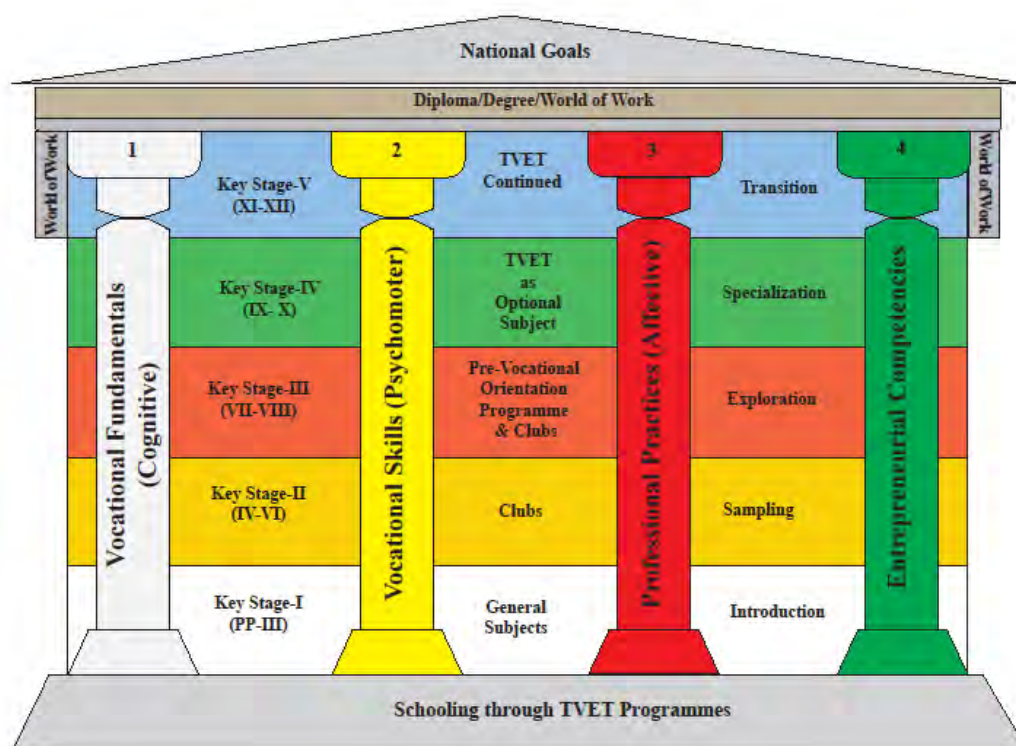# TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET)

NEW NORMAL CURRICULUM

INSTRUCTIONAL GUIDE

(COMPUTER HARDWARE AND NETWORKING)

CLASS: XI

Royal Education Council

Paro: Bhutan

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FOREWORD

COVID-19 has suddenly caused unforgiving disruptions in the 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 learning and teaching in traditional settings with physical interactions to the maximum in terms of relevancy and efficiency. This has caused a major problem for children living in poverty worldwide, who often rely on the physical settings of their schools for educational materials, guidance, and, sometimes, the only decent meal of the day.

In the new normal education, human interaction and well-being is a priority. Technology, particularly digital technology that enables communication, collaboration and learning across distance, is a formidable tool – not a panacea but 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 will 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 New Normal 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 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.

Kinga Dakpa,

Director General

INTRODUCTION

Technical and Vocational Education and Training (TVET) is education and training which provides knowledge and skills for employment. It comprises of education, training and skills development related to a wide range of occupational fields, production, services and livelihood. The Royal Education Council and Ministry of Education envisage 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 Rinchending) in Phuntsholing. Even after that, major curriculum reform was planned by the then Department of Curriculum Research and Development (DCRD) under the Ministry of Education 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 under Ministry of Education, 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 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 New Normal Curriculum Instructional Guide is prepared not only to encourage blended learning but also to facilitate remote learning. Thus, the guide would help the schools to implement the curriculum effectively without limiting to contact teaching/learning besides using a variety of pedagogies.

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Module 2: Performing troubleshooting of computer systems and devices.

Chapter 1: Diagnosing PC fault

A. **Learning objectives/Broad theme / Strand/Chapter:**

Learning Objectives	Core concepts (Chapter/Topic)
5.1.1 Define defragment. 5.1.2 State purpose of defragmentation. 5.1.3 Explain the advantages of disk defragmentation. 5.1.4 List types of software to defragment HDD. 5.1.5 Explain the method of defragmenting. *5.1.6 Ensure proper handling of materials and equipment.* *5.1.7 Defragment HDD*	**5.1 Defragmenting hard disk drive (HDD)**

B. **Competencies:**

- Defragment hard disk drive when the computer slows down.

C. **Pedagogy/Learning Experiences**

   Contact

- Let the learners read INFORMATION SHEET 5.1

- Demonstrate OPERATION SHEET 5.1

- Let the learners perform OPERATION SHEET 5.1

- Let the learners solve SAMPLE SELF CHECK 5.1

- Give additional questions.

   Non-contact:

- Let the learners read INFORMATION SHEET 5.1

- Provide handouts.

- Share the weblinks:

   ✓   https://www.youtube.com/watch?v=AtRIOUZuI2c

   ✓   https://www.slideshare.net/RohitRajput66/defragmentation

✓ https://www.youtube.com/watch?v=XJ71CqTXCS0

  ✓ Let the learners pause the video and make notes of it and submit it in google classroom

- Let the learners explore different types of tools used for defragmenting HDD.

- Let the learners solve SAMPLE SELF CHECK 5.1

D. Assessment:

Contact:

- Assess the learners' notes submitted to check the understanding of disk defragmentation.

- Assess the learner's performance on OPERATION SHEET 5.1

- Assess the learner's response on SAMPLE SELF CHECK 5.1

- Assess the learner's answer posted in the Google Classroom/social media.

Non-contact:

- Assess the learner's response on SAMPLE SELF CHECK 5.1

- Assess the learner through answers posted in the Google Classroom and provide necessary feedback.

E. Resources (online and offline):

- Competency-Based Learning Materials for Classes IX and X, REC

- Handouts

- https://www.youtube.com/watch?v=AtRIOUZuI2c (Explanation on disk defragmentation.)

- https://www.slideshare.net/RohitRajput66/defragmentation (Explanation on the scenario of the disk defragmentation)

- https://www.youtube.com/watch?v=XJ71CqTXCS0 (Explanation on how to defragment windows 10 hard drive.)

A. Learning objectives/Broad theme / Strand/Chapter:

Learning Objectives	Core concepts (Chapter/Topic)
5.2.1 List specification of screen size 5.2.2 List common screen errors. 5.2.3 Explain to troubleshoot common screen error	**5.2 Checking screen**

5.2.4 Ensure to use ESD wristband while checking the screen 5.2.5 Ensure proper handling of tools and materials 5.2.6 Check screen	

B. Competencies:

- Check screen to diagnose and fix common screen errors

C. Pedagogy/Learning Experiences

Contact

- Let the learners read INFORMATION SHEET 5.2
- Demonstrate OPERATION SHEET 5.2
- Let the learners perform OPERATION SHEET 5.2
- Let the learners solve SAMPLE SELF CHECK 5.2

Non-contact:

- Let the learners read INFORMATION SHEET 5.2
- Provide handouts.
- Share the weblink https://www.youtube.com/watch?v=ucaJA324hbg&t=140s
  - Let the learners pause the video and make notes on the step to replace the inverter and submit it in Google Classroom
- Let learners explore the internet to look for information on common screen error and take note of it and submit it in Google Classroom
- Let the learners solve SAMPLE SELF CHECK 5.2

D. Assessment:

Contact

- Assess the learner's performance on OPERATION SHEET 5.2
- Assess the learner's response on SAMPLE SELF CHECK 5.2

3

Non-contact:

- Assess the learner through a note posted in the Google Classroom and provide necessary feedback.
- Assess the learner's response on SAMPLE SELF CHECK 5.2

E. **Resources (online and offline):**

- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts
- https://www.youtube.com/watch?v=ucaJA324hbg&t=140s (Explanation on how to change the inverter of the computer.)

A. **Learning objectives/Broad theme / Strand/Chapter:**

Learning Objectives	Core concepts (Chapter/Topic)
5.3.1 Define Voltage	**5.3 Checking system component voltage**
5.3.2 List electronic components with their function	
5.3.3 State purpose of checking the voltage	
5.3.4 **Use multi-meter**	
5.3.5 Ensure to switch off the power while checking system component voltage	
5.3.6 Ensure the prop is placed in the right terminal	
5.3.7 Ensure to set the multi-meter range above the rated value of components to check.	
5.3.8 Check system component voltage	

B. **Competencies:**

- Check system component voltage when the system restarts frequently, gets heated up, and/or loses power abruptly.

C. **Pedagogy/Learning Experiences**

Contact

- Let the learners read INFORMATION SHEET 5.3
- Demonstrate OPERATION SHEET 5.3

- Let the learners perform OPERATION SHEET 5.3
- Let the learners solve SAMPLE SELF CHECK 5.3

Non-contact:
- Let the learners read INFORMATION SHEET 5.3
- Provide handouts.
- Share the weblinks:
- https://www.youtube.com/watch?v=SECWePatYjY
- https://www.youtube.com/watch?v=Tr70VyoACPg
- Let the learners make a note of how the power supply unit of a computer is tested using a multi-meter.
- Let the learners solve SAMPLE SELF CHECK 5.3
- Conduct a live question-answer session with students through google classroom or social media.

D. Assessment:

Contact:
- Assess the learner's performance on OPERATION SHEET 5.3
- Assess the learner's response on SAMPLE SELF CHECK 5.3

Non-contact:
- Assess the learners through a note posted in the Google Classroom using the rubric and provide necessary feedback.
- Assess the learner's response on SAMPLE SELF CHECK 5.3
- Assess the learners through question-answer session conduct through Google Classroom and social media using the rubric.

E. **Resources (online and offline):**
- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts
- https://www.youtube.com/watch?v=SECWePatYjY (Explanation on how to use multi-meter.)
- https://www.youtube.com/watch?v=Tr70VyoACPg (Explanation on how to measure the voltage of the power supply unit of a computer.)

A. Learning objectives/Broad theme / Strand/Chapter:

Learning Objectives	Core concepts (Chapter/Topic)
5.4.1 Define window inbuilt tool *5.4.2* Define safe mode *5.4.3* List Microsoft support diagnoses tool. *5.4.4* Be patient while using window inbuilt tools *5.4.5* Perform troubleshooting using windows inbuilt tools.	**5.4 Performing troubleshooting using window inbuilt tools**

B. Competencies:

- Troubleshoot using windows inbuilt tools to solve system issues.

C. Pedagogy/Learning Experiences

Contact

- Let the learners read INFORMATION SHEET 5.4
- Let the learners explore information on ways to troubleshoot the computer system and device.
- Demonstrate OPERATION SHEET 5.4
- Let the learners perform OPERATION SHEET 5.4
- Let the learners solve SAMPLE SELF CHECK 5.4
- Provide additional questions

Non-contact:

- Let the learners read INFORMATION SHEET 5.4
- Provide handouts.
- Let the learners explore the information to determine the factor affecting the cost of repair.
  Make note of it and submit it through Google Classroom/social media
- Let the learners explore the information on the price for every component of computer and laptop.
  Make note of it and submit it through Google Classroom/social media
- Let the learners estimate the cost of repair for a computer.
- Let the learners solve SAMPLE SELF CHECK 5.4

D. Assessment:

Contact:

- Assess the learners' response on SAMPLE SELF CHECK 5.4
- Assess the learners' conceptual understanding base on the answers submitted in the Google Classroom/social media.

Non-contact:

- Assess the learners through a note posted and estimated the cost of repair for a computer in the Google Classroom and provide necessary feedback using the rubric.
- Assess the learners' response on SAMPLE SELF CHECK 5.4

E. Resources (online and offline):

- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts

A. Learning objectives/Broad theme / Strand/Chapter:

Learning Objectives	Core concepts (Chapter/Topic)
5.5.1 State the definition of estimation and costing 5.5.2 Explain the importance of estimating and costing 5.5.3 State the types of material and their specification 5.5.4 Explain the factor determining the cost of repair 5.5.5 Ensure estimation cost is done correctly 5.5.6 Ensure to maintain work ethic and integrity while estimating the cost of repair. 5.5.7 Estimate the cost of repair	**5.5 Estimating the cost of repair**

B. Competencies:

- Estimate the cost of repair to determine the cost, quantity, specification, and time required for the maintenance and installation of computer hardware or network.

C. Pedagogy/Learning Experiences

Contact

- Let the learners read INFORMATION SHEET 5.5
- Demonstrate OPERATION SHEET 5.5
- Let the learners perform OPERATION SHEET 5.5
- Let the learners solve SAMPLE SELF CHECK 5.5
- Provide additional questions

Non-contact:

- Let the learners read INFORMATION SHEET 5.5
- Provide handouts.
- Let the learners explore information on determining the factors determining the cost of repair.
- Let the learners explore information on the internet to look for information for the price of the components of computer/laptop and them estimate the cost for repairing a computer/laptop.
- Let the learners solve SAMPLE SELF CHECK 5.5

D. Assessment:

Contact:

- Assess the learners' performance on OPERATION SHEET 5.5.
- Assess the learners' response on SAMPLE SELF CHECK 5.5.
- Assess the learners base on answers posted in the Google Classroom/social media

Non-contact:

- Assess the learners through notes submitted and cost estimate for repairing a computer in the Google Classroom and provide necessary feedback using the rubric.
- Assess the learners' response on SAMPLE SELF CHECK 5.5.

E. Resources (online and offline):

- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts

Chapter 2: Rectifying software faults

A. Learning objectives/Broad theme / Strand/Chapter:

Learning Objectives	Core concepts (Chapter/Topic)
2.1.1. Categorize types of software 2.1.2. Explain the importance of software updating 2.1.3. Explain methods of updating	**2.1 Installing software updates**

B. Competencies:

- Install software update when computer slows down or software malfunction.

C. Pedagogy/Learning Experiences

Contact

- Let the learners read INFORMATION SHEET 2.1
- Share the link https://www.youtube.com/watch?v=53jhGJgh51k to learn how to update the system software.
- Demonstrate OPERATION SHEET 2.1
- Let the learners perform OPERATION SHEET 2.1
- Let the learners solve SAMPLE SELF CHECK 2.1
- Provide questions.

Non-contact:

- Let the learners read INFORMATION SHEET 2.1
- Let the learners explore the internet to look for information on types of software and take note of it.
- Share the weblink https://www.youtube.com/watch?v=7iRAwq6YTqs
    - ✓ let learners make a note on how to update your computer using CMD.
- Let the learners solve SAMPLE SELF CHECK 2.1

D. Assessment:

Contact:

- Assess the learners' performance on OPERATION SHEET 2.1.
- Assess the learners' response on SAMPLE SELF CHECK 2.1.
- Assess the learners base on the answer submitted through google classroom/social media.

Non-contact:

- Assess the learner's notes uploaded in the Google Classroom/social media to assess the learner's conceptual understanding of installing software updates and provide intervention accordingly.
- Assess the learners' response on SAMPLE SELF CHECK 2.1.

E. Resources (online and offline):

- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts
- https://www.youtube.com/watch?v=7iRAwq6YTqs (Explanation on how to install software update directly from setting.)
- https://www.youtube.com/watch?v=7iRAwq6YTqs (Explanation on how to install software update using CMD.)

A. Learning objectives/Broad theme / Strand/Chapter:

Learning Objectives	Core concepts (Chapter/Topic)
2.2.1 Define software repair	**2.2 Repairing software (Application Software)**
2.2.2 Explain the purpose of repairing	
2.2.3 List types of application software errors	
2.2.4 Method of repairing	
2.2.5 Ensure to be patient while repairing software	
2.2.6 Repair software	

B. Competencies:

- Repair software when application software malfunctions.

C. Pedagogy/Learning Experiences

Contact

- Let the learners read INFORMATION SHEET 2.2
- Share the link https://www.youtube.com/watch?v=53jhGJgh51k to learn how to update the system software. Make note of it
- Demonstrate OPERATION SHEET 2.2
- Let the learners perform OPERATION SHEET 2.2
- Let the learners solve SAMPLE SELF CHECK 2.2

Non-contact:

- Let learners read information sheet 2.2.
- Learners will be given a topic each from information sheet 2.2 of CBLM to do research.
- Share the web link https://www.youtube.com/watch?v=2lplXtvqYo4 to learners will pause the video and make a note of it.
- Let the learners solve SAMPLE SELF CHECK 2.2

D. Assessment:

Contact:

- Assess the learner's performance on OPERATION SHEET 2.2
- Assess the learner's notes gathered from the video using rubrics.
- Assess the learners' response on SAMPLE SELF CHECK 2.2
- Assess learners' conceptual understanding of repairing software based on conducting the quiz.

Non-contact:

- Assess the learners' response on SAMPLE SELF CHECK 2.2
- Assess the learner's work uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.

E. Resources (online and offline):

- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts

- https://www.youtube.com/watch?v=2lplXtvqYo4 (Explanation on how to repair, uninstall and install software using a control panel.)

    A. **Learning objectives/Broad theme / Strand/Chapter:**

Learning Objectives	Core concepts (Chapter/Topic)
2.3.1 State purpose of upgrading. 2.3.2 State benefit of upgrading software. 2.3.3 Determine software versions. 2.3.4 *Ensure to install the software in a primary partition.* 2.3.5 *Upgrade software*	**2.3 Upgrading software**

B. **Competencies:**

- Upgrade software when a software compatibility issue occurs and new features are introduced.

C. **Pedagogy/Learning Experiences**

   Contact

- Let the learners read INFORMATION SHEET 2.3
- Demonstrate OPERATION SHEET 2.3
- Let the learners perform OPERATION SHEET 2.3.
- Let the learners solve SAMPLE SELF CHECK 2.3.

   Non-contact:

- Let the learners read INFORMATION SHEET 2.3
- Share the web link https://www.youtube.com/watch?v=QJnDFv5MBb0 to learners and let the learners pause the video and make a note of the step.
- Let the learners solve SAMPLE SELF CHECK 2.3.
- Provide additional questions.

D. **Assessment:**

   Contact:

- Assess the learner's performance on OPERATION SHEET 2.3
- Assess the learners' response on SAMPLE SELF CHECK21.3

- Assess learners' conceptual understanding of repairing software based on conducting the quiz.

   Non-contact:
- Assess the learner's notes gathered from the video using rubrics.
- Assess the learners' response on SAMPLE SELF CHECK 2.3.
- Assess the learners base on answers posted in Google Classroom/social media using the rubric.

E.   **Resources (online and offline):**
- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts
- https://www.youtube.com/watch?v=QJnDFv5MBb0 (Explanation on how to upgrade your operating system to the latest version.)

   A. Learning objectives/Broad theme / Strand/Chapter:

Learning Objectives	Core concepts (Chapter/Topic)
2.4.1 Explain the causes of BSOD errors. 2.4.2 State the purpose of system restore and safe mode. 2.4.3 *Ensure to wear an ESD wristband* 2.4.4 *Ensure to backup important files* 2.4.5 *Be patient while rectifying BSOD error* 2.4.6 *Rectify BSOD error/boot error*	**2.4 Rectifying BSOD error/boot error**

B. Competencies:
- Rectify BSOD error when the blue screen appears.

C. Pedagogy/Learning Experiences

   Contact
- Let the learners read INFORMATION SHEET 2.4.
- Let the learners be in a group and divide the topic each of INFORMATION SHEET 2.4. Let learners explore the internet to look for information on the cause of BSOD error and purpose of system restore and safe mode and then present the information to the class.
- Demonstrate OPERATION SHEET 2.4

- Let the learners perform OPERATION SHEET 2.4.
- Let the learners solve SAMPLE SELF CHECK 2.4

   Non-contact:
- Let the learners read INFORMATION SHEET 2.4.
- Provide handout to learners through google classroom/social media.
- Share the web link https://www.youtube.com/watch?v=sJYQPhgPzH8 to learn how to solve BSOD error and make a note of the step.
- Let the learners solve SAMPLE SELF CHECK 2.4
- Provide additional questions.

D. Assessment:

   Contact:
- Assess the learner's performance on OPERATION SHEET 2.4
- Assess the learners base on the presentation using the rubric
- Assess the learners' response on SAMPLE SELF CHECK 2.4
- Conduct class tests to observe the learner's conceptual understanding of the cause of BSOD error.

   Non-contact:
- Assess the learner's notes uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.
- Assess the learners' response on SAMPLE SELF CHECK 2.4
- Assess the learner's answers posted in the Google Classroom using the rubric.

E. Resources (online and offline):
- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts
- https://www.youtube.com/watch?v=sJYQPhgPzH8 (Explanation on rectifying BSOD error)

A. **Learning objectives/Broad theme / Strand/Chapter:**

Learning Objectives	Core concepts (Chapter/Topic)
2.5.1 List types of recovery tools	**2.5 Repairing OS**
2.5.2 State function of system recovery tools	
2.5.3 Explain causes of corrupted files in OS	
2.5.4 Navigate boot priority	
2.5.5 Ensure to repair with correct OS version	

B. Competencies:

- Repair operating system when operating system files is/are corrupted and/or missing and displays error messages

C. Pedagogy/Learning Experiences

Contact

- Let the learners read INFORMATION SHEET 2.5.
- Demonstrate SKILL SHEET and OPERATION SHEET 2.5
- Let the learners perform SKILL SHEET 2.5.
- Let the learners perform OPERATION SHEET 2.5.
- Let the learners solve SAMPLE SELF CHECK 2.5

Non-contact:

- Let the learners read INFORMATION SHEET 2.4.
- Provide handout to learners through Google Classroom/social media.
- Share the web link https://www.youtube.com/watch?v=9GblKZO-smU to learn about changing boot priority.
- Share the web link https://www.youtube.com/watch?v=5Zkvlcnv-UU to learn how to repair OS and make not of its step. Submit the note through Google Classroom/social media.
- Let the learners solve SAMPLE SELF CHECK 2.4

D. Assessment:

Contact:

- Assess learners while they perform skill sheet 2.5 using the rubric.
- Assess the learner's performance on OPERATION SHEET 2.5
- Assess the learners' response on SAMPLE SELF CHECK 2.5

Non-contact:

- Assess the learner's notes gathered from the video using rubrics.
- Assess the learners' response on SAMPLE SELF CHECK 2.5

E. **Resources (online and offline):**

- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts
- https://www.youtube.com/watch?v=9GblKZO-smU (Explanation on changing boot order)
- https://www.youtube.com/watch?v=5Zkvlcnv-UU (Explanation on repairing OS)

Chapter 3: Rectifying PC components (Laptop/Palmtop)

Learning Objectives	Core concepts (Chapter/Topic)
3.1.1 Explain the troubleshooting of SMPS 3.1.2 Define function and types of SMPS 3.1.3 List components of SMPS 3.1.4 Explain cable voltage rating 3.1.5 *Use required tools (Multi-meter, Soldering iron, and screwdriver)* 3.1.6 *Ensure proper disposal of used electronic components* 3.1.7 *Ensure not to touch the tip of the soldering iron* 3.1.8 *Ensure to return the soldering iron to its stand* 3.1.9 *Be patient while repairing SMPS*	**5.1 Repairing SMPS**

B. Competencies:

- Repair SMPS when computer malfunction due to power supply-related issues.

C. Pedagogy/Learning Exp0eriences

Contact

- Let the learners read INFORMATION SHEET 3.1
- Demonstrate OPERATION SHEET 3.1
- Let the learners perform OPERATION SHEET 3.1.
- Let the learners solve SAMPLE SELF CHECK 3.1

Non-contact:

- Let the learners read INFORMATION SHEET 3.1
- Provide handout to learners through google classroom/social media.
- Let learners explore and make a note on how to restore faulty SMPS and submit through google.
- Share the web link https://www.youtube.com/watch?v=rK1-vQtcShA to learn soldiering.
- Let the learners solve SAMPLE SELF CHECK 3.1
- Provide additional questions.

D. Assessment:

Contact:

- Assess the learners' performance referring to SKILL SHEET 3.1 and OPERATION SHEET 3.1
- Assess the learners' response on SAMPLE SELF CHECK 3.1.
- Assess learners by conducting the class test.

Non-contact:

- Assess the learner's note uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.
- Assess the learners' response on SAMPLE SELF CHECK 3.1.
- Assess the learner's answers posted in the Google Classroom/social media using the rubric.

E. Resources (online and offline):

- Competency-Based Learning Materials for Classes IX and X, REC

- Handouts
- https://www.youtube.com/watch?v=rK1-vQtcShA (Explanation on using a soldering iron)

A. Learning objectives/Broad theme / Strand/Chapter:

Learning Objectives	Core concepts (Chapter/Topic)
3.2.1 Explain the troubleshooting of the PC screen problem 3.2.2 List types of screen and their specification ***3.2.3 Use Screen Replacement Tool Kit*** *3.2.4 Ensure proper disposal of waste* *3.2.5 Ensure to replace the screen with the same specification*	**5.1 Replacing screen**

B. Competencies:

- Replace screen when the screen has display error due to hardware failure.

C. Pedagogy/Learning Exp0eriences

Contact

- Let the learners read INFORMATION SHEET 3.2
- Let learners be in a group and give a topic to each group. Explore the internet to look for the information and present it to the class.
- Demonstrate OPERATION SHEET 3.2
- Let the learners perform OPERATION SHEET 3.2.
- Let the learners solve SAMPLE SELF CHECK 3.2

Non-contact:

- Let the learners read INFORMATION SHEET 3.2
- Provide handout to learners through google classroom/social media.
- Let learners explore information on different types of laptop/computer screens and make note of it.
- Share the weblink https://www.youtube.com/watch?v=lnhgu6iWoa8 and

https://www.youtube.com/watch?v=ryIepQwM4HIhttps://www.youtube.com/watch?v=ryIepQwM4HI to learn how to replace laptop/computer screen and make note of the steps.

- Let the learners solve SAMPLE SELF CHECK 3.2
- Provide questions.

D. Assessment:

Contact:

- Assess learners while performing operation sheet 3.2 using the rubric.
- Assess the learners' response on SAMPLE SELF CHECK 3.2.
- Assess the learners while doing a presentation using the rubric.

Non-contact:

- Assess the learner's notes gathered based on the information obtained from the web link or relevant materials.
- Assess the learners' response on SAMPLE SELF CHECK 3.2.
- Assess the learner's answers posted in the Google Classroom/social media using the rubric.

E. Resources (online and offline):

- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts
- https://www.youtube.com/watch?v=lnhgu6iWoa8 (Explanation on replacing computer screen)
- https://www.youtube.com/watch?v=ryIepQwM4HIhttps://www.youtube.com/watch?v=ryIepQwM4HI (Explanation on replacing laptop screen)

A. Learning objectives/Broad theme / Strand/Chapter:

Learning Objectives	Core concepts (Chapter/Topic)
3.3.1 Explain the troubleshooting of the speaker 3.3.2 Classify types of speaker and their specification 3.3.3 *Ensure to wear an ESD wristband* 3.3.4 *Ensure to safely handle the connectors*	**5.1 Replacing the speaker**

B. Competencies:

- Replace speakers when there is no audio output or need to enhance audio.

C. Pedagogy/Learning Exp0eriences

Contact

- Let the learners read INFORMATION SHEET 3.3
- Demonstrate OPERATION SHEET 3.3
- Let the learners perform OPERATION SHEET 3.3
- Let the learners solve SAMPLE SELF CHECK 3.3

Non-contact:

- Let the learners read INFORMATION SHEET 3.3
- Provide handout to learners through Google Classroom/social media.
- Share the web link https://www.youtube.com/watch?v=w_QGruJuH7E to learn how to replace the laptop speaker and make note of the steps.
- Let the learners solve SAMPLE SELF CHECK 3.3

D. Assessment:

Contact:

- Assess learners while performing OPERATION SHEET 3.3 using the rubric.
- Assess the learners' response on SAMPLE SELF CHECK 3.3
- Conduct a quiz to assess their understanding of replacing speakers using the rubric.

Non-contact:

- Assess the learner's note uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.
- Assess the learners' response on SAMPLE SELF CHECK 3.3

E. Resources (online and offline):

- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts
- https://www.youtube.com/watch?v=w_QGruJuH7E (Explanation on replacing laptop speaker)

A. **Learning objectives/Broad theme / Strand/Chapter:**

Learning Objectives	Core concepts (Chapter/Topic)
3.4.1 Explain the troubleshooting of the keyboard 3.4.2 State the specifications of the keyboard 3.4.3 State the methods of replacing a keyboard 3.4.4 State reasons for keyboard damages 3.4.5 *Ensure not to pull the keyboard without disconnecting the cable* 3.4.6 *Ensure the keyboard is screwed or locked properly* *Ensure proper handling of tools and equipment*	**3.4 Replacing keyboard**

B. **Competencies:**

- Replace keyboard when keyboard cannot be repaired by simple hardware and software troubleshooting

C. **Pedagogy/Learning Experiences**

Contact

- Let the learners read INFORMATION SHEET 3.4.
- Demonstrate OPERATION SHEET 3.4.
- Let the learners perform OPERATION SHEET 3.4.
- Let the learners solve SAMPLE SELF CHECK 3.4.

Non-contact:

- Let the learners read INFORMATION SHEET 3.4.
- Provide handout to learners through Google Classroom/social media.
- Provide the weblink:
- Share the web link https://www.youtube.com/watch?v=GUzBWFqTKwM to learn how to replace the laptop keyboard and make notes of the steps.
- Let the learners solve SAMPLE SELF CHECK 3.4

D. Assessment:

Contact:

- Assess learners while performing OPERATION SHEET 3.4 using the rubric.
- Assess the learners' response on SAMPLE SELF CHECK 3.4.
- Conduct class test to assess learners conceptual understanding on

Non-contact:

- Assess the learner's notes uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.
- Assess the learners' response on SAMPLE SELF CHECK 3.4.

E. **Resources (online and offline):**

- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts
- https://www.youtube.com/watch?v=GUzBWFqTKwM (Explanation on replacing laptop keyboard)

   A. **Learning objectives/Broad theme / Strand/Chapter:**

Learning Objectives	Core concepts (Chapter/Topic)
3.5.1 Explain the troubleshooting of the touchpad 3.5.2 Label the components of a laptop 3.5.3 State the specifications of touchpad connectors 3.5.4 *Ensure not to pull the touchpad without disconnecting the cable* 3.5.5 *Ensure to align touchpad with base*	**3.5 Replace touchpad**

B. **Competencies:**

- Replace touchpad when there is touchpad sensor errors/damage.

C. Pedagogy/Learning Exp0eriences

Contact

- Let the learners read INFORMATION SHEET 3.5.
- Demonstrate OPERATION SHEET 3.5
- Let the learners perform OPERATION SHEET 3.5.
- Let the learners solve SAMPLE SELF CHECK 3.5.

Non-contact:

- Let the learners read INFORMATION SHEET 3.5
- Let the learners solve SAMPLE SELF CHECK 3.5.
- Provide handout to learners through Google Classroom/social media.
- Share the web link https://www.youtube.com/watch?v=hDASLGm0TZw to learn how to replace the laptop touchpad and make note of the steps.
- Let the learners solve SAMPLE SELF CHECK 3.5.

D. Assessment:

Contact:

- Assess learners while performing OPERATION SHEET 3.5 using the rubric.
- Assess the learners' response on SAMPLE SELF CHECK 3.5.
- Conduct class test to assess their conceptual understanding on replacing touchpad

Non-contact:

- Assess the learner's note uploaded in the Google Classroom/social media using the rubric and provide intervention accordingly.
- Assess the learners' response on SAMPLE SELF CHECK 3.5.
- Conduct online tests through social media/google classroom.

E. Resources (online and offline):

- Competency-Based Learning Materials for Classes IX and X, REC
- Handouts
- https://www.youtube.com/watch?v=hDASLGm0TZw (Explanation on replacing laptop touchpad)

RESOURCES

1) Technical and Vocational Education and Training (TVET) New Normal Curriculum Framework (Classes PP-XII)

2) Competency-Based Learning Material (CHN)