# NEW NORMAL FUNCTIONAL CURRICULUM

## Instructional Guide for Special and Inclusive Education

## Mathematics

## Classes IX - XII

Royal Education Council
Royal Government of 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 21$^{st}$ 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

**Kinga Dakpa**
Director General

# Table of Content

# Introduction

This guide has been developed for teachers teaching Functional Curriculum to the learners with special educational needs in special institute/schools with Special Educational Needs (SEN) Programme across the country for the implementation of the Functional curriculum. As Functional Curriculum for SEN is aimed at equipping the learners with a set of competencies, it is crucial for all the teachers to have the understanding about the intent of the curriculum so that they would be able to implement it as desired.

The functional curriculum for SEN has multiple learning areas. Each learning area has a set of competencies to be acquired and demonstrated by the learners at each stage of learning, which are outlined as Standards, Competencies and Objectives. While guiding teachers on what to teach, these standards, competencies and objectives will also inform the stakeholders about the levels of knowledge and skills expected from the learners at various stages of education. Children with disabilities are unique, and in that lies the hidden and unexplored talents and personal disposition. Where there is a flexible curriculum, all children have a chance to learn and benefit from education, and their achievements can be recognised. One of the alternatives to ensure that all children are educated and developed to their optimum capacities, is the implementation of functional curriculum. It caters to the learners with severe or multiple sensory impairments which hinder a learner from participating in the general curriculum setting.

The sample activities given in the guide are suggestive in nature. Teachers can negotiate to adapt and design their own teaching learning activities or experiences that best suit their learners and their environment. What is non-negotiable is the teaching of the competencies that the learners must acquire at each class before they move on to the next class.

The curriculum has a wide range of knowledge, concepts and skills that the students need to master. There are those which the learners can explore, acquire and practice to master on their own, and there are also more complex ones which need to be taught explicitly and practised consistently to gain a satisfactory level of mastery. Classroom teaching and instructional time should focus on teaching those concepts and skills that the students cannot learn on their own, while encouraging learners to explore some areas to learn and practice on their own.

The major shift in the curriculum is the teaching and development of skills by the learners. Therefore, the curriculum contents should be used as vehicles to move towards the acquisition of competencies. The competencies for each class are further broken down as objectives that should serve as signposts for teachers to decide what to teach.

Since, competencies are at the heart of curriculum and its implementation, teachers should make conscious choice of the most suitable teaching-learning approaches. And, because the teaching focusses on acquiring skills/competencies, assessment will also be on the acquisition and demonstration of the skills -skills in terms of literacy and numeracy, social, behavioural and affective domains that are demonstrable/measurable. Various assessment approaches and tools may be used for assessment, recording and reporting. Teachers are asked to be consistent to meaningfully assess students and report to stakeholders at various levels. Further, the focus of assessment should be for learning rather than assessment of learning, which would happen periodically.

## CurriculumContent

The Functional Curriculum contents serve as the means for the delivery of education towards achieving the competencies desired at various classes. Cross curricular linkages, various approaches and other co-curricular activities also contribute towards a systematic and comprehensive learning. In this age of advanced communication and information technology, contents are widely available from a number of sources, therefore, the contents of the curriculum have been kept flexible enough so that teachers can select, structure and sequence them to best suit the learners need while maintaining coherence and consistency. 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. The teaching-learning materials should be used as means to create a learning environment that is competency-based where the students 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 given tasks. 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 to realise their potential to the maximum.

## Class IX

**Competency 1:** Apply the knowledge of whole number in everyday life

| Core Concepts (Topic/Chapter/Theme) | Learning Objectives |
|---|---|
| **Whole Number**<br>➢ Place value<br>➢ Reading and writing Numbers<br>➢ Expanded form<br>➢ Comparing and Ordering | ➢ Identify the place value of 5-digit numbers<br>➢ Read 5-digit numbers<br>➢ Write 5-digit numbers in words<br>➢ Write 5-digit number in expanded from<br>➢ Compare and order 5-digit numbers using symbols less than, more than and equal to ( <,> and =) |

**Topic:** Place value

**Learning Objective**

- Identify the place value of 5-digit numbers

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Demonstrate place value using , place value chart abacus and BLM( Black Line Master)
- **Blended-Learning**
  - Use the link https://www.youtube.com/watch?v=e4Ro1M6ZeSU (To introduce 5-digit number).
  - Use the link https://www.youtube.com/watch?v=SRoMNb_8lq (To teach place value of 5- digit number).

**Topic:** Reading and writing Numbers

**Learning Objectives**

- Read 5-digit numbers
- Write 5-digit number in words

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Game: Teachers design number fishing game
  - Students fish out number cards from the box and read it
  - Teachers design worksheets to write number names
  - Students write number names
- **Placed Based Learning**
  - Teachers design *Dzongkhag* -wise population chart
  - Students read the population chart
- **Blended-Learning**
  - Use the link https://www.youtube.com/watch?v=e4Ro1M6ZeSU (To read and write number names)

**Topic:** Expanded form

**Learning Objective**

- Write 5-digit number in expanded from

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers design place value chart and abacus to teach expanded form
  - Teachers use BLM(Black Line Master) to represent expanded form
  - Teachers design worksheets to practices expanded form
  - Students write expanded form in the worksheets

**Topic:** Comparing and ordering numbers

**Learning Objective**

- Compare and order 5-digit numbers using symbols less than, more than and equal to (<,> and =)

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Provide children with set of number cards and get them to arrange in ascending /descending order
  - Teachers design a card game and provide students a set of number cards
  - Students throw the cards in turns and who ever throw greater number collects the thrown cards. A student with maximum number of cards at the end is the winner

**Assessment**

- **Anecdotal Record/Checklists**
  - Observe children while reading, writing, comparing and ordering numbers
  - Interview parents to get information about number practices in daily life
- **Portfolio**
  - Document work samples of students such as worksheets to assess numbers

**Competency 2:** Add, subtract, multiply and divide 4-digit numbers accurately using assistive devices

| Core Concepts (Topic/chapter/themes) | Learning Objectives |
|---|---|
| **Whole number computation**<br>➢ Addition<br>➢ Subtraction<br>➢ Multiplication<br>➢ Division | ➢ Add 4-digit numbers<br>➢ Subtract 4-digit numbers<br>➢ Multiply 2 -digit by 1- digit using arrays as a repeated addition and using assistive devices<br>➢ Divide 2- digit by 1- digit as a repeated subtraction, sharing and using assistive devices |

**Topic:** Addition

**Learning Objective**

- Add 4-digit numbers

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers demonstrate addition using place value chart
  - Teachers demonstrate addition using assistive devices
  - Students add using place value chart and assistive devices
- **Play-Based Learning**
  - Teachers prepare the purchased bills of items such as shoes ,bag, kira gho and shirt
  - Students calculate the total amount

**Topic:** Subtraction

**Learning Objective**

- Subtract 4-digit numbers

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Subtract 4-digit numbers using place value chart provided by teachers
  - Subtract 4-digit numbers using assistive devices provided by teachers

**Topic:** Multiplication

**Learning Objective**

- Multiply 2 -digit by 1- digit using arrays , as a repeated addition and using assistive devices

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers demonstrate multiplication using arrays, repeated addition and assistive devices
  - Students multiply using arrays, repeated addition and assistive devices
- **Blended-Learning**
  - Use the link https://youtu.be/dFZ6lqX_L4A (To teach multiplication)

**Topic:** Division

**Learning Objective**

- Divide 2- digit by 1- digit as a repeated subtraction ,sharing and using assistive devices

**Pedagogy/Strategies**

- **Activity-Based Learning**
  - Teachers demonstrate division by repeated subtraction, sharing and using assistive devices
  - Students divide by repeated subtraction, sharing and using assistive devices
- **Blended-Learning**

- Use the link https://youtu.be/5VaqKu0ENlY ( to introduce division)

**Assessment**

- **Anecdotal Record/Checklists**
  - Observe children while performing task and keep the records
  - Interview parents to get information about the students abilities to perform addition, subtraction, multiplication and division in daily life
- **Portfolio**
  - Document work samples of the student to assess addition, subtraction multiplication and division

**Competency 3:** Apply knowledge of time, perimeter and volume in real life situation

| Core Concepts (Topic/chapter/themes) | Learning Objectives |
|---|---|
| **Measurement**<br>➢ Time<br>➢ Perimeter<br>➢ Volume | ➢ Read activity schedules<br>➢ Calculate duration of the activity in minutes<br>➢ Calculate perimeter in metre and centimetre<br>➢ Calculate volume using cubes |

**Topic:** Time

**Learning Objectives**

- Read activity schedules
- Calculate duration of the activity in minutes

**Pedagogy/Strategies**

- **Place-based Learning**
  - Teachers use school schedules like school timing, class time table, exam time table to show the duration of different activities**.**
- **Activity-Based Learning**
  - Teachers provide school schedules like school timing ,class time table and exam time table
  - Students will go through schedules and follow the timing

**Topic:** Perimeter

**Learning Objective**

- Calculate perimeter in metre and centimetre

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers teach to calculate the perimeter of rectangle, triangle and pentagon using string
  - Teachers use diagrams of rectangle, triangle and pentagon to calculate the perimeter by adding given dimensions

- **Placed-Based Learning**
  - Students will be provided with hands on experience to calculate the perimeter of door, window, table top using string

**Topic:** Volume

**Learning Objective**

- Calculate volume using cubes

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers demonstrate to calculate volume of a cube and cuboid by using interlocking/judo cubes
  - Teachers provide cubes and cuboids for students to calculate the volume

**Assessment**

- **Anecdotal Record/Checklists**
  - Observe children to check whether they follow schedules
  - Observe children while calculating perimeter and volume
- **Portfolio**
  - Document work samples of students to assesses the topic perimeter and volume

**Competency 4:** Measure the value of goods in terms of money

| **Core Concepts (Topic/chapter/themes)** | **Learning Objectives** |
|---|---|
| **Financial Literacy** | ➢ Read price tag<br>➢ Tag sale items |

**Topic:** Financial Literacy

**Learning Objectives**

- Read price tag
- Tag sale items

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers display different items with price tags for children to learn about the cost of goods
  - Teachers prepare items chart and get the students to label the cost for each item
- **Place-Based Learning**
  - Visit nearby shops to provide hands-on experience

**Assessment**

- **Anecdotal Record/Checklists**
  - Observe students while performing task and keep the records
- **Portfolio**

| | |
|---|---|
| ➢ Document work samples of students such as worksheets | |
| **Competency 5:** Apply knowledge of fraction and decimal in daily life | |
| **Core Concepts (Topic/chapter/themes)** | **Learning Objectives** |
| ➢ Fraction and Decimal | ➢ Relate fraction and decimal<br>➢ Convert half, fourth, tenths and hundredths into decimal |

**Topic:** Fraction and Decimal

**Learning Objectives**

- Relate fraction to decimal
- Convert half, fourth, tenths and hundredths into decimal

**Pedagogy/Strategies**

- **Activity-based Learning**
  - ➢ Teachers Introduce decimal number using place value chart / with tenths and hundredths grid
  - ➢ Teachers relate fraction to decimal by shading tenths and hundredths grid
  - ➢ Students shade grids to relate fraction to decimal
- **Blended-Learning**
  - ➢ Use the link https://www.youtube.com/watch?app=desktop&v=Z8Pz59o-dpE(to convert decimal to fraction)

**Assessment**

- **Anecdotal Record/Checklists**
  - ➢ Observe children while shading grids to relate fraction to decimal
- **Portfolio**
  - ➢ Document work samples of students such as worksheets

| Class X | |
|---|---|
| **Competency1**: Apply the knowledge of whole number in everyday life. | |
| **Core Concepts (Topic/Chapter/Theme)** | **Learning Objectives** |
| **Whole Number**<br>➢ Place value<br>➢ Reading and writing Numbers<br>➢ Expanded form<br>➢ Standard form<br>➢ Compare and Order numbers | ➢ Identify the place value of 5-digit numbers<br>➢ Read 5-digit numbers<br>➢ Write 5-digit number in words<br>➢ Write 5- digit numbers in expanded form<br>➢ Represent 5-digit number with base ten blocks and abacus<br>➢ Compare and order 5-digit numbers using symbols less than. More than and equal to (<, > and =) |

**Topic:** Place value

**Learning Objectives**

- Identify the place value of 5-digit number

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teacher demonstrate place value using place value chart, abacus and Black line master(BLM)
- **Blended-Learning**
  - Use the link https://www.youtube.com/watch?v=e4Ro1M6ZeSU (To introduce and teach the place value of 5-digit numbers)
  - Use the link https://www.youtube.com/watch?v=SRoMNb_8lqA (To teach place value of 5-digit numbers)

**Topic:** Reading numbers

**Learning Objectives**

- Read 5-digit numbers
- Write 5-digit number in words

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teacher design work sheet for the students to practice number names.
- **Play-based Learning**
  - Teachers prepared number cards and put in the box
  - Students fish out number cards from the box and read it
- **Place-Based Learning**
  - Teacher design dzongkhags wise population chart for the class to read
  - Students read the chart and answer the questions
- **Blended-Learning**
  - Use the link https://www.youtube.com/watch?v=e4Ro1M6ZeSU To teach reading and

writing number names

- Down load the apps`1000,000 One Million LITE NumberWords Writer lite Grant Ojanen`s Creations` from the google play store to practice number names

**Topic:** Expanded form

**Learning Objectives**

- Write 5- digit numbers in expanded from

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers design place value chart and abacus to teach expanded form
  - Teachers use Black Line Master (BLM ) to represent numbers in expanded form
  - Teachers design worksheet for the students to practice expanded form
  - Students practice expanded form in the worksheet

**Topic:** Representing numbers

**Learning Objectives**

- Represent 5-digit number with base ten blocks and abacus

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers use base ten blocks, abacus and currency notes to represent numbers
  - Ask students to represent given numbers with base ten blocks / abacus
  - Teachers provide expanded form of numbers and students write in standard form

**Topic:** Comparing and ordering

**Learning Objectives**

- Compare and order 5-digit numbers using the symbol: smaller than, greater than and equal to (<, > and =)

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers provide children with set of number cards and get them to arrange in ascending /descending order
- **Play-based Learning**
  - Teachers provide students with a set of number cards. Students throw cards in turns. Whoever throw greater number collects the thrown cards. The person with maximum number of cards at the end is the winner

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe children while reading, writing, comparing and ordering numbers
  - Teachers interview parents to get information about number practices in daily life
- **Portfolio**
  - Teachers document work samples of students such as worksheets to assess numbers

**Competency 2:** Add, subtract, multiply and divide 5-digit numbers accurately using assistive devices

| Core Concepts (Topic/chapter/themes) | Learning Objectives |
|---|---|
| **Whole number computation**<br>➢ Addition<br>➢ Subtraction<br>➢ Multiplication<br>➢ Division | ➢ Add 5-digit numbers<br>➢ Subtract 5-digit numbers<br>➢ Multiply 3 -digit by 1- digit numbers<br>➢ Divide 3 -digit by -1 digit number |

**Topic:** Addition

**Learning Objectives**

- Add 5-digit numbers

**Pedagogy/Strategies**

- **Activity-based Learning**
  - ➢ Teacher demonstrate addition using place value chart
  - ➢ Teachers provide addition questions where students solve by using place value chart or assistive devices
- **Place-based Learning**
  - ➢ Teachers provide purchased bill samples of washing machine, television and mobile phone
  - ➢ Students calculate the total cost of items
- **Blended-Learning**
  - ➢ Use the link https://youtu.be/8yqPvNsS3NI to teach 5-digit number addition.

**Topic:** Subtraction

**Learning Objectives**

- Subtract 5-digit numbers

**Pedagogy/Strategies**

- **Activity-based Learning**
  - ➢ Teacher teaches subtraction using place value chart.
  - ➢ Let students solve problems using place value chart /assistive devices.
- **Blended-Learning**
  - ➢ Use the link https://youtu.be/nesCGR1F6SI to teach 5-digit subtraction

**Topic:** Multiplication

**Learning Objectives**

- Multiply 3 –digit numbers by 1- digit numbers

**Pedagogy/Strategies**

- **Activity-based Learning**
  - ➢ Teachers model multiplication as repeated addition using base ten blocks
  - ➢ Teachers design multiplication worksheet
  - ➢ Students solve multiplication problems using base ten blocks models / assistive devices

**Topic:** Division

**Learning Objectives**

- Divide 3 -digit numbers by -1 digit number

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers model division using base ten blocks
  - Students solve division problems using assistive devices
- **Blended-Learning**
  - Use the link https://www.youtube.com/watch?v=q8-Efax54xQ to introduce division as repeated subtraction
  - Use the link https://youtu.be/D7PelKmv-jI to teach division

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe children while performing task and record
  - Teachers interview parents to get information about the student's ability use number in real life situation.
- **Portfolio**
  - Teachers document student`s work samples to assess addition, subtraction, multiplication and division

**Competency 3: Apply knowledge of time, area and volume in real life situation**

| Core Concepts (Topic/chapter/themes) | Learning Objectives |
|---|---|
| **Measurement**<br>➢ Time<br>➢ Area<br>➢ Volume | ➢ Read Bhutan Broadcasting Services (BBS) and Radio valley programme schedules.<br>➢ Read public transport schedules.<br>➢ Calculate the duration of events in hours<br>➢ Calculate area in standard units<br>➢ Calculate the volume of cube and cuboid in standard units |

**Topic:** Time

**Learning Objectives**

- Read Bhutan Broadcasting Services (BBS) and Radio valley programme schedules.
- Read public transport services timing.
- Calculate duration of events in hours

**Pedagogy/Strategies**

- **Place-based Learning**
  - Teachers prepare or duplicate Bhutan broadcasting services programme schedules and Bhutan transport services departure and arrival timing.
- **Activity-based Learning**
  - Teacher will provide schedules and students will copy for reference.
  - Students use schedules to calculate duration of programmes and travels
- **Blended-Learning**
  - Use the link https://devilonwheels.com/bhutan-by-public-transport-bus-schedule from the RSTA website to teach about public transport services schedules

**Topic:** Area

**Learning Objectives**

- Calculate area in standard units

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers teach to calculate the area of rectangle using centimetre squares
  - Teachers teach to calculate area using formula
  - Students calculate the area of rectangles by counting squares/using area formula
- **Place-based Learning**
  - Students will be provided with hands on experience to calculate the area of classroom/flower gardens in metres

**Topic:** Volume

**Learning Objectives**

- Calculate the volume of cube and cuboid in standard units

**Pedagogy/Strategies**

- **Activity-based learning**
  - Teachers teach to calculate volume of cube and cuboid using interlocking /judo cubes
  - Teachers teach to calculate volume by using formula
  - Let students calculate volumes using cubes and formula
- **Place -Based Learning**
  - Provide hands on practice to calculate the volume of oil tin and cartoon box

**Assessment**

- **Interview**
  - Teachers ask questions to check understanding about broadcasting service and transport service schedules
  - Teachers interview parents to check whether the student is able to read and follow schedules
- **Anecdotal Record/Checklists**

- Teachers observe students while calculating area and volume

- **Portfolio**
  - Teachers document work samples of students to assess about area and volume

**Competency 4: Demonstrate Financial management skills.**

| Core Concepts (Topic/chapter/themes) | Learning Objectives |
|---|---|
| ➢ Financial literacy | ➢ Read purchasing bills/cash memos.<br>➢ Prepare selling bills/cash memos. |

**Topic:** Financial literacy

**Learning Objectives**

- Read purchasing bills/cash memos
- Prepare selling bills/cash memos

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers collect and display purchased bills to teach the topic
  - Teachers teach to prepare cash memo or bills
- **Place-based Learning**
  - Visit local shops to provide students with hands on experience

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe students while preparing bills and record the observation
- **Portfolio**
  - Teachers document student`s work samples. For example bills/memos prepared by the student

**Competency 5: Apply knowledge of fraction and decimal in daily life**

| Core Concepts (Topic/chapter/themes) | Learning Objectives |
|---|---|
| ➢ Fraction and Decimal | ➢ Relating fraction to decimal<br>➢ Naming decimal tenths, hundredths and thousandths as fractions |

**Topic:** Fraction and decimal

**Learning Objectives**

- Relate fractions to decimals
- Naming decimal tenths, hundredths and thousandths as fractions

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers relate fractions to decimals by shading tenths, hundredths and thousandths grids
  - Students shade grids to relate fractions to decimals
  - Teachers use place value chart to represent decimals with fractions
  - Teachers demonstrate ways to convert fractions to decimals using devices
- **Blended-Learning**
  - Use the link https://youtube.com/watch?v=3UDQjMZNbew&feature=share to introduce decimal
  - Use the link https://youtu.be/HDKMsqPQDbQ to teach decimal and fraction

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe and note down students abilities to solve fraction and decimal problems and provide support to address their needs
- **Portfolio**
  - Teachers study student's work samples to provide remedial measures

**Competency 6**: Apply knowledge of ratio and proportion in daily life.

| **Core Concepts (Topic/chapter/themes)** | **Learning Objectives** |
|---|---|
| ➢ Ratio | ➢ Compare quantity of objects in terms of ratio.<br>➢ Represent ratio with concrete objects.<br>➢ Represent ratio with proportion of ingredients. |

**Topic:** Ratio

**Learning Objectives**

- Compare quantity of objects in terms of ratio
- Represent ratio with concrete objects
- Represent ratio with proportion of ingredients

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers introduce ratio as comparison of quantity or proportion using concrete objects
  - Let students represent ratio using concrete objects /pictures of objects
- **Place-based Learning**

- Provide hands on practice to use ratio in real life situation by comparing amount of water with quantity of rice /quantity of rice with number of people

- **Blended- learning**
  - Use the link https://youtu.be/SsHLBIQhQ48 to introduce ratio and proportion

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe students while performing task
  - Teachers observe /interview parents to check student`s ability to use the knowledge of ratio for cooking
- **Portfolio**
  - Teachers document student`s work samples and use it for remedial measures

| Class XI | |
|---|---|
| **Competency 1:** Apply the knowledge of whole number in everyday life | |
| **Core Concepts (Topic/Chapter/Theme)** | **Learning Objectives** |
| **Whole Number**<br><br>➢ Place value<br>➢ Reading and writing Numbers<br>➢ Standard form<br>➢ Expanded form<br>➢ Comparing and ordering 6-digit number | ➢ Identify the place value of 6-digit numbers<br>➢ Read 6-digit numbers in million<br>➢ Write 6-digit number in words<br>➢ Write number in standard form<br>➢ Write 6- digit numbers in expanded form<br>➢ Compare and order 6-digit number using symbols less than, More than and equal to |

**Topic:** Place Value

- **Learning Objectives**
  - ➢ Identify the place value of 6-digit numbers

**Pedagogy/Strategies**

- **Activity-based Learning**
  - ➢ Demonstrate place value of 6-digit using period chart and abacus
  - ➢ Students write 6-digit numbers in period chart
- **Blended-Learning**
  - ➢ Use the link https://youtu.be/PPPRWrAYKbo to teach place value of 6-digit number

**Topic:** Reading and writing Numbers

- **Learning Objectives**
  - ➢ Read 6-digit numbers in million
  - ➢ Write 6-digit number in words

**Pedagogy/Strategies**

- **Activity-based Learning**
  - ➢ Game: Teachers design number fishing game
  - ➢ Students fish out number cards from the box and read it
  - ➢ Teachers design worksheets to write number names
  - ➢ Students write number names
- **Placed-based Learning**
  - ➢ Teachers design *Country*-wise population chart
  - ➢ Students read the population chart and answer the questions
- **Blended-Learning**
  - ➢ Use the link https://youtu.be/BUECmzjgBp8 to teach 6-digit number in words
  - ➢ Down load the app`1000,000 One Million LITE Number Word Writer lite Grant Ojanen`s Creations `from the Google play store to practice number names

**Topic:** Standard and Expanded form

- **Learning Objective**
  - Write 6-digit number in standard form
  - Write 6-digit number in expanded form

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers use period and abacus to teach standard and expanded form
  - Teachers write number names and let the students read and write numbers
  - Teachers provide standard form of numbers and let students write in expanded form
- **Blended-Learning**
  - Use the link https://youtu.be/JwgzsdLxW3Y to teach expansion of 6-digit number

**Topic:** Comparing and ordering numbers

**Learning Objectives**

- Compare and order -digit numbers using symbols less than, more than and equal to (<,> and =)

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Provide children with set of number cards and get them to arrange in ascending /descending order
- **Play-based Learning**
  - Teachers design a card game and provide students a set of number cards
  - Students throw the cards in turns and who ever throw greater number collects the thrown cards. A student with maximum number of cards at the end is the winner

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe children while reading, writing, comparing and ordering numbers
  - Teachers Interview parents to get information about number practices in daily life

- **Portfolio**
  - Document work samples of students such as worksheets to assess numbers

| **Competency 2: Add, subtract, multiply and divide 6-digit numbers accurately using assistive devices.** | |
|---|---|
| **Core Concepts (Topic/chapter/themes)** | **Learning Objectives** |

| | |
|---|---|
| **Whole number computation**<br>➢ Addition<br>➢ Subtraction<br>➢ Multiplication<br>➢ Division | ➢ Add 6-digit numbers using assistive devices<br>➢ Subtract 6-digit using assistive devices<br>➢ Multiply 3- digit by 1 digit using assistive device<br>➢ Divide 3-digit by digit 1-using assistive device |

**Topic:** Addition

**Learning Objectives**

- Add 6-digit numbers using assistive devices

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers demonstrate addition using place value chart
  - Teachers demonstrate addition using assistive devices
  - Students add using place value chart and assistive devices
- **Blended Learning**
  - Use the link https://youtu.be/PU3kghUw7uew to add 6-digit numbers using place value chart

**Topic:** Subtraction

**Learning Objectives**

- Subtract 6-digit numbers

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Subtract 6-digit numbers using place value chart provided by teachers
  - Subtract 6-digit numbers using assistive devices provided by teachers
- **Blended-Learning**
  - Use the link https://youtu.be/KMl_3D5s7eE (to teach 6-digit subtraction

**Topic:** Multiplication

**Learning Objectives**

- Multiply 3 -digit by 1- digit using assistive devices

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers demonstrate multiplication using assistive devices
  - Students multiply using assistive devices
  - Teachers demonstrate multiplication using base tens blocks
  - Students multiply using base tens blocks
- **Blended-Learning**
  - Use the link https://youtu.be/RTv6yt2iHJs to teach multiplication of 3-digit by 1-digit

**Topic:** Division

**Learning Objectives**

- Divide 3- digit by 1- digit using assistive devices

**Pedagogy/Strategies**

- **Activity-Based Learning**
  - Teachers demonstrate division by using assistive devices
  - Students divide using assistive devices
- **Blended-Learning**
  - Use the link https://youtu.be/meNk7X4266o to teach 3-digit division
  - Use the link https://youtu.be/D7PelKmv-jI to teach division

**Assessment**

- **Anecdotal Record/Checklists**
  - Observe children while performing task and keep the records
  - Interview parents to get information about the students' abilities to perform addition, subtraction, multiplication and division in daily life
- **Portfolio**
  - Document work samples of the student to assess addition, subtraction multiplication and division

**Competency 3:** Recognise financial institutions and their functions

| **Core Concepts (Topic/chapter/themes)** | **Learning Objectives** |
|---|---|
| **Banking Services in Bhutan**<br>➢ Financial institution<br>➢ Function of Banks<br>➢ Banking services | ➢ Name financial institution of Bhutan<br>➢ Explain functions of the banks such as Deposit, saving and Credit<br>➢ Apply the knowledge of using transition through (ATM, E-pay, M-pay, M-bob, E-teru) |

**Topic:** Financial Institutions

**Learning Objectives**

- Name financial institution of Bhutan

**Pedagogy/Strategies**

- **Place based Learning**
  - Teachers take students to different financial institutions and name them OR show the pictures of banks with names
  - Students look at the banks and write their names

**Topic:** Functions of Banks

**Learning Objectives**

- Explain functions of the banks such as deposit, saving and credit

**Pedagogy/Strategies**

- **Place-based Learning**
  - Teachers take students to the banks to learn about deposit, saving and credit
  - Teachers show and demonstrate to fill the forms of deposit and withdrawal
  - Teachers prepare questions with students to be asked to the people in the banks about saving and credit
  - Students fill the deposit and withdrawal forms of their own
  - Students interview people in the banks about saving and credit

- **Blended-Learning**

  - Use the link https://youtu.be/C3OnxgCAGm8 to teach filling of deposit form in the bank

**Topic:** Banking Services

**Learning Objectives**

- Apply the knowledge of using transition through ATM, E-pay, M-pay M-bob, E- teru

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers introduce mode of money transition through M-bob ,E-pay ,M-pay, ATM and E-teru
  - Teachers provide hands on practice to use apps
  - Pace Based Learning
  - Teachers take students to nearby ATM station to provide hands on practice

- **Blended Learning**
  - Use the link https://youtu.be/OJvTgJA7OX8 to teach on using of M-bob

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe students while filling deposit and withdrawal forms
  - Teachers observe students / interview parents about student's ability to perform money transition

**Competency 4:** Identify and compare the value of different currencies

| **Core Concepts (Topic/chapter/themes)** | **Learning Objectives** |
|---|---|
| ➢ **Financial Literacy** | ➢ Identify foreign currencies such as U.S $dollar, Indian Rupee and Thai baht |

| | |
|---|---|
| | ➢ Compare the value of currencies |

**Topic:** Financial Literacy

**Learning Objectives**

- Identify foreign currencies such as U.S $dollar, Indian Rupee and Thai baht.
- Compare the value of currencies

**Pedagogy/Strategies**

- **Activity-based Learning**
  - ➢ Teachers display and explain about different currencies
  - ➢ Teachers mingle different currencies and ask students to pick one of them and name it
  - ➢ Teachers explain different value of different currencies
  - ➢ Students calculate the exchange rate of each currency
- **Blended-Learning**
  - ➢ Use the link https://youtu.be/th0PkPVP3LI to teach Thai currency, Bhat
  - ➢ Use the link https://youtu.be/eXp3NAsCjvc to teach USA currency, dollar
  - ➢ Use the link https://youtu.be/hACtbh1_CDw to teach Indian currency, Rupee
  - ➢ Use the link https://youtu.be/FNw8Amcf7Yk to teach Bhutanese currency, Ngultrum

**Assessment**

- **Anecdotal Record/Checklists**
  - ➢ Teachers observe students while sorting out the currencies and keep the records

**Competency 5:** Apply knowledge of fraction and decimal in everyday life

| Core Concepts (Topic/chapter/themes) | Learning Objectives |
|---|---|
| ➢ Fraction and Decimal | ➢ Relate fraction to decimal<br>➢ Convert half, fourth, tenths and hundredths into decimal |

**Topic:** Fraction and Decimal

- **Learning Objectives**
  - ➢ Relate fraction to decimal
  - ➢ Convert half, fourth, tenths and hundredths into decimal

**Pedagogy/Strategies**

- **Activity-based Learning**
  - ➢ Teachers teach decimal and fraction using place value chart and using tenths and hundredths grids
  - ➢ Teachers relate fraction to decimal by shading tenths and hundredths grid
  - ➢ Students shade grids to relate fraction to decimal
- **Blended-Learning**
  - ➢ Use the link https://www.youtube.com/watch?v=DDASNYYm7RM (to convert decimal to fraction)

**Assessment**

- **Anecdotal Record/Checklists**
  - Observe children while shading grids to relate fraction to decimal
- **Portfolio**
  - Document work samples of students such as worksheets

**Competency 6:** Apply the knowledge of percentage for buying and selling of goods

| Core Concepts (Topic/chapter/themes) | Learning Objectives |
|---|---|
| ➢ Percentage | ➢ Calculate percentage |

**Topic:** Percentage

**Learning Objective**

- Calculate percentage

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers demonstrate percentage using hundred grid
  - Teachers demonstrate percentage using calculator
- **Blended-Learning**
  - Use the link https://youtu.be/09IOHCf9jUE (to teach how to calculate percentage)

**Assessment**

- **Anecdotal Record/Checklists**
  - Observe children while calculating percentage
- **Portfolio**
  - Document work samples of students worksheet

## Class XII

**Competency1**: Apply the knowledge of whole number in everyday life.

| Core Concepts (Topic/Chapter/Theme): | Learning Objectives |
|---|---|
| **Whole Number**<br>➢ Place value<br>➢ Reading and writing numbers<br>➢ Standard form<br>➢ Expanded form<br>➢ Renaming numbers<br>➢ Comparing and ordering 6-digit numbers | ➢ Identify the place value of 6-digit numbers<br>➢ Read 6-digit numbers<br>➢ Write 6-digit number in words<br>➢ Write 6- digit numbers in standard form<br>➢ Write 6- digit numbers in expanded form<br>➢ Rename 6-digit numbers<br>➢ Compare and order 6-digit numbers using symbols smaller than, greater than and equals to (<, > and =) |

**Topic:** Place value

**Learning Objective**

- Identify the place value of 6-digit number

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers demonstrate place value of 6-digit using period chart and abacus
- **Blended-Learning**
  - Use the link https://youtu.be/K0f-OxnJ2HU to teach place value of 6-digit numbers

**Topic:** Reading and writing numbers

**Learning Objectives**

- Read 6-digit numbers
- Write 6-digit number in words

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers design work sheet for the students to practice number names
- **Play-based Learning**
  - Teachers prepare number cards and put in the box
  - Students fish out number cards from the box and read it
- **Place-based Learning**
  - Teachers design country wise population chart for the class to read
  - Teachers ask questions about the population from the chart
- **Blended-Learning**
  - Use the link https://youtu.be/BUECmzjgBp8 to teach 6-digit numbers in words
  - Down load the app `1000,000 One Million LITE Number Words Writer lite Grant Ojanen`s Creations` from the google play store to practice number names

- Use the link https://youtu.be/oy_OwU8sD3o to teach reading and writing 6-digit numbers
- Use the link https://youtu.be/-O-Or9qGREs count to 100,000

**Topic:** Standard and expanded form

**Learning Objectives**

- Write 6- digit numbers in standard form
- Write 6- digit numbers in expanded form

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers use place value and abacus to teach standard and expanded form
  - Teachers write number names and let the students read and write numbers
  - Teachers provide standard form of numbers and let students write in expanded form
- **Blended-Learning**
  - Use the link https://youtu.be/JwgzsdLxW3Y to teach standard and expanded form of numbers

**Topic:** Renaming numbers

**Learning Objectives**

- Rename 6-digit numbers

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers use place value chart and abacus to rename numbers in million
  - Teachers provide worksheet for the students to practice renaming numbers
- **Blended-Learning**
  - Use the link to https://youtu.be/6_kVPJ31PI4 to introduce renaming numbers

**Topic:** Comparing and ordering

**Learning Objectives**

- Compare and order 6-digit numbers using the symbol: smaller than, greater than and equal to (<, > and =)

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers provide children with set of number cards and get them to arrange in ascending /descending order
- **Play-based Learning**
  - Teachers provide students with a set of number cards. Students throw cards in turns. Whoever throws greater number collects the thrown cards. The person with maximum number of cards at the end is the winner

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe children while reading, writing, comparing and ordering numbers
  - Teachers interview parents to get information about number practices in daily life
- **Portfolio**
  - Teachers document work samples of students such as worksheets/note books to assess about numbers

**Competency2**: Add, subtract, multiply and divide accurately using assistive devices

| Core Concepts (Topic/chapter/themes) | Learning Objectives |
|---|---|
| **Whole number computation**<br>➢ Addition<br>➢ Subtraction<br>➢ Multiplication<br>➢ Division | ➢ Add 6-digit numbers using assistive devices<br>➢ Subtract 6-digit numbers by 6-digit numbers with assistive devices<br>➢ Multiply 4- digit numbers by 1-digit numbers using assistive devices<br>➢ Divide 3-digit numbers by digit 2-numbers using assistive devices |

**Topic:** Addition

**Learning Objectives**

- Add 6-digit numbers using place value chart /calculator

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teacher demonstrate addition using place value chart
  - Teachers provide addition questions where students solve by using place value chart or assistive devices
  - A teacher teaches addition using Microsoft excel

**Topic:** Subtraction

**Learning Objectives**

- Subtract 6-digit numbers by 5-digit numbers

**Pedagogy/Strategies**

- **Activity-based Learning**
  - A teacher show subtraction using place value chart/ assistive devices
  - Let students solve problems using place value chart /assistive devices
- **Blended-Learning**
  - Use the link https://youtu.be/KMl_3D5s7eE to teach 6-digit subtraction

**Topic:** Multiplication

**Learning Objectives**

- Multiply 4- digit numbers by 1- digit numbers

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers model multiplication using base ten model
  - Teachers demonstrate multiplication using rectangle model
  - Teachers model multiplication using assistive devices
  - Students solve multiplication problems using base ten blocks /assistive devices
- **Blended-Learning**
  - Use the link https://youtu.be/ZhjuoMzr6gc to teach multiplication
  - Use the link https://youtu.be/lkuD4RyeMfgto teach multiplication

**Topic:** Division

**Learning Objectives**

- Divide 3 -digit numbers by -2 digit number

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers model division using base ten blocks/assistive devices
  - Students solve division problems using base ten blocks /assistive devices
- **Blended-Learning**
  - Use the link https://youtu.be/D7PelKmv-jI to introduce division
  - Use the link https://youtu.be/j3cOmLFnMYU to teach division
  - Use the link https://youtu.be/7JNtSXam7cc to teach division
  - Use the link https://youtu.be/VAbCVR1ot1c to teach division

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe children while performing task and record
  - Teachers interview parents to get information about the student's ability use calculation in real life situation.
- **Portfolio**
  - Teachers document student`s work samples to assess addition, subtraction, multiplication and division

**Competency 3**: Name functions of banks and apply the knowledge of transitions

| **Core Concepts (Topic/chapter/themes)** | **Learning Objectives** |
|---|---|
| **Banking Services**<br>➢ Function of banks<br>➢ Banking Services | ➢ Explain functions of the banks such as deposit, saving and credit.<br>➢ Apply the knowledge of using transactions through (M-bob, ATM, B-wallet, E-teru, M-pay, E-pay) |

**Topic:** Function of Banks

**Objectives**

- Explain functions of the banks such as deposit, saving and credit

**Pedagogy/Strategies**

- **Place-based Learning**
  - Teachers take students to the banks to learn about deposit, saving and credit
  - Teachers show and demonstrate to fill the forms of deposit and withdrawal
  - Teachers prepare questions with students to be asked to the people in the banks about saving and credit
  - Students fill the deposit and withdrawal forms of their own
  - Students interview people in the bank

**Topic:** Banking Services

**Objectives**

- Apply the knowledge of using transactions through (M-bob, ATM, B-wallet, E-teru, M-pay, E-pay)

**Pedagogy/Strategies**

- **Activity- based Learning**
  - Teachers introduce modes of money transition through M-bob, B-wallet, E-teru, M-pay, E-pay using transition apps
  - Teachers provide hands on practice to use apps
- **Place-based Learning**
  - Teachers take students to nearby ATM station to provide hands on practice
- **Blended-Learning**
  - Use the link https://youtu.be/OJvTgJA7OX8 to show usage of M-bob

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe students while filling deposit and withdrawal forms
  - Teachers observe students /interview parents about student`s ability to perform money transitions

**Competency 4** : Distinguish the value of different currencies and demonstrate money managing skills

| **Core Concepts (Topic/chapter/themes)** | **Learning Objectives** |
|---|---|
| ➢ Financial literacy | ➢ Compare the value of ngultrum with US$, Thai bath and Indian rupee<br>➢ Manage personal budget |

**Topic:** Financial literacy

**Learning Objectives**

- Compare the value of ngultrum with US$, Thai bath and Indian rupee
- Manage personal budget

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers explain value of different currencies
  - Students calculate the exchange rate of each currency
  - Teachers model house hold expenditure and budgeting
  - Let the students plan in advance for spending money
  - A teacher teach students to record money spent by maintaining diary

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe students while performing task
  - Interview parents or friends to ask about student`s money management skills
- **Portfolio**
  - Teachers study student`s money spending plan and spent record

**Competency 5**: Apply knowledge of fraction and decimal in everyday life

| Core Concepts (Topic/chapter/themes) | Learning Objectives |
|---|---|
| ➢ Fraction and Decimal | ➢ Relate mixed fractions to decimals<br>➢ Comparing and ordering fraction |

**Topic:** Fraction and decimal

**Learning Objectives**

- Relate mixed fractions to decimals
- Comparing and ordering fractions

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers demonstrate relation between fraction and decimal using place value chart tenths, hundredths and thousandths grids
  - Students shade grids to relate fractions to decimals
  - A teacher compare fractions and decimals using place value chart, tenths, hundredths and thousandths grid
  - Students shade grids to compare fractions and decimals
- **Play-based Learning**
  - A teacher design a fraction /decimal cards
  - A teacher provide students with a set of fraction/decimal cards

- A teacher instruct students to arranged their cards in ascending or descending order

- **Blended-Learning**
  - Use the link https://youtube.com/watch?v=3UDQjMZNbew&feature=share to introduce decimal
  - Use the link https://youtu.be/HDKMsqPQDbQ to teach decimal and fraction

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe and note down students abilities to solve fraction and decimal problems and provide support to address their needs
- **Portfolio**
  - Teachers study student's work samples to provide remedial measures

**Competency 6**: Can apply knowledge of simple interest in borrowing and lending

| Core Concepts (Topic/chapter/themes) | Learning Objectives |
|---|---|
| ➢ Simple interest | ➢ Calculate profit and loss using PRT formula |

**Topic:** Simple interest

**Learning Objectives**

- Calculate profit and loss using PRT formula

**Pedagogy/Strategies**

- **Activity-based Learning**
  - Teachers create real world activity to introduce simple interest
  - Students calculate simple interest using formula
  - Students calculate simple interest using calculator
- **Blended-Learning**
  - Use the link https://youtu.be/vIPhIi9KzAQ to introduce simple interest
  - Use the link https://youtu.be/TUquZC7fUeo to teach simple interest
  - Use the link https://youtu.be/gjS2JkIgCJc to teach simple interest
  - Use the link https://youtu.be/_XNRPcc6N_U to introduce about loan and interest

**Assessment**

- **Anecdotal Record/Checklists**
  - Teachers observe students while performing task
  - Teachers observe /interview parents to check student`s ability to use the knowledge of simple interest
- **Portfolio**
  - Teachers document student`s work samples and use it for remedial measures