

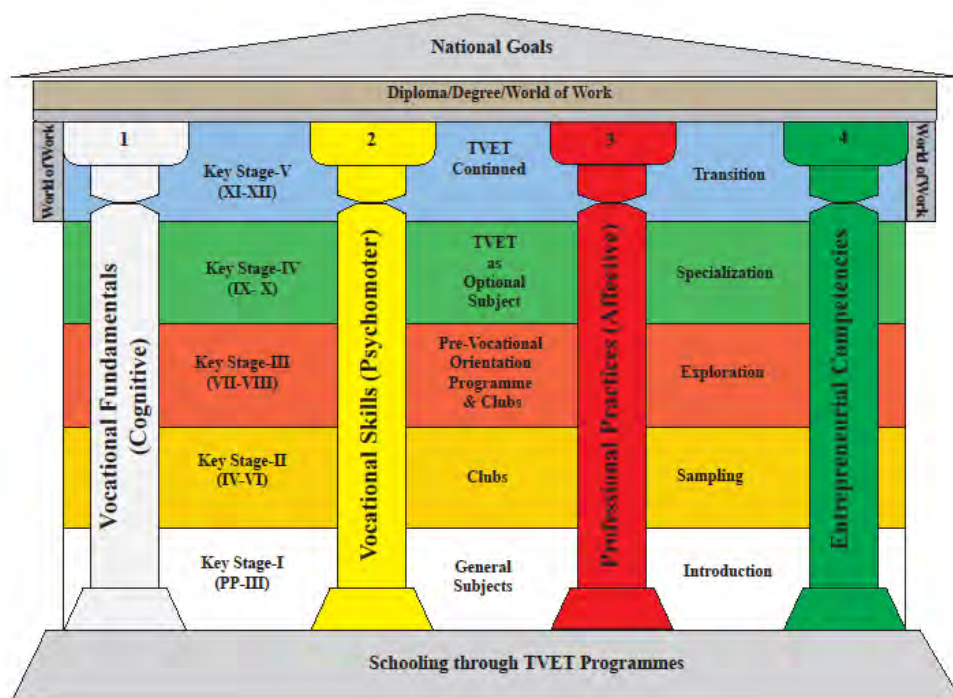
TECHNICAL AND VOCATIONAL EDUCATION AND TRAINING (TVET)

NEW NORMAL CURRICULUM

INSTRUCTIONAL GUIDE

(MASONRY)

CLASS: XI



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)
4.10.1 Define the seismic band. 4.10.2 List the types of seismic band. 4.10.3 State the purpose of seismic bands. 4.10.4 State the advantages and disadvantages of bands. 4.10.5 Explain the use of reinforcement concrete bands. 4.10.6 Explain the use of wooden bands. 4.10.7 Provide seismic bands. 4.10.8 <i>Ensure appropriate use of gloves, helmet, apron, and goggles.</i> 4.10.9 <i>Ensure the proper handling of tools.</i> 4.10.10 <i>Ensure cleanliness at a workplace.</i> 4.10.11 <i>Ensure proper storage of surplus materials.</i>	4.10 Providing seismic bands

B. Competencies

- i) Practice OHS procedure for safety as always.
- ii) Provide seismic bands as per requirement.

C. Pedagogy/Learning experience

- **Contact:**

- ✓ Make learners read the INFORMATION SHEET 4.10.
- ✓ Make learners read and perform the OPERATION SHEET 4.10 through demonstration and guided practice.
- ✓ Make learners answer the SAMPLE SELF CHECK 4.10 and provide additional questions.

- **Non-contact:**

- ✓ Instruct learners to read the INFORMATION SHEET 4.10 through Google Classroom.
- ✓ Instruct learners to watch a video on seismic bands and opening reinforcement in the web link <https://youtu.be/CIzvf1HYX8Q> through Google Classroom.
- ✓ Instruct learners to explore more about formwork by sharing the web link <https://www.designingbuildings.co.uk/wiki/Formwork> through Google Classroom.
- ✓ Ask learners to read the OPERATION SHEET 4.10 through Google Classroom.
- ✓ Instruct learners to answer the SAMPLE SELF CHECK 4.10 and provide additional questions and make them submit it through Google Classroom.

D. Assessment

- **Contact:**
 - ✓ Assess learners' ability to provide seismic band using a rubric.
 - ✓ Assess learners' response to SAMPLE SELF CHECK 4.10 and the additional questions provided.
 - ✓ Provide feedback.
- **Non-contact:**
 - ✓ Assess learners' response to SAMPLE SELF CHECK 4.10 and the additional questions provided.
 - ✓ Provide feedback through Google Classroom.

E. Resources

- CBLM for Classes XI and XII, REC
- <https://youtu.be/Clzvf1HYX8Q> (Video on seismic bands and opening reinforcement)
- <https://www.designingbuildings.co.uk/wiki/Formwork> (Article on formwork)

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

Learning objectives	Core concepts (Chapters/Topics)
4.11.1 Define confined masonry. 4.11.2 State the purpose of confined masonry. 4.11.3 Describe the structural components of a confined masonry building. 4.11.4 State the advantages and disadvantages of confine masonry. 4.11.5 Lay confined masonry wall. 4.11.6 <i>Ensure appropriate use of gloves, helmet, apron, and goggles.</i> 4.11.7 <i>Ensure the proper handling of tools.</i> 4.11.8 <i>Ensure cleanliness at a workplace.</i> 4.11.9 <i>Ensure economic use of materials.</i> 4.11.10 <i>Exhibit teamwork.</i> 4.11.11 <i>Ensure proper storage of surplus materials.</i>	4.11 Laying confined masonry wall

B. Competencies

- i) Practice OHS procedure for safety as always.
- ii) Lay confined masonry wall as required.

C. Pedagogy/Learning experience

- **Contact:**
 - ✓ Make learners read the INFORMATION SHEET 4.11.
 - ✓ Make learners read and perform OPERATION SHEET 4.11.
 - ✓ Make learners answer the SAMPLE SELF CHECK 4.11.
- **Non-contact:**
 - ✓ Make learners read the INFORMATION SHEET 4.11 and OPERATION SHEET 4.11 through Google Classroom.
 - ✓ Make learners explore more about confined masonry wall by sharing a pdf link <https://logementquartierhaiti.files.wordpress.com/2011/10/confined-masonry-training-pakistan.pdf> through Google Classroom.
 - ✓ Make learners watch a video on confined masonry by using the link <https://youtu.be/fiT2vEOXsuv> through Google Classroom.
 - ✓ Instruct learners to answer the SAMPLE SELF CHECK 4.11 and submit it through Google Classroom.

D. Assessment

- **Contact:**
 - ✓ Assess learners' ability to lay confine masonry wall using a rubric.
 - ✓ Assess learners' response to SAMPLE SELF CHECK 4.11 and the additional questions provided.
 - ✓ Provide feedback.
- **Non-contact:**
 - ✓ Assess learners' response to SAMPLE SELF CHECK 4.11.

✓ Provide feedback through Google Classroom.

E. Resources

- CBLM for Classes XI and XII, REC
- <https://logementquartierhaiti.files.wordpress.com/2011/10/confined-masonry-training-pakistan.pdf> (Note on confined masonry wall)
- <https://youtu.be/fiT2vEOXsuw> (Video on confined masonry)

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

Learning objectives	Core concepts (Chapters/Topics)
4.12.1 Define pointing. 4.12.2 List the types of tools and materials. 4.12.3 State the types of pointing and their function. 4.12.4 State the advantages of pointing over plastering. 4.12.5 Define curing. 4.12.6 State the purpose of curing. 4.12.7 State the methods of curing. 4.12.8 Describe the duration of curing. 4.12.9 Explain the effects of poor curing. 4.12.10 Provide pointing. 4.12.11 <i>Ensure proper use of pointing tools.</i> 4.12.12 <i>Ensure appropriate use of gloves, apron, and mask.</i>	4.12 Providing pointing

B. Competencies

- i) Practice OHS procedure for safety as always.
- ii) Provide the different type of pointing as required.

C. Pedagogy/Learning experience

- **Contact:**

- ✓ Make learners read the INFORMATION SHEET 4.12.
- ✓ Make learners read and perform the OPERATION SHEET 4.12.
- ✓ Make learners solve the SAMPLE SELF CHECK 4.12 and provide additional questions

- **Non-contact:**

- ✓ Instruct learners to read the INFORMATION SHEET 4.12 and OPERATION SHEET 4.12 through Google Classroom.
- ✓ Instruct learners to watch a video showing the ways to do a pointing by sharing a link <https://youtu.be/n0TqH0yret0> through Google Classroom.
- ✓ Instruct learners to watch a video on how curing is done by sharing a link https://youtu.be/T_wqwYPAie4 through Google Classroom.
- ✓ Instruct learners to solve the SAMPLE SELF CHECK 4.12 and provide additional questions and make them submit it through Google Classroom.

D. Assessment

- **Contact:**

- ✓ Assess learners' ability to provide pointing by using a rubric.
- ✓ Assess learners' response to SAMPLE SELF CHECK 4.12 and the additional questions provided.
- ✓ Provide feedback.

- **Non-contact:**
 - ✓ Assess learners' response to SAMPLE SELF CHECK 4.12 and the additional questions provided.
 - ✓ Provide feedback.

E. Resources

- CBLM for Classes XI and XII, REC
- <https://youtu.be/n0TqH0yret0> (Video on pointing)
- https://youtu.be/T_wqwYPAie4 (Video on curing)

Chapter 5: Performing stone masonry work

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

Learning objectives	Core concepts (Chapters/Topics)
5.1.1 Define stone masonry. 5.1.2 State the uses of stone masonry. 5.1.3 State the classification of rock. 5.1.4 Describe the types of stone used in building construction. 5.1.5 Describe the quality and selection of stone. 5.1.6 Define stone dressing. 5.1.7 Explain the purpose of stone dressing. 5.1.8 List the tools used for stone dressing. 5.1.9 Dress stones manually. 5.1.10 <i>Ensure proper handling of dressing tools.</i> 5.1.11 <i>Ensure cleanliness at a workplace.</i> 5.1.12 <i>Ensure appropriate use of gloves, apron, goggles, and mask.</i>	5.1 Dressing stones manually

B. Competencies

- i) Practice OHS procedure for safety as always.
- ii) Dress the stone manually in the required shape and size.

C. Pedagogy/Learning experience

- **Contact:**

- ✓ Make learners read the INFORMATION SHEET 5.1.
- ✓ Make learners read and perform the OPERATION SHEET 5.1.
- ✓ Ask learners to answer the questions given in the SAMPLE SELF CHECK 5.1 and provide additional questions.

- **Non-contact:**

- ✓ Instruct learners to read the INFORMATION SHEET 5.1 and OPERATION SHEET 5.1 through Google Classroom.
- ✓ Instruct learners to explore more about rocks by using the web link <https://byjus.com/physics/types-of-rocks/> through Google Classroom.
- ✓ Instruct learners to watch a video on how stones are being dressed by sharing the web link <https://youtu.be/1Dz0Serm3eU> through Google Classroom.
- ✓ Ask learners to solve SAMPLE SELF CHECK 5.1 and provide additional questions and instruct them to submit it through Google Classroom.

D. Assessment

- **Contact:**

- ✓ Assess learners' ability to dress stone manually by using a rubric.
- ✓ Assess learners' response to SAMPLE SELF CHECK 5.1 and the additional questions provided.
- ✓ Provide feedback.

- **Non-contact:**
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.1 and the additional questions provided.
 - ✓ Provide feedback through Google Classroom.

E. Resources

- CBLM for Classes XI and XII, REC
- <https://byjus.com/physics/types-of-rocks/> (Notes and video on type of rocks)
- <https://youtu.be/IDz0Serm3eU> (Video on dressing stone manually)

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

Learning objectives	Core concepts (Chapters/Topics)
5.2.1 Label the parts of the stone cutting machine. 5.2.2 State the importance of pouring water while using a cutting machine. 5.2.3 Differentiate between manual and mechanical dressing. 5.2.4 Dress stone using a cutting machine. 5.2.5 Operate cutting machine. 5.2.6 <i>Ensure the proper handling of the cutting machine.</i> 5.2.7 <i>Ensure cleanliness at a workplace.</i> 5.2.8 <i>Ensure appropriate use of gloves, apron, goggles, and mask.</i>	5.2 Dressing stone using a cutting machine

B. Competencies

- i) Practice OHS procedure for safety as always.
- ii) Dress stone using a cutting machine into a required shape and size.

C. Pedagogy/Learning experience

- **Contact:**
 - ✓ Make learners read the INFORMATION SHEET 5.2.
 - ✓ Demonstrate to operate the cutting machine and exhibit how to dress stone using it.
 - ✓ Make learners read and operate the SKILL SHEET 5.2.
 - ✓ Make learners read and perform the OPERATION SHEET 5.2.
 - ✓ Ask learners to answer the questions given in the SAMPLE SELF CHECK 5.2 and provide additional questions.
- **Non-contact:**
 - ✓ Instruct learners to read the INFORMATION SHEET 5.2, SKILL SHEET 5.2 and OPERATION SHEET 5.2 through Google Classroom.
 - ✓ Instruct learners to watch a video on how the stones cutter machine is being used by sharing the web link <https://youtu.be/wBBIVnwV-y0> through Google Classroom.
 - ✓ Ask learners to answer the questions given in the SAMPLE SELF CHECK 5.2 and provide additional questions and instruct them to submit them through Google Classroom.

D. Assessment

- **Contact:**
 - ✓ Assess learners' ability to dress stone using a cutting machine by using a rubric.
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.2.
 - ✓ Provide feedback.
- **Non-contact:**
 - ✓ Assess learners' response to SAMPLE SELF CHECK 5.2.
 - ✓ Provide feedback through Google Classroom.

E. Resources

- CBLM for Classes XI and XII, REC
- <https://youtu.be/wBBIVnwV-y0> (Video on stonecutter machine)

ENGINEERING DRAWING

A. Learning objectives/Broad theme/Strand/Chapter

Learning objectives	Core concepts (Chapters/Topics)
2.2.1 Define orthographic drawing. 2.2.2 List the four quadrants. 2.2.3 Name the different ways of drawing orthographic projections. 2.2.4 Differentiate between first and third angle projection. 2.2.5 Draw orthographic projection. 2.2.6 <i>Ensure proper handling of drawing instruments.</i> 2.2.7 <i>Ensure proper disposal of waste.</i>	2.2 Drawing orthographic projection

B. Competencies

- i) Draw orthographic projection as per the standard procedures and dimensions.

C. Pedagogy/Learning experience

- **Contact:**
 - ✓ Make learners read INFORMATION SHEET 2.2.
 - ✓ Make learners read and perform OPERATION SHEET 2.2.
 - ✓ Make learners solve the SAMPLE SELF CHECK 2.2 and provide additional questions on drawing an orthographic projection.
- **Non-contact**
 - ✓ Instruct learners read INFORMATION SHEET 2.2 through Google Classroom.
 - ✓ Instruct learners to watch these videos to know the details of differences between the first angle and third angle projection by sharing the web links <https://youtu.be/Gees6d2ANzs> and <https://youtu.be/sC8-IvJpBaA>.
 - ✓ Instruct learners to read and perform OPERATION SHEET 2.2 in A4 size paper and submit it through Google Classroom.
 - ✓ Provide additional questions to draw orthographic projection along with letting learners solve SAMPLE SELF CHECK 2.2 and submit their work through Google Classroom.

D. Assessment

- **Contact:**
 - ✓ Assess learners' ability to perform OPERATION SHEET 2.2 on drawing an orthographic projection using a rubric.
 - ✓ Assess learners' response to SAMPLE SELF CHECK 2.2 and the additional questions provided.
 - ✓ Provide feedback.
- **Non-contact:**
 - ✓ Assess learners' response to SAMPLE SELF CHECK 2.2 and the additional questions provided.
 - ✓ Provide feedback through Google Classroom.

E. Resources (online and offline)

- CBLM for Classes IX and X, REC
- <https://youtu.be/1sjaelzuGAk> (Video on basics of orthographic projection)
- <https://youtu.be/Gees6d2ANzs> / <https://youtu.be/sC8-IvJpBaA> (Video on differences between the first angle and third angle projection)

A. Learning objectives/Broad theme/Strand/Chapter

Learning objectives	Core concepts (Chapters/Topics)
2.3.1 Define building drawing. 2.3.2 List the types of building drawing. 2.3.3 Define the scale for drawing. 2.3.4 List the types of scale. 2.3.5 Draw a simple building plan. 2.3.6 <i>Develop creativity through their simple drawing plan.</i> 2.3.7 <i>Ensure proper handling of drawing instruments.</i> 2.3.8 <i>Ensure proper disposal of waste.</i>	2.3 Draw a simple building plan

B. Competencies

- i) Draw a building plan for different designs.

C. Pedagogy/Learning experience

• Contact:

- ✓ Make learners read INFORMATION SHEET 2.3.
- ✓ Make learners read and perform OPERATION SHEET 2.3.
- ✓ Make learners solve the SAMPLE SELF CHECK 2.3.
- ✓ Make learners design a simple drawing plan through their creativity.

• Non-contact

- ✓ Instruct learners to read INFORMATION SHEET 2.3 through Google Classroom.
- ✓ Instruct learners to watch a video on the web link <https://youtu.be/VYiVjVulnm4> that shows how to draw a floor plan.
- ✓ Instruct learners to read and perform OPERATION SHEET 2.3 in A4 size paper and submit it through Google Classroom.
- ✓ Instruct learners to solve the SAMPLE SELF CHECK 2.3 and submit it through Google Classroom.
- ✓ Make learners design a simple drawing plan through their creativity.

D. Assessment

• Contact:

- ✓ Assess learners' ability to perform OPERATION SHEET 2.3 on providing dimension to drawing using a rubric.
- ✓ Assess learners' response to SAMPLE SELF CHECK 2.3.
- ✓ Assess learners' creativity in designing a simple drawing plan.
- ✓ Provide feedback.

• Non-contact:

- ✓ Assess learners' response to SAMPLE SELF CHECK 2.3.
- ✓ Assess learners' creativity in designing a simple drawing plan.
- ✓ Provide feedback through Google Classroom.

E. Resources (online and offline)

- CBLM for Classes XI and XII, REC
- <https://youtu.be/VYiVjVulnm4> (Video on how to draw a floor plan)

RESOURCES

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