

**National School Curriculum**

# **INSTRUCTIONAL GUIDE FOR TVET (COMPUTER HARDWARE AND NETWORKING)**

**CLASSES IX & X**



**Department of Curriculum and Professional Development**  
Ministry of Education, Royal Government of Bhutan



“Your parents, relatives, and friends would be very proud of what you have achieved. At your age, to have completed your studies is your personal accomplishment. Your knowledge and capabilities are a great asset for the nation. I congratulate you for your achievements. Finally, your capabilities and predisposition towards hard work will invariably shape the future of Bhutan. You must work with integrity, you must keep learning, keep working hard, and you must have the audacity to dream big.”

*- His Majesty Jigme Khesar Namgyel Wangchuck*

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## Foreword

COVID-19 has suddenly caused unforgiving disruptions in public education all over the world and brought about threats of fragmentation due to disparities in accessibility and connectivity in many systems. In Bhutan too, continuity of education and learning has been severely affected as a result of nationwide school closures and due to restrictions and health protocols. The disruptions have led to challenges in many existing patterns and trends in education resulting in a massive shift away from teaching and learning in traditional settings.

In the new normal education, human interaction and well-being are a priority. Digital technology that enables communication, collaboration and learning across distance, is a source of innovation and expanded potentials. As we embrace this exceptional opportunity to transform the world, and as we reimagine the organization of our educational institutions and learning environments, we need to think about where we want to go.

In the post COVID 19 era, we must prioritize the development of the whole person not just academic knowledge. Inspiration for the change can be drawn from the 1996 Delors report, *Learning the treasure within*, in its specification of four pillars of learning as “learning to know”, “to do”, “to be”, and “to live together”. Therefore, curricula must be increasingly perceived as an integrated and based on themes and problems that allows learners to learn to live in peace with our common humanity and our common planet. This has the potential in the development of a strong base of knowledge about one’s self and about the world and find purpose and be better able to participate in social and political milieu.

The National School Curriculum is, not just a mere response to the pandemic, but also a culmination of the curriculum reform work for the last four years by the then Royal Education Council. It is an attempt to transform education from the teaching of “what” to learning of “how” and “why” towards empowering learners with the transversal competencies and the 21st century skills, and preparing them to be lifelong learners. We are optimistic that this move orients our education process towards nurturing nationally rooted and globally competent citizens.

Wish all our learners and teachers a life enriching experiential teaching and learning.  
Tashi Delek.



**Tashi Namgyal**

**Director**

## Introduction

Technical and Vocational Education and Training (TVET) is aimed at providing knowledge and skills for employment. It comprises education, training and skills development related to a wide range of occupational fields, production, services and livelihood. The Department of Curriculum and Professional Development, Ministry of Education envisages that the TVET curriculum has a place in the mainstream education system, as it is the case in most of the education systems of the developed world. The formal Technical and Vocational Education and Training (TVET) began in 1965 at Don Bosco Technical School (DBTS), in Kharbandi (presently known as Rinchening) in Phuntsholing. Even after that, major curriculum reform was planned by the then Department of Curriculum Research and Development (DCRD) in an attempt to make education relevant to the Bhutanese society through diversification of Secondary Education Curriculum in the schools, which included the introduction of TVET.

As per 'National Education Framework' developed collaboratively by the Royal Education Council (REC) and the Ministry of Education (MoE), it provides a pathway on integrating technical/vocational education in the mainstream school education curriculum and as elective subjects in higher classes (NEF, 2009; page 64).

With the collaborative efforts of the Ministry of Labour and Human Resources and the erstwhile Department of Curriculum Research and Development, Vocational Curriculum has been introduced in the schools with assistance from TTIs since 2011. After the first MoU that was signed between MoE and MoLHR in 2011, the second MoU was signed again in 2014, to improve technical/vocational courses. The technical/vocational courses offered by the TTIs/IZCs are adapted and redesigned and are offered in schools aligning to the 'Bhutan Education Blue Print' 2014-2024, which recommends upscaling and diversification of TVET in schools through the provision of alternative pathways in schools and the tertiary education systems, owing to the limited access to such courses, despite the growing demand for technical skills in the country.

The resolutions of the National School Curriculum Conference 2016, also strongly emphasised the need to upscale and deepen TVET. Accordingly, the TVET framework is developed from classes PP to XII, schools equipped with necessary resources and instructors trained. Tripartite MoU among the then REC, MoE and MoLHR was also signed in 2018 to implement the programmes collaboratively.

Although the TVET curriculum is competency based with more emphasis on hands-on experience, further improvements have been made taking care of cognitive and affective domains besides psychomotor. Teaching and learning approaches have also been enriched with the recommendation to use ICT and online resources. Since the pandemic (COVID-19) has resulted in the closure of schools, it has taught us lessons to be prepared for such an untoward situation in the future. Thus, the National School Curriculum Instructional Guide is prepared not only to encourage blended learning but also to facilitate remote learning. The guide would help the schools to implement the curriculum effectively without limiting to contact teaching/learning besides using a variety of pedagogies.

### **Purpose of the Instructional Guide**

Among the many definitions of 'curriculum' this Instructional Guide underscores the meaning of curriculum as a standard and competency-based sequence of planned learning experiences where learners practise and achieve the proficiency in applying the learning experiences in real life scenarios. These proficiencies, in the curriculum framework, have been stated as "competencies" and 'objectives' for each class. In keeping with the principle, 'less is more' as stated the National School Curriculum, the contents of the curriculum have been reworked, so that learners can be engaged more in activities that can lead to the acquisition of required skills rather than having them 'cover the syllabus'.

This Instructional Guide believes that the classroom teachers, as professional individuals, can make the most authentic and reliable judgment about each learner's learning needs and the learning experiences to be provided to propel the learners in the learning continuum. With these beliefs and principles as the background, the following are the purposes of this document.

- Facilitate learners acquire required skills and competencies.
- Strengthen blended learning, including flipped classroom with multimedia, digital pedagogies and ICT devices and websites as tools to share the responsibility of learning amongst the learners, teachers, the parents and other stakeholders.
- Facilitate the use of Continuous Formative Assessment for learning using diverse appropriate assessment techniques and tools commensurate with individual differences in learning, and gather evidence to guide planning of educational programmes and activities for learners.
- Promote inclusive learning through the blended learning which facilitates learning anywhere, any time with the learner being responsible for the learning.
- Provide suggestive means of acquiring required skills by building interrelationship among, and through, the integration of the four strands of the curriculum.
- Help teachers assume the roles of facilitator, guide, motivator and evaluator.
- Guide teachers, parents and other stakeholders in helping learners achieve their potential.
- Empower teachers to design their own 'course of study' or 'class curriculum' for their students in line with the National School Curriculum Framework.
- Enhance sharing the burden of responsibility and accountability for learning amongst the stakeholders, including the learners themselves.

In this age of advanced communication and information technology, contents are widely available from a number of sources. Therefore, the teachers can select, structure and sequence the contents as required to best suit the learners' need while maintaining coherence and consistency. In other words, while the contents of the curriculum are negotiable, the competencies and objectives are not. While, teachers may have access to number of materials, it should be kept in mind that the teaching and learning should be focused on achieving the competencies rather than 'covering of the syllabus'. The teaching learning materials should be used as means to create a learning environment that is competency-based where the learners need to master the skills presented to them. While designing lesson plans and teaching learning activities, teachers need to ensure that the materials are relevant and appropriate for the given task.

The assessment should be competency-based wherein the teachers should assess the learners' mastery of the skills stated as competencies and objectives for each class. Teachers should use appropriate assessment tools and techniques depending on the nature of the learning activities. The learners should be clearly informed about the success criteria, the areas of assessment and the tools to be used so that they know exactly what tasks are to be performed or expected of them. In the process of the performance, the teacher should continuously provide feedback and, if necessary, modify instructions. Efforts have to be made to ensure that every learner has mastered the skills.



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MODULE 1: PERFORMING INSTALLATION AND CONFIGURATION OF COMPUTER SYSTEM AND DEVICE

Chapter 1: Applying Occupational Health and Safety (OHS)

**A. Competency/Competencies:**

- i. Apply principles of 5S in any task for safety.

**B. Learning objectives/Topic:**

Learning objectives	Topic
1.1.1 Define 5S. 1.1.2 State the purposes of 5S 1.1.3 Explain the principle of 5S 1.1.4 Define OHS 1.1.5 State the importance of OHS. 1.1.6 Explain the rights of the employee 1.1.7 State the main causes of accidents 1.1.8 State the safety rules. 1.1.9 Ensure appropriate use of PPE. 1.1.10 Ensure to refer OHS manual 1.1.11 Apply the principles of 5Ss	<b>1.1 Applying the principles of 5S</b>  Overview: The topic is about the ways of organizing and managing the workplace that enable the learners to perform their tasks effectively and efficiently.

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 1.1.
- ✓ Provide handouts to learners.
- ✓ Make learners read and perform OPERATION SHEET 1.1.
- ✓ Ask learners to solve the SAMPLE SELF CHECK 1.1 and provide the additional questions referring to CBLM and other resources-Google/YouTube.
- ✓ Instruct learners to read INFORMATION SHEET 1.1 and perform OPERATION SHEET 1.1. through Google Classroom (Learners may arrange available tools and materials at home.)
- ✓ Provide handouts to learners through Google Classroom.
- ✓ Provide the web link <https://youtu.be/n9sxq34D9HQ> that explains the principles of 5S.
- ✓ Ask learners to solve the SAMPLE SELF CHECK 1.1 and provide the additional questions referring to CBLM and other resources. Ask them to submit through Google Classroom.

**D. Assessment :**

- ✓ Assess learners' ability to apply the principles of 5S using a rubric.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.1 and the additional questions provided.
- ✓ Provide feedback.
- ✓ Assess learners' ability to perform OPERATION SHEET 1.1 through a short video sent as evidence through Google Classroom.

- ✓ Assess learners' response to SAMPLE SELF CHECK 1.1 and the additional questions provided through Google Classroom.
- ✓ Provide feedback through Google Classroom.

**E. Resources:**

- ✓ CBLM
- ✓ Handouts
- ✓ <https://youtu.be/n9sxq34D9HQ> (Explanation on principles of 5S)

**A. Competency/Competencies:**

- i. Use PPE appropriately for safety.

**B. Learning objectives/Topic:**

Learning objectives	Topic
1.2.1 Define PPE. 1.2.2 State the importance of PPE. 1.2.3 List the categories of PPE. 1.2.4 Ensure to use appropriate PPE. 1.2.5 Ensure safe disposal of damaged PPE. 1.2.6 Ensure not to use defective and damaged PPE. 1.2.7 Use PPE	<b>1.2 Using PPE</b>  <b>Overview:</b> The topic is about the proper use of various PPE and it helps the learners to maintain safety at workplace.

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 1.2.
- ✓ Make learners read and perform OPERATION SHEET 1.2
- ✓ Ask learners to solve the SAMPLE SELF CHECK 1.2.
- ✓ Provide additional questions from CBLM and other resources-Google/YouTube.
- ✓ Instruct learners to read INFORMATION SHEET 1.2 and OPERATION SHEET 1.2.
- ✓ Instruct learners go through the weblink <https://youtu.be/r9vp1q1L2ro> that explains PPE.
- ✓ Instruct learners to solve the SAMPLE SELF CHECK 1.2.

**D. Assessment:**

- ✓ Assess learners' ability to understand the usage of PPE using a rubric.
- ✓ Assess learners' response to SAMPLE SELF CHECK 1.2 and the additional questions provided.
- ✓ Provide feedback.
- ✓ Assess learners' response to SAMPLE SELF CHECK 1.2 and the additional questions provided through Google Classroom.
- ✓ Provide feedback through Google Classroom.

**F. Resources:**

- ✓ CBLM
- ✓ <https://youtu.be/r9vp1q1L2ro>(Explanation on PPE)

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**A. Competency/Competencies:**

- i. Maintain workplace and occupational safety

**B. Learning objectives/Topic:**

Learning objectives	Topic
1.3.1 Define safety precaution. 1.3.2 List different types of safety. 1.3.3 Explain workshop and personal safety. 1.3.4 State the importance of maintaining workplace and personal safety. 1.3.5 Explain the importance of safety signs and symbols. 1.3.6 Explain the emergency exit. 1.3.7 Describe the layout of the workshop. 1.3.8 Ensure to follow OHS procedures. 1.3.9 Ensure to keep the workshop clean. 1.3.10 Ensure to ring the alarm bell before the accident spreads over. 1.3.11 Ensure to display safety signs and symbols. 1.3.12 Ensure to use appropriate PPE in workplace. 1.3.13 Ensure to avoid horseplay at work place. 1.3.14 Ensure to avoid smoking and eating inside the workshop. 1.3.15 Ensure to avoid working under influence of alcohol. 1.3.16 Maintain workplace safety and personal safety.	<b>1.3 Maintaining work place safety and personal safety.</b>  <b>Overview:</b> The learners can maintain a workplace and personal safety knowing about safety signs and symbols and ways of setting conducive workshop.

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 1.3.
- ✓ Make learners read and perform the OPERATION SHEET 1.3.
- ✓ Make learners answer the SAMPLE SELF CHECK 1.3.
- ✓ Instruct learners to read INFORMATION SHEET 1.3 and OPERATION SHEET 1.3 through Google Classroom.
- ✓ Let learners explore maintaining a workplace and personal safety following the link <https://www.youtube.com/watch?v=4bkr5lpKGUM> and <https://www.youtube.com/watch?v=WW0U6o1XNecthrough> through Google Classroom.
- ✓ Instruct learners to answer the SAMPLE SELF CHECK 1.3 and send it through Google Classroom.

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**D. Assessment:**

- ✓ Assess learners' ability to apply appropriate workplace and personal safety using a rubric.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.3.
- ✓ Provide feedback.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.3 and additional question provided through Google Classroom.
- ✓ Provide feedback through Google Classroom.

**E. Resources:**

- ✓ CBLM
- ✓ <https://www.youtube.com/watch?v=4bkr5lpKGUM> (Video on workplace safety)
- ✓ <https://www.youtube.com/watch?v=WW0U6o1XNec> (Video on safety tips)

**A. Competency/Competencies:**

- i. Practise OHS procedures in any task for safety.
- ii. Maintain hand tools and portable power tools for better performance.

**B. Learning objectives/Topic:**

Learning objectives	Topic
1.4.1 Explain tools and equipment safety.	<b>1.4 Maintaining tools and equipment safety</b>  <b>Overview:</b> The topic covers information on the ways of maintaining tools and equipment safety thereby increasing the efficiency of tools and equipment.
1.4.2 State the importance of maintaining tools and equipment safety.	
1.4.3 List do's and don'ts of tools and equipment.	
1.4.4 Ensure all the tools are in workable condition	
1.4.5 Ensure to keep tools clean and dry, and store them properly after use.	
1.4.6 Ensure to operate the machine when instructed.	
1.4.7 Ensure to refer manual prior to operation of tools and equipment	
1.4.8 Maintain tools and equipment safety.	

**C. Learning Experiences:**

- ✓ Make learners read the INFORMATION SHEET 1.4.
  - ✓ Ask learners to read and perform OPERATION SHEET 1.4 on maintaining tools and equipment safety.
  - ✓ Make learners solve the SAMPLE SELF CHECK 1.4.
  - ✓ Instruct learners to read the INFORMATION SHEET 1.4 and OPERATION SHEET 1.4.
  - ✓ Instruct learners to go through the web link <http://www.ehsdb.com/dos-and-donts--hand-tools-equipments.php> that shows additional Dos and don'tsof hand tools.
  - ✓ Instruct learners to watch a video on the web link <https://youtu.be/jovscTSq-mg> on tools and equipment safety.
-

- ✓ Ask learners to solve the SAMPLE SELF CHECK 1.4 and submit it through Google Classroom.

**D. Assessment:**

- ✓ Assess learners' ability to maintain tools and equipment safety using a rubric.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.4.
- ✓ Provide feedback.
- ✓ Assess the learners' response to SAMPLE SELF CHECK 1.4 through Google Classroom.
- ✓ Provide feedback through Google Classroom.

**E. Resources:**

- ✓ CBLM
- ✓ <http://www.ehsdb.com/dos-and-donts--hand-tools-equipments.php> (Article on Dos and don'tsof hand tools)
- ✓ <https://youtu.be/jovscTSq-mg> (Video on tools and equipment safety)

**A. Competency/Competencies:**

- Practise OHS procedures for safety.
- Operate and use different types of fire extinguishers to combat a fire.

**B. Learning objectives/Topic:**

Learning objectives	Topic
1.5.1 Define fire extinguisher. 1.5.2 Label the parts of fire extinguisher. 1.5.3 Explain the types of fire. 1.5.4 List types of fire extinguishers. 1.5.5 State the method of combating/extinguishing fire. 1.5.6 Ensure to read the instructions provided on the fire extinguisher. 1.5.7 Ensure appropriate use PPE. 1.5.8 Use fire extinguisher	<b>1.5 Using fire extinguisher</b>  <b>Overview:</b> The use of different fire extinguishers are covered and it enables learners to operate them appropriately.

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 1.5.
- ✓ Make learners read and perform the OPERATION SHEET 1.5 through guided practice.
- ✓ Make learners solve the SAMPLE SELF CHECK 1.5 and conduct a quiz on the classification of fire and types of fire extinguisher.
- ✓ Ask learners to read INFORMATION SHEET 1.5 and OPERATION SHEET 1.5.
- ✓ Instruct learners to read the article on the web link <https://www.marsden-fire-safety.co.uk/resources/fire-extinguishers> on the fire extinguisher.
- ✓ Provide a video link on the PASS system by sharing the web link <https://www.youtube.com/watch?v=PQV71INDaqY> through Google Classroom.
- ✓ Instruct learners to solve the SAMPLE SELF CHECK 1.5 and conduct a quiz on the classification of fire and types of fire extinguisher on Kahoot and Near pod which will be sent through Google Classroom.

- ✓ Ask learners to solve the SAMPLE SELF CHECK 1.5 through Google Classroom.
- D. Assessment**
  - ✓ Assess learners' ability to maintain tools and equipment safety using a rubric.
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 1.5.
  - ✓ Provide feedback.
  - ✓ Assess the learners' response to SAMPLE SELF CHECK 1.5.
  - ✓ Provide feedback through Google Classroom.
- E. Resources:**
  - ✓ CBLM
  - ✓ <https://www.marsden-fire-safety.co.uk/resources/fire-extinguishers> (Article on fire extinguishers)
  - ✓ <https://www.youtube.com/watch?v=PQV71INDaqY> (Video on PASS system)

## Chapter 2: Performing PC Assembly

### A. Competency/Competencies:

- i. Fix the motherboard properly.

### B. Learning objectives/Topic:

Learning objectives	Topic
2.1.1. Define the motherboard 2.1.2. Label components of the motherboard 2.1.3. Classify types of motherboards 2.1.4. Label system case 2.1.5. List types of the system case 2.1.6. State functions of stand-off 2.1.7. Interpret manual 2.1.8. Align motherboard 2.1.9. <i>Have works ethics and integrity</i> 2.1.10. <i>Be time conscious</i> 2.1.11. <i>Be efficient in using resource</i> 2.1.12. <i>Have patience</i> Proper handling of tools and storage of tools and materials	<b>2.1 Fixing motherboard</b> <b>Overview:</b> The topic is about the types of motherboards and its components; types of system case and it enables learners acquire the skills of fixing motherboard.



**C. Learning Experiences:**

- ✓ Make learners read information sheet 2.1
- ✓ Provide handouts to learners.
- ✓ Demonstration on operation sheet 2.1
- ✓ Make learners perform operation sheet 2.1
- ✓ Let learners discuss in a group and do the presentation, demonstration, and short video clips to explain the generation of computer, IPO terminology, computer hardware, and computer software.
- ✓ Let learners read information sheet 2.1
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the operation sheet 2.1 and send the evidence such as pictures/videos and upload it in the goggle classroom/social media.
- ✓ Make learners carryout self-check 2.1 and send it through Google Classroom/social media.
- ✓ Give additional questions.

**D. Assesment:**

- ✓ Make learners read INFORMATION SHEET 5 2.1 and perform OPERATION SHEET 2.1 and assess them using a checklist/performance guide. Provide necessary intervention.
- ✓ Conduct class tests to assess their understanding.
- ✓ Let learners carry out activities of the SAMPLE SELF CHECK 2.1
- ✓ Let learners do a presentation on generations of computers.
- ✓ Assessing the learner’s presentation using a rubric developed.
- ✓ Use a rubric to assess learner’s conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom/social media.

**E. Resources:**

- ✓ Competency-Based Learning Materials
- ✓ Handouts
- ✓ [https://www.youtube.com/watch?v=hrv7\\_gl4MAQ](https://www.youtube.com/watch?v=hrv7_gl4MAQ) (Fixing motherboard mount)

**A. Competency/Competencies:**

- i. Mount CPU correctly.

**B. Learning objectives/Topic:**

Learning objectives	Topic
2.1.2 Define CPU 2.1.3 Explain CPU frequency 2.1.4 Categorise types of CPU 2.1.5 Interpret CPU alignment 2.1.6 List types of sockets 2.1.7 Describe the effect of binding pins 2.1.8 Align CPU on socket 2.1.9 Ensure to align CPU on the socket after interpreting identification marks 2.1.10 Ensure to use anti-static wrist band 2.1.11 Ensure to switch off the power supply 2.1.12 Ensure to maintain Zero Insertion force (ZIF)while fixing CPU	<b>2.2 Mount Central Processing Unit (CPU)</b> <b>Overview:</b> The topic enables learners acquire knowledge and skills of mounting Central Processing Unit (CPU).

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 2.2
- ✓ Make learners perform OPERATION SHEET 2.2
- ✓ The teacher provides relevant material (Video link, download content, hand-outs, and textbook, etc) on the task.

**D. Assessment:**

- ✓ Assess the learner's performance on OPERATION SHEET 2.2
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.2
- ✓ The teacher assesses the given task by using the rubric.
- ✓ Check learner's understanding by conducting class tests and through question-answer sessions.
- ✓ The teacher assesses the given work through Google Classroom and social media.

**E. Resources:**

- ✓ CBLM
- ✓ <https://www.youtube.com/watch?v=FZGugFqdr60> (Mount Central Processing Unit (CPU))

**A. Competency/Competencies:**

- Install the CPU fan correctly.

**B. Learning objectives/Topic:**

Learning objectives	Topic
2.3.1 Define CPU fan	<b>2.3 Mounting CPU fan</b> <b>Overview:</b> This topic is structured to provide learners the knowledge and skills on mounting CPU fans, and identification of fan port.
2.3.2 Explain purpose of locking CPU fan	
2.3.3 Explain computer cooling mechanisms and its function	
2.3.4 Identify the ports and to connect CPU fan	
2.3.5 State the concept of e-waste management	
2.3.6 <i>Ensure CPU fan is properly aligned and tightened</i>	
2.3.7 <i>Ensure proper handling of CPU fan and tools</i>	
2.3.8 <i>Ensure power supply is unplugged</i>	

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 2.3
- ✓ Make learners perform OPERATION SHEET 2.3
- ✓ The teacher provides relevant material (Video link, download content, hand-outs, and textbook, etc) on the task.

**D. Assessment:**

- ✓ Assess the learner's performance on OPERATION SHEET 2.3
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.3
- ✓ The teacher assesses the given task by using the rubric.
- ✓ Check learner's understanding by conducting class tests and through question-answer sessions.
- ✓ The teacher assesses the given work through Google Classroom and social media.

**E. Resources:**

- ✓ CBLM
- ✓ <https://www.youtube.com/watch?v=5qczGR4KMnY> (Mounting CPU fan)

**A. Competency/Competencies:**

- i. Fix the RAM correctly.

**B. Learning objectives/Topic:**

Learning objectives	Topic
2.4.1 Define RAM 2.4.2 State the function of RAM 2.4.3 Classify types and size of RAM 2.4.4 Identify the RAM 2.4.5 Ensure RAM is seated firmly 2.4.6 <i>Ensure retaining clips are properly locked</i> 2.4.7 <i>Ensure compatible RAM is installed according to requirements</i> 2.4.8 <i>Ensure handle RAM lock with care</i> 2.4.9 <i>Ensure to use anti-static wrist band</i>	2.4 Fixing Random Access Memory (RAM) <b>Overview:</b> This topic enables learners know the definition of RAM fan, its purpose and can fix RAM.

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 2.4
- ✓ Make learners perform OPERATION SHEET 2.4
- ✓ The teacher provides relevant material (Video link, download content, hand-outs, and textbook, etc) on the task.

**D. Assessment:**

- ✓ Assess the learner's performance on OPERATION SHEET 2.4
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.4
- ✓ The teacher assesses the given task by using the rubric.
- ✓ Check learner's understanding by conducting class tests and through question-answer sessions.
- ✓ The teacher assesses the given work through Google Classroom and social media.

**E. Resources:**

- ✓ CBLM.
- ✓ <https://www.youtube.com/watch?v=eQj0GPEdKhg> (Fixing Random Access Memory (RAM))

**A. Competency/Competencies:**

- i. Instal add-on cards properly.

**B. Learning objectives/Topic:**

Learning objectives	Topic
2.5.1 <i>Define expansion card</i> 2.5.2 State types of expansion slot and card 2.5.3 State purpose of add-on cards 2.5.4 <i>Ensure to use antistatic wristband while installing Add-on card</i>	2.5 Installing Add-on cards <b>Overview:</b> This topic enables learners to install add-on cards besides knowing about the types of expansion card and add-on cards.

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 2.5
- ✓ Make learners perform OPERATION SHEET 2.5

- ✓ The teacher provides relevant material (Video link, download content, hand-outs, and textbook, etc) on the task.

**D. Assessment:**

- ✓ Assess the learner’s performance on OPERATION SHEET 2.5
- ✓ Assess the learners’ response to SAMPLE SELF CHECK 2.5
- ✓ The teacher assesses the given task by using the rubric.
- ✓ Check learner's understanding by conducting class tests and through question-answer sessions.
- ✓ The teacher assesses the given work through Google Classroom and social media.

**E. Resources:**

- ✓ CBLM.
- ✓ [https://www.google.com/search?q=Installing++Add-on+cards+&sxsrf=APq-WBsUkGhwODTqDRLpAWqW0mPvrSCSVQ%3A1646906558970&ei=vswpYtroOv6-OPEPoKqNkAI&ved=0ahUKEwjv7ODpbv2AhV-HzQIHSBVAYlQ4dUDCA4&uact=5&oq=Installing++Add-on+cards+&gs\\_lcp=Cgdnd3Mtd2l6EANKBAhBGABKBAhGGABQAFgAYPoQaABwAXgAgAGuB lgBrgSSAQM1LTGYAQcGgAQKGAQHAAQE&scient=gws-wiz#kpvalbx=\\_38wpYp-3HLefseMPI\\_Sc4AY17 \[Installation of Add-on cards \]](https://www.google.com/search?q=Installing++Add-on+cards+&sxsrf=APq-WBsUkGhwODTqDRLpAWqW0mPvrSCSVQ%3A1646906558970&ei=vswpYtroOv6-OPEPoKqNkAI&ved=0ahUKEwjv7ODpbv2AhV-HzQIHSBVAYlQ4dUDCA4&uact=5&oq=Installing++Add-on+cards+&gs_lcp=Cgdnd3Mtd2l6EANKBAhBGABKBAhGGABQAFgAYPoQaABwAXgAgAGuB lgBrgSSAQM1LTGYAQcGgAQKGAQHAAQE&scient=gws-wiz#kpvalbx=_38wpYp-3HLefseMPI_Sc4AY17 [Installation of Add-on cards ])

**A. Competency/Competencies:**

- Install Hard Disk Drive (HDD)

**B. Learning objectives/Topic:**

Learning objectives	Topic
2.6.1. Define Hard Disk Drive 2.6.2. State functions of HDD 2.6.3. Explain the types, size and capacity of HDD 2.6.4. State the type of cables and its function 2.6.5. Interpret the label on the HDD 2.6.6. Set jumper on the drive 2.6.7. <i>Ensure to plug cables in designated ports</i> 2.6.8. <i>Ensure proper tight of screw</i> 2.6.9. <i>Ensure to proper connection and alignment of HDD</i>	<a href="#">2.6 Installing Hard Disk Drive (HDD)</a> <b>Overview:</b> This topic is structured to provide learners the knowledge and skills on installing Hard Disk Drive (HDD).

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 2.6
- ✓ Make learners perform OPERATION SHEET 2.6
- ✓ The teacher provides relevant material (Video link, download content, hand-outs, and textbook, etc) on the task.

**D. Assessment:**

- ✓ Assess the learner’s performance on OPERATION SHEET 2.6
- ✓ Assess the learners’ response to SAMPLE SELF CHECK 2.6
- ✓ The teacher assesses the given task by using the rubric.
- ✓ Check learner's understanding by conducting class tests and through question-answer sessions.
- ✓ The teacher assesses the given work through Google Classroom and social media.

**E. Resources:**

- ✓ CBLM
- ✓ <https://www.youtube.com/watch?v=f2kcJH8ASN8> (Installation of Hard Disk Drive (HDD))

**A. Competency/Competencies:**

- i. Install optical drive.

**B. Learning objectives/Topic:**

Learning objectives	Topic
2.7.1 Define optical drive	<b>2.7 Installing optical drive.</b> <b>Overview:</b> This topic is structured to provide learners the knowledge and skills on installing optical drive.
2.7.2 List the types of optical drive	
2.7.3 Set jumper on drives	
2.7.4 <i>Ensure to plug cables in designated port</i>	
2.7.5 <i>Ensure to use antistatic wrist band while installing optical drive</i>	
2.7.6 <i>Ensure screws are properly tightened</i>	

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 2.7
- ✓ Make learners perform OPERATION SHEET 2.7
- ✓ The teacher provides relevant material (Video link, download content, hand-outs, and textbook, etc).

**D. Assessment:**

- ✓ Assess the learner's performance on OPERATION SHEET 2.7
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.7
- ✓ The teacher assesses the given task by using the rubric.
- ✓ Check learner's understanding by conducting class tests and through question-answer sessions.
- ✓ The teacher assesses the given work through Google Classroom and social media.

**E. Resources:**

- ✓ CBLM
- ✓ <https://www.youtube.com/watch?v=WAQZAU0NILE> (Installation of optical drive)

**A. Competency/Competencies:**

- i. Install Switch Mode Power Supply (SMPS)

**B. Learning objectives/Topic:**

Learning objectives	Topic
2.8.1 Define SMPS 2.8.2 Classify types of SMPS and its connectors 2.8.3 State the function of SMPS 2.8.4 State the components of SMPS 2.8.5 Identify the connectors 2.8.6 State the types of pin 2.8.7 State voltage rating of SMPS connectors 2.8.8 <i>Ensure SMPS is connected with correct connections</i> 2.8.9 <i>Ensure proper handling of tools and equipment</i> 2.8.10 <i>Ensure connections are correct and firmly fixed</i>	<b>2.8 Installing Switch Mode Power Supply (SMPS)</b> <b>Overview:</b> The topic enables learners acquire the knowledge and skills to install Switch Mode Power Supply (SMPS) besides knowing about the types of SMPS and to identify the connectors.

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 2.8
- ✓ Make learners perform OPERATION SHEET 2.8
- ✓ The teacher provides relevant material (Video link, download content, hand-outs, and textbook, etc) on the task.

**D. Assessment:**

- ✓ Assess the learner's performance on OPERATION SHEET 2.8
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.8
- ✓ The teacher assesses the given task by using the rubric.
- ✓ Check learner's understanding by conducting class tests and through question-answer sessions.
- ✓ The teacher assesses the given work through Google Classroom and social media.

**E. Resources:**

- ✓ CBLM.
- ✓ <https://www.youtube.com/watch?v=zCJxT-XMYCo> (Installing Switch Mode Power Supply (SMPS))

**A. Competency/Competencies:**

- i. Configure the front panel connection.

**B. Learning objectives/Topic:**

Learning objectives	Topic
2.9.1 Define jumper 2.9.2 State the function of jumper and LED 2.9.3 Identify the jumper position 2.9.4 State the full form of printed abbreviation 2.9.5 Interpret abbreviated word on mother board 2.9.6 <i>Ensure to use anti-static wristband and gloves</i> 2.9.7 <i>Ensure to correct configuration of jumper</i>	<b>2.9 Configuring the front panel connection</b> <b>Overview:</b> The topic provides learners the knowledge and skills to configure the front panel connection and to identify the jumper position.

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 2.9
- ✓ Make learners perform OPERATION SHEET 2.9
- ✓ The teacher provides relevant material (Video link, download content, hand-outs, and textbook, etc) on the task.

**D. Assessment:**

- ✓ Assess the learner's performance on OPERATION SHEET 2.9
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.9
- ✓ The teacher assesses the given task by using the rubric.
- ✓ Check learner's understanding by conducting class tests and through question-answer sessions.
- ✓ The teacher assesses the given work through Google Classroom and social media.

**E. Resources:**

- ✓ CBLM.
- ✓ <https://www.youtube.com/watch?v=9--Nbg2qKUA> (Configuring the front panel connection)

**A. Competency/Competencies:**

- i. Conduct test for PC assembly

**B. Learning objectives/Topic:**

Learning objectives	Topic
2.10.1 Define Basic Input /Output System (BIOS)	2.10 Conducting test for PC assembly <b>Overview:</b> Learners can conduct test for PC assembly besides the knowing about BIOS.
2.10.2 State the function of BIOS	
2.10.3 Identify the object that can be checked physically, visually and audibly	
2.10.4 List types of BIOS manufacturer	
2.10.5 Identify the key to enter BIOS setup	
2.10.6 <i>Ensure to BIOS setup and selection of key</i>	
2.10.7 <i>Ensure not to make any critical changes in BIOS without having knowledge</i>	

**C. Learning Experiences:**

- ✓ Make learners read INFORMATION SHEET 2.10
- ✓ Make learners perform OPERATION SHEET 2.10
- ✓ The teacher provides relevant material (Video link, download content, hand-outs, and textbook, etc) on the task.

**D. Assessment:**

- ✓ Assess the learner's performance on OPERATION SHEET 2.10
- ✓ Assess the learners' response to SAMPLE SELF CHECK 2.10
- ✓ The teacher assesses the given task by using the rubric.
- ✓ Check learner's understanding by conducting class tests and through question-answer sessions.
- ✓ The teacher assesses the given work through Google Classroom and social media.

**E. Resources:**

- ✓ CBLM.
- ✓ <https://www.youtube.com/watch?v=aanslIthvOU> (Conducting test for PC assembly)

## Chapter 3: Performing data backup

### A. Competency/Competencies:

- i. Perform data backup

### B. Learning objectives/Topic:

Learning objectives	Topic
3.1.1 Define backup 3.1.2 list the types of backups 3.1.3 Define cloud-based backup 3.1.4 State the pros and cons of cloud-based backup 3.1.5 <i>Ensure appropriate use of PPE</i> 3.1.6 <i>Ensure to avoid frequent plug and play</i>	<b>3.1 Performing data backup</b> <b>Overview:</b> The topic is structured to provide learners the knowledge, and skills to perform data backup.

### C. Learning Experiences:

- ✓ Let learners read INFORMATION SHEET 3.1
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 3.1
- ✓ Let learners perform OPERATION SHEET 3.1
- ✓ Let learners solve SAMPLE SELF CHECK 3.1
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 3.1 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 3.1 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

### D. Assessment:

- ✓ Assess while performing OPERATION SHEET 3.1 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 3.1
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 3.1

### E. Resources:

- ✓ <https://www.youtube.com/watch?v=6oaOjRtsLJU> (Performing data backup)
- ✓ CBLM



**A. Competency/Competencies:**

- i. Perform off-site back-up

**B. Learning objectives/Topic:**

Learning objectives	Topic
3.2.1 Define off-site backup 3.2.2 State the types of off-site backup 3.2.3 State the function of off-site backup 3.2.4 State the advantages and limitations of off-site backup 3.2.5 <i>Ensure appropriate use of PPE</i> 3.2.6 <i>Ensure to follow the OHS rules and regulation</i>	3.2 Performing off-site back-up <b>Overview:</b> This topic provides learners the knowledge and skills to perform off-site back-up.

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 3.2
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 3.2
- ✓ Let learners perform OPERATION SHEET 3.2
- ✓ Let learners solve SAMPLE SELF CHECK 3.2
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 3.2 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 3.2 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 3.2 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 3.2
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 3.2

**E. Resources:**

- ✓ <https://www.youtube.com/watch?v=Xlup8lxdIH8> (Performing off-site back-up)
- ✓ CBLM.

**A. Competency/Competencies:**

- i. Perform network- attached storage back-up

**B. Learning objectives/Topic:**

Learning objectives	Topic
3.3.1 Define network-attached storage back-up	<b>3.3 Performing network-attached storage back-up</b> <b>Overview:</b> This topic enables learners acquire knowledge on network-attached storage back-up , its types, advantages and limitations of it and the skills to perform the storage back up.
3.3.2 State the types of network-attached storage back-up	
3.3.3 State the advantages and limitations of network - attached storage backup	
3.3.4 Differentiate between network attached storage and offline backup	
3.3.5 State the types of users	
3.3.6 <i>Ensure appropriate use of PPE</i>	
3.3.7 <i>Ensure to follow the OHS rules and regulation</i>	

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 3.3
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 3.3
- ✓ Let learners perform OPERATION SHEET 3.3
- ✓ Let learners solve SAMPLE SELF CHECK 3.3
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 3.3 and send the evidence such as pictures and videos and upload it in the Google Classroom and social media.
- ✓ Let learners solve SELF-CHECK 3.3 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 3.3 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 3.3
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 3.3

**E. Resources:**

- ✓ <https://www.youtube.com/watch?v=7mihqePPOw8&t=16s> (Performing network-attached storage back-up)
- ✓ CBLM

## Chapter 4: Installing Operating System (OS) and Application software

**A. Competency/Competencies:**

- i. Install Windows Operating System (OS).

**B. Learning objectives/Topic:**

Learning objectives	Topic
4.1.1 Define Operating system 4.1.2 State the functions of Operating System 4.1.3 List the types of Operating System 4.1.4 Identify versions and service pack of windows 4.1.5 State the purpose of product key 4.1.6 Examine methods of installation 4.1.7 Identify key to enter the BIOS 4.1.8 Explain the Hardware Compatibility 4.1.9 <i>Ensure to check the configuration of hardware drive</i>	<b>4.1 Installing Windows Operating System (OS)</b> <b>Overview:</b> This topic enables learners to acquire knowledge on Operating System, functions of Operating System, types of Operating System, purpose of product key and the skills to install OS.

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 4.1
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 4.1
- ✓ Let learners perform OPERATION SHEET 4.1
- ✓ Let learners solve SAMPLE SELF CHECK 4.1
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 4.1 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 4.1 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 4.1 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.1
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.1

**E. Resources:**

- ✓ <https://www.youtube.com/watch?v=GFqkLljkTZA> (Installation of Windows Operating System (OS))
- ✓ CBLM

**A. Competency/Competencies:**

- i. Install Mac OS.

**B. Learning objectives/Topic:**

Learning objectives	Topic
4.2.1 Define Mac OS 4.2.2 State the version of Mac OS 4.2.3 State the hardware compatibility 4.2.4 Explain the methods of installation 4.2.5 <i>Ensure appropriate use of PPE</i> 4.2.6 <i>Ensure to follow the OHS rules and regulation</i>	<b>4.2 Installing Mac OS</b> <b>Overview:</b> The topic enables learners to acquire knowledge, and skills on install Mac OS

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 4.2
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 4.2
- ✓ Let learners perform OPERATION SHEET 4.2
- ✓ Let learners solve SAMPLE SELF CHECK 4.2
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 4.2 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 4.2 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 4.2 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.2
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.2

**E. Resources:**

- ✓ <https://www.youtube.com/watch?v=YyuCc1n7154> (Installation of Mac OS)
- ✓ CBLM

**A. Competency/Competencies:**

- i. Install Linux OS.

**B. Learning objectives/Topic:**

Learning objectives	Topic
4.3.1 Define Linus OS 4.3.2 State the features of Linus OS 4.3.3 State the advantages and limitation of Linus OS 4.3.4 State the types of Linus OS 4.3.5 Differentiate between the Microsoft window and Linus OS 4.3.6 <i>Ensure appropriate use of PPE</i> 4.3.7 <i>Ensure to follow the OHS rules and regulation</i>	<b>4.3 Installing Linux OS</b> <b>Overview:</b> This learners can install Linus OS besides knowing about installation of Linus OS, features of Linus OS , Microsoft window and Linus OS

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 4.3
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 4.3
- ✓ Let learners perform OPERATION SHEET 4.3
- ✓ Let learners solve SAMPLE SELF CHECK 4.3
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 4.3 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 4.3 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 4.3 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.3
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.3

**E. Resources:**

- ✓ <https://www.youtube.com/watch?v=Dx2dJUPsJso> (Installation of Linux OS)
- ✓ CBLM

**A. Competency/Competencies:**

- i. Install application software after knowing about software compatibility.

**B. Learning objectives/Topic:**

Learning objectives	Topic
4.4.1 Define application of software 4.4.2 State function of application software 4.4.3 List the types of application software 4.4.4 Differentiate between trial and licensed version 4.4.5 Explain the software compatibility 4.4.6 Interpret Read-me file 4.4.7 <i>Ensure the installation of antivirus</i>	<b>4.4 Installing application software</b> <b>Overview:</b> Learners can install application software besides knowing about application of software, function of application software and differentiate between trial and licensed version

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 4.
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 4.4
- ✓ Let learners perform OPERATION SHEET 4.4
- ✓ Let learners solve SAMPLE SELF CHECK 4.4
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 4.4 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 4.4 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 4.4 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.4
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.4

**E. Resources:**

- ✓ <https://www.youtube.com/watch?v=6ZGhDPfSXXA> (Installation of application software)
- ✓ CBLM

**A. Competency/Competencies:**

- i. Install device driver.

**B. Learning objectives/Topic:**

Learning objectives	Topic
4.5.1 Define device manager 4.5.2 State the function of device manager 4.5.3 Explain the methods to install device driver 4.5.4 Identify the incompatibility sign on device manager 4.5.5 Explain the alternative ways to obtain device driver 4.5.6 Explain the importance if service tag, serial number and model number 4.5.7 <i>Ensure appropriate use of PPE</i> 4.5.8 <i>Ensure to follow the OHS rules and regulation</i> 4.5.9 <i>Ensure to check compatibility of device driver</i>	<b>4.5 Installing device driver</b> <b>Overview:</b> The topic is structured to provide learners the knowledge and skills to install device driver.

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 4.5
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 4.5
- ✓ Let learners perform OPERATION SHEET 4.5
- ✓ Let learners solve SAMPLE SELF CHECK 4.5
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 4.5 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 4.5 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 4.5 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.5
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.5

**E. Resources:**

- ✓ <https://www.youtube.com/watch?v=jyKrxXOvQY> (Installation of device driver)
- ✓ CBLM

**A. Competency/Competencies:**

- i. Format Hard Disk Drive (HDD).

**B. Learning objectives/Topic:**

Learning objectives	Topic
4.6.1 State the purpose of formatting	<b>4.6 Formatting Hard Disk Drive (HDD)</b> <b>Overview:</b> The topic provides learners the knowledge and skills on formatting Hard Disk Drive.
4.6.2 State the methods of formatting storage device	
4.6.3 Illustrate file system	
4.6.4 Differentiate between HDD while installing Windows and after booting	
4.6.5 <i>Ensure to avoid repeated formatting</i>	

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 4.6
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 4.6
- ✓ Let learners perform OPERATION SHEET 4.6
- ✓ Let learners solve SAMPLE SELF CHECK 4.6
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 4.6 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 4.6 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 4.6 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.6
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.6

**E. Resources:**

- ✓ <https://www.youtube.com/watch?v=GNzEVpGwhS8> (Formatting of Hard Disk Drive)
- ✓ CBLM



**A. Competency/Competencies:**

- i. Customize disk partition (through Disk management)

**B. Learning objectives/Topic:**

Learning objectives	Topic
<p>4.7.1 State function of Disk Management tools</p> <ul style="list-style-type: none"><li>✓ Shrink volume</li><li>✓ Delete volume</li><li>✓ Format</li><li>✓ Change drive letter</li></ul> <p>4.7.2 Illustrate of file system</p> <p>4.7.3 Allocate the disk space to create partition</p> <p>4.7.4 Explain the methods of browsing disk management window</p> <p>4.7.5 <i>Browse “disk management” tool</i></p> <p>4.7.6 Ensure to shrink volume from the drive other than OS containing drive</p> <p>4.7.7 Be patient while customising disk partition State function of Disk Management tools</p> <p>4.7.8 Illustrate of file system</p> <p>4.7.9 Allocate the disk space to create partition</p> <p>4.7.10 Explain the methods of browsing disk management window</p> <p>4.7.11 Browse “disk management” tool</p> <p>4.7.12 Ensure to shrink volume from the drive other than OS containing drive</p> <p>4.7.13 Be patient while customising <i>disk partition</i></p>	<p>4.7 Customizing disk partition (through Disk management)</p> <p><b>Overview:</b> The topic provides learners the knowledge and skills on customizing disk partition (through Disk management).</p>

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 4.7
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 4.7
- ✓ Let learners perform OPERATION SHEET 4.7
- ✓ Let learners solve SAMPLE SELF CHECK 4.7
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 4.7 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 4.7 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 4.7 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.7
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 4.7

**E. Resources:**

- ✓ [https://www.youtube.com/watch?v=\\_HgjasKuOBw](https://www.youtube.com/watch?v=_HgjasKuOBw) (Customizing disk partition)
- ✓ CBLM

Chapter 5: Installing peripheral device

**A. Competency/Competencies:**

- i. Install printer driver.

**B. Learning objectives/Topic:**

Learning objectives	Topic
5.1.1 Define printer 5.1.2 Explain the types of printers 5.1.3 List types of printer toner 5.1.4 Explain methods of installing the printer 5.1.5 <i>Ensure to connect USB/COM cable in the right port</i> 5.1.6 <i>Ensure to check the compatibility of device driver</i>	<b>5.1 Installing printer</b> <b>Overview:</b> Learners acquire knowledge on printer, types of printers, printer toner and can also install the printer.

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 5.1
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 5.1
- ✓ Let learners perform OPERATION SHEET 5.1
- ✓ Let learners solve SAMPLE SELF CHECK 5.1
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 5.1 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 5.1 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 5.1 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 5.1
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 5.1

**E. Resources:**

- ✓ <https://www.youtube.com/watch?v=J8-kyaNjpUM> (Installation of printer)
- ✓ CBLM

**A. Competency/Competencies:**

- i. Install projectors.

**B. Learning objectives/Topic:**

Learning objectives	Topic
5.2.1 Define projector 5.2.2 Specify the projector and its components 5.2.3 Set the projector 5.2.4 Use drilling machine 5.2.5 Mount projector brackets 5.2.6 Ensure Video Graphic Array (VGA) cable is securely tightened 5.2.7 Ensure bracket is installed securely 5.2.8 Ensure the screw is tightened securely into the wall 5.2.9 Ensure appropriate use of PPE 5.2.10 Ensure the proper disposal of waste	5.2 Installing projector <b>Overview:</b> Learners can install projector after knowing about the specification of the projectors.

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 5.2
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 5.2
- ✓ Let learners perform OPERATION SHEET 5.2
- ✓ Let learners solve SAMPLE SELF CHECK 5.2
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 5.2 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 4.3 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 5.2 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 5.2
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 5.2

**E. Resources:**

- ✓ <https://www.youtube.com/watch?v=GzXt5IW7Jrg> (Installation of projector)
- ✓ CBLM

**A. Competency/Competencies:**

- i. Install scanners.

**B. Learning objectives/Topic:**

Learning objectives	Topic
5.3.1 Define scanner 5.3.2 List types of scanners 5.3.3 Explain methods of installation 5.3.4 <i>Ensure to install the right utility software</i>	5.3 <b>Installing scanner</b> <b>Overview:</b> The topic provides learners the knowledge on scanner, its types and the skills to install it.

**C. Learning Experiences:**

- ✓ Let learners read INFORMATION SHEET 5.3
- ✓ Provide handout to learners.
- ✓ Demonstration OPERATION SHEET 5.3
- ✓ Let learners perform OPERATION SHEET 5.3
- ✓ Let learners solve SAMPLE SELF CHECK 5.3
- ✓ Provide handouts to learners through Google Classroom or any other social media platforms.
- ✓ Let learners perform the OPERATION SHEET 5.3 and send the evidence such as pictures and videos and upload it in the google classroom and social media.
- ✓ Let learners solve SELF-CHECK 5.3 and submit it through Google Classroom/social media.
- ✓ Provide additional questions.

**D. Assessment:**

- ✓ Assess while performing OPERATION SHEET 5.3 using checklist/performance guide. Provide necessary intervention.
- ✓ Assess learner's responses submitted in google classroom using the rubric.
- ✓ Assess learner's response on SAMPLE SELF CHECK 5.3
- ✓ Conduct class tests to assess their understanding.
- ✓ Use a rubric to assess learner's conceptual understanding on how to check the system information based on the work they have submitted through Google Classroom and other social media.
- ✓ Assess learner's response on SAMPLE SELF CHECK 5.3

**E. Resources:**

- ✓ <https://www.youtube.com/watch?v=0dUBKdL-iHY> (Installation of scanner)
- ✓ CBLM

## **RESOURCES**

- ✓ Technical and Vocational Education and Training (TVET) New Normal Curriculum Framework (Classes: PP-XII)
- ✓ Competency Based Learning Materials (Computer Hardware and Networking)