? Was there not enough time to practice new skills during training? (Short- and medium-term)

  - Ensure all teacher educators have access to a trusted and trained mentor. It is well known that support through mentoring can help to implement new skills and teaching and learning methods. Peer collaboration can also achieve this within a college culture that emphasizes trust and encourages collaboration. Encouragement can mean providing time for teacher educators to meet and work together on common professional goals. (Short- and medium-term)

  - Provide better access to online learning and encourage sharing of ‘1 page’ summaries of recent applications of research on early learning (particularly neuroscientific research). Some teacher educators can support their colleagues by providing short introductory papers on new teaching and learning research that is phrased in such a way as to be practical and enlightening. These papers can lead colleagues to pursue their own professional lines of enquiry. (Short- and medium-term)
• Major finding 5: Women have less familiarity with a range of teaching approaches.

There could be a number of reasons for this finding, for example limited early training, and a college culture with some additional societal bias. Just like the need for a more systematised development of a culture of collaboration, there should be a drive for a more gender sensitive approach to all aspects of college life. (Medium-term)

- More INSET for female teacher educators, particularly on the practical implementation of more diverse teaching approaches could be provided.

- Provide more opportunities for women to be considered for a range of higher-level responsibilities within departments and at the college leadership level.

- Train college managers in gender responsive management.

• Major finding 6: Some topics are approached in a theoretical way and may lack the practical applicability to school-based teaching.

This finding is more anecdotal based on informal observations of practice, rather than objective. However, it would be imperative for colleges to reflect on the way student teachers understand the practical context of the classroom while interpreting education theory. Reflection of the amount and quality of the practicum and the college’s relationship with schools may also gain results. (Medium-term)

- Colleges to develop more and closer partnerships with schools

- Provide more teacher educators with up-to-date experience at school, particularly in the early grades (linked to action research)

• Major finding 7: Lack of appreciation on the need for 21st century skills. Lack of opportunities for professional collaboration.

An approach to support less experienced teachers is imperative as they will be entering a world where more of the same may not be adequate to prepare young people for life and work in the 2030’s. Although this a national concern, linking new curricula with pedagogical content knowledge, the way teacher educators teach will act as models for beginning teachers. The days when teachers closed their classroom doors may be gone as emphasis on cooperation and collaboration will provide teacher educators with the peer support and knowledge that will be necessary for dealing with diverse school populations in a rapidly changing world. One potential approach is to establish Professional Learning Communities with members and participants from
different departments /TEIs for experience sharing and peer motivation, and build an action research culture to support and motivate continuous professional learning. (Short-term)

- Limitation of this TNA: Not enough triangulation of results through direct observation

COVID-19 has prevented this so far. Colleges to plan an observation schedule using college-based mentors, which can be validated through sampled external monitoring. Not only will teacher educators be supported through mentoring using observation as the evidence point, but results can be triangulated within this TNA.

Outside of this TNA there may be topics that MoEYS have identified as necessary for any INSET programme, particularly cross-curricular themes such as health education – a topic of particular importance, especially during a situation where public health needs to be upheld such as the COVID19 outbreak.

The scope of this TNA does not permit a formulation of recommendations for inter-institutional dialogues at the policy level to institutionalise resilience capacity building among teacher educators in Cambodia. This will be necessary, for example, by equipping them with competencies required to acquire new skills themselves and train the workforce of the future with the facility of ICT available to them. The recent COVID 19 emergency has brought into sharp focus the need for teachers and teacher educators to embrace new modalities of learning, teaching, and training; thus, these kinds of dialogues have a new sense of urgency.

Acknowledgements: This is to acknowledge the indispensable contribution of individual TNA committee members, PTTC directors and teacher educators, and reviewers in making the TNA and report possible.
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Annex A: TNA Questionnaire

Questionnaire set A for Khmer Studies

Data Collection Tool for PTTC Teacher Educators In-Service Training Needs Assessment

Objective: To assist with the preparation for in-service teacher training to promote teacher educators’ competencies at PPTCs, Ministry of Education, Youth and Sport (MoEYS) has prepared a questionnaire to survey the training needs of all PTTC teacher educators across the country. Please fill in this questionnaire attentively, honestly, and individually. Based on the result of this survey, technical teams of the Ministry and STEPCam/GPE3 will collaborate to establish in-service teacher training in respond to teacher educators’ actual training needs.

Note: Please complete this questionnaire and return it by 28 December 2019. The questionnaire takes approximately 120 minutes to complete.

- Name of PTTC: ..........................................................
- Name of teacher educator: ........................................ Gender ................................
- Subject(s) of specialization: ..........................................................
- Subject(s) you are/will be teaching: ..........................................................
- Subject(s) in need of training: (1) ..........................................................
  (2) ..........................................................
- Work/teaching experience: .............................................. years

I. Content knowledge

What is most useful about teaching Khmer Studies to students?

........................................................................................................................................
........................................................................................................................................

Please tick ☑ a correct answer:
1. What eras is Post-Angkor Literature divided into?
   □ a. Nokor Phnom and Chenla
   □ b. Longvek and Oudong
   □ c. Longvek, Oudong, French colonisation, and Present
2. What are the main types of Khmer literature?
   □ a. Popular literature, Ancient literature, and Modern literature
   □ b. Hindu literature, Buddhist literature, and Khmerised literature
   □ c. Ancient literature, Medieval literature, and Contemporary literature
3. Please choose the story(ies) from below that is(are) categorized as Buddhist literature
   □ a. Kolap Pailin
   □ b. Krong Sopheak Mit
   □ c. Thoun Chey
   □ d. Ream Kei
   □ e. Preah Vesandor
   □ f. New Sun on the Old Earth
   □ g. Puthisen Neang Kong Rey
4. When analysing one literature work, what is the most important aspect to analyse?
   a. Meaning
   b. Writing style
   c. Theme
   d. Character Analysis

5. Please tick ☑ the needs for additional training to upgrade content knowledge. Please focus on the prioritized content areas only.

<table>
<thead>
<tr>
<th>Content</th>
<th>Not necessary</th>
<th>Of little necessity</th>
<th>Kind of necessary</th>
<th>Very necessary</th>
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</thead>
<tbody>
<tr>
<td>1. History of Literature</td>
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<tr>
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<td>☐</td>
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<td>2. Theory of Literature</td>
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<td>☐</td>
<td>☐</td>
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<td>☐</td>
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<td>Characteristics of Literature</td>
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<td>☐</td>
<td>☐</td>
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<tr>
<td>3. Article Analysis</td>
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<td>Meaning</td>
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<td>☐</td>
<td>☐</td>
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<td>Theme</td>
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<tr>
<td>Writing Style</td>
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<td>4. Grammar</td>
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<td>5. Method for teaching Khmer Studies</td>
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<td>Listening ability</td>
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<td>☐</td>
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<tr>
<td>Speaking ability</td>
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<td>☐</td>
<td>☐</td>
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<tr>
<td>Reading ability</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Writing ability</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Khmer Studies Teaching Methodology

6. In primary education, what skills are to be focused on for Khmer Literacy?
   a. Listening, Speaking, and Writing
   b. Listening, Speaking, Reading, and Writing
   c. Listening, Singing, Speaking, and Writing

7. In teaching Khmer Literacy, what are the symbols representing various skills?
   a. Key, Candle, Book & Pen, Ear, and Lips
   b. Key, A person holding a book, Candle, Book & Pen, Ear, and Lips
   c. Book, Book & Pen, and Lips

8. What are the procedures for teaching Grade 1 reading?
   a. Recognizing sounds, Recognizing letters, Reading syllables and words, Terminology, Reading short article, and Writing
   b. Recognizing sounds, Recognizing letters, Reading syllables and words, Terminology, and Listening
9. What are the reading sub-skills?
   □ a. Letter recognition, Fluent reading, Understanding key words, Reading comprehension, and Reading sentences.
   □ b. Sound recognition, Writing, Fluent reading, Understanding key words, and Reading comprehension
   □ c. Sound recognition, Letter recognition, Fluent reading, Understanding key words, and Reading comprehension

10. Please point out the teaching method for ‘descriptive’ writing
    □ a. Introduction, Body (Linking words and topic explanation), and Conclusion
    □ b. Introduction, Body (Good and bad points), and Conclusion
    □ c. Introduction, Body (Comparison), and Conclusion

11. In primary education, what are the ways for conducting ‘dictation’?
    □ a. Copying, Monitored dictation, and Paragraph writing
    □ b. Copying, Article writing, and Prepared dictation
    □ c. Copying, Prepared dictation, Monitored dictation

12. What are the procedures for teaching Khmer Grammar?
    □ a. Relationship, Studying examples, Knowledge consolidation, Assessment, and Homework
    □ b. Relationship, Studying examples, Learning about concept, Exercises, Knowledge consolidation, Assessment, and Homework
    □ c. Relationship, Studying examples, Learning about concept, Exercises, and Knowledge consolidation

Requests and suggestions for training:
.............................................................................................................................
.............................................................................................................................

II. Teaching Methodology
A. Knowledge
1. What is the importance of teaching methodology for your teaching?
.............................................................................................................................
.............................................................................................................................

2. To what extent do you apply these teaching methods in your teaching?
Please put a tick ☑ in the following table:
   Level 1: Never heard of this method
   Level 2: Heard of it but have not received training to use it yet
   Level 3: Have received training but have not used it
   Level 4: Have used it but not confident
   Level 5: Skilled in using it (need no further training)

<table>
<thead>
<tr>
<th>Teaching methodology</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
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</thead>
<tbody>
<tr>
<td>Imitation (miming)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concept-Based Approach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Various questioning techniques</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inquiry-Based Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Cooperative learning
Socratic method
Scientific teaching
Lecture and presentation

3. To what extent do you know about test construction?
   □ a. Little knowledge and will need additional training
   □ b. Much knowledge and will not need additional train

4. To what extent do you know how to use a course syllabus?
   □ a. Little knowledge and will need additional training
   □ b. Much knowledge and will not need additional train

B. True or False Questions
5. Decide in the following sentences which one is 'true' and which one is ‘false’. Write your answers in the boxes below.
   1) Pre-existing knowledge may help as well as hinder students’ study.
   2) Bloom Taxonomy was created in 1956 and was led by Benjamin Samuel Bloom, aiming to improve teaching.
   3) Lesson study is a skill development process for teachers who specialize in either the same or different subjects, who work together to prepare lesson plans and teaching materials, and to explore new teaching methods in order that good teaching quality is ensured. This approach is implemented in four stages.
   4) It is found that cooperative learning can improve not only the learning of students but also their social development skills and communication.
   5) Lecturing is not a good and beneficial teaching method to students.
   6) Open-ended question is a kind of question that has more than one answer. There are two types of open-ended question which are called simple open-ended question and hard open-ended question. This type of question requires students to have advanced and critical thinking skill.
   7) Lesson study is conducted in five stages.
   8) Whether or not an attitude in the class is considered appropriate may vary from one culture to another.
   9) Inductive and deductive approaches are two approaches with opposite directions and are not complementary to each other even though both of them are related.
   10) Teachers play a role of imparting knowledge in Inquiry-Based Learning.
   11) Cooperative teaching method is a method that students with similar capacity work together as a group and have teacher as a counsellor.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</tr>
</tbody>
</table>

C. Multiple Choice Questions
   For each question below, please circle one answer that is the most appropriate to you.

6. ...................... is a process of acquiring or improving knowledge, behavior, skill, value, or choice that one practices.
   □ a. Learning
   □ b. Teaching
   □ c. Thinking
   □ d. Asking

7. Which is the order of thinking, from low to high levels, in Bloom Taxonomy?
   □ a. Remember, Understand, Practise, Analyse, Evaluate, Create
   □ b. Understand, Practise, Analyse, Evaluate, Create, Remember
   □ c. Remember, Understand, Evaluate, Create, Analyse
   □ d. Create, Understand, Remember, Evaluate, Practise, Analyse
8. .................. is a student-centered teaching method. This method is based on Constructivist Theory in that teachers help students construct their own knowledge.
   □ a. Teacher-centred Method
   □ b. Lecture
   □ c. Behaviorism or Behavioural Method
   □ d. Inquiry-Based Learning

9. Among the reasons below, which one is NOT the one that leads to the use of Cooperative Method?
   □ a. Students must work actively
   □ b. Students do not need teacher input
   □ c. Students must help each other
   d. Motivation occurs when achieving success

10. Which of the following methods is NOT part of Lecture as a Teaching Method?
    □ a. Elaborating
    □ b. Explaining
    □ c. Describing
    □ d. Short test

11. Knowledge, skill, and...................are three main parts of learning.
    □ a. Research
    □ b. Attitude
    □ c. Practice
    □ d. Homework

12. Bloom Taxonomy is important for determination of expected learning outcome, teaching activity, learning, and ...........
    □ a. Learning assessment
    □ b. Students’ thinking
    □ c. Students’ understanding
    □ d. Observation of teachers

13. A student may display an inappropriate attitude because the ..................... of the student and teacher are different.
    □ a. Expectations
    □ b. Powers
    □ c. Values
    □ d. Cultural standards

14. Which of the following is NOT a principle for Constructivist Learning?
    □ a. Facilitative learning
    □ b. Interactive learning
    □ c. Student-centred learning
    □ d. Low quality learning

15. Example: students choose a subject that they want to study such as: philosophy, chemistry, or physics, according to their own interests to do research. What type of learning is it in this example?
    □ a. Constructivist Learning
    □ b. Scientific Learning
    □ c. Lecture Learning
    □ d. Cooperative Learning

16. Which of the problems below is NOT the problem that teachers would pay attention to when using Lecture as a Teaching Method?
    □ a. Use of words
    □ b. Content of the lessons
    □ c. Behaviors
    □ d. Use of cutting-edge tools

17. Which of the following is NOT an element of Cooperative Learning?

35
D. Requests and Suggestions

III. ICT
A. Specialized Knowledge

1. What is computer? Please choose the correct answer.
   - a. A tool for importing and storing data
   - b. A kind of electronic machine/tool that enable users to import, store, process, and export data
   - c. A machine for typing text, surfing Internet, and storing documents
   - d. A machine for checking data

2. What are the components of a computer? Please choose the correct answers (You may choose more than one answer).
   - a. System unit, Monitor, Keyboard, Mouse
   - b. Monitor, Keyboard, Mouse, Scanner
   - c. Printer, Monitor, Keyboard, Power supply
   - d. Scanner, Printer, Power supply, Television

3. What is computer operating system? Please choose the correct answer.
   - a. It is a processing system
   - b. It is an operating system that starts first once you turn on the computer
   - c. Other programs of a computer
   - d. Other programs that run on a computer

4. Which of the following programmes are part of Microsoft Office? Please choose the correct answers (You may choose more than one answer).
   - a. Word
   - b. Internet
   - c. PowerPoint
   - d. Photoshop

5. What is Microsoft Office PowerPoint used for? Please choose the correct answer.
   - a. For typing text
   - b. For making videos
   - c. For presentation
   - d. For animating letters or pictures

6. What is Microsoft Office Excel used for? Please choose the correct answer.
   - a. Making a table
   - b. Making a workbook
   - c. Making an accounting record, Calculating, Recording statistics, Employee salary, and other records
   - d. For doing work related to Accounting

7. What is Internet? Please choose the correct answer.
   - a. A program on the web
b. An electronic message
c. A network that is connected around the world for communicating and providing information
d. A network between two computers connected by wires or airwaves

8. What is Google Drive? Please choose the correct answer.
   a. A program installed on the computer
   b. A place for storing documents
   c. A service that supports human work
   d. A space created by Google to provide **File Storage** and **Synchronization service**.

9. Have you ever used ICT in teaching and learning? If yes, what programs have you used?

--------------------------------------------------------------------------------

**B. Training Needs**

10. In the table below, please put a tick (☑) in the box (1 to 4) based on the level of needs for training. Due to short duration of the training, please focus on the prioritized content.

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<th>3</th>
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</thead>
<tbody>
<tr>
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<td>Formatting Page Setup</td>
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<td>Inserting header and footer</td>
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<tr>
<td>Putting bullet point, serial number, and inserting pictures</td>
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<td>Work related to table</td>
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<td>Creating an automatic table of content</td>
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<td>Setting paragraph format</td>
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<td>Inserting special characters</td>
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<td>Setting Tab Stops</td>
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<td>Text Columns</td>
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<tr>
<td>Printing</td>
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<td>Spreadsheet, with key functions in Microsoft Excel</td>
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<tr>
<td>Understanding Row, column, cell, and sheet</td>
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<tr>
<td>Setting the format for cell</td>
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<tr>
<td>Types of data</td>
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<td>Formatting number</td>
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<td>Using existing operation symbols and formulas</td>
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<tr>
<td>Making a class ranking table by using existing formulas</td>
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<td>Learning about graphs and charts</td>
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<td>Sorting and filtering data</td>
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<td>PowerPoint slide design</td>
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<tr>
<td>Inserting text, picture, existing shape, video, and audio</td>
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<td>Inserting a hyperlink</td>
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<td>Services on the Internet</td>
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<td>Important programs for searching information (online)</td>
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<td>Using Email</td>
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<td>Using Google Drive, file sharing, and online collaboration</td>
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<td>Using educational applications and smartphone (including YouTube and</td>
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<td>Telegram group</td>
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C. Requests and suggestions

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Questionnaire set B for Mathematics

Data Collection Tool for PTTC Teacher Educators In-Service Training Needs Assessment

Objective: To assist with the preparation for in-service teacher training to promote teacher educators’ competencies at PPTCs, Ministry of Education, Youth and Sport (MoEYS) has prepared a questionnaire to survey the training needs of all PTTC teacher educators across the country. Please fill in this questionnaire attentively, honestly, and individually. Based on the result of this survey, technical teams of the Ministry and STEPCam/GPE3 will collaborate to establish in-service teacher training in respond to teacher educators’ actual training needs.

Note: Please complete this questionnaire and return it by 28 December 2019. The questionnaire takes approximately 120 minutes to complete.

- Name of PTTC: ............................................................................................................................
- Name of teacher educator: ................................................................. Gender .........................
- Subject(s) of specialization: ........................................................................................................
- Subject(s) you are/will be teaching: ...........................................................................................
- Subject(s) in need of training: (1) ..............................................................................................
  (2) .............................................................................................................................
- Work/teaching experience: ................................................................................................. years

I. Specialized knowledge
1. What is the significance of teaching Mathematics? Please explain with specific examples.

........................................................................................................................................................................

2. Which lessons/units of Mathematics do you teach to your student teachers to help them perform well in teaching Mathematics in their (primary) schools?

........................................................................................................................................................................

........................................................................................................................................................................

3. Complete all pairs of positive integers that are double-digit and single-digit in boxes below. And provide an explanation.

\[
\boxed{\phantom{12}} \phantom{12} - \phantom{12} = 6
\]

........................................................................................................................................................................

4. There are fraction \(\frac{2}{5}\) and ratio \(\frac{2}{5}\). What is the difference between the fraction and ratio?

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5. There is an equation \(2019 - 515 = \phantom{2019} \). Please create a descriptive question based on this equation.

........................................................................................................................................................................
6. Indicate at least two ways of teaching to help students understand the three different numeric values of 3 in 333 by using an image.

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7. To round up 3425 in a ‘hundreds’ digit, how do you explain on the number axis to help students easily understand this?

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8. If students do the addition of fractions and get the following result:

\[ \frac{1}{3} + \frac{1}{6} = \frac{2}{9} \]

In what ways do the students misunderstand about the calculation above?

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What kind of image do you use to get rid of this misconception?

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9. Put a tick ✓ in the box that has the correct statement:
- Square is a parallelogram that has perpendicular diagonals
- Square is a rectangle that has the equal length of line segments.
- Square is a quadrilateral that has four equal angles
- Square is a rectangle that has perpendicular diagonals

10. Put a tick ✓ in the box that has the correct statement:
- Rectangle has four lines of symmetry.
- Rectangle has one line of symmetry.
- Rectangle has two lines of symmetry.
- Rectangle has three lines of symmetry.

11. Circle the letter(s) in the pictures below that has (have) the characteristics of parallelogram.

A
B
C
D
E
F
12. Students always think that ‘when the side length of a square is multiplied by four, the area of the square grows four times as well’. How do you get rid of this misconception?

13. As a teacher, you want to explain the formula of calculating the area of a triangle by a tangible method. How do you use an image to explain this formula? Draw a picture and describe the method.

14. A teacher asks a student to tell three side lengths that can create a triangle. Point out the misconception that happens to the student. What method do you use to get rid of this misconception?

15. Which of the following shapes have the same perimeter?

16. Bouna spent 6 hours 20 minutes to travel from Phnom Penh to Siem Reap. He arrived in Siem Reap at dawn, 5 am. What time did he leave Phnom Penh?
17. The square in the picture below represents the actual land area that has a 1 km side length. Which scale of the following choices best fits the square in this picture? Please circle the correct answer.

A. \( \frac{1}{100000} \)  
B. \( \frac{1}{50000} \)  
C. \( \frac{1}{25000} \)  
D. \( \frac{1}{40000} \)

18. Students usually misconceive the relationship between perimeter and area of quadrilateral. They think that if the quadrilaterals have an equal perimeter, their area must be equal as well. Supposed you are given a piece of square-shaped paper, how do you get rid of the misconception? Please draw a picture and describe the method.

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19. One student did the following operation:

\[
\begin{align*}
4h 15mn \\
- 2h 37mn \\
\hline
1h 78mn
\end{align*}
\]

What is the misconception that occurs? how do you get rid of the misconception?

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20. There are four different items: a battery, a nail, a bead, and a key. In order to correctly compare the size of the four items, what method do you use to demonstrate to your students? Please describe your activities clearly.

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II. What challenges do you face in teaching mathematics?

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III. Requests and suggestions

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42
II. Teaching Methodology

A. Knowledge

1. What is the importance of teaching methodology for your teaching?
......................................................................................................................................................................................
......................................................................................................................................................................................

2. To what extent do you apply these teaching methods in your teaching?
Please put a tick ☑ in the following table:

<table>
<thead>
<tr>
<th>Level 1: Never heard of this method</th>
<th>Level 2: Heard of it but have not received training to use it yet</th>
<th>Level 3: Have received training but have not used it</th>
<th>Level 4: Have used it but not confident</th>
<th>Level 5: Skilled in using it (need no further training)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imitation (miming)</td>
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<tr>
<td>Concept-Based Approach</td>
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<tr>
<td>Various questioning techniques</td>
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<tr>
<td>Inquiry-Based Learning</td>
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<tr>
<td>Cooperative learning</td>
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<tr>
<td>Socratic method</td>
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<tr>
<td>Scientific teaching</td>
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<tr>
<td>Lecture and presentation</td>
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</tbody>
</table>

3. To what extent do you know about test construction?
☐ a. Little knowledge and will need additional training
☐ b. Much knowledge and will not need additional training

4. To what extent do you know how to use a course syllabus?
☐ a. Little knowledge and will need additional training
☐ b. Much knowledge and will not need additional training

B. True or False Questions

5. Decide in the following sentences which one is ‘true’ and which one is ‘false’. Write your answers in the boxes below.
   1) Pre-existing knowledge may help as well as hinder students’ study.
   2) Bloom Taxonomy was created in 1956 and was led by Benjamin Samuel Bloom, aiming to improve teaching.
   3) Lesson study is a skill development process for teachers who specialize in either the same or different subjects, who work together to prepare lesson plans and teaching materials, and to explore new teaching methods in order that good teaching quality is ensured. This approach is implemented in four stages.
   4) It is found that cooperative learning can improve not only the learning of students but also their social development skills and communication.
   5) Lecturing is not a good and beneficial teaching method to students.
   6) Open-ended question is a kind of question that has more than one answer. There are two types of open-ended question which are called simple open-ended question and hard open-ended question. This type of question requires students to have advanced and critical thinking skill.
   7) Lesson study is conducted in five stages.
8) Whether or not an attitude in the class is considered appropriate may vary from one culture to another.
9) Inductive and deductive approaches are two approaches with opposite directions and are not complementary to each other even though both of them are related.
10) Teachers play a role of imparting knowledge in Inquiry-Based Learning.
11) Cooperative teaching method is a method that students with similar capacity work together as a group and have teacher as a counsellor.

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<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
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</table>

C. Multiple Choice Questions
For each question below, please circle one answer that is the most appropriate to you.

6. ...................... is a process of acquiring or improving knowledge, behavior, skill, value, or choice that one practices.
   ☐ a. Learning
   ☐ b. Teaching
   ☐ c. Thinking
   ☐ d. Asking

7. Which is the order of thinking, from low to high levels, in Bloom Taxonomy?
   ☐ a. Remember, Understand, Practise, Analyse, Evaluate, Create
   ☐ b. Understand, Practise, Analyse, Evaluate, Create, Remember
   ☐ c. Remember, Understand, Evaluate, Create, Analyse
   ☐ d. Create, Understand, Remember, Evaluate, Practise, Analyse

8. ...................... is a student-centered teaching method. This method is based on Constructivist Theory in that teachers help students construct their own knowledge.
   ☐ a. Teacher-centred Method
   ☐ b. Lecture
   ☐ c. Behaviorism or Behavioural Method
   ☐ d. Inquiry-Based Learning

9. Among the reasons below, which one is NOT the one that leads to the use of Cooperative Method?
   ☐ a. Students must work actively
   ☐ b. Students do not need teacher input
   ☐ c. Students must help each other
   ☐ d. Motivation occurs when achieving success

10. Which of the following methods is NOT part of Lecture as a Teaching Method?
    ☐ a. Elaborating
    ☐ b. Explaining
    ☐ c. Describing
    ☐ d. Short test

11. Knowledge, skill, and ...................... are three main parts of learning.
    ☐ a. Research
    ☐ b. Attitude
    ☐ c. Practice
    ☐ d. Homework

12. Bloom Taxonomy is important for determination of expected learning outcome, teaching activity, learning, and .......... 
    ☐ a. Learning assessment
    ☐ b. Students’ thinking
    ☐ c. Students’ understanding
    ☐ d. Observation of teachers

13. A student may display an inappropriate attitude because the ...................... of the student and teacher are different.
14. Which of the following is NOT a principle for Constructivist Learning?
- a. Facilitative learning
- b. Interactive learning
- c. Student-centred learning
- d. Low quality learning

15. Example: students choose a subject that they want to study such as: philosophy, chemistry, or physics, according to their own interests to do research. What type of learning is it in this example?
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16. Which of the problems below is NOT the problem that teachers would pay attention to when using Lecture as a Teaching Method?
- a. Use of words
- b. Content of the lesson
- c. Behaviors
- d. Use of cutting-edge tools

17. Which of the following is NOT an element of Cooperative Learning?
- a. Individual responsibility
- b. Cooperative skill
- c. Face to face interaction
- d. Actions of the members

D. Requests and Suggestions

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A. Specialized Knowledge
1. What is computer? Please choose the correct answer.
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**C. Requests and suggestions**

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**Questionnaire set C for Science**

**Data Collection Tool for PTTC Teacher Educators In-Service Training Needs Assessment**

**Objective:** To assist with the preparation for in-service teacher training to promote teacher educators’ competencies at PPTCs, Ministry of Education, Youth and Sport (MoEYS) has prepared a questionnaire to survey the training needs of all PTTC teacher educators across the country. Please fill in this questionnaire attentively, honestly, and individually. Based on the result of this survey, technical teams of the Ministry and STEPCam/GPE3 will collaborate to establish in-service teacher training in response to teacher educators’ actual training needs.

**Note:** Please complete this questionnaire and return it by 28 December 2019. The questionnaire takes approximately 120 minutes to complete.

- Name of PTTC: .................................................................
- Name of teacher educator: .............................................. Gender .................
- Subject(s) of specialization: .................................................................
- Subject(s) you are/will be teaching: .................................................................
- Subject(s) in need of training: (1) .................................................................
  (2).................................................................................................
- Work/teaching experience: ................................................................. years

I. Specialized knowledge
1. What is significant about teaching Applied Science?
   .................................................................................................................................
2. Which of the following is NOT the correct statement about atom?
   □ a. Atom is the smallest particle of element.
   □ b. Atoms of the same element may have different mass.
   □ c. Atom can be separated (nuclear reaction).
   □ d. Atoms of the same element cannot form a bond with each other.

3. What is represented by the symbol $^{4}\text{He}$?
   □ a. Helium has four protons.
   □ b. One helium atom has two electrons.
   □ c. Helium is in a form of diatomic molecule
   □ d. One helium atom has two electrons and four electrons in its nucleus.

4. There are two chemical substances: M (Z = 12) and X (Z = 17). The combination of the two substances will create a formula of:
   □ a. MX
   □ b. XM
   □ c. MX$_2$
   □ d. X$_2$M

5. Which one is not a mixture?
a. Table sugar (C₁₂H₂₂O₁₁)
b. Brass (Cu-Zn)
c. Coconut juice
d. Smoothie

6. White wine is the combination of alcohol and water. What is the effective method to extract alcohol from white wine?
   a. Filtering method
   b. Convenient distillation method
   c. Proportional distillation method
   d. Evaporation method

7. Among the choices below, which is the correct example of aqueous solution?
   a. Air
   b. Vinegar
   c. Steel
   d. All of the above

8. A Ca(OH)₂(aq) solution has a 60% mass percent composition, and a mass of 180g. What is the mass of calcium hydroxide?
   a. 30 g
   b. 108 g
   c. 240 g
   d. 300 g

9. Calculate the concentration in molecule of solution sodium hydroxide, NaOH(aq). The volume is 500 mL from the solution of 8g solid sodium hydroxide in distilled water. M(NaOH) = 40 g/mol.
   a. 0.0004 M
   b. 0.004 M
   c. 0.04 M
   d. 0.4 M

10. Sugar is dissolved in the water and it results in an aqueous solution sugar water. This is called:
    a. Nonelectrolyte
    b. Electrolyte
    c. Strong electrolyte
    d. Weak electrolyte

11. A pH indicator Bromothymol blue turns acidic solution into:
    a. blue
    b. purple
    c. yellow
    d. red

12. When you teach the lesson on atom, which of the following is similar to your style of teaching?
    a. The teacher lets teacher students read and find the definition of atom.
    b. The teacher tells the definition of atom and lets students repeat.
    c. The teacher asks students to cut small aluminum foil until they can’t cut even smaller, and then assume that the smallest part is atom.
    d. Write the definition of atom on the board by leaving some blanks for students to fill in.
13. Before teaching the lesson on a chemical formula, which of the following is similar to your style of teaching?

a. The teacher writes questions on the board and lets students answer them, reading the book.

b. The teacher shows some chemical substances, asks what their names are, and then draws the formula from those substances.

c. The teacher tells the name and formula of the substances, and then describe the way of creating that chemical formula.

d. The teacher writes the title of the lesson and lets students describe and explain the formula.

14. Before teaching a lesson to your students, have you discussed your teaching plan with other teachers?

a. Never

b. Once a year

c. Two or three times a year

d. Frequently

If you have never done this, please specify the reasons:

15. Mixing boiled water will cold water will result in warm water. Please explain this phenomenon.

16. What is the difference between direct current and alternating current?

17. Are the mass and weight of an element the same? Please explain.

18. Put a tick in front of only one correct answer:

a. Whenever an element has an unchanged volume but a changed shape, which state is that element?

a. Solid  b. Liquid  c. Gas

b. When we pour ether on our palm, our palm feels cold because:

a. Ether is evaporating and sending latent heat of evaporation to the palm.

b. Evaporating ether absorbs heat from the palm.

c. Ether is colder than our palm.

d. Boiling point of ether is higher than the temperature.

c. An electric current goes through 0.2A lightbulb. The current runs through the lightbulb for 2h. The total value of running electric charge is:

a. 1640C  b. 1460C  c. 1440C  d. 1540C

d. If a plastic ball is pushed by a glass chopstick, the ball and the chopstick will:

a. store electric charges with opposite signs

b. store electric charges with the same sign

c. not store electric charges of any sign

d. store only one electric charge

e. Newton’s laws say: “the acceleration of an object is directly proportional to the vector sum of the force on that object and inversely proportional to the mass of that object”. Which law is this Newton’s law?
Newton’s 1st law  b. Newton’s 2nd law  c. Newton’s 3rd law

f. If we spin a rope where its end is tied with a small heavy object, which force does the object receive when it leaves the rope?

19. What are the internal regulations in a laboratory?

20. To effectively teach physics to students, what teaching materials does a teacher need to prepare?

21. What methods can a teacher use to teach physics?

22. How many times in a year do you conduct experiments to demonstrate physics lessons to your students?

23. Three main forms: cell membrane, cytoplasm, and nucleus. They are important parts of:

24. The main type(s) of non-vascular plants is/are:
   a. Virus and Bacteria  b. Moss and Liverwort  c. Palm tree  d. None

25. Which experiment(s) have you ever conducted in your teaching? (You may choose more than one answer)
   a. Observing animal cells (epithelium of human palate)  b. Observing the microorganisms in dirty water  c. Observing the form of moss  d. None

26. What are the experiment tools required for an observation of the plant cells (onion)?
   a. I have never done such an experiment

27. Describe the important cellular elements of animal cells

28. Small disease-causing particles in the water and invisible to the naked eyes, they are:
   a. Small cellular elements
29. Describe two challenges you have faced in teaching biology to your students.

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30. What grouping method have you been using in teaching and learning biology?

☐ a. In pair
☐ b. Small group discussion
☐ c. Large group discussion
☐ d. The whole class

31. Have you applied the Inquiry-Based Learning method in teaching biology?

☐ a. Yes, I have.
☐ b. Yes, I have, but not frequently.
☐ c. Yes, I have applied this method but not for biology.
☐ d. Never

32. Have you used any of the technological devices below in teaching biology? (You may choose more than one answer)

☐ a. Slideshow with a projector
☐ b. Phone
☐ c. Computer
☐ d. Never

33. Have you been taught to use any of the teaching and learning materials below? (You may choose more than one answer)

☐ a. Concept (testing) card
☐ b. Mind map
☐ c. Traffic card
☐ d. Never

34. Among the sentences below, which one is correct?

☐ a. Based on the Big Bang theory, the universe is composed of thousands of galaxies.
☐ b. As one of all galaxies, our galaxy is called the ‘Milky Way galaxy’.
☐ c. Milky Way galaxy is a small part of our Solar System
☐ d. Earth is a big planet in the universe.

35. Which planet has the strongest gravity?

☐ a. Moon
☐ b. Earth
☐ c. Earth and Moon have equal gravity.
☐ d. I do not know.

36. In which direction does the Earth spin if we look from the North Pole?

☐ a. Clockwise
☐ b. From north to south
☐ c. Counterclockwise
☐ d. From east to west

37. How many degrees does the Earth’s axis tilt from its orbital plane?
38. What is it called in each year when the Earth has an equal amount of day and night time?
   - a. Winter solstice
   - b. Spring equinox
   - c. Summer solstice
   - d. Autumn equinox

39. Among the experiments below, which one do you conduct frequently in your teaching?
   - a. Continental drift experiment
   - b. Day and night experiment
   - c. Solar eclipse and Lunar eclipse
   - d. Practice creating the planet models in Solar System and planetary orbits in Solar System

40. Among the chosen experiments above, please describe the process of at least one experiment.

   ...............................................................................................................................

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41. To teach science subject effectively and interestingly, which activity do you use?
   - a. Demonstrate only theories and formulas
   - b. Demonstrate theories, formulas, and let students think based on existing knowledges and skills
   - c. Apply scientific study including observation and experiment linking theories to real practices
   - d. B and C

Requests and suggestions

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II. Teaching Methodology

A. Knowledge

1. What is the importance of teaching methodology for your teaching?

   ...............................................................................................................................

   ...............................................................................................................................

2. To what extent do you apply these teaching methods in your teaching? Please put a tick ✓ in the following table:

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<tr>
<th>Teaching methodology</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
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</table>
Concept-Based Approach

Various questioning techniques

Inquiry-Based Learning

Cooperative learning

Socratic method

Scientific teaching

Lecture and presentation

3. To what extent do you know about test construction?
   - a. Little knowledge and will need additional training
   - b. Much knowledge and will not need additional train

4. To what extent do you know how to use a course syllabus?
   - a. Little knowledge and will need additional training
   - b. Much knowledge and will not need additional train

B. True or False Questions

5. Decide in the following sentences which one is 'true' and which one is ‘false’. Write your answers in the boxes below.
   1) Pre-existing knowledge may help as well as hinder students’ study.
   2) Bloom Taxonomy was created in 1956 and was led by Benjamin Samuel Bloom, aiming to improve teaching.
   3) Lesson study is a skill development process for teachers who specialize in either the same or different subjects, who work together to prepare lesson plans and teaching materials, and to explore new teaching methods in order that good teaching quality is ensured. This approach is implemented in four stages.
   4) It is found that cooperative learning can improve not only the learning of students but also their social development skills and communication.
   5) Lecturing is not a good and beneficial teaching method to students.
   6) Open-ended question is a kind of question that has more than one answer. There are two types of open-ended question which are called simple open-ended question and hard open-ended question. This type of question requires students to have advanced and critical thinking skill.
   7) Lesson study is conducted in five stages.
   8) Whether or not an attitude in the class is considered appropriate may vary from one culture to another.
   9) Inductive and deductive approaches are two approaches with opposite directions and are not complementary to each other even though both of them are related.
   10) Teachers play a role of imparting knowledge in Inquiry-Based Learning.
   11) Cooperative teaching method is a method that students with similar capacity work together as a group and have teacher as a counsellor.

C. Multiple Choice Questions

For each question below, please circle one answer that is the most appropriate to you.

6. ...................... is a process of acquiring or improving knowledge, behavior, skill, value, or choice that one practices.
   - a. Learning
   - b. Teaching
   - c. Thinking
   - d. Asking

7. Which is the order of thinking, from low to high levels, in Bloom Taxonomy?
a. Remember, Understand, Practise, Analyse, Evaluate, Create
b. Understand, Practise, Analyse, Evaluate, Create, Remember
c. Remember, Understand, Evaluate, Create, Analyse
d. Create, Understand, Remember, Evaluate, Practise, Analyse

8. .................. is a student-centered teaching method. This method is based on Constructivist Theory in that teachers help students construct their own knowledge.
   a. Teacher-centred Method
   b. Lecture
   c. Behaviorism or Behavioural Method
   d. Inquiry-Based Learning

9. Among the reasons below, which one is NOT the one that leads to the use of Cooperative Method?
   a. Students must work actively
   b. Students do not need teacher input
   c. Students must help each other
   d. Motivation occurs when achieving success

10. Which of the following methods is NOT part of Lecture as a Teaching Method?
    a. Elaborating
    b. Explaining
    c. Describing
    d. Short test

11. Knowledge, skill, and...................are three main parts of learning.
    a. Research
    b. Attitude
    c. Practice
    d. Homework

12. Bloom Taxonomy is important for determination of expected learning outcome, teaching activity, learning, and ...........
    a. Learning assessment
    b. Students’ thinking
    c. Students’ understanding
    d. Observation of teachers

13. A student may display an inappropriate attitude because the .................... of the student and teacher are different.
    a. Expectations
    b. Powers
    c. Values
    d. Cultural standards

14. Which of the following is NOT a principle for Constructivist Learning?
    a. Facilitative learning
    b. Interactive learning
    c. Student-centred learning
    d. Low quality learning

15. Example: students choose a subject that they want to study such as: philosophy, chemistry, or physics, according to their own interests to do research. What type of learning is it in this example?
    a. Constructivist Learning
    b. Scientific Learning
    c. Lecture Learning
    d. Cooperative Learning

16. Which of the problems below is NOT the problem that teachers would pay attention to when using Lecture as a Teaching Method?
    a. Use of words
b. Content of the lessons

c. Behaviors

d. Use of cutting-edge tools

17. Which of the following is NOT an element of Cooperative Learning?

a. Individual responsibility
b. Cooperative skill
c. Face to face interaction
d. Actions of the members

D. Requests and Suggestions

III. ICT

A. Specialized Knowledge

1. What is computer? Please choose the correct answer.

a. A tool for importing and storing data
b. A kind of electronic machine/tool that enable users to import, store, process, and export data
c. A machine for typing text, surfing Internet, and storing documents
d. A machine for checking data

2. What are the components of a computer? Please choose the correct answers (You may choose more than one answer).

a. System unit, Monitor, Keyboard, Mouse
b. Monitor, Keyboard, Mouse, Scanner
c. Printer, Monitor, Keyboard, Power supply
d. Scanner, Printer, Power supply, Television

3. What is computer operating system? Please choose the correct answer.

a. It is a processing system
b. It is an operating system that starts first once you turn on the computer
c. Other programs of a computer
d. Other programs that run on a computer

4. Which of the following programmes are part of Microsoft Office? Please choose the correct answers (You may choose more than one answer).

a. Word
b. Internet
c. PowerPoint
d. Photoshop

5. What is Microsoft Office PowerPoint used for? Please choose the correct answer.

a. For typing text
b. For making videos
c. For presentation
d. For animating letters or pictures

6. What is Microsoft Office Excel used for? Please choose the correct answer.

a. Making a table
b. Making a workbook
c. Making an accounting record, Calculating, Recording statistics, Employee salary, and other records
7. What is Internet? Please choose the correct answer.
   - a. A program on the web
   - b. An electronic message
   - c. A network that is connected around the world for communicating and providing information
   - d. A network between two computers connected by wires or airwaves

8. What is Google Drive? Please choose the correct answer.
   - a. A program installed on the computer
   - b. A place for storing documents
   - c. A service that supports human work
   - d. A space created by Google to provide **File Storage** and **Synchronization service**.

9. Have you ever used ICT in teaching and learning? If yes, what programs have you used?

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B. Training Needs

10. In the table below, please put a tick (✓) in the box (1 to 4) based on the level of needs for training. Due to short duration of the training, please focus on the prioritized content.

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<td>Components of computer hardware</td>
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<td>Roles of monitor, system unit, keyboard, mouse</td>
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<td>Inserting a hyperlink</td>
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<td>Animation in PPT</td>
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<tr>
<td>Internet and media literacy (including YouTube and social media)</td>
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<td>Services on the Internet</td>
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<td>Important programs for searching information (online)</td>
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<td>Using Email</td>
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<td>File storage on a cloud drive</td>
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<td>Using Google Drive, file sharing, and online collaboration</td>
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<td>Using educational applications and smartphone (including YouTube and</td>
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<td>Telegram group</td>
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C. Requests and suggestions

...........................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................
Questionnaire set D for Social Studies

Data Collection Tool for PTTC Teacher Educators In-Service Training Needs Assessment

Objective: To assist with the preparation for in-service teacher training to promote teacher educators’ competencies at PPTCs, Ministry of Education, Youth and Sport (MoEYS) has prepared a questionnaire to survey the training needs of all PTTC teacher educators across the country. Please fill in this questionnaire attentively, honestly, and individually. Based on the result of this survey, technical teams of the Ministry and STEPCam/GPE3 will collaborate to establish in-service teacher training in respond to teacher educators’ actual training needs.

Note: Please complete this questionnaire and return it by 28 December 2019. The questionnaire takes approximately 120 minutes to complete.

- Name of PTTC: .................................................................................................................................
- Name of teacher educator: ........................................ Gender ...........................................................
- Subject(s) of specialization: ....................................................................................................................
- Subject(s) you are/will be teaching: ........................................................................................................
- Subject(s) in need of training: (1) .......................................................................................................... (2) ..............................................................................................................................
- Work/teaching experience: .................................................. years

I. Specialized knowledge
What is significant about teaching Social Studies?
.............................................................................................................................................................
.............................................................................................................................................................
1. Put a tick ☑️ in the box to select only one correct answer:
   1. Knowledge with no order, no relationship, and no consideration is called:
      ☐ a. Instinct
      ☐ b. Intuition
      ☐ c. Habit
      ☐ d. Common sense
   2. The first wisdom that comes from quick and direct impression, without consideration is:
      ☐ a. Common sense
      ☐ b. Scientific knowledge
      ☐ c. Intuition
   3. “I know that the fruit is ripe because I judge it based on”:
      ☐ a. ‘Psychological’ intuition
      ☐ b. The ‘Eagle’ intuition
      ☐ c. ‘Intellectual’ intuition
      ☐ d. Metaphysical intuition
2. According to the Ethics and Civics subject, there are seven stages of a learning procedure: 1. Describe the picture, 2. Read, 3. Question and answer, 4. Answer more questions, and three more stages. Please choose a correct answer below.
   ☐ a. Read to analyze content, discuss to seek for answers, and evaluate
b. Summarize, group activity, and read quietly

c. Group activity, summarize, and evaluate

d. Describe the picture, group activity, and answer more questions

3. Please put a tick ☑ on the needs for additional training for the following Ethics and Civics lessons. Please focus on the prioritized content.

<table>
<thead>
<tr>
<th>Content</th>
<th>Not necessary</th>
<th>Of little necessity</th>
<th>Kind of necessary</th>
<th>Very necessary</th>
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</thead>
<tbody>
<tr>
<td>Brahmavihara</td>
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<tr>
<td>Intelligence</td>
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<tr>
<td>General thinking techniques</td>
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<tr>
<td>Universal ethics</td>
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<td>Nationality Act</td>
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<td>Immigration Act</td>
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<tr>
<td>Corruption</td>
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</tbody>
</table>

4. How many branches is Geography divided into?
   - a. 2
   - b. 3
   - c. 4
   - d. 5

5. How many sectors of industry does Cambodian economy depend on?
   - a. 2
   - b. 3
   - c. 4
   - d. 5

6. How many categories of farmer are there?
   - a. 2
   - b. 3
   - c. 4
   - d. 5

7. What is GDP?
   - a. Annual domestic and foreign human product
   - b. Annual domestic human product
   - c. Total annual national human product

8. What is GNP?
   - a. Annual domestic and foreign human product
   - b. Annual domestic human product
   - c. Total annual national human product

9. How many categories of road are there?
   - a. 3
   - b. 4
   - c. 5
   - d. 6

10. Which national road is the longest in Cambodia?
    - a. National road 4
    - b. National road 5
    - c. National road 6
    - d. National road 7
11. The word **Global South** is used to identify?
   ☐ a. Developed countries
   ☐ b. Developing countries
   ☐ c. Undeveloped countries
   ☐ d. Industrialized countries

12. Please put a tick ☑ on the needs for additional training for the following Geography lessons. Please focus on the prioritized content.

<table>
<thead>
<tr>
<th>Content</th>
<th>Not necessary</th>
<th>A little necessary</th>
<th>Necessary</th>
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<tbody>
<tr>
<td>Economic geography of Cambodia</td>
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<tr>
<td>Geography of developing nations</td>
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<tr>
<td>Economic geography of European Union</td>
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<tr>
<td>Map-drawing method of European Union</td>
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<tr>
<td>Cambodia and map locators</td>
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</tbody>
</table>

13. To what extent do you think history is an important subject to study?
   ☐ a. Not important
   ☐ b. A little important
   ☐ c. Important
   ☐ d. Very important

14. Put a tick ☑ in the box for a correct answer:
   1) The evidence that shows Khmer is the native occupants of present Cambodia comes from:
      ☐ a. Excavation
      ☐ b. Foreign documents
      ☐ c. Pre-historical station
      ☐ d. Narrative by the elderly
   
   2) For how many years was Cambodia a French Protectorate?
      ☐ a. 60 years
      ☐ b. 70 years
      ☐ c. 80 years
      ☐ d. 90 years

Within this period, how many kings reigned Cambodia and who were they?

15. How many well-known kings were there in the Chenla era?
    ☐ a. 2
    ☐ b. 3
    ☐ c. 4
    ☐ d. 5

16. From which year to which year was the People’s Socialist Community era?
    ☐ a. 1953-1963
    ☐ b. 1955-1970
    ☐ c. 1970-1975
    ☐ d. 1975-1979

17. Please put a tick ☑ on the needs for additional training for the following History lessons. Please focus on the prioritized content.

<table>
<thead>
<tr>
<th>Content</th>
<th>Not necessary</th>
<th>Of little necessity</th>
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<tr>
<td>Prehistory</td>
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<tr>
<td>Nokor Phnom era</td>
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<tr>
<td>Chenla era</td>
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<tr>
<td>Content</td>
<td>Not necessary</td>
<td>Of little necessity</td>
<td>Kind of necessary</td>
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<tr>
<td>Angkor era</td>
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<td>Chaktomuk Mongkol era</td>
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<td>Longvek era</td>
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<tr>
<td>Oudong era</td>
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<tr>
<td>Kampuchea Krom</td>
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<tr>
<td>French Protectorae</td>
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<tr>
<td>People’s Socialist Community</td>
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<tr>
<td>Khmer Republic</td>
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<tr>
<td>Democratic Kampuchea</td>
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<tr>
<td>People’s Republic of Kampuchea</td>
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<tr>
<td>The end of conflicts in Cambodia and Kingdom of Cambodia</td>
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</table>

18. Which lesson do you find difficult to teach?
   - a. Plain seam (hand, machine, and trace)
   - b. Dense trace loop (trace, art, and catch stitch)
   - c. Backstitch, Running stitch, and Buttonhole stitch

19. Which embroidery technique are you capable of?
   - a. Artistic embroidery
   - b. Vine stitch
   - c. Fishbone stitch
   - d. Sres embroidery

20. Which is the function of lower parts of a sewing machine?
   - a. Holding the spool pin
   - b. Holding the belt
   - c. Stabilizing the thread

21. Among the tools below, which one is the general embroidery tool?
   - a. Angular bead, Twist bead, and Disc bead
   - b. Needle, Stretching ring, and Thread
   - c. Spool thread, Measure tap, and Scissors

22. Among the solutions below, which one works for a slow-running sewing machine that is running?
   - a. Lubricating, Replacing needle, and Tightening bobbin case
   - b. Checking location and balance of presser foot and Straightening presser foot lifter
   - c. Checking bobbin, Cleaning and lubricating, and Replacing belt

23. Which kind of soup are you able to cook?
   - a. Curry soup
   - b. Namya soup
   - c. Sour soup

24. Which kind of dried soup are you able to cook?
   - a. Beef salad
   - b. Amok
   - c. Stir-fried pork ribs
   - d. ‘Plea’ beef

25. Which kind of dessert are you able to cook?
26. What method do you use in teaching Home economics?
☐ a. Let teacher students try with their own hands
☐ b. Let them observation how teachers do

27. Please put a tick ☑ on the needs for additional training for the following History lessons. Please focus on the prioritized content.

<table>
<thead>
<tr>
<th>Content</th>
<th>Not necessary</th>
<th>Of little necessity</th>
<th>Kind of necessary</th>
<th>Very necessary</th>
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<tbody>
<tr>
<td>Plain seam by hand and machine trace</td>
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<tr>
<td>Dense trace loop, trace, art, and catch stitch</td>
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<tr>
<td>Backstitch, Running stitch, and Buttonhole stitch</td>
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<tr>
<td>Artistic embroidery</td>
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<tr>
<td>Vine stitch</td>
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<tr>
<td>Fishbone stitch</td>
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<tr>
<td>Beef salad</td>
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<tr>
<td>Amok</td>
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<tr>
<td>Stir-fried pork ribs</td>
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<tr>
<td>‘Plea’ beef</td>
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</tr>
<tr>
<td>Curry soup</td>
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<tr>
<td>Namya soup</td>
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<tr>
<td>Sour soup</td>
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<tr>
<td>Dried sweet Gooseberry</td>
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<tr>
<td>Mung bean dessert soup</td>
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<tr>
<td>Sago flour</td>
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<tr>
<td>Lotus seed jam</td>
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28. What challenges do you face in teaching Social Studies?
........................................................................................................................................
........................................................................................................................................

29. Suggestions and request
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II. Teaching Methodology
A. Knowledge
1. What is the importance of teaching methodology for your teaching?
........................................................................................................................................

2. To what extent do you apply these teaching methods in your teaching?
Please put a tick ☑ in the following table:
Level 1: Never heard of this method
Level 2: Heard of it but have not received training to use it yet
Level 3: Have received training but have not used it yet
Level 4: Have used it but not confident
Level 5: Skilled in using it (need no further training)

<table>
<thead>
<tr>
<th>Teaching methodology</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imitation (miming)</td>
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<tr>
<td>Concept-Based Approach</td>
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<tr>
<td>Various questioning techniques</td>
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<tr>
<td>Inquiry-Based Learning</td>
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<tr>
<td>Cooperative learning</td>
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<tr>
<td>Socratic method</td>
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<tr>
<td>Scientific teaching</td>
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<tr>
<td>Lecture and presentation</td>
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3. To what extent do you know about test construction?
   □ a. Little knowledge and will need additional training
   □ b. Much knowledge and will not need additional training

4. To what extent do you know how to use a course syllabus?
   □ a. Little knowledge and will need additional training
   □ b. Much knowledge and will not need additional training

B. True or False Questions

5. Decide in the following sentences which one is 'true' and which one is ‘false’. Write your answers in the boxes below.
   1) Pre-existing knowledge may help as well as hinder students’ study.
   2) Bloom Taxonomy was created in 1956 and was led by Benjamin Samuel Bloom, aiming to improve teaching.
   3) Lesson study is a skill development process for teachers who specialize in either the same or different subjects, who work together to prepare lesson plans and teaching materials, and to explore new teaching methods in order that good teaching quality is ensured. This approach is implemented in four stages.
   4) It is found that cooperative learning can improve not only the learning of students but also their social development skills and communication.
   5) Lecturing is not a good and beneficial teaching method to students.
   6) Open-ended question is a kind of question that has more than one answer. There are two types of open-ended question which are called simple open-ended question and hard open-ended question. This type of question requires students to have advanced and critical thinking skill.
   7) Lesson study is conducted in five stages.
   8) Whether or not an attitude in the class is considered appropriate may vary from one culture to another.
   9) Inductive and deductive approaches are two approaches with opposite directions and are not complementary to each other even though both of them are related.
   10) Teachers play a role of imparting knowledge in Inquiry-Based Learning.
   11) Cooperative teaching method is a method that students with similar capacity work together as a group and have teacher as a counsellor.

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<tbody>
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<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
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</table>
C. Multiple Choice Questions

For each question below, please circle one answer that is the most appropriate to you.

6. .................. is a process of acquiring or improving knowledge, behavior, skill, value, or choice that one practices.
   □ a. Learning
   □ b. Teaching
   □ c. Thinking
   □ d. Asking

7. Which is the order of thinking, from low to high levels, in Bloom Taxonomy?
   □ a. Remember, Understand, Practise, Analyse, Evaluate, Create
   □ b. Understand, Practise, Analyse, Evaluate, Create, Remember
   □ c. Remember, Understand, Evaluate, Create, Analyse
   □ d. Create, Understand, Remember, Evaluate, Practise, Analyse

8. .................. is a student-centered teaching method. This method is based on Constructivist Theory in that teachers help students construct their own knowledge.
   □ a. Teacher-centred Method
   □ b. Lecture
   □ c. Behaviorism or Behavioural Method
   □ d. Inquiry-Based Learning

9. Among the reasons below, which one is NOT the one that leads to the use of Cooperative Method?
   □ a. Students must work actively
   □ b. Students do not need teacher input
   □ c. Students must help each other
   □ d. Motivation occurs when achieving success

10. Which of the following methods is NOT part of Lecture as a Teaching Method?
    □ a. Elaborating
    □ b. Explaining
    □ c. Describing
    □ d. Short test

11. Knowledge, skill, and..................are three main parts of learning.
    □ a. Research
    □ b. Attitude
    □ c. Practice
    □ d. Homework

12. Bloom Taxonomy is important for determination of expected learning outcome, teaching activity, learning, and ...........
    □ a. Learning assessment
    □ b. Students’ thinking
    □ c. Students’ understanding
    □ d. Observation of teachers

13. A student may display an inappropriate attitude because the .................. of the student and teacher are different.
    □ a. Expectations
    □ b. Powers
    □ c. Values
    □ d. Cultural standards

14. Which of the following is NOT a principle for Constructivist Learning?
    □ a. Facilitative learning
    □ b. Interactive learning
    □ c. Student-centred learning
    □ d. Low quality learning
15. Example: students choose a subject that they want to study such as: philosophy, chemistry, or physics, according to their own interests to do research. What type of learning is it in this example?
   □ a. Constructivist Learning
   □ b. Scientific Learning
   □ c. Lecture Learning
   □ d. Cooperative Learning

16. Which of the problems below is NOT the problem that teachers would pay attention to when using Lecture as a Teaching Method?
   □ a. Use of words
   □ b. Content of the lessons
   □ c. Behaviors
   □ d. Use of cutting-edge tools

17. Which of the following is NOT an element of Cooperative Learning?
   □ a. Individual responsibility
   □ b. Cooperative skill
   □ c. Face to face interaction
   □ d. Actions of the members

D. Requests and Suggestions
   ........................................................................................................................................................................
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III. ICT
   A. Specialized Knowledge
   1. What is computer? Please choose the correct answer.
      □ a. A tool for importing and storing data
      □ b. A kind of electronic machine/tool that enable users to import, store, process, and export data
      □ c. A machine for typing text, surfing Internet, and storing documents
      □ d. A machine for checking data

   2. What are the components of a computer? Please choose the correct answers (You may choose more than one answer).
      □ a. System unit, Monitor, Keyboard, Mouse
      □ b. Monitor, Keyboard, Mouse, Scanner
      □ c. Printer, Monitor, Keyboard, Power supply
      □ d. Scanner, Printer, Power supply, Television

   3. What is computer operating system? Please choose the correct answer.
      □ a. It is a processing system
      □ b. It is an operating system that starts first once you turn on the computer
      □ c. Other programs of a computer
      □ d. Other programs that run on a computer

   4. Which of the following programmes are part of Microsoft Office? Please choose the correct answers (You may choose more than one answer).
      □ a. Word
      □ b. Internet
      □ c. PowerPoint
      □ d. Photoshop

   5. What is Microsoft Office PowerPoint used for? Please choose the correct answer.
6. What is Microsoft Office Excel used for? Please choose the correct answer.
- a. Making a table
- b. Making a workbook
- c. Making an accounting record, Calculating, Recording statistics, Employee salary, and other records
- d. For doing work related to Accounting

7. What is Internet? Please choose the correct answer.
- a. A program on the web
- b. An electronic message
- c. A network that is connected around the world for communicating and providing information
- d. A network between two computers connected by wires or airwaves

8. What is Google Drive? Please choose the correct answer.
- a. A program installed on the computer
- b. A place for storing documents
- c. A service that supports human work
- d. A space created by Google to provide File Storage and Synchronization service.

9. Have you ever used ICT in teaching and learning? If yes, what programs have you used?
........................................................................................................................................................................................................................................................................

B. Training Needs
10. In the table below, please put a tick (✔) in the box (1 to 4) based on the level of needs for training. Due to short duration of the training, please focus on the prioritized content.

<table>
<thead>
<tr>
<th>Content</th>
<th>1</th>
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<td>Foundational computer skills</td>
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<td>Components of computer hardware</td>
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<td>Roles of monitor, system unit, keyboard, mouse</td>
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<tr>
<td>Components of system unit and functions of RAM, CPU, HDD, and Motherboard</td>
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<tr>
<td>Using Windows operating system</td>
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<tr>
<td>Using keyboard for typing Khmer</td>
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<tr>
<td>Computer skills for administration, including key functions in Microsoft Word</td>
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<tr>
<td>Using typing programs</td>
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<tr>
<td>Formatting Page Setup</td>
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<tr>
<td>Inserting header and footer</td>
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<tr>
<td>Putting bullet point, serial number, and inserting pictures</td>
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<tr>
<td>Work related to table</td>
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<tr>
<td>Creating an automatic table of content</td>
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<tr>
<td>Setting paragraph format</td>
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<tr>
<td>Inserting special characters</td>
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<tr>
<td>Setting Tab Stops</td>
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<table>
<thead>
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<th>Content</th>
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<tbody>
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<td>Text Columns</td>
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<td>Printing</td>
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<tr>
<td>Spreadsheet, with key functions in Microsoft Excel</td>
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<tr>
<td>Understanding Row, column, cell, and sheet</td>
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<td>Setting the format for cell</td>
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<tr>
<td>Types of data</td>
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<td>Formatting number</td>
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<tr>
<td>Using existing operation symbols and formulas</td>
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<tr>
<td>Making a class ranking table by using existing formulas</td>
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<tr>
<td>Learning about graphs and charts</td>
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<tr>
<td>Sorting and filtering data</td>
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<tr>
<td>PowerPoint slide design</td>
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<tr>
<td>Creating the first (PPT) slide</td>
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<tr>
<td>Inserting text, picture, existing shape, video, and audio</td>
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<tr>
<td>Inserting a hyperlink</td>
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<tr>
<td>Animation in PPT</td>
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<tr>
<td>Internet and media literacy (including YouTube and social media)</td>
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<td>Services on the Internet</td>
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<tr>
<td>Important programs for searching information (online)</td>
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<td>Using Email</td>
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<td>File storage on a cloud drive</td>
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<tr>
<td>Using Google Drive, file sharing, and online collaboration</td>
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<tr>
<td>Using educational applications and smartphone (including YouTube and Telegram group)</td>
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C. Requests and suggestions

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Annex B: Interview questions

Interview questions – TNA for INSET560

Guidelines

- Meeting the management and teacher educators
- Conduct an interview based on subjects of specialisation
- Interview duration: 10-20 minutes
- Requesting permission to audio-record the interview
- Engage the teacher educators in a “small talk” to make them comfortable
- Wrap-up and thank the teacher educators

Questions

1. What challenges do you face in teaching your teacher trainees?

2. In what ways will you need training to teach the content of the subject(s) you are teaching?

3. In what lessons/units/specific contents will you need training? Please mention only two lessons/units/specific contents for one subject you are teaching.

4. What makes you think the lessons/units/specific contents mentioned above are “important” for additional training?

5. In what teaching method/approach will you need training for your teaching now and in the future?

6. What makes you think the method/approach mentioned above is “important” for additional training?

7. ICT appears to be an area necessary for additional training for many teacher educators. How about you? What ICT skills will you need training for your teaching now and in the future?

8. What makes you think the ICT skills mentioned above are “important”?

9. What additional requests related to additional INSET would you like to make?
Appendix C: Past efforts to analyse Cambodian INSET and teacher education

- Decisions on credit system and credit transfer for higher education (Accreditation Committee of Cambodia, 2004)
- Effective components of INSET in Cambodia (Courtney, 2007)
- Initial teacher education and continuing training policies in a comparative perspective: Current practices in OECD countries and a literature review on potential effects (Musset, 2010)
- Challenges of Cambodian teachers in contributing to human and social development: Are they well-trained? (Phin, 2014)
- Improving teacher quality in Cambodia (Tandon & Fukao, 2015)
- Improving Teacher Quality: Maximising returns on investment in teacher education investment in Cambodia (Prigent et al., 2016)
- Survey on teachers and teaching profession in Cambodia (No & Heng, 2017)
- Implications for teacher training and support for inclusive education in Cambodia: An empirical case study in a developing country (Kuroda et al., 2017)
- Empirical directions to designing sustainable in-service training framework for primary school teachers in Cambodia (Phin, 2017)
- INSET teacher education (Koellner & Greenblatt, 2018)
- Developing teacher capacity in Cambodia: an expanded model (King, 2018)
- The project for establishing foundations for Teacher Education College (TEC) baseline survey report (JICA, 2019)