The Government of the Republic of the Union of Myanmar

Ministry of Education

Year 1 Semester 1

EDU1109

Curriculum and Pedagogy Studies: Information and Communication Technology

Teacher Educator Guide

PREFACE

The Myanmar Ministry of Education developed the four-year Education College curriculum, in line with the pre-service teacher education reform as specified in the 'National Education Strategic Plan' (NESP) 2016-2021.

The Myanmar Education College curriculum consists of several components: the curriculum framework, syllabi, Student Teacher Textbooks, and Teacher Educator Guides. This curriculum for the four-year Education College was designed and structured to align with the Basic Education Curriculum and to equip student teachers with the competencies needed to teach effectively in Myanmar's primary and middle school classrooms. It is based on a Teacher Competency Standards Framework (TCSF) which articulates the expectations for what a teacher should know and be able to do in the classroom.

The curriculum follows a spiral curriculum approach, which means that throughout the four years student teachers return to familiar concepts, each time deepening their knowledge and understanding. To achieve this, the four-year Education College programme is divided into two cycles. The first cycle (Years 1 and 2) is repeated at a deeper level in the second cycle (Years 3 and 4) to enable student teachers to return to ideas, experiment with them, and share with their peers a wider range of practices in the classroom, with the option to follow up on specific aspects of their teaching at a deeper level.

The curriculum structure provides an integrated approach, where teaching of subject knowledge and understanding educational theories are learnt through a supportive learning process of relevant preparation and practical application and experience. The focus is, therefore, not just on subject content, but also on the skills and attitudes needed to effectively apply their knowledge, skills, and attitudes in teaching and learning situations, with specific age groups. As the focus is on all components of a 'competency' – knowledge, skills, attitudes and their effective application – it is referred to as a competency-based curriculum.

Accordingly, a competency-based curriculum is learner-centred and adaptive to the changing needs of students, teachers and society. Where new concepts are learnt, they are then applied and reflected on:

1. Learn (plan what and how to teach);
2. Apply (practise teaching and learning behaviours); and
3. Reflect (evaluate teaching practice).

Beyond the Education College curriculum, it is intended that student teacher graduates will be able to take and apply this cycle of 'learn, apply and reflect' to their own teaching to effectively facilitate the learning and development of Myanmar's next generation.

The Myanmar Education College curriculum was developed by a curriculum core team, which is a Ministry of Education-appointed team of Myanmar Education College teacher educators supported by the Ministry of Education, resource persons from the Universities of Education, University for the Development of National Races of the Union and a team of national and international experts. Overall guidance of the work was provided by the Department of Higher Education, Ministry of Education.

The curriculum development was also supported by the Strengthening Pre-Service Teacher Education in Myanmar project, with technical assistance from the United Nations Educational, Scientific and Cultural Organization (UNESCO) and financial contributions from Australia, Finland, and UK Governments. Substantial input to the drafting process was also provided by Japan International Cooperation Agency and the primary education curriculum development team through the Project for Curriculum Reform at Primary Level of Basic Education (CREATE) team.

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HOW TO USE THIS GUIDE

Who will use this ICT Teacher Educator Guide?

This Teacher Educator Guide has been designed to help you facilitate student teachers' learning of Year 1 Information and Communication Technology (ICT). It is addressed to you, as the teacher educator, and should be used in tandem with the Student Teacher Textbook as you teach ICT. This Teacher Educator Guide contains step-by-step instructions to help you guide the student teachers in your class towards achieving the learning outcomes for each lesson and unit in the Student Teacher Textbook.

When and where does ICT take place?

The ICT subject has been allotted twenty-four periods of teaching for each year of the four-year Education College programme. Classes will be held on the Education College campus.

What is included in the Year 1 ICT Teacher Educator Guide?

The organisation and content of both the Student Teacher Textbook and this Teacher Educator Guide align with the syllabus of the four-year Education College curriculum on ICT.

The Student Teacher Textbook, and accompanying Teacher Educator Guide, for this programme contains the following topics for Year 1 ICT:

- Computer system fundamentals;
- Media and Information Literacy;
- Internet safety and security;
- Basic troubleshooting;
- Word processing;
- Presentation;
- Introduction to Internet;
- Asynchronous conferencing; and
- Introduction to ICT in education.

The Teacher Educator Guide follows the same structure as the Student Teacher Textbook. For each unit and lesson, there are **expected learning outcomes** that indicate what student teachers should know and be able to do by the end of the unit.

For each lesson, the Teacher Educator Guide includes:

Competencies gained: This list of competencies highlights the teacher competencies from the Teacher Competency Standards Framework that are focused on in that lesson.

Time: This is the total teaching minutes and number of 50-minute class periods allocated for the lesson as per the syllabus.

Learning strategies: This is an overview of all the learning strategies used during the suggested lesson learning activities.

Preparation needed: This can include: guidance on what you need to know about the topic and references to subject knowledge resources; technology preparation; links to other subjects; room organisation; time management; reference to expected answers.

Resources needed: This can include: printed media; flipchart paper; coloured paper; marker pens; URLs; video clips; low/no cost resources; practical equipment.

Learning activities: Each lesson includes a variety of suggested learning activities designed to help student teachers achieve the expected learning outcomes within the allotted time. Each lesson should begin by activating student teacher prior knowledge or fostering interest in the subject. Learning activities are varied and in line with competency-based approaches to teaching and learning.

Stop and think: This instruction boxes are included as an occasional 'safety net' at key points during the lesson, reminding you to quickly check that the lesson is flowing in the direction as planned, and to check if there are any points to emphasise to ensure that student teachers are learning effectively before moving forward.

Assessment: This comes at the end of each activity, an explanation or recap as to how each activity can be assessed formatively in order to assess success and inform future teaching. Instructions for facilitating various types of assessment are included in the 'Toolbox for assessment approaches'.

Possible student teachers' responses: The responses that you may get from the student teachers for each learning activity's assessment are recorded here.

Check student teachers' understanding: This is the lesson plenary. At the end of the lesson, revisit the learning objectives and TCSF competencies, summarise the learning outcomes and briefly assess the extent to which they have been achieved. Summarise the competencies and how they were addressed by the lesson content. Explicitly remind student teachers what they have studied and how they did so.

Extension and differentiation activities: Each lesson in this guide includes ideas on ways to adapt the learning activities to either provide additional stimulus for stronger student teachers (extension) or extra support for student teachers who are struggling or who have different learning needs (differentiation).

For each unit, the Teacher Educator Guide includes:

Review questions: Possible student teachers' responses: A box at the end of each unit gives you the answers to the review questions in the Student Teacher Textbook. This section exists to support your knowledge as a teacher educator, and enables you to support your student teachers by confirming the answers to the questions in their Student Teacher Textbook. It is NOT part of the lesson.

Unit summary: This is a summary of the unit, including a reminder of the key points that student teachers should take from the unit.

Unit reflection: This section is part of the student teachers' self-study material and is included in the Student Teacher Textbook. It is duplicated here to inform you of its content. Your only task here is to remind the student teachers to read it. **It does not form part of any lesson.** It provides the student teachers with reflection points or questions relating to the learning in the unit.

Further reading: Suggestions for additional resources are listed according to the relevant unit. You can use these resources to learn more about the topic yourself, or encourage student teachers to look them up in the library, on the internet, or in your Education College's e-library.

Please note that the learning activities in the Student Teacher Textbook are designed for individual self-study. At times, these individual learning activities may be incorporated into the learning activities outlined in this guide. You may also wish to assign the learning activities in the Student Teacher Textbook for homework or encourage student teachers to do them at their own pace.

While this Teacher Educator Guide contains detailed learning activities to help you plan and deliver lessons, the instructions in this guide are only suggestions. The student teachers in your classroom will have different characteristics and learning needs. As their teacher educator, you are encouraged to come up with your own learning activities which suit these needs, interests and ability levels. You should feel free to change and adapt the lessons as much, or as little, as needed.

What is a competency-based curriculum?

The Student Teacher Textbooks and Teacher Educator Guides for all Education College degree programmes follow a competency-based approach. This is outlined in the Education College Curriculum Framework for the four-year degree and is based on the Myanmar Teacher Competency Standards Framework (TCSF). A competency-based approach means that the teacher education curriculum does not just focus on subject content. Rather, it emphasises the development of knowledge, skills and attitudes and their application in real-life contexts. Competency-based curriculums are learner-centred and adaptive to the evolving needs of learners, teachers and society.

The following elements are integrated throughout this Teacher Educator Guide, in line with a competency-based approach to teacher education:

- **Contextualisation:** The learning content and learning activities are based on the Myanmar context to ensure that student teachers can relate what they learn to daily life.

- **Flipped classroom:** This pedagogical concept and method replaces the standard lecture-in-class format with opportunities for student teachers to review, discuss and investigate course content with the teacher educators in class. Student teachers are typically expected to read the learning materials before class at their own pace. Classroom time is then used to deepen understanding through discussion with peers and problem-solving activities facilitated by you, as teacher educator.

- **Collaborative learning:** This educational approach involves groups of student teachers working together to solve a problem or complete a task. Learning occurs through active engagement among peers, either face-to-face or online. The main characteristics of collaborative learning are: a common task or activity, small group learning, co-operative behaviour, interdependence, and individual responsibility and accountability.

- **Problem-solving:** This involves the act of defining a problem; determining the cause of the problem; identifying, prioritising and selecting alternatives for a solution; and implementing a solution. The learning content and activities included in this Teacher Educator Guide provide opportunities for student teachers to apply their problem-solving skills, as appropriate.

Course rationale and description

This course prepares student teachers in Education College s to learn ICT under the learning area Curriculum and Pedagogical Studies, Course 2.1 Teaching the Basic Education Curriculum and Course 2.2 Mastering teaching as described in the Education College Curriculum Framework.

While there is an ICT subject in middle schools, there is no single ICT subject in the primary schools. But primary schools in different regions and states in Myanmar may adopt a local curriculum which may include some elements of ICT; depending on the context in the relevant regions and states.

The purpose of this course is to provide student teachers with basic knowledge of ICT-related concepts and using ICT for teaching, learning and professional development and to prepare them to teach ICT in middle schools and in primary schools (the latter applies if ICT is included in the local curriculum). Student teachers will learn about the objectives of teaching ICT, the ICT curriculum in basic education and teacher education and other strands including basic ICT concepts, media and information literacy and digital citizenship, computer applications, internet and communication and ICT in education. The course contains learning activities that will help student teachers to remember and gain a deeper understanding of the content and apply ICT tools in their teaching and learning context.

Basic Education Curriculum objectives

The aims of the Basic Education Curriculum are as follows:

After the completion of basic education, students will be able to:

a) Attend the school until the completion of basic education;
b) Develop 'union spirit' and appreciate, maintain and disseminate languages and literatures, cultures, arts and traditional customs of all national groups;
c) Become good citizens with well-developed five strengths including critical thinking skills, communication skills and social skills;
d) Apply their civic and democratic practice in daily lives, and become good citizens who abide by laws;
e) Be competent in Myanmar language which is the official language of the Republic of the Union of Myanmar and develop their skills in respective ethnic language and English;
f) Develop foundational knowledge and skills for higher learning and technical and vocational education;
g) Develop sound body and sportsmanship through participation in Physical Education activities and school health activities, and apply health knowledge in daily lives;
h) Appreciate and maintain natural environment and materialise its sustainability;
i) Become global citizens with awareness and appreciation of human diversity and abilities to practise basic knowledge of peace in their daily lives; and
j) Take pride in being a citizen of the Union of Myanmar.

Note: According to the Basic Education Law, the aims of basic education will be mentioned.

Teacher competencies in focus

The content of this Teacher Educator Guide is based on the Myanmar Teacher Competency Standards Framework (TCSF) which articulates the expectations for what student teachers should know and be able to do in the classroom. The teacher competencies in focus for ICT include:

Table A. ICT Teacher Competencies in Focus

Competency standard	Minimum requirement	Indicator(s)
A2. Know available instructional technology	A2.2. Demonstrate understanding of appropriate use of Information and Communication Technology (ICT) in teaching and learning	A2.2.1. Describe the function and purpose of online and offline educational tools and resources to support the teaching-learning process A2.2.2. Evaluate and match available online and offline ICT tools and resources to curriculum content and pedagogical strategies including online and offline ICTs A2.2.3. Describe and demonstrate the understanding of basic concepts and principles of media and information literacy
A5. Know the subject content	A5.2. Demonstrate understanding of how to vary delivery of subject content to meet students' learning needs and the learning context.	A5.2.1. Describe ways to contextualise learning activities for the age, language, ability and culture of students to develop understanding of subject related principles, ideas and concepts.
B1. Teach curriculum content using various teaching strategies	B1.2. Demonstrate capacity to apply educational technologies and different strategies for teaching and learning	B1.2.1. Use teaching methods and learning strategies appropriate for the class – culture, size and type
B2. Assess, monitor, and report on students' learning	B2.1. Demonstrate capacity to monitor and assess student learning	B2.1.2. Use assessment information to plan lessons
B4. Work together with other teachers, parents and community	B4.1. Demonstrate strategies for working together with other teachers, parents and the local community to improve the learning environment for students	B4.1.1. Speak positively to others about school culture and the primary curriculum to promote understanding among parents B4.1.2. Describe strategies to promote parents' involvement in their child's learning at school at home and in the community
C1. Service to Profession	C1.4. Demonstrate responsibility and accountability for the use of education resources	C1.4.1. Use school supplies and resources appropriately
D2. Engage with colleagues in improving teaching practice	D2.1. Improve own teaching practice through learning from other teachers and professional development opportunities	D2.1.3. Establish goals for own professional development as a teacher
D3. Participate in professional learning to improve teaching practice	D3.1. Demonstrate understanding of the importance of inquiry and research-based learning to improve teaching practice	D3.1.2. Search and analyse online or offline information on current trends and research-based practices in primary education and for specific subjects taught to improve one's own content knowledge and teaching practice

Source: Myanmar Teacher Competency Standards Framework (TCSF), Beginning Teachers, Draft Version 3.2. (May 2019) (pp 30 – 36)

Teaching young adult learners

The student teachers in your classroom are young adult learners. As such, evidence suggests that they will learn best when:

- The course content is related to their prior knowledge and experiences;
- There are opportunities for them to be active in their learning, both in and outside the classroom; and
- They are asked to develop their critical thinking and social skills and to take ownership of their own learning.

The different types of content delivery and learning strategies proposed in this Teacher Educator Guide are based on the following 'good practice' principles of teaching adult learners:

1. **Keep it relevant.** Adults tend to be goal-oriented and practical. They want to understand how what they are learning will be important in their daily lives. This means that it is important to have clearly defined goals and objectives for what student teachers will accomplish in a lesson, and why Student teachers need to see the relevance of what they are learning for their future jobs as teachers. You can tell them explicitly what they are learning or how individual learning activities will be useful to them as teachers.

2. **Recognise your student teachers' backgrounds.** Your student teachers are coming to you with at least 18 years of life experience. The content of your course should reflect the level of education that they have completed and the realities of their daily lives. Adult learners need to be shown respect by valuing the experience and knowledge that they bring to the class. In your lessons, you can look for places where student teachers can draw on their real-life experiences and prior knowledge to help them understand and connect to a topic.

3. **Encourage exploration.** As adult learners, your student teachers are capable of learning on their own and being self-directed. Activities that require problem-solving and collaboration can help your student teachers to deeply and meaningfully connect with the lesson content. To do this, look for ways to actively involve your student teachers through discussion groups, real-life practice and opportunities to teach others. It may help to think of yourself as a facilitator of learning rather than a teacher. You can encourage the student teachers in your classes to take ownership of their learning by finding out what is interesting to them and encouraging them to pursue these things.

Gender equality and inclusivity in the classroom

Actively promoting gender equality in the classroom is an essential element of your teaching. Facilitating a safe and positive environment and atmosphere where all student teachers feel that their contributions are equally valued, and have equal access to learning, requires you to be mindful of the teaching and learning strategies and resources you use.

As a teacher educator, it is your responsibility not only to ensure your student teachers have equal access to learning but also to ensure that they understand and value the importance of gender equality and take that knowledge with them into their own teaching practice. The skills, knowledge, values and attitudes developed in the classroom with regards to gender, either implicitly or explicitly, can have a long-lasting impact on the future behaviour of your student teachers.

Be aware of your own gender biases. Reflect on your actions and the teaching strategies you use. Consider these ways in which you can ensure gender inclusivity in your classroom:

- Ensure that there is equal frequency in the representation of male and female names and characters. When identifying characters whose gender is unknown, use alternating pronouns (he, she).
- When using quotes, ensure that both female and male voices are heard.
- Ensure that females and males are represented equally in illustrations and that any existing gender stereotypes are not reinforced.

- Use equitable and gender-inclusive language in the classroom and ensure that your student teachers do likewise.
- Help and encourage your student teachers to be gender-aware, highlight any perceived gender-biased attitudes and encourage your student teachers to reflect on their own actions.
- Ensure that you interact equally with male and female student teachers, addressing and engaging them both to the same degree in your teaching, across different subjects, for example, when asking questions, asking for volunteers, selecting activity leaders, giving complements, giving eye contacts, or even remembering the names of student teachers.
- Encourage and support the participation of quieter student teachers regardless of gender.
- Use teaching and learning strategies and assessment approaches that support equal participation from both genders, for example, group work, role plays and group discussions. Manage the activities in a flexible manner addressing different needs and learning styles of all student teachers, to ensure that both female and male student teachers have the opportunity to participate actively and that individuals do not dominate activities.
- Ensure to set an equal expectation for both female and male student teachers on their performance across different subjects.
- Arrange the classroom setting in a gender-sensitive and equal manner, in terms of classroom decorations, seating arrangement or group formation/division.

Gender stereotypes are often inadvertently reinforced in the classroom through the use of language, pedagogical approaches and resources that support the preconceived culturally expected norms, roles, and responsibilities of women and men. By promoting a gender-inclusive environment in the classroom, you can support both male and female student teachers in building a healthy understanding of gender equality and further mainstreaming of this gender-sensitive and inclusive practice into basic education classrooms.

Toolbox for teaching and learning strategies

This Teacher Educator Guide includes suggested learning activities for each lesson in the Student Teacher Textbook. These learning activities are intended to help support you as you plan your lessons but they do not dictate what you must do to help student teachers develop the desired knowledge, skills and attitudes for each lesson. On the contrary, you are encouraged to come up with the lesson activities that will best help the student teachers in your classroom to learn, given their unique backgrounds and needs.

Many of the learning activities listed below are used in this Teacher Educator Guide. You can also use this list to help you plan, or further adapt, your lessons. This is not an exhaustive list of teaching and learning strategies. You may wish to brainstorm additional teaching strategies by visiting http://www.theteachertoolkit.com/index.php/tool/all-tools or other similar websites.

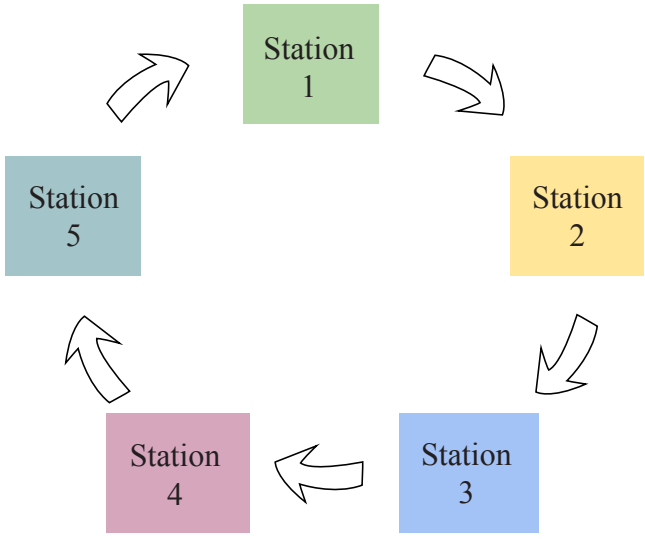
Assignments: The assignments that you give to student teachers might include formal written essays, portfolios and reflection journals. They also might be smaller, developmental tasks – for example, a short homework assignment answering questions about a reading. Assignments can help student teachers to review previously taught materials. They can also help student teachers prepare for future learning – for example, you might assign student teachers to read the Student Teacher Textbook content in advance of the next lesson.

Case studies: Working through case studies can help student teachers to develop their problem-solving and critical thinking skills as they must apply what they are learning to a scenario or story (the 'case'). To complete a case study, student teachers first read the scenario and then discuss and answer one or more open-ended questions about the scenario. Case studies often require student teachers to propose solutions to the problem presented in the scenario.

Directed activities: These are activities set by you, as the teacher educator, but carried out by the student teacher independently. For example, a directed activity might be for a student teacher to interview a basic education teacher during their Practicum school placement, or to independently research a specific teaching strategy. Directed activities are typically followed up in tutorials, seminars or workshops, which provide an opportunity for student teachers to share about what they have learned and to learn from their peers.

Gallery walk: In a gallery walk, student teachers work in groups to answer questions or complete a task on poster paper at various stations. They then rotate stations and add comments, questions or further content to the poster at that station.

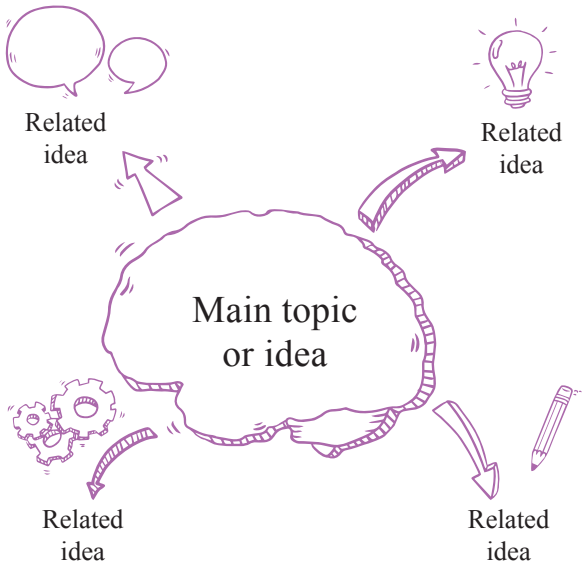
You can also use a version of the gallery walk to display student teachers' work. In this type of gallery walk, posters created during individual or group work are displayed around the room. Student teachers then circulate at their own pace to either simply view the posters or to add their questions or comments to the poster.



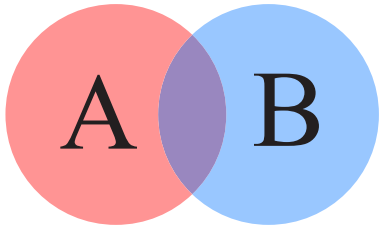
Graphic organisers: Graphic organisers are a simple and effective tool to help student teachers brainstorm and organise their thoughts and ideas in a way that makes it easier for them to understand. Graphic organisers can be used in any lesson for brainstorming, planning, problem-solving or decision-making.

Some of the most popular graphic organisers that you will see in your Teacher Educator Guides include:

- **Concept map (also called a mind map):** Concept maps, or mind maps, can be used to visually show the relationships between concepts or ideas. They are useful for brainstorming and also organising information. Concept maps can be organised in different ways and with different levels of complexity but most start with broad topics first, connected to sub-topics (or more specific concepts) to form a web of connecting ideas. The diagram below shows a very simple concept map.



- **Venn diagram:** Venn diagrams can be used to compare and contrast at least two different things or ideas (A and B). In the Venn diagram below, the overlapped area represents the characteristics belonging to both A and B, and the two areas without overlap are for listing the characteristics that belong only to A and those that belong only to B.



- **KWL chart:** KWL charts can help student teachers organise information before, during, and after a unit or a lesson. They can be used to engage students in a new topic, activate prior knowledge, share unit objectives, and monitor student teachers' learning. KWL charts can be completed as a small group, whole class, or by an individual. Before the lesson or unit, student teachers should fill in the first two columns about what they already know and what they want to know. After the lesson or unit, they can fill in the column about what they have learned.

K What I **K**now	W What I **W**ant to know	L What I **L**earned

- **T-chart:** T-charts can help student teachers examine two facets of a topic; for example, the advantages and disadvantages, or facts versus opinions.

Heading 1	Heading 2

Group work: Group work refers to any time you ask student teachers to cooperatively work together in groups on a task (for example, see the Jigsaw activity below). Group work can help motivate student teachers and encourage active learning. It requires student teachers to practise key critical thinking, communication and decision-making skills. Student teachers can work in groups to answer questions, create a presentation, write a lesson plan, analyse a case study, conduct a role-play and many more learning activities. You may wish to assign roles to group members – for example, recorder, presenter and team leader – to make sure that everyone is involved in the task.

Jigsaw: In a jigsaw activity, small groups of student teachers become experts on one component of a topic and then 'teach' that component to their peers. This gives student teachers the opportunity to work with others and to see different points of view. The jigsaw technique is especially effective because each student teacher is responsible for another's learning, and student teachers come to realise that each group member has something important to contribute to the group. In a jigsaw, student teachers must practise using many important skills, including communication, problem-solving and critical thinking.

Lecture: Lectures are largely one-way communication between you, as teacher educator, and a group of student teachers. They can be useful for delivering straightforward new content. Even when giving a lecture, you can involve student teachers more actively by pausing to ask and respond to questions or by asking a student teacher to reflect or comment on the topic.

Micro-teaching: During a micro-teaching experience, a student teacher, or a small group of student teachers, teaches their peers all or part of a lesson. They then receive feedback on the mini-lesson and reflect on the experience in order to develop practical skills and apply their learning. Micro-teaching is an important opportunity to prepare for the Practicum Lesson Study and school placements. It can also provide a chance to focus on specific core teacher practices; for example, asking open-ended questions or giving students positive feedback.

Modelling: Modelling is an instructional strategy in which the teacher demonstrates a new concept or approach and students learn by observing.[3] As a teacher educator, you may choose to demonstrate a learning activity or teaching strategy, rather than simply telling the student teachers about it – this is modelling.

Modelling may also be followed by a discussion about how you presented the activity or strategy and what impact that had on the student teachers as learners. This can highlight the role of modelling in teaching and encourage student teachers to reflect on how they might use modelling in their own teaching in the future.

Observation: Student teachers can observe a peer or expert teacher teaching, then participate in structured, reflective discussion to make sense of what was observed. You may also observe a student teacher teaching all or part of a lesson and then follow this with a discussion to explore and develop the student teachers' thinking and practice. This strategy is an excellent opportunity to make links between theory and practice, and to support student teachers in making accurate assessments of their progress.

Practicals: Practicals can include demonstrations by you as teacher educator (for example, showing how to conduct a science experiment) and those led by, or involving, student teachers (for example, having student teachers complete a mathematical investigation and associated worksheet). This strategy can help student teachers to understand how different activities can help students learn. Practicals can also encourage student teachers to connect theory to their developing practice as teachers.

Reading groups: A reading group is a small group session focused on the analysis and interpretation of a text, most commonly an academic paper. The paper is usually issued in advance and student teachers are expected to be familiar with its contents before attending the reading group. One student teacher may be asked to present the paper to the group, followed by a discussion to which all student teachers contribute. This strategy helps to familiarise students with academic writing as well as with the ideas within papers. Discussions may focus on the content, presentation or the methodology of the papers presented.

[3] Eggen and Kauchak, *Strategies and Models for Teachers: Teaching Content and Thinking Skills*, (2001)

Role-playing: Role-play is a technique that allows student teachers to explore realistic situations as they interact with people and scenarios in a simulated way to try different strategies. This can allow student teachers to work through common challenges or specific aspects of teaching, in a safe and supportive environment.

Self-study: In a self-study, student teachers must take responsibility for their own learning, with you as a guide. This strategy can supplement face-to-face and Education College -based learning and is important to help frame, supplement, and consolidate new learning. Self-study can take a number of forms such as reading around topic areas and action planning. Self-study includes time to think about specific areas of education.

Seminars: Seminars are small group sessions where questions can be explored and views debated and analysed. Student teachers usually complete preparatory work or reading before the seminar. While you would lead the as a seminar as teacher educator, all student teachers are expected to contribute to discussions. Seminars can be good for developing student teachers' deeper thinking about content with which they are already familiar.

Think-pair-share: Think-pair-share is a simple and collaborative strategy where learners work together to solve a problem or answer a question. To use think-pair-share in your class, you can follow these three steps:

1. Think: Begin by asking a specific question about the text. Ask student teachers to 'think' about what they know or have learned about the topic.
2. Pair: Each student teacher should pair up with a classmate or with a small group.
3. Share: With their partner or small group, student teachers should share and discuss their thinking about the question. You can then expand this time of sharing into a whole class discussion about the topic.

Tutorials: Tutorials are one-on-one or small group sessions between you and a student teacher. Tutorials allow for personalised, detailed discussion and exploration of ideas. They may have a pastoral or academic focus and may be used to support student teachers who are struggling with specific academic content or who have missed out on an in-class learning experience.

Virtual Learning Environment (VLE): This widely-used tool is a teaching strategy to supplement and support learning and self-study. In VLE, activities, study skills, and links to websites are shared with student teachers and different tools are used to explore understanding, such as wikis, forums and blogs. An online learning portal is available for student teachers to access teaching and learning resources.

Workshops: Workshops are group sessions in which student teachers engage with new content and skills in order to develop their understanding and practice. This strategy often incorporates a great deal of collaboration and discussion as well as more lecture 'teaching' by you, as a teacher educator. Workshops allow for detailed discussions about a topic and for student teachers to practise applying what they are learning.

Toolbox for assessment approaches

There are many different ways you can monitor student teachers' learning before, during and after a lesson. This Teacher Educator Guide includes many of these assessment approaches. Remember that providing feedback, either written or verbally, is an important part of formative assessment. Your feedback is what will help student teachers to learn and improve on future tasks. You can think of formative assessment as a chance for student teachers to practise before the summative assessment, where they will be asked to show what they have learned through a larger test, exam or project.

Some of the most popular assessment methods you will see in this Teacher Educator Guide include:

Demonstration: In a demonstration, you may ask a student teacher to show you – or demonstrate – a skill that they have been learning. For example, you may ask a student teacher to demonstrate a dance technique, a step in a science experiment or a movement in Physical Education. By observing the demonstration, you can monitor student teachers' progress and provide suggestions for improvement. As with all formative assessment approaches, the feedback you provide on the student teacher's demonstration is what will help him or her to improve.

Homework assignments: Checking student teachers' homework assignments, which may include tasks such as reading and answering questions or looking up additional information, is a good way to monitor if they are on the right track. Depending on the homework assignment, you may wish to discuss answers as a class, check for completion or collect and provide written feedback.

Journal log/reflection papers: These are a detailed log of student teachers' thoughts and feelings about their professional development and growth. The journal log and reflection papers are intended to help student teachers think deeply about their own learning by reflecting on their progress towards becoming a teacher. The process of consciously reflecting on their learning will help student teachers make connections between the content they learnt in a subject and other subjects, solve problems that come up, and learn from their experiences. Teacher educators may provide advice to student teachers on the areas to focus on when preparing the journal logs and reflection papers.

Observation: Informal observation – by circulating the room, listening to groups discuss, and making eye contact – is a good way to get a general sense of whether student teachers are understanding the material. More formal observation would involve using a checklist or criteria that you are looking for in a student teacher's answers or presentation. You can then provide feedback on the basis of what you have observed.

Peer assessment: If you ask student teachers to evaluate or judge the work of their peers, this is called peer assessment. You will need to have the appropriate peer assessment tools – either a rubric or a checklist – so that student teachers can provide feedback to their classmates based on established criteria. When student teachers observe each other during micro-teaching and complete an observation sheet, this is a form of peer assessment.

Presentation: A presentation may be similar to a demonstration but often involves more preparation on the part of the student teachers. Asking groups or individuals to present their work – perhaps at the end of the lesson – is an excellent opportunity to check for understanding, correct any misconceptions, and provide feedback.

Projects: Projects are completed by each student teacher, either individually or collaboratively in a group. This is to demonstrate their understanding in the subject content knowledge and their competencies gained through designing, planning and developing projects. Student teachers work on a project over a certain period of time to investigate a topic or a real-life issue. Teacher educators are requested to provide instructions on completing the projects, including the rubrics of the assessment.

Question and answer: Asking student teachers both closed-ended and open-ended questions is a good way to monitor if student teachers are understanding the material. During question and answer sessions, be sure to call on a variety of student teachers for their responses. While you may want to use some closed-ended questions (with one correct answer) to check understanding, you will be able to foster better and deeper discussions through open-ended questions, which have more than one right answer and generally require more thinking on the part of the student teachers.

Quiz: You may wish to use a short quiz to test the knowledge of your student teachers. Quizzes can be graded in class as a whole class activity or you may wish to collect and check the quizzes outside of class. Quizzes can also be seen as a way to 'practise' for a summative test or exam.

Self-assessment: In a self-assessment, student teachers evaluate their own strengths and weaknesses. This process can help them to understand their own gaps in skills or knowledge and to create a plan to address these gaps. Self-assessments are good ways to encourage student teachers take ownership of their own learning and development. As in peer assessment, student teachers will need some coaching to understand the assessment criteria and how to apply them to their own work or skill sets.

Written examinations: Written examinations are conducted usually at the end of each semester to test the basic subject content specific knowledge and reflection of related pedagogy discussed during the course.

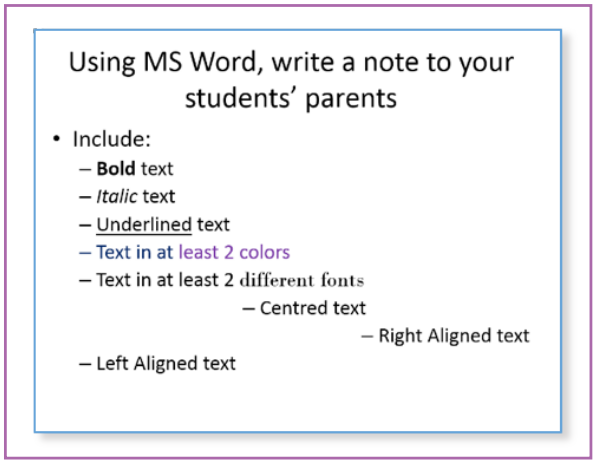
General tips for facilitating a lesson

Some of the teaching and learning strategies suggested here and throughout this Teacher Educator Guide may be new to you. If so, it is recommended that you spend some time carefully planning out how you will use them in your lessons so that student teachers can achieve the desired learning outcomes.

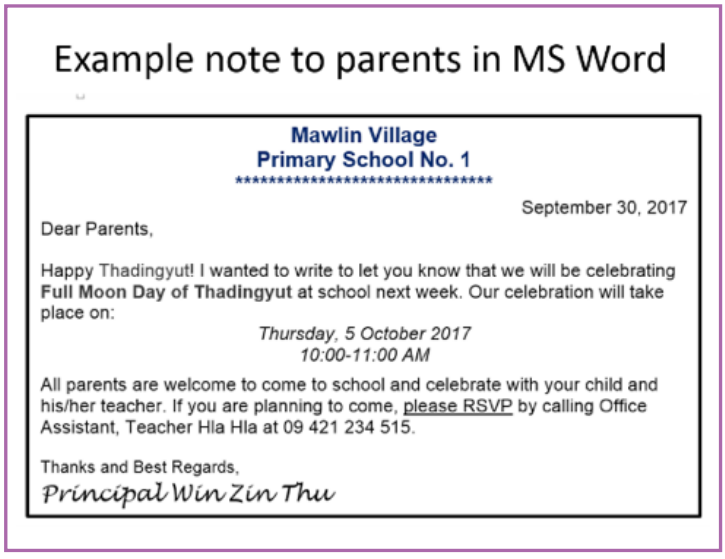
The following are some additional general tips that you can implement to help your student teachers learn.

Before teaching a class, you may wish to do the following:

- Choose a small amount of content to deliver. Keep in mind that in a given 50-minute class period, you generally do not want more than one-third of the class period focused on content delivery. This will enable there to be enough time for student teachers to practice their skills and deepen their understanding of the topic.
- Note down the key points you think are most important for your student teachers to learn from the lesson content. You can refer to these as you deliver the content to the class to make sure you discuss these key points.
- Make sure you are clear on how you will carry out the content delivery and the learning activities. Refer to the suggestions in this guide and discuss with other teacher educators if needed. Always feel free to change the suggested steps so that the lesson activities work well for your specific classroom situation.
- For each learning activity, prepare clear written instructions for your student teachers describing, step-by-step, how to do the activity. The instructions could be displayed on a presentation slide, printed on a handout or written on the board. Make sure the instructions are large enough to be read by all student teachers. For example:



- You may want to practise explaining the instructions verbally, going slowly and step-by-step. This will help you be ready to explain the instructions to your student teachers before the activity, so they will understand what to do. You can practise the explanation with a friend or colleague ahead of time and then ask them what needs to be explained more clearly.
- If time allows, prepare to model what student teachers are expected to do during the activity. This might involve one or two teacher educators doing a short role-play, pretending they are the student teachers doing the activity. This will enable student teachers to see exactly what they should be doing.
- If student teachers are expected to produce something at the end of an activity, you may wish to prepare an example, or 'end product,' to show student teachers what they should be aiming to create during the activity. For example:



During class, just before the content delivery or any learning activity, if applicable, it may be helpful to:

- Distribute any materials or learning supplies that student teachers will need to carry out for the tasks you will ask them to do. Make good use of the online learning portal to request student teachers to access necessary teaching and learning materials online as appropriate.
- Provide clear verbal and written instructions to student teachers about any task you would like them to do as you deliver the content.
- Model what the student teachers should do using a short role-play.
- Show the example end product to student teachers that you prepared before class.
- Ask one or more student teachers to repeat back to the class how to do the activity, using their own words, to make sure they understand the instructions.
- Tell student teachers how long they have to complete the activity.

Throughout the class, it may be helpful to:

- Look for any signs that suggest whether the student teachers understand the content you are delivering or the task they are working on. If you suspect certain points may be difficult for student teachers to understand, consider explaining the information in a different way or breaking down the information into smaller, more manageable pieces.
- Walk around to all parts of the classroom to:
  - Ensure all student teachers are on task.
  - Answer questions student teachers have.
  - Ensure student teachers have all the materials needed to do the activity.
  - Assess student teachers' understanding by observing whether they are carrying out the activity as instructed.
- Encourage student teachers to ask questions.
- If you detect a misunderstanding, either talk directly to the student teacher to clarify or, if the whole class may benefit from the clarification, call the attention of all student teachers and explain to everyone.
- Check for **Stop and think** instruction boxes for points to emphasise and to ensure that student teachers are learning effectively before moving forward.

At the end of class, it may be helpful to:

- Consider following the suggested ways to 'Check student teachers' understanding' at the end of each lesson. This is an opportunity to summarise the lesson and to briefly assess the student teachers' achievement of the learning outcomes and understanding of how the lesson addressed the Teacher Competency Standards Framework (TCSF).
- Assess student teachers' understanding by asking them to share a point from the content you delivered that they thought was particularly interesting or that surprised them.
- Encourage student teachers to ask questions and provide comments on what you have just taught them.
- Ask one or two student teachers to share what they produced during the activity. If the activity was not designed to produce an end product, ask one or two student teachers to describe what they learned from the activity.
- After student teachers share their work or their thoughts, choose one or two aspects of what they shared to emphasise to the class. The point you choose to emphasise should be key points that you would like all student teachers to learn and remember from the activity.

As a teacher educator, you have an important role to play in creating a classroom where all student teachers feel free to ask questions, share their reflections and practise teaching in a safe, supportive environment. It is your feedback and support that will help them grow into teachers who can foster the holistic development and learning of Myanmar's children and youth.

Content Map

Table B. Year 1, Semester 1, ICT Content Map

Units	Sub-units	Lessons	Learning outcomes	TCSF	Periods
1. Introduction	1.1. Objective of Teaching ICT	1.1.1. Understanding ICT in Myanmar primary schools and classrooms	• Explain what ICT (beyond computers) is and why it is important for a teacher (including but not limited to teaching) in primary school; • Understand the importance and describe the roles of ICT in Myanmar primary schools and classrooms	A5	2
	1.2. Teacher Education Curriculum Relating to ICT	1.2.1. Understanding ICT Teacher Education Curriculum and its linkage with other subjects/ learning areas	• Describe the five main strands (basic ICT concepts, media and information literacy and digital citizenship, computer applications, Internet and communication, ICT in education) in the Teacher Education Curriculum • Explain linkages between ICT and other subjects/learning areas such as ICT across curriculum, Reflective Practice and Essential Skills, and Practicum for primary school teachers.	A5	
2. Basic ICT Concepts	2.1. Computer System Fundamentals	2.1.1. Structures and functions of hardware within a computer system	• Describe the structures and functions of hardware within a computer system (input, central processing unit, output and storage); • Describe the features, advantages, disadvantages and examples of input and output devices and select the appropriate use of devices in various scenarios;	A5., B1.	3
		2.1.2. Developments in computer systems	• Outline the developments in computer systems; • Compare the characteristics of various types of computers;	A2., A2.2.1., A2.3.1.	

Units	Sub-units	Lessons	Learning outcomes	TCSF	Periods
		2.1.3. Understanding System Software, Types of Computers and File/Folder Management	• Understand functions of system software and application software and describe the basic functions of an Operating System such as Windows; • Describe the functional characteristics of storage devices in terms of random or sequential access, volatile or non-volatile, data transfer rate and storage capacity • Understand file and folder management.	A2., A2.2.1., A2.3.1.	
3. Computer Application (Word Processing)	3.1. Basic Function and Troubleshooting	3.1.1. Performing Windows basic functions	• Perform basic functions on an Operating System such as Windows;	A5., B1.	5
		3.1.2. Installing fonts onto an Operating System	• Install fonts onto the system and demonstrate typing	A5., B1.	
	3.2. Word Processing	3.2.1. Basic functions of word processing 1	• Describe the basic features of a word processing application • Create, open, view, save and close a new document • Type Myanmar font (Zawgyi and Unicode) in word document.	A2., A2.3.2.	
		3.2.2. Basic functions of word processing 2	• Do text, paragraph and table formatting • Create document designs and layout • Print a document	A2., A2.3.2.	
		3.2.3. Basic functions of word processing 3	• Describe and practise the basic functions of word processing such as Microsoft Word (typing in Myanmar font (Zawgyi and Unicode), page setup, saving, formatting, printing, header and footer, bullets and numbering; creating tables, inserting pictures and charts).	A2., A2.3.2.	

Units	Sub-units	Lessons	Learning outcomes	TCSF	Periods
4. Media and Information Literacy and Digital Citizenship	4.1. Media and Information Literacy (MIL)	4.1.1. Understanding the principles of Media and Information Literacy	• Explain what Media and Information Literacy is and why it is important for a teacher (including but not limited to teaching) in primary school	A5.	2
		4.1.2. The roles and functions of Media and Information providers	• Understand the difference between types of information providers and types of media • Understand the functions of the different media and information providers and the role they play in a democratic society.	A5.	
Total number of Periods					**12**

Unit 1

Introduction

In this unit, you will have an overview of the Information and Communication Technology (ICT) subject in Education College programme.

Expected learning outcomes

By the end of this unit, you will be able to:

- Explain what ICT (beyond computers) is and why it is important for a teacher (including but not limited to teaching) in primary school;
- Understand the importance and describe the roles of ICT in Myanmar primary schools and classrooms;
- Describe the five main strands (basic ICT concepts, media and information literacy and digital citizenship, computer applications, Internet and communication, ICT in education) in the Teacher Education Curriculum; and
- Explain linkages between ICT and other subjects/learning areas such as ICT across curriculum, Reflective Practice and Essential Skills, and Practicum for primary school teachers.

1.1. Objectives of Teaching ICT

This sub-unit provides explanations what ICT is and its importance for teachers and aims at explaining the importance and roles of ICT in primary schools.

1.1.1. Understanding ICT in Myanmar primary schools and classrooms

Expected learning outcomes

By the end of the lesson, student teachers will be able to:

- Explain what ICT (beyond computers) is and why it is important for a teacher (including but not limited to teaching) in primary school; and
- Understand the importance and describe the roles of ICT in Myanmar primary schools and classrooms.

Competencies gained: A5 Know the subject content.

Time: 1 period of 50 minutes

Learning strategies: Flipped classroom, teacher-led discussions and individual assessment work

Preparation needed: You may refer to the following reference to prepare for this lesson.

Title	Link	QR Code	Source
E-learning Series on ICT in Education	http://archive1.unescobkk.org/fileadmin/user_upload/ict/Teacher_Training_Workshops/UNESCObkkE-LearningSeriseOnICTInEducation.zip		**UNESCO**

You may instruct student teachers to complete Learning activity 1 on the Student Teacher Textbook prior to the lesson. Ask them to write down at least one question about the topic so that this question can be discussed in the lesson.

Resources needed: Internet, devices to access Internet, presentation file for each lesson.

Stop and think:

- **Flipped classroom ideas:** Student teachers are instructed to read the content text prior to the lesson. Ask them to write down at least one question about the topic so that this question can be discussed in the lesson.
- **Link to other subjects:** This lesson provides an overview of the potential uses of ICT in Myanmar primary school classrooms. One important message from the lesson is that ICT has potential benefits to improve teaching and learning of various subjects, given that it is used properly by trained teachers. Also, the skills on how to do basic online search are important across the subjects as student teachers will be requested to do basic online search for different learning activities.

Learning activity 1: Reading (15 minutes)

1. For each lesson, a presentation file is prepared for teacher educators. You can decide whether to use the presentation file or to adapt the file to your context.

2. Ask student teachers if they have any questions which need to be clarified based on the reading text and go through the reading text to deliver a short summarised lecture as a recap of their reading.

Stop and think:

- Remind student teachers to get familiar with this practice: when they read the text, mark at least one question so that this can be further discussed in the lesson.
- For this first lesson, you may spend around 15 minutes to do some lecturing about the reading text. In future lessons, the amount of time spent on lecturing should be reduced gradually as the flipped classroom approach is encouraged.

Assessment

- Brief verbal feedback during or in response to individual answer.

Learning activity 2: Online search (35 minutes)

The skills on how to do basic online search are important across the subjects as student teachers will be requested to do basic online search for different learning activities. Student teachers may find it less familiar to use Google to do basic online search. You may spend some time to walk around the classroom to provide necessary assistance in accessing Google and doing basic online search.

You can guide the student teachers the following steps:

1. Explain the tasks and ask student teachers to read and try the steps to do basic online search. Emphasise that the Internet should only be used for teaching and learning purpose. (5 minutes)
2. Try the search keywords and write down their observations individually. (12 minutes)

3. Ask some volunteer student teachers to share their answers and guides discussions on why the search results are different. Then, introduce the use of double inverted commas (“ ”) to perform a phrase search where Google will provide the search results which exactly match the phrase and the use of – to exclude the keyword you do not want to search. For instance, putting – in front of Myanmar will lead to search results excluding the keyword Myanmar. In addition, if one searches ICT in Education, the search engine will search results with ICT, in, and Education keywords. As such, there are more results shown if one searches ICT in Education compared to ICT. (10 minutes)
4. Explain the same search techniques can also be applied to other search engines. Encourage student teachers to practice more on basic online search on Google after class. (3 minutes)
5. Explain the task and ask student teachers to read and try the steps to install QR scanner on their smart phones and do some QR code scanning. (5 minutes)

Assessment

- Presentation
- Question and answer
- Observation

Possible student teachers’ responses

The number of search results are based on the number shown on Google when this lesson was drafted. This number may change as there will be more and more websites created every day.

Search keyword	*Number of search results*	*Do you think the results are good and useful?*
ICT	191,000,000	This is dependent on the objectives of the online search. The tips are to try to use phrase search “ ” to increase the chance of getting relevant results and use – to exclude keywords which you do not want to be shown in the search results.
ICT in Education	282,000,000	
ICT in Education in Myanmar	240,000,000	
“ICT in Education in Myanmar”	5	
ICT in Education -Myanmar	240,000,000	

Learning activity 3: Short quiz

1. Ask student teachers to complete this activity after class. At the beginning of next lesson, you can ask some student teachers to share their answers.
2. This reflection activity allows student teachers to check if they catch the key messages from the lesson.

Assessment

- Quiz
- Written work and feedback

Possible student teachers' responses

1. False. ICT does not mean less demand for teachers. Although ICT is a very useful teaching tool, it can only supplement existing resources. With the use of ICT in the classroom, while the role of teachers will change, teachers will be needed as much as ever.

2. False. ICT does nothing on its own. It depends completely on how teachers use ICT in the classroom. Teachers need to be trained to use the equipment and to use any associated materials. Teachers also need to adapt their pedagogical approaches to use ICT effectively. With adequate administrative and technical support, it is possible that ICT can improve educational outcomes.

3. False. As in the real world, there is a lot on the Internet that you would want to guard your students against, such as scams and obscene materials. However, with suitable supervision and guidance to students, the Internet is a powerful tool for education.

4. True. ICT refers to a range of electronic tools for storing, processing, creating, displaying and exchanging information and communicating. Some examples include radios, televisions, digital cameras and smart phones. Any or all of these can help improve educational outcomes if they are used properly. It is also important to note that ICT can be used both online and offline. It is not a requirement to have the internet in order to use ICT.

5. True. Development in solar and wireless technologies are making ICT tools accessible even in remote areas with no stable power supply and phone lines. These solar and wireless technologies may even be more affordable than conventional electricity and telecommunications technologies.

6. All except F. ICT refers to a range of electronic tools for storing, processing, creating, displaying and exchanging information and communicating. However, the option F (Whiteboard) is not an electronic tool. Only can interactive whiteboard be considered as part of ICT.

7. B (Internet), D (CDs or DVDs) and E (Computer networks). These technologies allow access from different locations at times convenient to the students. They also allow access to the course throughout the year, even allowing students to review the materials after they have taken the course. A (Radio) and C (Television) are not the answers because they do not support access at times convenient to the students because they have fixed schedule for broadcasting information.

8. A (They are as effective in achieving education goals), D (They are still accessible to many people) and E (They are still affordable compared to more sophisticated technologies) are the best three answers. B is not the answer because users may need to know basic reading and writing skills in order to access the Internet. C is not the answer because low cost technologies may not require less electricity.

9. Student teachers can come up with their own personal goals and ways to achieve their goals.

Review questions: Possible student teachers' responses

1. Student teachers will self-assess whether they achieve the expected learning outcomes of the lesson.

	Yes	No	Not sure
1.1.1.			
I can explain what ICT (beyond computers) is and why it is important for a teacher (including but not limited to teaching) in primary school.			
I understand the importance and describe the roles of ICT in Myanmar primary schools and classrooms.			

2. Use your words to explain to your peers why ICT is important in Myanmar primary schools and classrooms.

Student teachers can refer to the reading text of this lesson to extract the main reasoning to support the notion why ICT is important in Myanmar primary schools and classrooms. They can also be encouraged to do some online search to find examples.

Check student teachers' understanding

Summarise the learning outcomes of the lesson and the extent to which they have been achieved. In particular, check if student teachers are clear that ICT is not just about computers. Emphasise that ICT is important for a teacher in the 21st century and see if the student teachers can provide reasons for this.

Encourage student teachers to think about how they can use search engines to further enhance their learning process and how search engines can be useful in their real life. Remind them further to think about the effective tips to find information easily using search engines.

Extension and differentiation activities

Student teachers can be asked to try to search using the same keywords above on other search engines such as Bing (http://www.bing.com) and Yahoo (http://www.yahoo.com).

1.2. Teacher Education Curriculum Relating to ICT

ICT is not just a subject in Education College that prepares you to teach ICT in basic education schools. It is also a subject to equip you with necessary competencies to utilise ICT effectively across different subjects/learning areas. In this unit, you will have an overview of the main strands of the teacher education curriculum relating to ICT and its linkages across subjects/learning areas.

1.2.1. Understanding ICT Teacher Education Curriculum and its linkage with other subjects learning areas

Expected learning outcomes

By the end of the lesson, you will be able to:

- Describe the five main strands (basic ICT concepts, media and information literacy and digital citizenship, computer applications, Internet and communication, ICT in education) in the Teacher Education Curriculum; and
- Explain linkages between ICT and other subjects/learning areas such as ICT across curriculum, Reflective Practice and Essential Skills, and Practicum for primary school teachers.

Competencies gained: A5 Know the subject content.

Time: 1 period of 50 minutes

Learning strategies: Flipped classroom, individual visualisation exercise, group work and individual assessment work

Preparation needed: You are advised to refer to the following reference to prepare for this lesson to understand the global framework for teachers on ICT competency. In addition, please read the Education College ICT subject syllabus and get yourself familiar with the content, particularly the ICT competencies relating to TCSF.

Title	Link	QR Code	Source
UNESCO ICT Competency Framework for Teachers	http://unesdoc.unesco.org/images/0021/002134/213475e.pdf		**UNESCO**

You may instruct student teachers to complete Learning activity 1 on the Student Teacher Textbook prior to the lesson. Ask them to write down at least one question about the topic so that this question can be discussed in the lesson.

Resources needed: Education College ICT subject syllabus, list of competencies relating to ICT (that is, the same as the 'Teacher competencies in focus' at the beginning of the Student Teacher Textbook and Teacher Educator Guide), presentation file.

Learning activity 1: Reading (15 minutes)

1. For each lesson, a presentation file is prepared for teacher educators. You can decide whether to use the presentation file or to adapt the file to your context.

2. Ask student teachers if they have any questions which need to be clarified based on the reading text and go through the reading text to deliver a short summarised lecture as a recap of their reading.

Assessment

- Brief verbal feedback during or in response to individual answer.

Learning activity 2: Individual visualization (10 minutes)

1. Explain the tasks. Remind student teachers that ICT competencies refer to the skills on using ICT. If needed, they can refer to the Teacher competencies in focus (see at the beginning of the Student Teacher Textbook) to get some ideas. Ask student teachers to refer to Learning activity 3 and think about what ICT competencies will be needed in order to make the ICT use in Myanmar primary school. (3 minutes)
2. Write down ICT competencies individually. (7 minutes)

Possible student teachers' responses

Some examples of ICT competencies can be similar to teacher competencies in focus (see at the beginning of the Student Teacher Textbook).

Learning activity 3: Group work (25 minutes)

1. Explain the tasks and divide student teachers into groups. A note taker needs to be selected in each group. It is ideal if each group is of the size of 5-7 student teachers. (2 minutes)
2. Each student teacher takes turn to share their responses to Learning activity 2 with the group. One of the student teachers should be assigned to take notes of the responses. (6 minutes)
3. Student teachers try to group similar ICT competencies shared by the group members together and classify them. (8 minutes)

4. Teacher educators request volunteers from different groups to respond to the whole class what classifications their groups have come up with. Teacher educator can write these down on the board. Try to link these with the ICT in Teacher Education curriculum, showing that this curriculum is able to support student teachers to strengthen their ICT competencies. (7 minutes)
5. Give instructions to student teachers to complete Learning activity 4 after class. This is an activity to help them reflect their level of ICT competencies. (2 minutes)

Possible student teachers' responses

Possible classifications of competencies include understanding ICT in education, curriculum and assessment, pedagogy, ICT, organisation and administration and teacher professional learning. This is based on the UNESCO ICT Competency Framework for Teachers. Other classifications are possible as long as student teachers are able to demonstrate their ability of grouping similar ICT competencies under a meaningful category.

Check student teachers' understanding

Remind student teachers to be clear about the five main strands of the ICT subject and ask volunteers to explain in their own words what each main strand means. Emphasise that ICT competencies can be developed through the Teacher Education Curriculum and ask student teachers to give examples of key ICT competencies which a Myanmar teacher should be equipped with.

Extension and differentiation activities

Student teachers can be provided with UNESCO ICT Competency Framework for Teachers and be asked if any of those competencies can be applicable in Myanmar as well.

For groups with more advanced student teachers who complete Learning activity 3 earlier than instructed, ask them to prioritise which category or categories of ICT competencies may be more important in the context of primary school classrooms.

Review questions: Possible student teachers' responses

1. Reflect on what you have learned in the lessons under this unit, and assess your understanding of the subject.

	Yes	No	Not sure
1.1.2.			
I can describe the five main strands (basic ICT concepts, media and information literacy and digital citizenship, computer applications, Internet and communication, ICT in education) in the Teacher Education Curriculum.			
I can explain linkages between ICT and other subjects/learning areas such as ICT across curriculum, Reflective Practice and Essential Skills, and Practicum for primary school teachers.			

2. What are the main strands of ICT subject in teacher education? How do you see the importance of each main strand in teaching Myanmar primary schools and classrooms?

   This ICT subject in the teacher education curriculum comprises five strands or thematic areas, namely basic ICT concepts, media and information literacy and digital citizenship, computer applications, Internet and communication, ICT in education. Student teachers can link ICT as part of the 21st century skills to be acquired by teachers and students.

3. What are the linkages between ICT and other subjects/learning areas?

   As a cross-cutting subject, ICT is not only useful for those who are going to teach ICT in basic education but also important for all teachers who are specialised in various subjects. Different types of ICT tools can be used in facilitating teaching and learning of different subjects/learning areas.

Unit Summary

Key messages

- ICT is a short form of Information and Communication Technology and refers to a range of electronic tools for storing, processing, creating, displaying and exchanging information and communicating, not limited to simply computers and the Internet.

- Countries that are using ICT extensively have become knowledge societies, which are reliant on creating, sharing and using electronically communicated knowledge for their prosperity.

- ICT tools offer a range of benefits for education. In particular, ICT tools offer the potential to make education more accessible, improve the quality of education, and provide an effective and efficient management tool.

- Professional development for teachers is important in successfully integrating ICT in education. Teachers like you need training to use ICT so that you can be at ease with ICT, adapt your pedagogical approaches and your roles to use ICT effectively.

- This ICT subject in the teacher education curriculum comprises five strands or thematic areas, namely basic ICT concepts, media and information literacy and digital citizenship, computer applications, Internet and communication, ICT in education.

- There are close linkages between this ICT subject and other subjects/learning areas. ICT are not only used in this ICT subject but also in other subjects and learning areas including Reflective Practice and Essential Skills and Practicum.

- A teacher in the 21st century should be equipped with ICT competencies.

Unit reflection

Possible student teachers' responses

1. How do you think the competencies gained from this ICT subject is helpful for you as a student teacher while you are in your Education College?
   Apart from this ICT subject, student teachers will have chances to learn more about and apply ICT skills in learning areas including Reflective Practice and Essential Skills and Practicum. In the former, student teachers will have a chance to understand your ICT competencies/skills and learn about ways to strengthen the competencies/skills. In the latter, student teachers will make use of ICT in the teaching practice and professional development.

2. How will integrating ICT into other learning areas and subjects support accelerating learning process? How can you use ICT competencies to foster learning of your students in classrooms?
   As a cross-cutting subject, ICT is not only useful for those who are going to teach ICT in basic education but also important for all teachers who are specialised in various subjects. For example, a Geography teacher may use ICT to show maps and satellite images to train map reading skills of students and to explain real life examples to students; an English teacher may show a short audio and/or video clip of a poem to help students understand the pronunciation and context of the poem.

Further reading

1.1

UNESCO. E-learning Series on ICT in Education.http://archive1.unescobkk.org/fileadmin/user_upload/ict/Teacher_Training_Workshops/UNESCObkkE-LearningSeriseOnICTInEducation.zip

Unit 2

Basic Information and Communication Technology (ICT) Concepts

In this unit, student teachers will be introduced the structures and functions of hardware within a computer system, the developments in computer systems, basic functions of an Operating System, computer storage and file/folder management.

Expected learning outcomes

By the end of this unit, you will be able to:

- Describe the structures and functions of hardware within a computer system (input, central processing unit, output and storage);
- Describe the features, advantages, disadvantages and examples of input and output devices and select the appropriate use of devices in various scenarios;
- Outline the developments in computer systems;
- Compare the characteristics of various types of computers;
- Understand functions of system software and applications software and describe the basic functions of an Operating System such as Windows;
- Describe the functional characteristics of storage devices in terms of random or sequential access, volatile or non-volatile, data transfer rate and storage capacity; and
- Understand file and folder management.

2.1. Computer System Fundamentals

Computers have become more prevalent in our daily life. A computer is an electronic device which is capable of receiving data and processing data in order to produce results which are useful for us. In computing, data are translated into a form that is efficient for processing.

In history, computers were only formed as calculating devices, from a simple manual device such as abacus to digital calculator, used in doing calculations. As the time passed, the development process of the machine occurred from 1940s and to the present.

2.1.1. Structures and functions of hardware within a computer system

Expected learning outcomes

By the end of the lesson, you will be able to:

- Describe the structures and functions of hardware within a computer system (input, central processing unit, output and storage); and
- Describe the features, advantages, disadvantages and examples of input and output devices and select the appropriate use of devices in various scenarios.

Competencies gained: A5 Know the subject content; and B1 Teach curriculum content using various teaching strategies.

Time: 1 period of 50 minutes

Learning strategies: Flipped classroom, individual work, group work.

Preparation needed: Teacher educators need to have a list of commonly found input, processing and output devices in Myanmar. Browse the following websites for more information. The references are particularly useful if the topics to be covered are new to teacher educators.

Student teachers are instructed to complete the reading text, Learning activities 1 and 2 on the Student Teacher Textbook prior to the lesson. Ask them to write down at least one question about the topic so that this question can be discussed in the lesson.

Title	Link	QR Code	Source
Types of input devices with explanations	https://www.tutorialspoint.com/computer_fundamentals/computer_input_devices.htm		**Tutorialspoint**
Types of output devices with explanations	https://www.computerhope.com/jargon/o/outputde.htm		**Computer Hope**

Resources needed: Pictures of examples of input, processing and output devices, flip charts and papers

Learning activity 1: Pre-reading exercise

Ask the student teachers to provide answers for Learning activity 1 and give examples of input, processing and output devices commonly seen in Myanmar.

Student teachers may find it hard to explain the functions of some devices not commonly seen in their daily lives such as modem, voice recognition, joystick and optical character recognition. It is advised you particularly request some student teachers to explain these to the whole class and show pictures of these devices. Student teachers are also encouraged to look at the Glossary at the end of the Student Teacher Textbook to learn the definitions of these devices.

Assessment

- Brief verbal feedback during or in response to individual practice.
- A quick individual quiz.

Possible student teachers' responses

Item	Have you seen the item in daily life?	What is the name of the item?	Where do you usually see the item?
A	Yes / No	Barcode reader	Supermarkets and shops
B	Yes / No	Smartphone	Many people
C	Yes / No	Keyboard and mouse	Where a computer is used
D	Yes / No	CD-ROM drive	Where a computer is used and an external storage is needed
E	Yes / No	Speakers	Where a computer is used and sound needs to be projected
F	Yes / No	Flash drive	Where a computer is used and an external storage is needed
G	Yes / No	Printer	Where it is connected to a computer and used to print the softcopy documents from the computer
H	Yes / No	Scanner	Where is it connected to a computer and used to scan the hardcopy documents to the computer
I	Yes / No	Digital Camera	Many people
J	Yes / No	Tablet	Many people

Interesting fact

Smartphone penetration rates in Myanmar have soared in recent years. They account for more than 70 percent of the country's mobile connections, higher than the Asia-Pacific average of 53 per cent and even the European level of 68 per cent, according to GSMA Intelligence, an international industry body.

Check student teachers' understanding

Teacher educator can walk around in the classroom, and choose student randomly to ask briefly about any random input/output device.

Extension and differentiation activities

Student teachers can be asked to provide some other examples of commonly seen devices in daily life and write them down on the board. This may be useful for Learning activity 3 to help student teachers brainstorm the types of devices which are appropriate for particular scenarios.

Learning activity 2: Post-reading exercise

This should be completed prior to the lesson so that teacher educators can ask student teachers to give their answers to the whole class. However, if teacher educator wishes, this activity can be done in small groups at the beginning of the lesson. Each group may be asked to focus on completing the answers for one item in three minutes and then each group can take turns to give their answers to the whole class within 12 minutes.

Assessment

- Brief verbal feedback during or in response to individual practice.
- A quick individual quiz.

Possible student teachers' responses

Item	Is it an input, processing and/ or output device?	Main function
A	Input	To read barcodes of products and to transfer information from the barcodes to a computer
B	Input, Processing and Output	To input information to the smartphone, in which the built-in processor performs tasks and provides outputs as required by the user
C	Input	To input information to a computer with characters (using a keyboard) or with positioning of a cursor (using a mouse) to draw and execute programme functions
D	Input and Output	To retrieve and store information on CD/DVD
E	Output	To produce audio output that can be heard by the listener
F	Input and Output	To store, backup data and transfer computer files from one computer to another
G	Output	To print the softcopy documents from the computer
H	Input	To scan the hardcopy documents to the computer
I	Input	To take photos and to transfer the photos to a computer
J	Input, Processing and Output	To input information to the tablet, in which the built-in processor performs tasks and provides outputs as required by the user

Teaching tips

You may explain clearly to student teachers that there are many devices which serve purposes more than just input, processing or output. Some devices that perform both input and output operations are referred to as I/O (input/ output) or hybrid devices and their operations are called I/O operations. Examples of common input and output components.

Check student teachers' understanding

Teacher educator can walk around in the classroom, and choose student randomly to ask any random input/output device and its main function.

Extension and differentiation activities

Student teachers can be asked to describe the main functions of the devices they wrote on the board in previous activity. This may be useful for Learning activity 3 to help student teachers brainstorm the types of devices which are appropriate for particular scenarios.

Learning activity 3: Group work (40 Minutes)

Teacher Educator Guide the student teachers to complete the activity as following steps:

1. Explain the tasks and divide student teachers into groups, clarify any unclear or unfamiliar names of input and output devices on the table provided.

    a. Each group may be guided to use a graphic organiser (such as a mind map) to present their answers.
    b. Each group should consider pros and cons of using different devices and come up with a decision on which devices are the most suitable in the scenario.
    c. Student teachers may not consider the cost of procuring the devices because it may not be clear to the student teachers how much each device would cost. However, during the debriefing of the activity, you may wish to draw student teachers' attention to the cost implications of different options of devices. (5 minutes)

2. Discuss in groups and come up with decisions in a graphic organiser format. (15 minutes)
3. Present group outputs. (15 minutes)
4. Debrief. (5 minutes)

Possible student teachers' responses

There is no right or wrong answer. The main purpose of the activity is to train student teachers to brainstorm pros and cons of using a particular device relevant to the given scenario. Student teachers will get a better understanding of the features of different devices so that they as a group can make informed decisions on which devices should be the most appropriate in the given scenario. The skills of being able to choose the appropriate devices for relevant scenarios are important not only for teaching ICT but also for using ICT in their daily life. Additionally, ask the student teachers to identify the input and output devices from the ICT classroom.

Assessment

- Student teachers work in groups and present their discussion output (such as graphic organiser) in Activity 3. Teacher educator gives verbal feedback on the discussion output.
- Student presentation.

Extension and differentiation activities

For weaker student teachers: You can give clear expectations to request them to think about only one input and one output devices appropriate in the given scenario.

Review questions

If time does not allow in class, please ask student teachers to complete this activity after class. At the beginning of next lesson, teacher educators can ask some student teachers to share their answers. Please note that student teachers will provide responses which have no right or wrong answers.

This reflection activity allows student teachers to reflect what they have learnt in the lesson. It is advisable for student teachers to get used to the reflective practices and sharing among each other. While student teachers can write down their responses on their reflective journals, teacher educators may consider using online platforms such as pad let (https://padlet.com) to gauge responses. Please refer to ICT training package on how to use pad let.

Teaching tips

Please emphasise that there is no right or wrong answer and student teachers should feel free to share their views. Student teachers should get more familiar with this reflective practice as this will be applied across different subjects.

Particular attention needs to be paid to question 5. While not all student teachers may need to teach ICT in basic education schools in the future, it is still desirable for student teachers to give comments on how they see the relevance and usefulness of the activities. This is also a way to train teachers to critically think about selecting the appropriate teaching strategies with due consideration of the local contexts and students' characteristics.

2.1.2. Developments in computer systems

Expected learning outcomes

By the end of the lesson, student teachers will be able to:

- Outline the developments in computer systems; and
- Compare the characteristics of various types of computers.

Competencies gained:A2 Know available instructional technology; and A2.2.1 Describe the function and purpose of online and office educational tools and materials to support the teaching-learning process.

Time: 1 period of 50 minutes

Learning strategies: Flipped classroom to complete Learning activity 1
Group work in class to complete Learning activities 2 and 3

Preparation needed:

Teacher educators are recommended to consult the following websites for more information about the topic.
Student teachers are instructed to complete Learning activity 1on the Student Teacher Textbook prior to the lesson. Ask them to write down the key points they learn to share and discuss in class.

Title	Link	QR Code	Source
History of Computer Development	http://wikieducator.org/History_of_Computer_Development		**Wikieducator**
The Evolution of Computers	https://www.nortonsecurityonline.com/security-center/evolution-of-computers.html		**Norton Security Online**
Basic ICT Literacy Training Manual	[available on e-library]		**UNESCO**

Resources needed: Examples of Artificial Intelligence

Learning activity 1: Individual work (15 minutes)

It is expected that student teachers complete this activity prior to the lesson. It is expected that around 15 minutes should be spent on this activity.

Teacher Educator Guides the student teachers to complete the activity as following steps:

1. Ask student teachers if they have any questions about reading text. If so, provide clarifications to the class. (3 minutes)
2. Ask volunteers to give their own answers to this Learning activity. Each volunteer may provide his/her answer to one generation of computers. (10 minutes)
3. Explain to the class that currently we are experiencing fifth to sixth generations of computers. (2 minutes)

Stop and think:

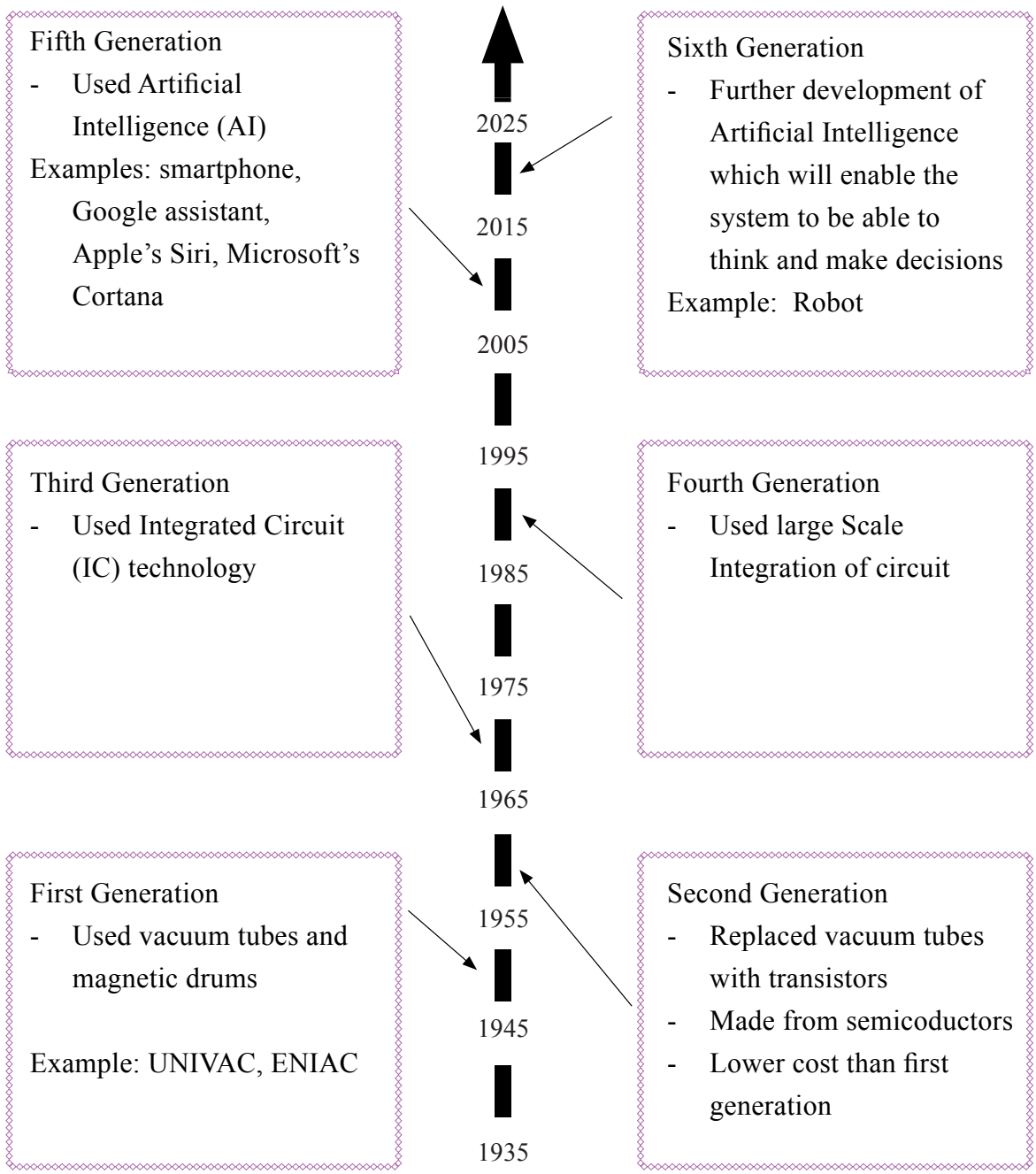
Some student teachers may find it hard to understand the earlier generations of computers such as vacuum tubes, transistors, Integrated Circuits and microprocessors. Explain to them what these are based on the pictures in reading text. Encourage them to watch the video from the provided links to have a better understanding.

Assessment

- Brief verbal feedback during or in response to individual work.

Possible student teachers' responses

Development in Computer Systems



Development in Computer Systems

Learning activity 2: Group work (20 minutes)

Teacher Educator Guides the student teachers to complete the activity as following steps:

1. Explain what Artificial Intelligence (AI) is and ask student teachers to provide examples. Alternatively, provide some real-life examples of AI in class. (5 minutes)
2. Explain the tasks and divide student teachers to work in groups. (2 minutes)
3. Each group brainstorms how AI can be beneficial to education and writes down the ideas. (8 minutes)
4. Student teachers verbally provide their answers while teacher educators write the collective ideas on the board. Emphasise that AI will have great impact in education in the coming years. (5 minutes)

Assessment

- Brief verbal feedback during or in response to group work.

Possible student teachers' responses

AI may be used to support education in the following ways. This is not an exhaustive list.

- Grading standardised assessments and possibly more than standardised assessments in the future
- Assisting teachers to provide personalised tutorial lessons with students outside class hours
- Assessing individual students' strengths and weaknesses and adjusting the learning content
- Providing appropriate support to address students' special needs
- Identifying common mistakes from students and alerting students by offering hints to the correct answers if necessary
- Offering helpful feedback to teachers on areas where they can improve instructions to students

Learning activity 3: Group work (15 minutes)

Teacher Educator Guides the student teachers to complete the activity as following steps:

1. Explain the tasks and ask student teachers to stay in the same group. Each group is requested to complete two out of four questions. Teacher educators can assign different groups the two questions they should work on. (2 minutes)
2. Each group discusses and writes down the answers to two questions. (6 minutes)
3. Student teachers verbally provide their answers while teacher educators provide verbal feedback. (7 minutes)

Assessment

- Brief verbal feedback during or in response to group work.

Possible student teachers' responses

No.	*Scenario*	*Type of computers*	*Justification*
1	Downloading some pictures from the Internet and showing them in class	D	This task can be done with small sized personal computers (microcomputers or mobile computers) for a single user.
2	Storing digital files and printing those files within the EC campus	C and D	Digital files can be stored in small sized personal computers (microcomputers) for a single user while printing can be done using print server (minicomputers) in a LAN size network on campus.
3	Editing a short video clip about Myanmar poems	D	This task can be done with small sized personal computers (microcomputers or mobile computers) for a single user.
4	Managing the Education Management Information System (EMIS) at the national level	B	This task requires relatively powerful large sized computers (mainframe computers) to handle massive amount of school data at the national level and to allow thousands of users to access the data simultaneously.

Stop and think:

Student teachers may not be able to distinguish the differences between supercomputers and mainframe computers and between minicomputers and microcomputers. Explain to them that it is a relative concept to classify computers in terms of speed and volume of data processed.

2.1.3. Understanding system software, types of computers and file/folder management

Expected learning outcomes

By the end of the lesson, student teachers will be able to:

- Understand functions of system software and application software and describe the basic functions of an Operating System such as Windows;
- Describe the functional characteristics of storage devices in terms of random or sequential access, volatile or non-volatile, data transfer rate and storage capacity; and
- Understand file and folder management.

Competencies gained: A2 Know available instructional technology; and A2.2.1 Describe the function and purpose of online and office educational tools and materials to support the teaching-learning process.

Time: 1 period of 50 minutes

Learning strategies: Flipped classroom, group work

Preparation needed: Teacher educators are recommended to consult the following websites for more information about the topic.

Student teachers are instructed to complete the reading text and Learning activity 1 on the Student Teacher Textbook prior to the lesson. Remind them to read the instruction of the activities carefully and complete the activities accordingly. Ask them to write down at least one question about the topic so that this question can be discussed in the lesson.

Title	Link	QR Code	Source
Basic Computing Using Windows/Operating Systems and Controls	https://en.wikibooks.org/wiki/Basic_Computing_Using_Windows/Operating_Systems_and_Controls		**Wikibooks**
Basic Functions of an Operating System	https://www.techwalla.com/articles/what-are-system-interrupts		**Techwalla**
Different types of computers	http://www.vidyagyaan.com/computer-knowledge/different-types-of-computer/		**VidyaGyaan**
Data Transfer Rate	https://searchunifiedcommunications.techtarget.com/definition/data-transfer-rate		**Techtarget Network**
Size / Bandwidth Calculator	http://www.stardot.com/bandwidth-and-storage-calculator		**Stardot**
Introduction to Computer Information System / Storage	https://en.wikibooks.org/wiki/Introduction_to_Computer_Information_Systems/Storage		**Wikibooks**
Basic ICT Literacy Training Manual	[available on e-library]		**UNESCO**

Learning activity 1: Individual work (10 minutes)

Teacher Educator Guide the student teachers to complete the activity as following steps:

1. Ask student teachers to raise their hands to show their responses to each question (either True or False). Choose a few student teachers to explain their answers.

Assessment

- A quick individual quiz.
- Brief verbal feedback during or in response to individual answer.

Possible student teachers' responses

No.	*Description*	*True*	*False*
1	System software can function independent of application software while application software cannot run without system software.	✓	
2	There are much fewer system software as compared to application software.	✓	
3	The programming of system software is relatively complex as it requires the knowledge of the working of the underlying hardware while the programming of application software is relatively easier as it requires only the knowledge of the underlying system software.	✓	
4	Application software executes continuously as long as the computer is in operation while system software executes only when the end user requires. Correct answer: Application System software executes continuously as long as the computer is in operation while system application software executes only when the end user requires.		✓
5	System software runs in the background and the end users usually do not interact with it directly; however, application software runs in the foreground with frequent interaction with the end users to satisfy their computing needs.	✓	
6	Examples of system software include Windows OS, Mac OS and Linux, Microsoft Word while examples of application software include Windows Media Player and Adobe Photoshop. Correct answer: Examples of system software include Windows OS, Mac OS and Linux, Microsoft Word while examples of application software include Microsoft Word, Windows Media Player and Adobe Photoshop.		✓

Learning activity 2 Group work (25 minutes)

Teacher Educator Guides the student teachers to complete the activity as following steps:

1. Briefly explain the different storage devices and media. If possible, show the real storage devices and media for illustration purpose. (5 minutes)
2. Explain the tasks and assign student teachers to groups. Each group is requested to complete two out of four questions. Teacher educators can assign different groups the two questions they should work on. (3 minutes)
3. Each group discusses and writes down the answers to two questions. (6 minutes)
4. Student teachers verbally provide their answers while teacher educators provide verbal feedback. (8 minutes)
5. Explain to student teachers that in the curriculum they will later learn about the importance of data security and protection. It is important to take extra care in storing files to avoid data loss or data leakage. (3 minutes)

Assessment

- A quick group quiz.
- Brief verbal feedback during or in response to individual answer.

Possible student teachers' responses

Student teachers can feel free to suggest other alternative devices/media for storage in different scenarios. What they have to bear in mind is to keep data in a safe place and to minimise the risk of data loss and data leakage.

1. I use a public computer in the library to prepare my lesson plan by creating word processing files. Should I save my files using HDD in the public computer or a USB flash drive?

Hints: Think about the portability of the files. Do you need the lesson plan files to be accessible not only in the public computer but also other computers?

Selected storage medium	*Justification of selection*
USB flash drive	It is not advisable to save files in a public computer because the files may be accessible by others and may be removed by others. It is good to save the files in a USB flash drive so that the files can be accessible anywhere as long as you have a computer with a USB port to read and write files via the flash drive.

2. I need to save some important files containing student teachers' final examination scores in a safe place. Should I save the files using HDD in the head of administration's office laptop or a USB flash drive?

   Hints: Think about the security of the files. Do you need a location to storage the scores, which are considered confidential information? Which storage is less likely to be prone to information leak?

Selected storage medium	*Justification of selection*
HDD in the head of administration's office laptop	As the files contains personal information, it is advisable to save them in a location which is not easily accessible by others. The office laptop of the head of administration should be accessible only by authorised staff and thus it is desirable to save the files there. It is not advisable to save these files on a USB flash drive as there may be a risk of losing the flash drive together with the files.

3. The Ministry of Education at the central level requests our college to save student teachers' personal information in a storage medium and to deliver the storage medium to Nay Pyi Taw. Should I save the files using CD or DVD or a USB flash drive?

   Hints: Think about the size of the data and the equipment available at the Ministry of Education.

Selected storage medium	*Justification of selection*
CD DVD USB flash drive	There is no definite answer to this scenario. The storage medium to be selected is dependent on the size of the data and the equipment available at the Ministry of Education. If the size of the data exceeds the storage capacity of a CD, use a DVD. A flash drive can be used as long as it has enough storage capacity. In addition, it is necessary to ensure that the Ministry of Education has the necessary equipment, such as a CD and DVD reader; otherwise, use a USB flash drive instead as most of the modern computers should have at least a USB port to support file transfer via a flash drive.

4. I want to purchase a laptop which I can carry around between my home and the school. I will also need to bring it along with me when I travel to other places in Myanmar. Should I choose a laptop with HDD or SSD?

   Hints: Think about which option can have a more durable hard drive, which is shock resistant?

Selected storage medium	*Justification of selection*
SSD	If price is not the main consideration, SSD is more preferable to HDD. SSD does not have any moving parts so there is no data loss problem or drive corrupt problem. SSD is more durable and it is more likely to keep the data safe as it is shock resistant, particularly when the laptop needs to be carried around.

Learning activity 3 Group work (15 minutes)

Teacher Educator Guides the student teachers to complete the activity as following steps:

1. Explain the tasks and ask student teachers to stay in the group. Each group is requested to complete five out of ten questions. Teacher educators can assign different groups the five questions they should work on. (2 minutes)
2. Each group discusses and writes down the answers to five questions. (6 minutes)
3. Student teachers verbally provide their answers while teacher educator provides verbal feedback. (7 minutes)

Assessment

- A quick group quiz.
- Brief verbal feedback during or in response to individual answer.

Possible student teachers' responses

Any file names which follows the tips of naming files in the reading text should be acceptable. There are no fixed answers for the revised file names.

No.	*File name*	*Acceptable or not?*	*If it is not acceptable, suggest another file name.*
1	myfile.doc	Acceptable / Not acceptable	The name is too general and does not provide the meaning to understand what is contained. Any name which can provide the meaning to understand what is contained is acceptable. For instance, Activity4-answer.doc is acceptable.
2	20191203year1testscore.xls	Acceptable / Not acceptable	
3	mYaNmArSoNg.wmv	Acceptable / Not acceptable	The name should better be in lowercase letters only. myanmarsong.wmv
4	English-grammar-class-2.docx	Acceptable / Not acceptable	
5	LessonPlanMaths@Year1.txt	Acceptable / Not acceptable	The name should not include special character @. LessonPlanMathsYear1.txt

No.	*File name*	*Acceptable or not?*	*If it is not acceptable, suggest another file name.*
6	photo.jpg	Acceptable / Not acceptable	The name is too general and does not provide the meaning to understand what is contained. Any name which can provide the meaning to understand what is contained is acceptable. For instance, photo-principal.doc is acceptable.
7	PRACTICUM_RECORD.odt	Acceptable / Not acceptable	The name should not be in all capital letters. practicum_record.odt
8	Year_1_Semester_1_Reflective_Practice_and_Essential_Skills_Assignment_3_December_2019.ppt	Acceptable / Not acceptable	The name is too long. yr1-s1-rpes-assignment3.ppt
9	ict textbook copy.pdf	Acceptable / Not acceptable	No space should be used for the name. ict-textbook-copy.pdf
10	science-homework-final4-revised.html	Acceptable / Not acceptable	It is interesting to have a file name which is considered to be the fourth final version but it is still being revised. If it is final, put 'final' in the file name. science-homework-final.html

Stop and think:

Student teachers may have limited knowledge about file extensions of common file types as presented in the reading text. Ask student teachers to see what file extensions they are not familiar with and explain them accordingly.

Review Questions: Possible student teachers' responses

1. Reflect on what you have learned in the lessons under this unit, and assess your understanding of the subject.

	Yes	No	Not sure
2.1.1.			
I can describe the structures and functions of hardware within a computer system (input, central processing unit, output and storage).			
I can describe the features, advantages, disadvantages and examples of input and output devices and select the appropriate use of devices in various scenarios.			
2.1.2.			
I can outline the developments in computer systems.			
I can compare the characteristics of various types of computers.			
2.1.3.			
I understand functions of system software and applications software and describe the basic functions of an Operating System such as Windows.			
I can describe the functional characteristics of storage devices in terms of random or sequential access, volatile or non-volatile, data transfer rate and storage capacity.			
I understand file and folder management.			

2. What are the input and output devices that you think are useful for teaching and learning in basic education schools?
   Some examples may be as follows:

Mouse	Monitor	Photocopier	Keyboard
Speaker	Modem	Flash drive	Memory card reader
Printer	Scanner	CD-ROM	CD-ROM drive
Laptop	Desktop	Tablet	Smartphone
Voice recognition	Digital camera	Projector	Microphone
Joystick	Digital video recorder	Optical character recognition	Headphone

3. Which type of computers would be useful in basic education schools? Please justify your answer.

   Likely teachers and students in basic education schools may use microcomputers and mobile computers. These are multipurpose single use computers and can support daily teaching and learning tasks such as Internet search and preparation for lessons. Subject to availability of resources, basic education schools may also benefit from minicomputers as file and database servers in LAN size network to facilitate file and data sharing within the campus.

4. Why is file and folder management important? Give AT LEAST TWO examples showing what you can do to ensure the management of proper records of files and folders.

   When there are a lot of files and folders in your computer, it may not be easy for you to locate the files or folders you want. As such, you should have good file and folder management, such as storing and naming the files and folders in a consistent, organised and descriptive way.

Unit Summary

Key messages

- A computer may be divided into several fundamental units: input, Central Processing Unit and output.

- There are six generations of computers with recent development on Artificial Intelligence and robotic technology. A generation indicates a major breakthrough, such as reducing the size of processors as well as increasing capacity and speed.

- There are four types of computers, namely supercomputers, mainframe computers, minicomputers, microcomputers and mobile computers. In our daily life, microcomputers and mobile computers are commonly used in Education Colleges.

- Application software is a type of software designed for end-users to perform specific user's task, including those to support teaching and learning.

- It is important to understand what input, output and storage devices should be used based on the need and purpose of the tasks.

- Proper file and folder management allows end-users to locate files or folders in the computer easily.

Unit reflection

Possible student teachers' responses

1. How do you describe computers in your daily life?

Computers have become more prevalent in our daily life. A computer is an electronic device which is capable of receiving data and processing data in order to produce results which are useful for us.

2. How do you compare the various types of computers?

There are various types of computers depend on characteristics and usage such as Supercomputers, Mainframe computers, Minicomputers and Microcomputer/mobile computers.

3. How can you do to ensure effective management of proper records of files and folders on the computers?

You may bear in mind the following when naming files and folders to ensure effective management of proper records:

- Ensure that the names can provide meaning for you to understand what is contained in the files/folders;
- Keep the names not too long, because long names may not work well with some types of software;
- Use only letters and numbers and avoid using special characters such as @, #, $, %, ! ,
- \, >, *, :, ‘ because these may not be readable by some types of software. No blank space ( ) should be used for the names either;
- Use lowercase letters only or use capital letters only for the first letter of words if possible for consistency purpose;
- If there is a need to indicate a date in the name, follow the format YYYYMMDD (Y refers to Year; M refers to Month; D refers to Date) so that the files and folders can be sorted in chronological order easily; and
- Use leading zeros (0) in the name if you number the files and folders in sequential order. For instance, use 001, 002, 011, 012 instead of 1, 2, 11 and 12.

Further reading

2.1

Types of input devices with explanations: Retrieved from https://www.tutorialspoint.com/computer_fundamentals/computer_input_devices.htm

Types of output devices with explanations: Retrieved from https://www.computerhope.com/jargon/o/outputde.htm

History of Computer Development: Retrieved from http://wikieducator.org/History_of_Computer_Development

The Evolution of Computers: Retrieved from https://www.nortonsecurityonline.com/security-center/evolution-of-computers.html

Data Transfer Rate: Retrieved from https://searchunifiedcommunications.techtarget.com/definition/data-transfer-rate

Size / Bandwidth Calculator: Retrieved from http://www.stardot.com/bandwidth-and-storage-calculator

Introduction to Computer Information System / Storage: Retrieved from https://en.wikibooks.org/wiki/Introduction_to_Computer_Information_Systems/Storage

Basic Computing Using Windows/Operating Systems and Controls: Retrieved from https://en.wikibooks.org/wiki/Basic_Computing_Using_Windows/Operating_Systems_and_Controls

Basic Functions of an Operating System: Retrieved from https://www.techwalla.com/articles/what-are-system-interrupts

Different types of computers: Retrieved from http://www.vidyagyaan.com/computer-knowledge/different-types-of-computer/

Basic ICT Literacy Training Manual: Developed by UNESCO, available on E-Library.

Unit 3

Computer Application (Word Processing)

In previous unit, student teachers have learned the development of computer systems, functions of hardware within a computer system and functions of the system software such as Operating System. In this unit, student teachers will be able to learn the basic functions of the Operating System such as Windows and practise the basic functions of word processing application such as Microsoft Word including typing in Myanmar fonts (Zawgyi and Unicode).

Expected learning outcomes

By the end of this unit, student teachers will be able to:

- Perform basic functions on an Operating System such as Windows;
- Install fonts onto the system and demonstrate typing; and
- Describe and practise the basic functions of word processing such as Microsoft Word (typing in Myanmar font(Zawgyi and Unicode), page setup, saving, formatting, printing, header and footer, bullets and numbering; creating tables, inserting pictures and charts).

3.1. Basic Functions and Troubleshooting

In this sub-unit, student teachers will learn how to perform basic functions of an Operating System and installing fonts onto the system and demonstrating typing.

3.1.1. Performing Windows basic functions

Expected learning outcomes

By the end of the lesson, student teachers will be able to:

- Perform basic functions on an Operating System such as Windows.

Competencies gained: A5 Know the subject content; and
B1 Teach curriculum content using various teaching strategies.

Time: 1 period of 50 minutes

Learning strategies: Individual exercise, group work.

Preparation needed: Teacher educators need to read and practise about the lesson in Student Teacher Textbook in advanced. Teacher educators can explore the following website to wider the content knowledge. The references are particularly useful if the topics to be covered are new to teacher educators.

Title	Link	QR Code	Source
Windows Basics	https://edu.gcfglobal.org/en/windowsbasics/		**GCF Global**

Resources needed: Student Teacher Textbook; Computers; Windows Operating System, Any Desk Mobile App.

Learning activity 1: Individual practice (20 minutes)

1. Ask some student teachers to demonstrate how they did for some tasks during individual practice on their own. This allows teacher educators to see how much they could do for those tasks and if there is any difficulty.
2. Ask student teachers to demonstrate Task 1 in class. Provide supports (or) clarifications for any difficulty encounter while student teachers completing the tasks.
3. Ask student teachers to demonstrate Task 2 in class. Provide supports (or) clarifications for any difficulty encounter while student teachers completing the tasks.

Assessment

- Brief verbal feedback during or in response to individual practice.
- Peer assessment: Student teachers assess each other against by asking one another other function of Windows.

Possible student teachers' responses

Task 1

Suggested answers for task 1 are as following:

1. Right click on the Desktop -> View and Uncheck the Show desktop icons.
2. Windows key.

3. Right click on the Microsoft Word and Microsoft Excel icons, and on the menu appeared, click Pin to taskbar.
4. On the pinned Microsoft Excel icon from the taskbar, click Unpin from the taskbar.
5. Windows key + L.
6. Right click on the desktop -> New -> Shortcut, and click Browse to choose location (choose Desktop) -> click Next -> fill the name and click Finish.
7. Double click on an application, click minimise icon, click the opened application on the taskbar to restore it, resise using mouse and click close button to close it.

Task 2

Teacher educators need to make sure students complete the following tasks correctly.

Step 1: Create one file and name it as 'Lesson 3.1.1.'. Create one folder and as it as 'EC ICT Curriculum'.

Step 2: Rename the file with your name and folder as 'Activity 2'.

Step 3: Move the file inside the folder. Temporarily delete both file and folder.

Step 4: Restore the file and folder. Do the permanent deletion of the file and folder.

Learning activity 2: Group work (25 minutes)

1. Discuss with the whole class possible solutions/suggestions to address the two common problems using Windows identified on the Student Teacher Textbook.
2. Ask student teachers to work in groups to discuss common problems using Windows.
3. Each group discusses the problems they encountered when using Windows and suggests ways to address them. Each group should take notes and be prepared to share their discussion output with the whole class.
4. Ask some groups to share their problems using Windows and possible solutions/ suggestions. Provide necessary support and clarifications.

Assessment

- Brief verbal feedback during group tasks
- Sharing of problems and suggestions by groups.

Possible student teachers' responses

Common problems using Windows	*Possible solution / suggestion*
A file is accidentally deleted and needs to be recovered.	Go to Recycle Bin, select the desire file to restore, right click and choose Restore.
I know my file name but forget where I have saved it in the File Explorer.	Go to File Explorer, type the file name on the search bar at the top right corner and search. Go over the list of search results and identify the file name.

Check student teachers' understanding

Teacher educator needs to:

- Summarise the learning outcomes of the lesson and the extent to which they have been achieved.
- Walk around in the classroom, and choose student randomly to work on random tasks from Learning activities 1 and 2.

Extension and differentiation activities

For advanced student teachers, teacher educators can advise them to try other functions of Windows such as testing keyboard shortcuts finding new ones, noting down all the keyboard shortcuts tested, and working with Files/Folders management (creating, moving and deleting).

For weaker students, teacher educators may provide some screencast links about basic functions of Windows Operating System (files/folder management and keyboard shortcuts) so that student teachers can learn by themselves following the screencasts.

3.1.2. Installing fonts onto an Operating System

Expected learning outcomes

By the end of the lesson, student teachers will be able to:

- Install fonts onto the system and demonstrate typing.

Competencies gained: A5 Know the subject content; and
B1 Teach curriculum content using various teaching strategies.

Time: 1 period of 50 minutes

Learning strategies: Flipped classroom

Preparation needed: Teacher educators need to have the folder of fonts and font installers and keyboard layout ready. Consult the following websites for more information. The references are particularly useful if the topics to be covered are new to teacher educators.

Title	Link	QR Code	Source
Myanmar Fonts downloading	https://myanmaritacademy.blogspot.com/2013/08/myanmar-fonts-alpha-zawgyimyanmar2.html		**MyanmarIT Academy**
How to install Myanmar Fonts	http://alpha-zawgyi-download.blogspot.com/		**Alpha-Zawgyi_ blogspot**

Resources needed: A word processing application, Font installer and font (Pyidaungsu font, Myanmar Unicode, Zawgyi and Win Innwa) and keyboard layout.

Learning activity 1: Self practice

This should be completed prior to the lesson.

Learning activity 2: Self practice (50 minutes)

1. Typing skills and font installation are important. Teacher educators may wish to spend enough time in class to check if all student teachers are able to install fonts and to type using either Zawgyi or Unicode or both. Ask student teachers to type in different font and ask if they have any questions.
2. Ask the student teachers if they have experience that Myanmar font display is not correct when they use their ICT devices, particularly smart phones, tablets and laptops and what they did to address the issue. The responses of the student teachers will be able to demonstrate how much they know about the importance of font installation.
3. Ask student teachers to work in groups to discuss common problems using Microsoft Word.
4. Each group discusses the problems they encountered when using Microsoft Word and suggests ways to address them. Each group should take notes and be prepared to share their discussion output with the whole class.
5. Ask some groups to share their problems using Microsoft Word and possible solutions/suggestions. Provide necessary support and clarifications.

Assessment

- A quick team quiz.
- Brief verbal feedback during group tasks.
- Peer assessment: Student teachers assess each other against by asking one another to try typing one given word in different font.

Stop and think:

Student teachers may need some time to get familiar with the hand typing position on the keyboard. Encourage them to practise more outside class hours. Remind them that it is important to practice the correct hand position.

Check student teachers' understanding

Teacher educator need to:

- Summarise the learning outcomes of the lesson and the extent to which they have been achieved.
- Remind the students that there are many fonts styles, different layout, and most importantly, to practise in correct hand position when using keyboard.

Extension activities and differentiation activities

More able student teachers may be introduced the use of Myanmar font converter to change Myanmar font from Zawgyi to Unicode or vice versa. The font converter is particularly useful when the original document is of one type of Myanmar font and the student teachers need to save the document into another type of Myanmar font to allow sharing of documents to another person.

Teaching tips

An example of Myanmar font converter can be found at http://www.mcf.org.mm/myanmar-unicode-converter/.

Review Questions: Possible student teachers' responses

1. Reflect on what you have learnt in the lessons under this unit, and assess your understanding of the subject.

	Yes	No	Not sure
3.1.1.			
I can perform basic functions on an Operating System such as Windows.			
3.1.2.			
I can install fonts onto the system and demonstrate typing.			

2. What is an Operating System? How is it useful for your daily work?
   Operating System (OS) is the most well-known system software which can operate hardware and acts as the platform for end-users' application software. The basic functions of the OS are Hardware Management, System Resource Management, File and Folder Management / Data Management and provision of environment for Application Software.

   Microsoft Windows is the one of the most commonly used Operating Systems in the market. It provides Graphical User Interface (GUI), which allows users to interact with the system and applications through graphical icons instead of text-based user interfaces. It monitors application software and tasks running using Task Manager program. It also provides information about computer performance, which includes running processes, CPU load, and Windows services. In addition, it manages, repairs and optimises the performance and data of the computer system using a set of program called utilities programs.

3. Which Myanmar font do you think would be the most suitable for Myanmar basic education schools? Justify your answer.

   There is no right or wrong answer. Student teachers are requested to provide justifications to the answer.

   Zawgyi font is the most popular font on Myanmar websites and widely used among Myanmar people. In order to use Zawgyi Font, you will need to install the font and a keyboard layout into the Operating System.

   Myanmar Unicode is another typeface with Myanmar characters, which follow internationally accepted standards by the World Wide Web Consortium. Myanmar Unicode font is gaining its popularity in Myanmar and is pre-installed in commonly used Operating System such as Microsoft Windows 8 or above.

3.2. Word Processing

In this sub-unit, student teachers will learn how to navigate the commonly used Microsoft Word interface and become familiar with its most important features such as the Ribbon, Quick Access Toolbars, and Back stage view and Myanmar font typing.

3.2.1. Basic functions of word processing 1

Expected learning outcomes

By the end of the lesson, student teachers will be able to:

- Describe the basic features of a word processing application;
- Create, open, view, save and close a new document; and
- Type Myanmar font (Zawgyi and Unicode) in word document.

Competencies gained: A2 Know available instructional technology.

Time: 1 period of 50 minutes

Learning strategies: Flipped classroom, Group work, Individual work after class

Preparation needed: Prior to the lesson, teacher educators are required to instruct student teachers to study about the lesson by reading or practising and take note if any difficulties found during the self-study. Student teachers need to be able to use the computer room or ICT room or any room with ICT facilities out of school hours to complete the activities.

At the same time, teacher educators also need to complete the reading and practical tasks in this lesson in the Student Teacher Textbook in advance. Teacher educators can explore the following website to wider the content knowledge. The references are particularly useful if the topics to be covered are new to teacher educators.

Title	Link	QR Code	Source
Basic ICT Literacy Training Manual	[available on e-library]		**UNESCO**
How to use Microsoft Word	https://www.digitalunite.com/guides/creating-documents/microsoft-word		**Digital Unite**
A beginner's guide to Microsoft Office	https://www.investintech.com/content/beginnersmsoffice/		**Investintech**
Microsoft Word – Basic & Advanced	https://www.goskills.com/Course/Microsoft-Word		**Goskills**
Word Basics	https://edu.gcfglobal.org/en/word2010/		**GCFGlobal**

Student teachers can sit in the normal classroom settings and can easily work in groups of 3-5 in the computer room or the ICT room.

Resources needed: Computer, Word processing software.

Learning activity 1: Introduction (10 minutes)

Teacher educators check the reading and practical tasks which are completed by student teachers prior to the lesson. In particular, ask student teachers to explain some functions that a presentation application can do. Demonstrate the tasks which most student teachers were not able to compete.

Assessment

- Brief verbal feedback during group tasks.
- Observation of student teachers' individual work.

Possible student teachers' responses

Some possible responses are as follows:

Common Problems using Microsoft Word	*Possible Solution / Suggestion*
Unable to locate the saved file.	Make sure to choose 'Desktop' after clicking 'Browse' to find the location to save. In this way, you can see your saved file on the computer screen.
Time consuming to find and insert some missing characters of Myanmar font.	Click 'Insert' tab, click dropdown arrow of 'Symbol' and 'More Symbols', choose the Myanmar character you want, click 'Shortcut Key' button, press the new shortcut key (for example: Ctrl+w), click 'Assign'. You just type the shortcut key (Ctrl+w).
Difficult to name a file.	Filenames should be short and meaningful. It can include types of information and perhaps date. Example: Unit 3 Lesson Plan 2 15 Dec 2019.

Learning activity 2: Group work (25 minutes)

1. Ask student teachers to work in groups to discuss common problems using Microsoft Word.
2. Each group discusses the problems they encountered when using Microsoft Word and suggests ways to address them. Each group should take notes by filling the provide table in Student Teacher Textbook and be prepared to share their discussion output with the whole class.
3. Ask some groups to share their problems using Microsoft Word and possible solutions/suggestions.
4. Demonstrate the tasks that most student teachers could not complete, provide necessary support and clarifications.

Assessment

- Brief verbal feedback during group tasks
- Sharing of problems and suggestions by groups.

Learning activity 3: Individual work (15 minutes)

Student teachers can continue working on the activity after class. Student teachers are requested to submit their assignment as soft copy by USB flash drive or any other way as deemed appropriate by teacher educators. Ensure that the computer room or the ICT room is available for access outside school hours so that student teachers can do the assignments. If needed, prepare a sign-up sheet to ensure that different student teachers get a timeslot to use the computer. Before the class end, teacher educators are to provide clear instruction on what student teachers need to prepare for the next lesson.

Assessment

- Observation of student teachers' individual work.

Possible student teachers' responses

Student teachers should produce a word document exactly the same as provided sample as follows:

မြန်မာစာရိုက်ရာတွင် အောက်ပါ ပါဠိစကားလုံးများလည်းရိုက်တတ်ရန်လိုအပ်ပါသည်။

က၊ ခ၊ ဂ၊ ဃ၊ င
ကဏ္ဍ၊ ၊ ကန္တာရ၊ ကိန္နရီ ကိန္နရာ၊ ဣစ္ဆာသယ၊ ကပ္ပိယ၊ ခန္ဓာ၊ ၊ ခန္တီ၊ ခြေသေ့၊ ဂန္ထဝင်၊ ဂန္ဓာရုံ၊ ဂန္ဓမာပန်း။

စ၊ ဆ၊ ဇ၊ ဈ၊ ည
စိတ်သန္တာန်၊ စန္ဒာ၊ စဏ္ဍာလ။

ဋ ဌ ဍ ဎ ဏ

တ၊ ထ၊ ဒ၊ ဓ၊ န
တစ္ဆေ၊ ဒုလ္လဘာ၊ ဒဏ္ဍာရီ၊ ဒေသန္တရ၊ ဒက္ခိဏာ၊ နန္ဒ၊ နှစ်ပရိစ္ဆေဒ။

ပ၊ ဖ၊ ဗ၊ ဘ၊ မ
ပုဏ္ဏား၊ ပုံပန်းသဏ္ဌာန်၊ ပဏ္ဍိတ၊ ပါမောက္ခ၊ပရိကမ္မရာ၊ပလ္လင်၊ ပဏ္ဏာ၊ ဗန္ဓတ်၊ ဗိန္ဒော၊
ဘဏ္ဍာ၊ ဘိက္ခု၊ မဏ္ဍိုင်၊ မဏ္ဍပ်၊ မိစ္ဆာ၊ မစ္ဆာရိယ၊ မန္တန်၊ မေတ္တာ။

ယ၊ ရ၊ လ၊ ဝ၊ သ
ရာထူးဌာနန္တရ ၊ ရိက္ခာ ၊ ရုက္ခစိုး၊ ရုက္ခဗေဒ၊ ရဟန္တာ၊ ဝဏ္ဏ၊ ဝံသာနုရက္ခိတ၊ သင်္ကေတ၊ သဏ္ဌာန်၊ သဒ္ဒါ၊ သဒ္ဒါရုံ၊
သဒ္ဒါ၊ သန္တာ၊ သန္တိသုခ၊ သန္တရသ၊ သပ္ပုရိသ၊ သပ္ပာယ်၊ သန္ဓေ၊ သိန္ဓောဆား၊ သန္နိဋ္ဌာန်၊ သုဝဏ္ဏသာမ၊ သုဒ္ဓကိန်း၊
သိဒ္ဓိ၊ သိဒ္ဓိတင်၊ သဒ္ဒါလင်္ကာရ၊ လက္ခဏာ။

ဟ၊ ဠ၊ အ
အဏ္ဏဝါ၊ အနန္တ၊ အန္တိမ၊ ဧကန္တ၊ အိန္ဒြေ၊ အာဂန္တု။

Check student teachers' understanding

Teacher educator can check student teachers' understanding by observing their work which is saved in the computer.

Extension and differentiation activities

For more-able student teachers, teacher educators can advise them to try Google Docs to make a word processing document. Tell the student teachers that many features on Google Docs are similar to those available in Microsoft Word. The advantage of using Google Docs is that different student teachers can get connected to collaborate on the same document at the same time. Real time changes can be seen on the screen and the document is automatically saved. One downside is that one needs to be online when editing the Google Docs. There is also a feature that the Google Docs can be converted and saved in Microsoft Word format for easy file sharing for working further offline.

Teaching tips

More explanations about Google Docs can be found at https://www.google.com/docs/about/

For less-able students, teacher educators may provide some screencast links about basic features of a word processing application so that student teachers can learn by themselves following the screencasts.

3.2.2. Basic functions of word processing 2

Expected learning outcomes

By the end of the lesson, student teachers will be able to:

- Do text, paragraph and table formatting;
- Create document designs and layout; and
- Print a document.

Competencies gained: A2 Know available instructional technology.

Time: 1 period of 50 minutes

Learning strategies: Flipped classroom, group work, Individual work after class

Preparation needed: Prior to the lesson, teacher educators are required to instruct student teachers to self-study about the lesson in Student Teacher Textbook by reading or practising and take note if any difficulties found during the self-study. Student teachers need to be able to use the computer room or ICT room or any room with ICT facilities out of school hours to complete the activities.

At the same time, teacher educators also need to practise all the tasks in this lesson in Student Teacher Textbook before the lesson. Screen casts for each task are available by clicking the links next to the sub-topics on the Student Teacher Textbook. Consult the following websites for more information. The references are particularly useful if the topics to be covered are new to teacher educators.

Title	Link	QR Code	Source
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How to use Microsoft Word	https://www.digitalunite.com/guides/creating-documents/microsoft-word		**Digital Unite**
A beginner's guide to Microsoft Office	https://www.investintech.com/content/beginnersmsoffice/		**Investintech**
Microsoft Word – Basic & Advanced	https://www.goskills.com/Course/Microsoft-Word		**Goskills**
Word Basics	https://edu.gcfglobal.org/en/word2010/		**GCFGlobal**

Student teachers can sit in the normal classroom settings and can easily work in groups of 3-5 in the computer room or the ICT room.

Resources needed: Computer, word processing software, printer (if available)

Learning activity 1: Group discussion (35 minutes)

1. Ask student teachers to work in groups to discuss common problems using Microsoft Word.
2. Each group discusses the problems they encountered when using Microsoft Word and suggests ways to address them. Each group should take notes and be prepared to share their discussion output with the whole class.
3. Ask some groups to share their problems using Microsoft Word and possible solutions/suggestions.
4. Demonstrate the tasks that most student teachers could not complete, provide necessary support and clarifications.

Assessment

- Brief verbal feedback during group tasks
- Sharing of problems and suggestions by groups.

Possible student teachers' responses

Common problems using Microsoft Word	*Possible solution / suggestion*
When I have to use more than one shapes, I can't move them together.	Hold the ' Shift' key and select the shapes one by one. Right click on the shapes and select ' Group' .
I don't know how to change different border of the table.	Select the table, click ' Design' tab, click the dropdown arrow of ' line style' under Borders group, choose a preferred line style.
I can't change the color of table cells.	Check the cells you want to edit, click the dropdown arrow of ' Shading' , choose a color you want.

Learning activity 2: Individual work (15 minutes)

Student teachers can continue working on the activity during and after class. The text to insert in the assignment can be copied and pasted from the file provided by teacher educator.

Student teachers are requested to submit their assignment as soft copy by USB flash drive or any other way as deemed appropriate by teacher educators. Ensure that the computer room or the ICT room is available for access outside school hours so that student teachers can do the assignments. If needed, prepare a sign-up sheet to ensure that different student teachers get a timeslot to use the computer.

Assessment

- Observation of student teachers' individual work.
- Output of student teachers' individual work.

Possible student teachers' responses

Student teachers should produce a word document exactly the same as provided sample as follows:

Individual Assignment

A word processing application, or known as a word processor, allows you to perform different tasks of composing, editing, formatting and printing of a wide variety of documents, including letters, resumes and reports. It is a useful aid for teaching and learning as well because you may use it to create lesson plans, worksheets and examination papers. Moreover, the produced materials by word processing are easy to share among teachers and students. Education staff can also prepare official letters and other office documents for administrative purposes using a word processing application.

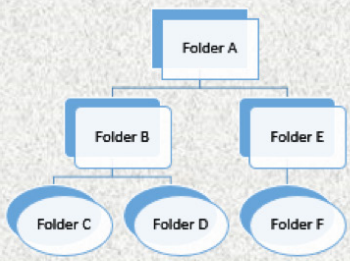
A word processing application is one of the most frequently used software programmes on a computer. Microsoft Word is the most popular but commercial one. Examples of free word processing application are LibreOffice, Open Office and Google Docs. While many of the word processing applications have similar functions, it is important to know which application your counterparts usually use because it is advisable to use the same word processing application for document sharing to avoid any loss in formatting. For instance, if you create a document using LibreOffice and share it with a friend who will use Microsoft Word to open it, the formatting of the document may be slighted changed.

Type of Word Processing Applications	
No.	Name
1.	Microsoft Word
2.	LibreOffice

Be aware of the difference between a word processing application and a plaintext editor. The former can perform formatting tasks while the latter, such as Notepad on the Windows operati ng system, can only allow editing and creating plain text documents without any formatting capabilities. A word processing application offers a number of additional features that can make your text document with a more professional appearance. However, if you need more design features of a document, you may need to use a desktop publishing software, such as Microsoft Publisher or Adobe InDesign, which can give you more control over the page layout.

In this lesson, you will learn how to navigate the commonly used Microsoft Word interface and become familiar with its most important features, such as the Ribbon, Quick Access Toolbars, and Backstage view and Myanmar font typing.

File and Folder Management in word processing



Check student teachers' understanding

Teacher educator can check student teachers' understanding by observing their work which is saved in the computer and their responses during the discussion.

Extension and differentiation activities

Teaching tips

More explanations about Google Docs can be found at https://www.google.com/docs/about/

For more able student teachers, teacher educator can advise them to try Google Docs to make a word processing document. Tell the student teachers that many features on Google Docs are similar to those available in Microsoft Word. The advantage of using Google Docs is that different student teachers can get connected to collaborate on the same document at the same time. Real time changes can be seen on the screen and the document is automatically saved. One downside is that one needs to be online when editing the Google Docs. There is also a feature that the Google Docs can be converted and saved in Microsoft Word format for easy file sharing for working further offline.

For less able student teachers, teacher educator may provide some screencast links about basic features of a word processing application so that student teachers can learn by themselves following the screencasts.

3.2.3. Basic functions of word processing 3

Expected learning outcomes

By the end of the lesson, you will be able to:

- Describe and practise the basic functions of word processing such as Microsoft Word (typing in Myanmar font (Zawgyi and Unicode), page setup, saving, formatting, printing, header and footer, bullets and numbering; creating tables, inserting pictures and charts).

Competencies gained: A2 Know available instructional technology.

Time: 1 period of 50 minutes

Learning strategies: Flipped classroom, Group work, Individual work after class

Preparation needed: Prior to the lesson, teacher educators are required to instruct student teachers to self-study about the lesson in Student Teacher Textbook by reading or practising and take note if any difficulties found during the self-study. Student teachers need to be able to use the computer room or ICT room or any room with ICT facilities out of school hours to complete the activities.

At the same time, teacher educators also need to practise all the tasks in this lesson in Student Teacher Textbook before the lesson. Screen casts for each task are available by clicking the links next to the sub-topics on the Student Teacher Textbook. Consult the following websites for more information. The references are particularly useful if the topics to be covered are new to teacher educators.

Title	Link	QR Code	Source
Basic ICT Literacy Training Manual	[available on e-library]		**UNESCO**
How to use Microsoft Word	https://www.digitalunite.com/guides/creating-documents/microsoft-word		**Digital Unite**
A beginner's guide to Microsoft Office	https://www.investintech.com/content/beginnersmsoffice/		**Investintech**
Microsoft Word – Basic & Advanced	https://www.goskills.com/Course/Microsoft-Word		**Goskills**
Word Basics	https://edu.gcfglobal.org/en/word2010/		**GCFGlobal**

Student teachers can sit in the normal classroom settings and can easily work in groups of 3-5 in the computer room or the ICT room.

Resources needed: Computer, word processing software, printer (if available)

Learning activity 1: Group work (20 minutes)

Student teachers have learnt how to navigate the commonly used Microsoft Word interface and become familiar with its basic functions. In this lesson, they are to revisit those features practically and apply the skills in the educational context.

In group before class, remind student teachers to do the revision in lesson 3.2.1. and in lesson 3.2.2., practise and discuss among themselves on how to do all the tasks in those activities. Remind them to take note of the parts that are still unclear or need clarification. In the class, guide the student teachers to complete the task as following:

1. Ask student teachers to work in groups to discuss common problems using Microsoft Word.
2. Each group discusses the problems they encountered when using Microsoft Word and suggests ways to address them. Each group should take notes and be prepared to share their discussion output with the whole class.
3. Ask some groups to share their problems using Microsoft Word and possible solutions/suggestions.
4. Demonstrate the tasks that most student teachers could not complete, provide necessary support and clarifications.

Assessment

- Brief verbal feedback during group tasks; and
- Sharing of problems and suggestions by groups.

Possible student teachers' responses

Common problems using Microsoft Word	*Possible solution / suggestion*
It is not convenient to type the text which includes a mix of English and Myanmar font as I have to change the keyboard the change the two fonts.	Right click on the language bar, click 'setting', click 'Advanced settings', click 'Change language bar hot keys', select 'Between input languages', click 'Change Key Sequence', select 'Ctrl+Shift' under Switch Keyboard layout, click Ok and close the popup window. In this way, you can change between Myanmar and English font keyboard by pressing 'Ctrl+Shift' key when you type.
I don't know how to move the Myanmar word without separating the included character of the word?	If the character of a Myanmar word gets separated when you press space, undo by pressing 'Ctrl+Z', move the cursor using arrow key on the direction you want, then press space key to move the whole Myanmar word.
I couldn't type the word inside the shape because I don't know how to add a cursor in a shape.	Draw a shape you want, select the shape, right click, choose Add text'.

Learning activity 2: Individual work (30 minutes)

It is expected that around 30 minutes should be spent on this activity in class. Student teachers can continue working on the activity after class.

Student teachers are requested to submit their assignment as soft copy by USB flash drive or any other way as deemed appropriate by teacher educators. Ensure that the computer room or the ICT room is available for access outside school hours so that student teachers can do the assignments. If needed, prepare a sign-up sheet to ensure that different student teachers get a timeslot to use the computer.

Task 1

Teacher Educator guides student teachers to create a word document according to the provided sample in Student Teacher Textbook and collect the output they produced. Teacher educator needs to ensure student teachers save their work as 'Lesson 3.2.3._ Activity 2_Task 1_ [your name]'.

Task 2

Teacher educator asks student teachers to create a word document according to the provided sample in Student Teacher Textbook and collect the output they produced. Teacher educator need to ensure student teachers save their work as 'Lesson 3.2.3._ Activity 2_Task 2_ [Add Your Name Here]'.

Task 3

Teacher educator asks student teachers to create a lesson plan using Microsoft Word. Student teachers can make reference to the lesson plan they created for other subjects or a sample lesson plan from others in hard copy. Teacher educator needs to ensure student teachers save their work as 'Lesson 3.2.3._Activity2_Task 3_ [your name]'. Teacher educator provides the instructions to student teacher on how and when to submit their assignment (for example: submit the assignment with USB before next class (or) assignment should be submitted by email before next class).

Assessment

- Observation of student teachers' individual work.
- Output of student teachers' individual work.

Teacher educators can request student teachers to complete selected activities and there is no need to complete all activities if there is too much workload for student teachers. The rationale of these activities is to apply what student teachers learnt about Microsoft Word in their daily teaching life.

Possible student teachers' responses

Task 1

Student teachers should produce a word document exactly the same as provided sample as follows:

Application software

Allows users to accomplish one or more tasks. It includes:

- ✓ ***word processing;***
- ✓ ***web browsing; and***
- ✓ ***almost any other task for which you might install software.***

Some application software is pre-installed on most computer systems. Software is generally created (written) in a high-level programming language, one that is readable by people. These high-level instructions are converted into ' machine language' instructions and represented in binary code before the hardware can ' run the code' . When you install software, it is generally already in this machine language, binary, form.

သုံးစွဲသူများ၏ အလုပ်တစ်ခု သို့မဟုတ် အလုပ်များကို ပြီးမြောက်စေရန်ကူညီပေးသည်။ ၄င်းတွင်-

a. ***စာစီစာရိုက်ခြင်း၊***
b. ***အင်တာနက်ကြည့်ရှုခြင်းနှင့်***
c. ***အခြားလုပ်ငန်းကိစ္စများအတွက် Software များကိုသွင်းယူထားရမည်။***

အချို့သော Application Software များကို ကွန်ပျူတာစနစ်နှင့်အတူ ကြိုတင်သွင်းယူထားသည်။ Software ကို ယေဘုယျအားဖြင့် လူပုဂ္ဂိုလ်များအလွယ်တကူဖတ်နိုင်သော အဆင့်မြင့် Program ရေးသားနည်း (High-Level Programming Language) ဖြင့်ရေးသားထားကြသည်။ ၄င်း (High-Level) ညွှန်ကြားချက်များမှ ကွန်ပျူတာနားလည်သည့်ဘာသာစကား (Machine Language) သို့မဟုတ် နှစ်ခုစုံသင်္ကေတ (Binary Code) အဖြစ် Hardware များလုပ်ဆောင်နိုင်ရန် ပြောင်းလဲပေးသည်။ ကွန်ပျူတာနားလည်သည့် ဘာသာစကား (Machine Language) သည် Software များသွင်းယူစဉ်ကတည်းက ပါဝင်လာသည်။

Task 2

Myanmar Education College **Attendance Sheet**			
အတန်း - ဘာသာရပ် - ရက်စွဲ နှင့် အတန်းချိန် -			
အမှတ်စဉ်	အမည်	ခုံအမှတ်	လက်မှတ်
၁။	မအိသဇင်ဖူး		
၂။	မောင်နေသူရိန်		
၃။	မောင်မြတ်နိုင်		
၄။	မမေသူအေး		
၅။	မသွန်းစက်နေခြည်		
၆။			
၇။			
၈။			
၉။			
၁၀။			

Task 3

One of the possible sample outputs is as follows. Student teachers can also follow the lesson plan template included in Educational Studies learning area.

သင်ခန်းစာပြင်ဆင်မှုပုံစံ			
ဆရာ၏အမည်			
ကျောင်း			
ဘာသာရပ် နယ်ပယ်		အတန်းအဆင့်	
လေ့လာသင်ယူမှု အစီအစဉ်၏ ခေါင်းစဉ်			
ကြာမြင့်သည့် ကာလ		နေရာ	
ကျောင်းသားများ ရရှိထားရန် လိုအပ်သော အသိပညာနှင့် ကျွမ်းကျင်မှု			
လေ့လာသင်ယူမှု ရည်မှန်းချက်များ			
သင်ကြား ပို့ချမှု လုပ်ဆောင်ချက်များ			
သုံးသပ်ချက်/ အကဲဖြတ်ချက်			
ပစ္စည်း/ရင်းမြစ်	(အသေးစိတ် စာရင်း ပြုစုရန်နှင့် ရရှိနိုင်မည် သို့မဟုတ် ပြုလုပ်ယူရမည်ကို ဖော်ပြရန်)		
• ပုံနှိပ်ပစ္စည်းများ			
• ICT အခြေပြု ပစ္စည်းများ			
• ပစ္စည်းကိရိယာများ			
အခြားလိုအပ်သော ပြင်ဆင်မှုများ			

Check student teachers' understanding

Teacher educator can check student teachers' understanding by observing their work which is saved in the computer and their responses during the discussion.

Extension and differentiation activities

Teaching tips

More explanations about Google Docs can be found at https://www.google.com/docs/about/

For more able student teachers, teacher educators can advise them to try Google Docs to make a word processing document. Tell the student teachers that many features on Google Docs are similar to those available in Microsoft Word. The advantage of using Google Docs is that different student teachers can get connected to collaborate on the same document at the same time. Real time changes can be seen on the screen and the document is automatically saved. One downside is that one needs to be online when editing the Google Docs. There is also a feature that the Google Docs can be converted and saved in Microsoft Word format for easy file sharing for working further offline.

For less able students teachers, teacher educators may provide some screencast links about basic features of a word processing application so that student teachers can learn by themselves following the screencasts.

Review Questions: Possible student teachers' responses

1. Reflect on what you have learned in the lessons under this unit, and assess your understanding of the subject.

	Yes	No	Not sure
I can describe and practise the basic functions of word processing such as Microsoft Word (typing in Myanmar font (Zawgyi and Unicode), page setup, saving, formatting, printing, header and footer, bullets and numbering; creating tables, inserting pictures and charts).			

Unit Summary

Key messages

- In Myanmar, there are two main types of character encoding system which is commonly seen. Compared to Zawgyi, Unicode follows internationally accepted standards and is gaining its popularity in Myanmar.

- A word processing application, or known as a word processor, allows you to perform different tasks of composing, editing, formatting and printing of a wide variety of documents.

Unit reflection

Possible student teachers' responses

1. How will you make good use of Myanmar font typing skill in teaching and learning or in other activities?

   I will use Myanmar font typing skill in preparing exam questions, preparing lesson plans, creating invitation letters for school events and entering student records.

2. How can you apply the skills of utilising a word processing application when you work as a teacher in basic education schools?

   I will apply these skills in school administrative works as needed, creating lesson notes, worksheet, creating school newsletter, preparing school meeting minutes, creating letters to parents, report writing.

3. If you are asked to install Myanmar font in a computer, what are the steps you would take to do it?

   I will do the following steps to install Myanmar font:
   Step 1: Download the font file from the Internet.
   Step 2: Copy the downloaded font file into Font folder.
   Alternate Step 2: Right click on the font file and click ' Install font' .

4. How would word processing application be useful to plan your lesson?

   Word processing application allows me to draw tables to create a lesson plan template easily insert pictures as necessary and edit the text whenever I want.

Further reading

3.1.

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Pyidaungsu Font. (n.d.). Retrieved from http://mcf.org.mm/download-center/pyidaungsu-font.html

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UNESCO. (2018). Basic ICT training manual. Yangon, Myanmar: UNESCO

How to use Microsoft Word. (n.d.). Retrieved from https://www.digitalunite.com/technology-guides/creating-documents/how-use-microsoft-word

A beginner's guide to Microsoft Office. (n.d.). Retrieved from https://www.investintech.com/resources/articles/beginnersmsoffice/

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Word Basics. (n.d.). Retrieved from https://edu.gcfglobal.org/en/word2010/

Myanmar Fonts (Alpha Zawgyi, Myanmar2, Myanmar3) [Blog]. (n.d.). https://myanmaritacademy.blogspot.com/2013/08/myanmar-fonts-alpha-zawgyimyanmar2.html

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Unit 4

Media and Information Literacy and Digital Citizenship[4]

In this unit, student teachers will be introduced to the principles and basic concepts of Media and Information Literacy. Student teachers will learn the competencies that a Media and Information Literate person should have and why it is important that teachers and students are Media and Information Literate. The unit will take student teachers through the different media and information providers and the functions and roles that they play in a democratic society.

Expected learning outcomes

By the end of this unit, student teachers will be able to:

- Explain what Media and Information Literacy is and why it is important for a teacher (including but not limited to teaching) in primary school;
- Understand the difference between types of information providers and types of media; and
- Understand the functions of the different media and information providers and the role they play in a democratic society.

[4] During Semester 1, 4.1.1 *Understanding the principles of Media and Information Literacy and 4.1.2 The roles and functions of Media and Information providers* will be covered. This unit will further be covered during Semester 2.

4.1. Media and Information Literacy

This sub-unit is divided in three different lessons. Lesson 4.1.1. provides a general overview of what is Media and Information Literacy, and the importance of it when teaching and learning about and through ICTs. Lesson 4.1.2. aims at explaining the different roles that the media and the information providers play in our society. Lesson 4.1.3. is devoted to one specific type of media, News Media and its importance in democratic societies.

4.1.1. Understanding the principles of Media and Information Literacy

Expected learning outcomes

By the end of the lesson, you will be able to:

- Explain what Media and Information Literacy is and why it is important for a teacher (including but not limited to teaching) in primary school.

Competencies gained: A5 Know the subject content.

Time: 1 period of 50 minutes

Learning strategies: Teacher-led discussions, group work and individual work after class

Preparation needed: Teacher educators shall prepare in advance some ideas about topics to be used for Learning activity 2 in case students have difficulties in identifying the topics that the activity requires to work on.

Teacher educators may refer to the following reference to prepare for this lesson.

Title	Link	QR Code	Source
MIL Curriculum For Teachers (English)	http://unesdoc.unesco.org/images/0019/001929/192971e.pdf		**UNESCO**
MIL Curriculum For Teachers (Myanmar Language)	http://unesdoc.unesco.org/images/0019/001929/192971MYA.pdf		**UNESCO**
Media and Information Literacy: Policy and Strategy Guidelines (English)	http://unesdoc.unesco.org/images/0022/002256/225606e.pdf		**UNESCO**
Internet Bawdar	https://www.internetbawdar.com/		**Phandeeyar**

MIL is a concept combining media literacy and information literacy. If student teachers need clarifications about media literacy and information literacy, explain them first to ensure that student teachers understand them well before moving onto talking about MIL and its three processes.

Below you can find additional information about the basic principles and notions of Media and Information Literacy that can be useful to clarify any questions that students might have on the reading text provided in the Student Teacher Textbook at the beginning of the lesson.

Basic principles and notions of Media and Information Literacy

Media and Information Literacy is a combination of two concepts: Information Literacy and Media Literacy. Each concept includes distinct knowledge, attitudes and competencies that come together under the unifying concept of Media and Information Literacy. The purpose of this text is to detail the distinct elements of Information Literacy and Media Literacy respectively and provide an explanation on how both concepts merge into Media and Information Literacy.

Information Literacy focuses on the purposes why people engage with information, and how they become informed. It is strongly associated with the concepts of learning to learn and making decisions. A process that starts by defining the information needs and problems, accessing relevant information, and using it critically and responsibly. Media Literacy addresses a similar process, but the starting point is the understanding of the roles and functions of the media and information providers in society. Media literacy goes beyond information literacy to address, for example, how social and ethnic groups are represented, expressing opinions and viewpoints in the media, and how people engage with media for entertainment.

The concept of Information Literacy includes seven stages or elements:

1. Define and articulate information needs	This is about realising that certain information is needed in order to make a decision or solve a problem. **What information is needed?*
2. Locate and access information	To identify the sources where the information that is needed can be located and accesses. *What sources can provide the information that I need, and how can I access that information?
3. Assess information critically	After the information has been located and accessed, it is time to evaluate if the information is credible and if it can be used for the purpose that is needed for. *Is this the information that I need to take my decision or solve the problem? Is it credible?
4. Organise information	Once the information has been evaluated, the ideas needed will be extracted and organised, to make it easier to use. How will you organise, or store the information in a way that is easy for you to use?
5. (Ethically) use information	This component is about synthesising the ideas and information and put it at work. In other words, to use the information. By ethically, what it means, is that in the case the information will be used for a project, the author or the sources need to be referenced and acknowledged. Copyrights, if any, need to be respected. *How am I going to use this information?
6. Communicate the information	Communicate one's understanding of the newly created knowledge to an audience in an appropriate form and medium *How am I going to create and communicate to other people the new information and knowledge that I learnt?
7. Use ICT skills for information processing	The ability to access the information, store it and communicate it using ICTs. How am I going to use ICT's to locate, access, evaluate, organise, use and communicate the information?

The concept of Media Literacy, includes five stages or elements:

1. Understand the roles and functions of media in democratic societies	When interacting with the media or consuming media, a media literate person need to understand the different roles and functions that the different types of media and information providers play in democratic societies. The roles of media include: entertainment, education, provide information or the latest news, and so on. *What is the role of the media that I am engaging with?
2. Understand the conditions under which media can fulfill their functions	Not only the roles of media need to be understood, also the context in which the media operates have to be considered when interacting with the media and information providers. There are different factors that condition the media, for example: censorship applied by authorities, media legislation, existing infrastructure, and so on. For example, if a given country has laws that restrict heavily freedom of expression, media will not be able to report on the news freely. If in some areas of a country there is no electricity, people from those areas will not be able to watch TV and will have to rely in other channels of communication. If the media does not have access to certain information or geographical areas in a given country, the media will not be able to provide certain information to the public.
3. Critically evaluate media content and in the light of media functions	The information that is accessed through the media, need to be evaluated considering the roles and functions of the media. For example, if we obtain information from an advertisement, we need to understand that the characteristics and benefits of the product might have been exaggerated because the purpose of an advertisement is to sell the product. Another example, let us say that we are watching a Hollywood film about Japan. We cannot take as truthful or real the representation of the Japanese society that the film portrays in the screen because the purpose of films is to entertain the public. The role of cinema is not to provide an accurate portrayal of a reality. To learn more about Japanese society, it would be better to watch a documentary, read the news or get a specialised book from the library.
4. Engage with media for self-expression, intercultural dialogue and democratic participation	Engage with media for self-expression: The ability to engage with the media to give one's opinion or point of view on a given topic, or to share one's creative work (like an article, a video, photography, and so on.) Engage with media for intercultural dialogue: The ability to engage with media to learn about different cultures and to share about our own culture to foster common understanding and break stereotypes. Engage with media for democratic participation: The ability to engage with media to learn from different points of view and to share also our opinion as means to participate in public debates.
5. Acquire and use skills (including ICTs) needed to produce user-generated content	It refers to the ability to use ICT's to create videos, take photos, write text and record audio-clips to share information in different media platforms, like social media, websites, messaging apps, newspapers or broadcasting stations.

Learning activity 1: : Individual reflection (20 minutes)

1. Student teachers were asked to do the reading in the lesson before the class.

2. Provide some examples of what media and information providers are: Newspapers, TV, Radio, Books, Movies, Internet, Social Media (Facebook, Youtube, others), videogames.

3. Request student teachers to complete the table in their Student Teacher Textbooks.

4. Indicate that student teachers should have estimated the amount of time they spent interacting with each media and information provider identified, and include the purpose of that interaction (that is, entertainment or leisure, learn about the current affairs, learn something new, complete school assignments or study, and so on).

5. Ask some student teachers to read aloud from their answers the three media or information providers that they spent the most time on and record them on the board so that there will be a consolidated list of examples of media and information providers on the board. In a second column, write the estimated time they spent with each media. In a third column, write down the purpose why those media were consumed/interacted with. If there are any media or information providers identified that are new to some of the teacher students, provide a brief explanation about it.

6. Discuss with student teachers the importance that media and information providers have in their life. Some questions that might be used include:
   - 'Do you think you spend a lot of time using media and information providers?'
   - 'What is the effect that you think the media and information providers has in your life?'
   - 'How do you take decisions based on what you see, listen to and read in the media? Can you provide examples?'

Possible student teachers' responses

There are no wrong or right answers in this activity. The purpose of the exercise is for student teachers to realise the enormous exposure they have to media and information providers in their lives, and for the teacher educators to test the knowledge student teachers have on what media and information providers are and in which ways they engage with them.

A sample of how the answers might look like is provided below:

Type of Media or Information Provider	*Number of hours spent in one week*	*Purpose for interaction*
Facebook	16	Communicate with friends
TV	7	Entertainment/leisure
Newspapers	10	Learn
Video games	20	Entertainment/leisure
Internet	10	Learn (complete school work)

Assessment

- Questions directed at individuals.
- Direct verbal feedback from the teacher educator.
- Self-assessment.

Learning activity 2: Think and write (30 minutes)

1. Divide student teachers in different groups for this activity. Explain that they need to choose a topic about something that has recently happened in their township or city and answer the questions on the Student Teacher Textbook.

2. If student teachers have difficulties in identifying the topic, they want to work on, have some options ready. Teacher educators can source those options from the local newspapers, TV, radio or digital media. Then student teachers discuss with the group and answer the questions.

3. Select one or two groups to present their answers.

4. Explain to student teachers that during this activity, they have exercised the three processes of MIL: Access and evaluate. Teacher educators can write in the board how each question relates to each phase of the MIL process. Explain also that due to the time limitation, the last process of MIL – produce – was not able to complete with a real output in class. Student teachers may continue to prepare a brief presentation, in any format such as showing a picture or verbal explanation and deliver it in the next lesson if time allows.

Possible student teachers' responses

This activity allows student teachers to understand better the three processes of MIL. They will realise that they already do this process in an unconscious way. They will also realise that by acquiring better knowledge and skills to access, evaluate and produce information, they will be better equipped to communicate information and engage with media in a more effective way.

The table below may serve as a guide in assessing the answers that student teachers will have recorded in their Student Teacher Textbooks.

		MIL process	*Key question*	*Possible answers:*
1		**Accessing the information and media content:** -Identifying information needs	Why do I need that information?	To learn something new, to complete a task, to make a decision, to solve a problem, to be updated on current affairs, and so on.
		-Determining the sources of information and searching it	Where am I going to search for that information/media content?	Internet, TV and Radio, Newspapers, Library, books, specialised journals, and so on.
		-Locating and retrieving information	How do I get/retrieve and store the information/ media content?	Save it in the laptop, take a photo, make a copy, print it out, store in a memory card, photocopy, record it, and so on.
2		**Analysing and evaluating the information and content retrieved**	How do I know if the information/media content I collected and retrieved is of good quality, accurate and truthful?	It should come from a reputable source like an institution, it should be backed with data and facts if it is a piece of news it should include more than one information source (the more sources, the better).
3		**Production and sharing media content/information** -Using the information	How will you apply the new knowledge?	To communicate new knowledge; to educate; to raise awareness on a topic; for self-learning; to make a decision based on the information I have; to solve a problem; and so on.
		-How are you going to communicate and share this information	What media shall you use to communicate the information/ knowledge/media content?	Prepare a Powerpoint Presentation to be presented in the class; prepare a news article; write a short post on facebook; make a video and upload it in social media; write a report and publish it; and so on.

Assessment

- Questions directed at individuals.
- Direct verbal feedback from the teacher educator.

Learning activity 3: Test your understanding

Student teachers will be requested to complete this activity after class and submit the paper to teacher educators. At the beginning of next lesson, teacher educators can ask some student teachers to share their answers.

Assessment

- Short essay responses.
- Sharing of responses by individuals.

Being the first lesson of the unit, it is not expected that students will have a sound knowledge and understanding of MIL. A sample rubrics of assessment are as follows:

Evaluation Criteria	EXCELLENT	VERY GOOD	GOOD	NEEDS IMPROVEMENT
Understanding of MIL basic concepts and notions	The use of the terms related to MIL in the essay show that the student understands their meaning. The student understands that MIL is important not only for teachers but also for citizens. The student includes scenarios or situations where skills and competencies related to MIL can be applied.	The use of the terms related to MIL in the essay show that the student understands most of the concepts. The student understands that MIL is important not only for teachers but also for citizens. The student can identify at least one scenario or situation where MIL competencies and skills can be applied.	The use of the terms related to MIL in the essay show a vague understanding of MIL related concepts. The student understands that MIL is important not only for teachers but also for citizens. The student cannot identify any situation or scenario where MIL competencies and skills can be applied.	The student does not understand the basic concepts and terms related to MIL. The student cannot identify any scenario or situation where MIL skills and competencies can be applied.
Completeness	The assignment was submitted within the deadline and satisfies the requirements	The assignment was submitted within the deadline and satisfies the requirements	The assignment submitted by the student partially satisfies the requirements	The assignment is not submitted on time or/ and does not satisfy the requirements

Check student teacher's understanding

Make sure that student teachers understand that Media and Information Literacy is a set of competencies that allow them to access, evaluate and produce/share information and media content. Remind them that MIL is not only important for their day-to-day life, but also for their profession, as it will allow them to use the most suitable information and media content in the classroom, for their own professional development (learning new skills, knowledge, etc.) and they will be able to transfer those MIL competencies to their students.

Extension and differentiation activities

To further the understanding of teacher students on how important role information providers and media play in our life, you might want to ask student teachers to think about how life would be if one day they woke up in the morning and there were no media and information providers. They can discuss in groups or with all in the classroom. Some questions that can guide the discussion might include:

- 'How would you communicate with other people?'
- 'How would you know what is happening in other parts of the world or in Myanmar? How will this affect you?'
- 'Will this affect the decisions you make during your day?'
- 'What would you miss the most?'

4.1.2. The roles and functions of Media and Information Providers

Expected learning outcomes

By the end of the lesson, student teachers will be able to:

- Understand the difference between types of information providers and types of media; and
- Understand the functions of the different media and information providers and the role they play in a democratic society.

Competencies gained: A5 Know the subject content.

Time: 1 period of 50 minutes

Learning strategies: Flipped classroom, group work

Preparation needed: After learning the three processes of MIL, student teachers move forward to learn the roles and functions of media and information providers in the processes of MIL. This lesson is directly linked to lesson 4.1.1 and it deepens the understanding of the role that media and information providers play in people's life and in the broader context of the society.

Teacher educators may refer to the following reference to prepare for this lesson.

Title	Link	QR Code	Source
MIL Curriculum For Teachers (English)	http://unesdoc.unesco.org/images/0019/001929/192971e.pdf		**UNESCO**
MIL Curriculum For Teachers (Myanmar Language)	http://unesdoc.unesco.org/images/0019/001929/192971MYA.pdf		**UNESCO**
Media and Information Literacy: Policy and Strategy Guidelines (English)	http://unesdoc.unesco.org/images/0022/002256/225606e.pdf		**UNESCO**
Internet Bawdar	https://www.internetbawdar.com/		**Phandeeyar**

Student teachers are instructed to complete Learning activity 2 on the Student Teacher Textbook prior to the lesson.

Resources needed: internet connection and computer or hand phone devices.

Learning activity 1: Review of previous lesson (10 minutes)

1. Student teachers should have completed this activity prior to the lesson. The objective of this activity is to review the principles of MIL and allow teacher educators to assess if student teachers have understood the basic concepts of the subject.

2. Ask student teachers about the MIL practices that they usually perform when consuming media. This will provide you with a better overview of the understanding of students about MIL. It will also make student teachers realise that unconsciously; they do have and practise basic MIL skills.

3. Record the answers in the board. If student teachers find it difficult to explain themselves, they can provide examples of how they perform those practices.

Possible student teachers' responses

Student teachers might have difficulties at the beginning to identify and express the MIL practices that they perform in their daily life. The following questions can guide that thinking process:

- 'When you read some news in Facebook or the newspaper, do you cross-check the information or the news with other media?'
- 'Do you check different information sources and information providers to make sure that the information you have located is of good quality?'
- 'Before you sharing information and media content with others (through Facebook, instant messaging apps Viber, Whatsapp, and so on.), do you try to verify if the information is true or false?'
- 'Before sharing information, do you think if the content can be harmful or offensive to other people or groups of people?'

Assessment

- Concept-checking or comprehension questions directed at individual students by the teacher educator.
- Peer assessment: student teachers assess each other.

Learning activity 2: Search and compare (15 minutes)

1. Ask student teachers to individually search online two to three resources or media content that are examples of the functions listed in the Student Teacher Textbook, and indicate which media or information provider(s) fulfill these roles. Students can use any devices (such as smart phone, tablet or laptop) to do the online search.

2. If online search is not available, teacher educators can write the roles (suggested answers below) on the board and request student teachers to match the examples with each role. Student teachers are given time to search for the examples online.

3. Ask a few student teachers to explain to the class the examples they have found and why they think they fulfill the role attributed to each example. Write on the board all the functions and mark with a check the relevant role whenever an example related to it is presented by a student teacher. This will show not only which roles that most media, information providers and media content fulfill but will also help teacher educators identify which roles the student teachers have more difficulties in identifying or associating to the media and information providers.

Possible student teachers' responses

Role	*Possible examples of media, media content or information provider that fulfills each role*
Inform	All media, media content and information providers
Educate	Examples of libraries, documentaries, Public Service Announcements, textbooks, articles found in some magazines or specialised journals, some educational TV programmes, libraries, and so on.
Facilitate teaching and learning processes	Examples of textbooks, libraries, archives, online resource hubs (like dictionary.com), manuals, toolkits, online courses, youtube videos that provide instructions on a given topic, and so on.
Provide access to all types of information	Examples of libraries, Thesaurus, internet, archives, museums, and so on.
Promote universal values and civil rights such as freedom of expression and information	Examples of news articles, documentaries, videos, publications, reports by NGOs, etc. that advocate for freedom of expression or human rights or denounce limits imposed on freedom of expression or violation of human rights.
Serve as society's collective memory	Examples of museums, archives, digitalised copy of important written documents, video and audio files or movies, libraries, and so on.
Gather information	Examples of libraries, archives, internet resource hubs, museums, and so on.
Preserve cultural heritage	Examples of museums, archives, digitalised copy of important written documents, video and audio files or movies, libraries, and so on.
Entertain	Examples of movies, books, TV and Radio programmes, music recordings, comic books, video games.

This activity allows student teachers to classify different types of information providers and media content based on the roles they perform.

Assessment

- Concept-checking or comprehension questions directed at individual students by the teacher educator.
- Brief verbal feedback.

Learning activity 3: Group discussion (25 minutes)

1. Divide student teachers in groups and ask them to identify which roles is the media playing in each example provided. Let them know that one example might fulfill more than one media roles or functions.. They can discuss the answers with the group. They should note down any questions they might have about the roles and functions of the media.

2. After student teachers conduct the activity, ask them to say their answers out loud and write the answers in the whiteboard.

3. Ask student teachers students to compare it with the answers they came up with in each group. Ask students if they agree with the answers, and if their answers are different, ask them to explain how they came up with their answers.

Possible student teacher's responses

Example	Media role or function	Explanation
A. An investigative report published in a daily newspaper about a Minister that has been giving multi-million contracts to companies owned by members of his family.	5. Function as a watchdog of government in all its forms, promoting transparency and public scrutiny of those with power through exposing corruption, maladministration and corporate wrong-doing.	In this example, the media is exposing corruption of the Government, therefore, it is acting as a watchdog of the powerful. The media has the responsibility to report on any wrong-doing that people in power might do. That way, the public, the people will know what the government or big business men are doing.
B. A foreign company will be building a production plant in the bank of the Ayeyarwaddy river, near a village where most of the population are farmers and fisherfolk. In the news, they have interviewed the owners of the plant who talk about the new jobs that they will create when they build the plant. Local farmers have been also talking on TV, complaining that the waste produced by the plant will pollute the water and the soil, and no vegetables will grow there anymore, making it impossible for them to live from farming. The protests staged by environmentalists have been also covered by the news, they claim that the pollution of the plant will destroy the ecosystem of the region. In a press conference, the government assures the local population that the plant will not affect their livelihoods and will bring great wealth to the region.	2. Facilitate informed debate between diverse social actors.	Thanks to the media, the public can learn the different points of view and opinions that the different people and actors involved in or affected by one issue have. By listening to the different points of view, citizens will be able to create their own opinion on that issue. This, will allow them to communicate their own opinion on the issue and participate in the public debate around it.

Example	Media role or function	Explanation
C. In the lead up to the general elections, a TV channel will be broadcasting a debate between the Chairs of the two main political parties. In the TV programme, both leaders will present their electoral programmes. In the election's day, journalists and TV crews will be at the poll stations to report any incidents that might happen during the election day, and make sure that the guidelines issued by the Election Commission are strictly followed.	6. Are essential facilitators of democratic processes and one of the guarantors of free and fair elections?	Thanks to the media, citizens know what are the agendas and ideas that the different political parties and political leaders are aiming at implementing if they get elected. This way, citizens will be able to decide which ideas they like and what party or leader they will vote for. Media also follows up closely what happens in the elections day, they can point out if there are signs that there is fraud, and they make sure that the electoral process is conducted in a transparent way by explaining the electoral process to the public and pointing out possible flaws in the system.
D. A TV documentary series about the culture and customs of the different ethnic groups that co-exist in Myanmar.	3. Provide us with much of what we learn about the world beyond our immediate experience.	Thanks to the media we learn what is happening in other parts of the world, or what is happening in places in our same country that are far from where we are. The media also breaks down and explains complex issues in a way that is easy to understand by the public.
	4. Are means by which a society learns about itself and builds a sense of community?	The media allow us to learn more about our society and our community. Through the media, we can learn about our history, our traditions, prominent people from our society, and so on.
	7. Are a vehicle for cultural expression and cultural cohesion within and between nations?	Creative and artistic work can be shared through the media. The media also serves as a platform to learn from different cultures, communities and traditions that are different from ours. Those different cultures can be from other groups within our country or from groups that are far from us in other parts of the world. By learning other cultures, the media allows us to understand better those different groups of people, and appreciate their culture.

Example	Media role or function	Explanation
A. A feature story in a newspaper that denounces the high number of incidents of gender based violence that rural women suffer and the lack of policies and mechanisms to address the issue.	8. Function as an advocate and social actor on its own right while respecting pluralistic values.	Media has also the power and the responsibility to make our societies better. They can bring to the spotlight social problems, or human rights abuses by publishing and broadcasting stories about them. This way, they have the capacity to open the debate to address issues that matter to people and advocate for change.
A. B. C. D. E.	1. Act as channels of information and knowledge through which citizens communicate with each other and make informed decisions.	In all the examples, the media is playing this role and function. It is providing the channel to share information and knowledge to the public. It is also allowing citizens to communicate with one another, by including their voices and opinions in the content they produce, publish and broadcast. This information and knowledge that is channeled through the media, allow citizens to acquire new ideas and information that will help them taking decisions.

The information under '*Explanation*' can help Teacher educators to provide feedback and additional information to student teachers to better understand the role that the media is playing in each example.

Assessment

- Verbal feedback on the discussion output.
- Peer assessment: student teachers assess each other.

Check student teacher's understanding

Make sure student teachers understand that there are more than one type of media or information providers, and that they can play many different roles. Put the focus on the importance of the news media, and the specific roles that this type of media play in a democratic society.

Through this lesson, student teachers are encouraged to think about the importance of consulting different sources of information before using that information, to present it to others, to take decisions or to build an opinion on a given issue.

Student teachers should understand the process by which information, data, events, and so on, become news, and the important role that journalists and professional media play in this. It should also be highlighted how important it is for journalists to consult different sources of information and different voices before writing/editing the story that will be published or broadcasted.

Remind students the importance of having a diverse range of news media houses that can provide different angles and views on a given topic or issue (media diversity and media pluralism), that are independent and can report freely. Only if a country has a free and diverse media, news media can perform its roles and functions in a democratic society.

Extension activities and differentiation activities

Ask each group to choose one or two functions of the media and come up with another example on how those functions and roles are fulfilled. Student teachers can use their smart phones, tables or laptops to search for examples online.

Review Questions: Possible student teachers' responses

1. Reflect on what you have learnt in the lessons under this unit, and assess your understanding of the subject.

	Yes	No	Not sure
4.1.1.			
I can explain what Media and Information Literacy is and why it is important for a teacher (including but not limited to teaching) in primary school.			
4.1.2.			
I understand the difference between types of information providers and types of media.			
I understand the functions of the different media and information providers and the role they play in a democracy.			

2. Media and Information Literacy is important for a teacher in primary school. Please give examples why it is important.

   The responses may vary. According to the Student Teacher Textbook, Media and Information Literate teachers will lead to Media and Information Literate students. Thus, it is important for primary teachers to understand how media and information might be appropriately used in the school curriculum and classroom settings, so they can be able to critically assess media content and information sources in the light of the functions attributed to news media and other information providers. Critical thinking and problem-solving skills acquired by teachers through MIL will be effectively transferred to students across the different subjects in the curriculum. If teachers know and understand the core concepts, tools of enquiry and structures of MIL, they will be able to create learning experiences that are meaningful for students and prepare them for their role as citizens.

   - Help students to develop critical thinking skills, checking different sources of information and building their own opinion about different issues.

- Help teachers utilise information, multimedia content (videos, photos, text, and so on) in the delivery of the classes.
- Aid teachers in continuous learning. A media and information literate teacher knows where to access information that will help her continue learning new concepts, subjects and ideas throughout her career.

3. What are the differences between types of information providers and types of media?

   Information is anything that informs. It can be defined as data, facts, experiences or knowledge that has been processed to be presented in a way that can be used and applied for a certain purpose. The media are one way through which the information and knowledge is communicated to the public. Media can also be defined by the format in which the information is packaged and communicated: Print Media (newspapers, books, magazines, comic books), Audiovisual Media (movies, photographs, radio, audio recordings) and Digital Media (blogs, social media like facebook or youtube, videogames).

4. What are the roles media and information providers play in Myanmar?

   The general roles that the media and information providers play are listed below:
   - Inform;
   - Educate;
   - Facilitate teaching and learning processes;
   - Provide access to all types of information;
   - Promote universal values and civil rights, such as freedom of expression and information;
   - Serve as society's collective memory;
   - Gather information;
   - Preserve cultural heritage; and
   - Entertain.

   It is important to note, that one media can play more than one role from the list above. For example, a TV documentary about wildlife can Inform, Educate and can also Entertain. On the other hand, we can also find the media which only fulfill one role. For example, a comedy film only seeks to Entertain the audiences.

Further reading

4.1.

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UNESCO. MIL Curriculum For Teachers (Myanmar Language). http://unesdoc.unesco.org/images/0019/001929/192971MYA.pdf

UNESCO. Media and Information Literacy: Policy and Strategy Guidelines(English). http://unesdoc.unesco.org/images/0022/002256/225606e.pdf

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Glossary

Terms	Elaborations
Arithmetic Logic Unit (ALU)	The part within a Central Processing Unit which carries out arithmetic operations like addition, subtraction, multiplication and division and other logical actions such as AND and OR functions and operates on data available in the main memory and send them back after processing
Artificial Intelligence (AI)	A computer system that stimulates human intelligence process which include learning, reasoning and interacting.
Asynchronous	Something not occurring at the same time or delay between two or more points. For example, in asynchronous conferencing, there is a delay in interaction between participants.
CD-ROM	An adaptation of the CD that is designed to store computer data in the form of data (text, graphics and so on). Its full name is Compact Disc, read-only-memory.
Central Processing Unit (CPU)	The main part of a computer in which all processing is carried out and which controls the activities of the whole computer configuration
Control Unit	The part which directs all operations inside a computer and can be known as the heart of the computer because it controls and coordinates all hardware operations including the Central Processing Unit, input and output devices
Conferencing	Two or more peoples have simultaneous conversation using Internet, it is called conferencing. When this process is adding video streaming technology, it is called video conferencing.
Copyright	A set of rights granted to the author or creator of a work to restrict others' ability to copy, redistribute and reshape the content. Rights are frequently owned by the companies who sponsor the work rather than the creators themselves, and can be bought and sold on the market.

Terms	Elaborations
Democracy	A system of government where the people have final authority which they exercise directly or indirectly through their elected agents chosen in a free electoral system. It also implies freedom to exercise choice over decisions effecting the life of the individual and the protection of fundamental rights and freedoms. In this context, independent media and free access to information are fundamental to the pursuit of democracy and freedom in the whole world.
Digital	The electronic technology using two electronic states: ON and OFF expressed in Digits (ON = 1 and OFF = 0), to generate, store and process data. In computer system, the information is stored in the form of a string of 0s and 1s, and each digit is referred to as a bit.
DVD	A digital optical disc storage format which can store computer data with higher capacity than a compact disc (CD) while having the same dimensions.
File	The digital version of resource or data stored in computer system.
Flash drive	A data storage device which is also called thumb drive, pen drive or flash stick. It is typically removable, rewritable and much smaller than an optical disk.
Folder	The cataloging structure of a directory in a file system which can put files inside.
Freedom of Expression	A fundamental human right. It is used to indicate not only the freedom of verbal speech but any act of seeking, receiving and delivering information.
Graphical User Interface (GUI)	A feature which allows users to interact with the system and applications through graphical icons instead of text-based user interfaces.

Terms	Elaborations
Hard Disk Drive (HDD)	An electromechanical data storage device which use magnetic storage technology to store and retrieve digital information.
Information Literacy	Focuses on the purposes of engaging with information and the process of becoming informed. It is associated with the concepts of learning and making decisions through its emphasis on defining needs and problems, relevant information and using it critically and responsibly (ethically).
Input device	Any device that enters information into a computer from an external source
Internet	The most well-known and the largest network linking hundreds of thousands of individual smaller networks all over the world.
Joystick	A cursor control device used in computer games and assistive technology, being a hand-held lever that pivots on one end and transmits its coordinates to a computer
Local Area Network (LAN)	A network of computers that interconnect within a limited area.
Media	Physical objects used to communicate, or mass communication through physical objects such as radio, television, computers, films, etc. It also refers to a physical object used to communicate media messages. Media are a source of credible information in which contents are provided through an editorial process determined by journalistic values and therefore, editorial accountability can be attributed to an organisation or person. In more recent years, the term media is often used to include new online media. Media are channels of information and education through which citizens can communicate with each other and disseminate stories, ideas and information, they are also vehicles for cultural expression and cultural cohesion within and between nations.
Media Literacy	The ability to read, analyse, evaluate and produce communication in a variety of media forms (e.g. television, print, radio, computers, etc.)

Terms	Elaborations
Memory	The part in a computer to store information which can be recalled and accessed when required
Metropolitan Area Network (MAN)	A network that interconnect computer resources in a geographic area or region larger than that covered by LAN.
Modem	A conversion device which converts signals from one device into signals another device can read. Its full name is modulator demodulator. For example, a modem may covert the digital data of a computer into an analog signal that can be read and carried by a telephone line.
Operating System	The system software which operate hardware and act as the platform for end-users' application software.
Optica character recognition	A device which reads printed or written text characters and then translates the character image into commonly used character codes for data processing.
Output device	Any device that translates the computer output into a form that human beings can understand.
Processing device	Any electronic devices that process or transform provided information as an input to an output
Right to information	The right of citizens to access information held by public bodies (Government, parliament, military, etc.)
Solid-state Storage Drive (SSD)	A data storage device which uses integrated circuit assemblies as memory to store data persistently. SSDs are more resistant to physical shock, lower latency, faster access time but more expensive than HHDs.
Voice recognition	A device which enables the translation of spoken language into text
Wide Area Network (WAN)	The computer network which is also called telecommunications network. The Internet may be considered a WAN.

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Notes

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The Government of the Republic of the Union of Myanmar
Ministry of Education