

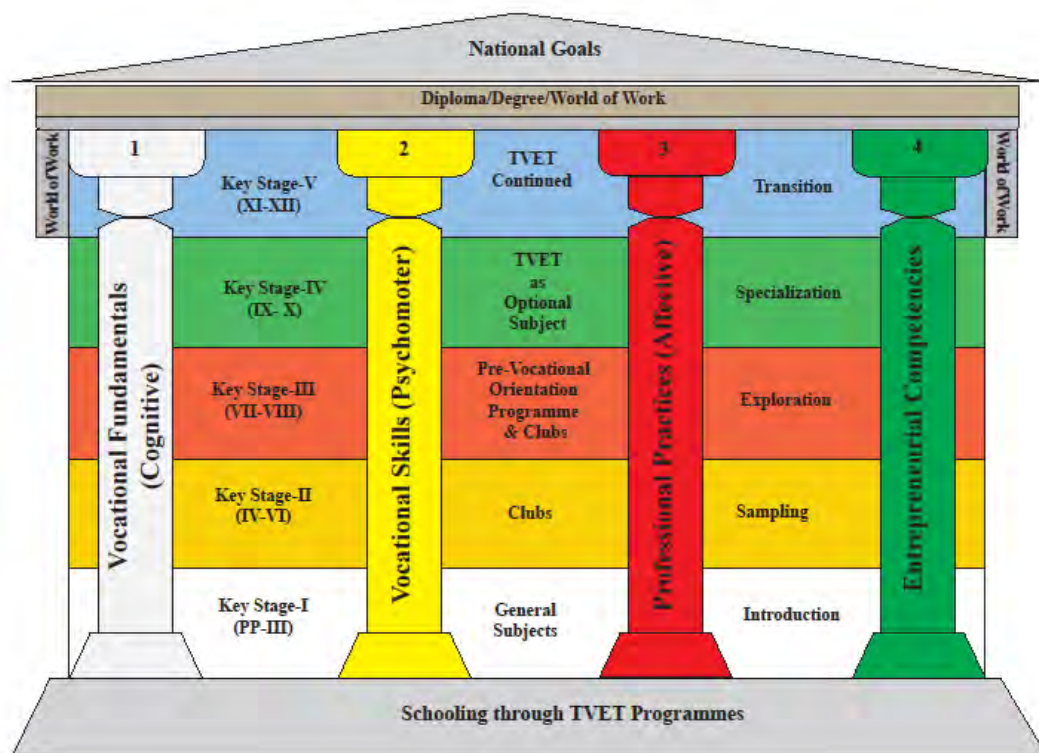
TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET)

NEW NORMAL CURRICULUM

INSTRUCTIONAL GUIDE

(MASONRY)

CLASS: XII



Royal Education Council

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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 Rinchening) 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 I: PERFORMING BRICK/BLOCK, STONE MASONRY AND PLASTERING

Chapter 4: Performing brick/blocks masonry work

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

Learning objectives	Core concepts (Chapters/Topics)
5.3.1 State the technical terms used in stone masonry. 5.3.2 Describe the types of stone masonry. 5.3.3 Define RRM. 5.3.4 State the applications of the RRM wall. 5.3.5 State the reasons for providing through stones. 5.3.6 Differentiate between RRM wall & brick wall. 5.3.7 Estimate materials for RRM wall. 5.3.8 Lay RRM wall. 5.3.9 <i>Ensure proper care and handling of aligning tools.</i> 5.3.10 <i>Ensure cleanliness at the workplace.</i> 5.3.11 <i>Ensure economic use of materials.</i> 5.3.12 <i>Ensure proper storage of surplus materials.</i> 5.3.13 <i>Ensure appropriate use of gloves, apron, goggles, and mask.</i>	5.3 Laying Random Rubble Masonry (RRM) wall

B. Competencies

- i) Practice OHS procedure for safety as always.
- ii) Construct different types of rubble masonry as required.

C. Pedagogy/Learning experience

- **Contact:**

- ✓ Make learners read the INFORMATION SHEET 5.3.
- ✓ Provide a few questions to estimate the quantity of materials required in a wall.
- ✓ Make learners read and perform the OPERATION SHEET 5.3 through guided practice.
- ✓ Make learners answer the SAMPLE SELF CHECK 5.3.
- ✓ Make learners answer the SAMPLE SELF CHECK 5.3 through Google Classroom.

- **Non-contact:**

- ✓ Instruct learners to read INFORMATION SHEET 5.3 and OPERATION SHEET 5.3 through Google Classroom.
- ✓ Provide a few questions to estimate the quantity of materials required in a wall through Google Classroom.
- ✓ Share a video that shows how to construct course rubble masonry by using a link <https://youtu.be/kEDDMfmFoLY> through Google Classroom.

D. Assessment

- **Contact:**
 - ✓ Assess learners' ability to construct the RRM wall.
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.3.
 - ✓ Provide feedback.
- **Non-contact:**
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.3.
 - ✓ Provide feedback through Google Classroom.

E. Resources

- CBLM for Classes XI and XII, REC
- <https://youtu.be/kEDDMfmFoLY> (Video on construction of coursed rubble masonry)

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

Learning objectives	Core concepts (Chapters/Topics)
5.4.1 Define the DRM wall. 5.4.2 List the advantages and disadvantages of the DRM wall. 5.4.3 Estimate material for DRM wall. 5.4.4 State the application of the DRM wall. 5.4.5 Lay the DRM wall. 5.4.6 <i>Ensure proper care and handling of aligning tools.</i> 5.4.7 <i>Ensure cleanliness at the workplace.</i> 5.4.8 <i>Ensure economic use of materials.</i> 5.4.9 <i>Ensure proper storage of surplus materials.</i> 5.4.10 <i>Ensure appropriate use of gloves, apron, goggles, and mask.</i>	5.4 Laying Dry Rubble Masonry (DRM) wall

B. Competencies

- i) Practice OHS procedure for safety as always.
- ii) Construct the DRM wall as required.

C. Pedagogy/Learning experience

- **Contact:**
 - ✓ Make learners read the INFORMATION SHEET 5.4.
 - ✓ Provide a few questions to practice the estimation of required material for the DRM wall.
 - ✓ Make learners read and perform the OPERATION SHEET 5.4.
 - ✓ Make learners solve the SAMPLE SELF CHECK 5.4.
- **Non-contact:**
 - ✓ Make learners read the INFORMATION SHEET 5.4 and OPERATION SHEET 5.4 through Google Classroom.
 - ✓ Provide a few questions to practice the estimation of required material for the DRM wall through Google Classroom.
 - ✓ Share the video weblink <https://youtu.be/mtQChQXKrkA> that shows the laying of dry rubble masonry wall through Google Classroom.
 - ✓ Instruct learners to solve the SAMPLE SELF CHECK 5.4 and submit their work through Google Classroom.

D. Assessment

- **Contact:**
 - ✓ Assess learners' ability to construct a DRM wall using a rubric.
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.4.
 - ✓ Provide feedback.
- **Non-contact:**
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.4.
 - ✓ Provide feedback through Google Classroom.

E. Resources

- CBLM for Classes XI and XII, REC
- <https://youtu.be/mtQChQXKrKA> (Video on dry rubble masonry wall)

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

Learning objectives	Core concepts (Chapters/Topics)
5.5.1 Define Ashlar masonry. 5.5.2 Describe the types of ashlar masonry. 5.5.3 Differentiate between RRM and Ashlar masonry. 5.5.4 State the application of Ashlar masonry. 5.5.5 Lay Ashlar masonry wall. 5.5.6 <i>Ensure proper care and handling of aligning tools.</i> 5.5.7 <i>Ensure appropriate use of gloves, apron, goggles, and mask.</i>	5.5 Laying Ashlar masonry wall

B. Competencies

- i) Practice OHS procedure for safety as always.
- ii) Lay Ashlar masonry wall as per the requirement.

C. Pedagogy/Learning experience

- **Contact:**
 - ✓ Make learners read the INFORMATION SHEET 5.5.
 - ✓ Make learners read and perform the OPERATION SHEET 5.5.
 - ✓ Make learners solve the SAMPLE SELF CHECK 5.5.
- **Non-contact:**
 - ✓ Instruct learners to read the INFORMATION SHEET 5.5 and OPERATION SHEET 5.5 through Google Classroom.
 - ✓ Instruct learners to learn the difference between rubble and ashlar masonry by sharing the web link <https://youtu.be/C4LZ2TFAlHw> through Google Classroom.
 - ✓ Instruct learners to explore about types of ashlar masonry and its advantage by sharing the web link <https://www.civilclick.com/ashlar-masonry/> through Google Classroom.
 - ✓ Instruct learners to solve the SAMPLE SELF CHECK 5.5 and submit it through Google Classroom.

D. Assessment

- **Contact:**
 - ✓ Assess learners' ability to lay ashlar masonry using a rubric.
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.5.
 - ✓ Provide feedback.
- **Non-contact:**
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.5.
 - ✓ Provide feedback through Google Classroom.

E. Resources

- CBLM for Classes XI and XII, REC
- <https://youtu.be/C4LZ2TFAlHw> (Rubble masonry vs Ashlar masonry)
- <https://www.civilclick.com/ashlar-masonry/> (Ashlar masonry and its advantage)

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

Learning objectives	Core concepts (Chapters/Topics)
5.6.1 Define retaining. 5.6.2 State the purpose of retaining the wall. 5.6.3 List the types of retaining wall and their applications. 5.6.4 Explain the reason for providing weep holes. 5.6.5 Interpret the drawing and specifications. 5.6.6 Explain the technique for preparing a wooden profile. 5.6.7 Lay retaining wall. 5.6.8 <i>Ensure proper use of aligning tools.</i> 5.6.9 <i>Ensure appropriate use of gloves, apron, goggles, and mask.</i>	5.6 Laying retaining wall

B. Competencies

- i) Practice OHS procedure for safety as always.
- ii) Lay different types of retaining wall as required.

C. Pedagogy/Learning experience

- **Contact:**

- ✓ Make learners read the INFORMATION SHEET 5.6.
- ✓ Make learners read the OPERATION SHEET 5.6.
- ✓ Make learners solve the SAMPLE SELF CHECK 5.6.
- ✓ Conduct a class test on different types of stone walls.

- **Non-contact:**

- ✓ Make learners read the INFORMATION SHEET 5.6 and OPERATION SHEET 5.6.
- ✓ Let learners explore the retaining wall and make a note on it by sharing the link <https://theconstructor.org/geotechnical/retaining-wall-types-use/24566/> and submit it through Google Classroom.
- ✓ Share learners the video link https://youtu.be/elW_nNO19Xo to watch how retaining walls are built.
- ✓ Instruct learners to solve the SAMPLE SELF CHECK 5.6 and submit it through Google Classroom.
- ✓ Conduct a class test through Google Classroom on different types of stone walls within a time-bound.

D. Assessment

- **Contact:**

- ✓ Assess learners' ability to lay ashlar masonry using a rubric.
- ✓ Assess learners' response to SAMPLE SELF CHECK 5.6.
- ✓ Provide feedback.

- **Non-contact:**
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.6.
 - ✓ Provide feedback through Google Classroom.

E. Resources

- CBLM for Classes XI and XII, REC
- <https://theconstructor.org/geotechnical/retaining-wall-types-use/24566/> (Note on retaining wall)
- https://youtu.be/eIW_nNO19Xo (Video on retaining wall)

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

Learning objectives	Core concepts (Chapters/Topics)
5.7.1 State the types of defects. 5.7.2 Explain the causes of defects. 5.7.3 Describe the remedies for defects. 5.7.4 Repair brick, block and stone masonry works. 5.7.5 <i>Ensure proper use of repairing tools.</i> 5.7.6 <i>Ensure appropriate use of gloves, apron, goggles, and mask.</i>	5.7 Repairing brick, block and stone masonry works

B. Competencies

- i) Practice OHS procedure for safety as always.
- ii) Repair the different types of masonry defects as per requirement.

C. Pedagogy/Learning experience

- **Contact:**
 - ✓ Make learners read the INFORMATION SHEET 5.7.
 - ✓ Make learners read and perform the OPERATION SHEET 5.7.
 - ✓ Go around the school and repair the damaged structures related to masonry.
 - ✓ Ask learners to solve the SAMPLE SELF CHECK 5.7.
- **Non-contact:**
 - ✓ Make learners read the INFORMATION SHEET 5.7 and OPERATION SHEET 5.7.
 - ✓ Share learners the web link <https://youtu.be/s-ooKCI-cFc> to watch how old brick walls are repaired through Google Classroom.
 - ✓ Ask learners to solve the SAMPLE SELF CHECK 5.7 and submit it through Google Classroom.

D. Assessment

- **Contact:**
 - ✓ Assess learners' ability to repair the damaged structures using a rubric.
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.7.
 - ✓ Provide feedback.
- **Non-contact:**
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.7.
 - ✓ Provide feedback through Google Classroom.

E. Resources

- CBLM for Classes XI and XII, REC
- <https://youtu.be/s-ooKCI-cFc> (Video on repairing old brick wall)

RESOURCES

- 1) Technical and Vocational Education and Training (TVET) New Normal Curriculum Framework (Classes: PP-XII)
- 2) Competency-Based Learning Materials (Masonry)