

# NEW NORMAL CURRICULUM

## Instructional Guide

### Geography Classes IX - X



**Royal Education Council**

**Paro Bhutan**

## **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 prioritise 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<sup>st</sup> 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**

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**Advisors**

Kinga Dakpa, Director General, Royal Education Council, Paro

Wangpo Tenzin, Curriculum Specialist, Royal Education Council, Paro

**Copy Editor**

Norbu Wangchuk, Curriculum Specialist, Royal Education Council, Paro

**Research and Writing**

Kelzang Wangdi, Shaba HSS, Paro

Namkha Gyeltshen, Wanakha CS, Paro

Bida Tamang, Yangchenphug HSS, Thimphu

Kalpana Giri, Yangchenphug HSS, Thimphu

Samten Dorji, Gaselo HSS, Wangdue

Yeshey Pem, Lungtenzampa MSS, Thimphu

Norbu Wangchuk, Curriculum Specialist, REC, Paro

**Design & Layout**

Tashi Zangpo, REC, Paro

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## **Introduction**

The 21<sup>st</sup> Century Education framework stipulates the emphasis on the thematic based learning areas with a comprehensive support system. The theme-based approach lends greater opportunities for experiential learning contextualised to the learner's physical, social, political, economic, spiritual and cultural setting. An approach, which mandates learning through active engagement of learners. Roles of teachers are transformed from knowledge transmitter to facilitation, guide, evaluator, researcher and motivator.

The conventional education, which is predominantly knowledge based and examination centred teaching and learning has been the time old practices, and the stress of this model is on the learning of textual information perceived by educators important for the grade. On the other hand, with the advancement in ICT, the world is flooded with such information, which are widely read by all at their leisure. What learners cannot acquire from the multiple sources are the skills, which are crucial in facilitating learners realise their potential to be socially responsible and productive individuals and contribute in the nation building processes – economic, social, political development. In the contemporary world, the knowledge-based education compromises the development of psychomotor and affective domains of learning, which affects the holistic development of learners.

Despite the stigma of COVID 19 pandemic as a disaster, it presents wider scope and opportunities for creation and innovation, generally perceived more efficient and effective in work places and social activities. The pandemic situation explicated that the old ways of working, teaching and learning, and lifestyle have limitations. Consequently, new normal ways of how we work and live, teach and learn are the contemporary traditions. In this context, an overhaul of how we think and do is an imperative, not a choice. The transformation of classroom instruction from teacher centred to learner centred teaching and learning, however calls for the following adjustment, or even the overhaul of a few practices.

- i. Reduction of learning content to facilitate deep learning as opposed to the width of the teaching through the active engagement of learners.
- ii. Integration of ICT as tools and ends of learner's education. The use of multimedia and ICT software is commonly utilised in teaching and learning as innovation to introduce variation in stimuli and sustain learner's interest and zeal in learning.
- iii. Adoption of theme based learning content, which facilitates to broaden the horizon of learning beyond the four walls, and stimulates the transfer of learnt concepts to the learner's immediate environment. This arrangement makes learner aware of the realities of the social, political, economic and cultural practices and ethos of the society. Being aware of the immediate environment of the scopes and challenges, learner is sensitised of the opportunities and issues, which may need attention for better future for the society.
- iv. Consideration to ground the curriculum design and instruction approaches the epistemological theories is imperative to facilitate deep learning as opposed to factual learning. However, the selection and use of them is subject to the nature of respective

subject. For instance, constructivism is more apt for science, while connectivism is relevant for languages and ICT curricula.

- v. Active engagement of learners is imperative of the competency-based education and learning. Inevitably, summative assessment has limitation in gauging the progressive development of the learner. This is achieved objectively by the use of the continuous formative assessment (CFA). However, if summative assessment evidences are used to provide feedback to help learner in learning, it can serve as one of the techniques of CFA.

The curriculum adapted and grounded on the above wisdom, the principle of competency based learning, inspired by being aware of reality of the immediate environment, and the belief system of the society may be arbitrarily termed as the New Normal Curriculum. Learning is facilitated through the “Instructional Guide” with learners taking responsibilities of their learning; teachers facilitate and guide learners in the due course of their active engagement and assess their performance for improvement in their learning.

In the New Normal Curriculum, deep learning synonymous to “less is more” is facilitated with the use of Instructional Guide for each subject and specific class. The content of the instruction in the guide for the subjects are aligned with the curriculum framework with partial reference to the existing textbooks. Therefore, it is purported to achieve the following objectives:

- i. Facilitate learning anywhere, any time with learner being responsible for the learning.
- ii. Facilitate deep learning with awareness and sensitivity of the realities of the world around.
- iii. Strengthen competency based learning and experiential learning to foster sensitivity of realities of the life and environment.
- iv. Strengthen blended learning and flip classroom with multimedia, digital pedagogies and ICT devices and websites as the tools and learning content.
- v. Guide parents in facilitating learning of their children.
- vi. Inspire teachers to assume the roles of facilitation, guide, motivator and evaluator.
- vii. Helps in the prioritisation of learning content with emphasis to create time and space for active engagement of learners.
- viii. Facilitate the use of Continuous Formative Assessment (CFA) for learning through objective observation and guidance.

# CLASS IX

## Strand I: Time and Space

### 1. Theme: The Earth and its Atmosphere

**1.1. Competency One-** Explore the significance of solar system to comprehend relative motions.

#### 1.2. Objectives

- i. Discuss the uniqueness of the Earth.
- ii. State the evidences to prove the sphericity of the Earth.
- iii. Explain the size of the Earth in comparison to other planets in the solar system.
- iv. Explain the consequences of rotation and revolution.
- v. Evaluate the importance of latitude.
- vi. Calculate the time and longitude.

#### 1.3. Pedagogy or Learning Experiences

Pedagogies such as brainstorming, project based learning, cooperative learning, basic questioning, and inquiry based learning are suggestive and may use any relevant pedagogy in teaching learning process.

**Activity 1:** Students brainstorm on the uniqueness of the Earth and present their findings to the class.

**Activity 2:** The teacher generates the discussion on the size of the Earth. Students in groups explore the evidences to prove the sphericity of the Earth and do the presentation to the class.

**Activity 3:** <https://www.youtube.com/watch?v=L18-brRutcw>

Using the link, the students find out the differences between rotation and revolution and their effects.

**Activity 4:** <https://www.youtube.com/watch?v=iPp2KZWBR5k>

Using the link, the students in pairs discuss the definition and the importance of the latitude and longitude.

<https://www.youtube.com/watch?v=bWnEZCBvrsU&t=68s>. Teacher and students use the link or any other relevant resources for time calculation.

For time calculation questions, teacher refers Principles of General Geography (Chapter 4) or any other relevant resources.

#### **1.4. Assessment**

Use assessment tools such as rubrics, checklist, anecdotal record, quiz, question and answer, any other relevant tools may be used to assess student's task.

#### **1.5. Resources**

<https://www.youtube.com/watch?v=L18-brRutcw> (Motions of the Earth)

<https://www.youtube.com/watch?v=iPp2KZWBR5k> (Latitude and Longitude)

<https://www.youtube.com/watch?v=libKVRa01L8> (The Solar System)

<https://www.youtube.com/watch?v=dnvk-mP3FCE> (Structure of the atmosphere)

<https://www.youtube.com/watch?v=ySSyT44nma4> (Weather instruments)

Principles of General Geography by Charles Farro

Globes



## Strand I: Time and Space

### 2. Theme: Map Reading and Interpretation

**2.1 Competency Two** - Apply appropriate technology to design maps for interpretation of geographical concepts.

#### 2.2 Objectives

- i. Interpret topographical maps.
- ii. Locate the important physical features on a map
- iii. Represent important human made features on a map.

#### 2.3 Pedagogy or Learning Experiences

Strategies like activity based learning, think pair share, cooperative learning, basic questioning, and brainstorming, are suggestive and may use any relevant pedagogy in teaching learning process.

**Activity1:** <https://www.youtube.com/watch?v=ypinpNiDXVY>

and

<https://www.youtube.com/watch?v=zqPMYGDxCr0>

Students use the link and available resources, to interpret topographical maps such as features, grid references, scales and conventional signs and symbols.

**Map Work:** Bhutan, South Asia, Asia (teachers to use revised map work guidelines)

#### 2.4 Assessment

Use assessment tools such as rubrics, checklist, anecdotal record, quiz, question and answer and any other relevant tools and techniques can be used to assess student's task.

#### 2.5 Resources

<https://www.youtube.com/watch?v=zqPMYGDxCr0> (Topographical Map)

<https://www.youtube.com/watch?v=CoVcRxza8nI&t=79s> (Topographical Map)

<https://www.youtube.com/watch?v=q2IJZV1yC6o&t=150s> (Physical features)

Topographical maps

## Strand II: Physical Environment

### 3 Theme: Rivers and Landforms

**3.1 Competency Three** - Assess the significance of natural resources to conserve the eco system for long term sustainability.

#### 3.2 Objectives

- i. Explain the factors affecting soil formation.
- ii. Explain the properties of different types of soil.
- iii. Describe the different types of soil found in Bhutan.
- iv. Describe the importance of soil and the ways to conserve it.
- v. Describe the composition of atmosphere.
- vi. Analyse the characteristics of different layers of atmosphere.
- vii. Explain the basic working principle of weather instruments with the help of drawings.
- viii. Explain the sources of river with the help of diagram.
- ix. Describe the river as an important agent of denudation.
- x. Draw diagrams to interpret various features formed by rivers in different stages.
- xi. Evaluate the importance of river in the socio-economic development of a nation.

#### 3.3 Pedagogy or Learning Experiences

Brainstorming, basic questioning, power point presentation, fieldtrip, video lesson are some of the suggestive pedagogies and teachers may use any relevant methods of teaching learning.

**Activity 1:** Use basic questioning method to check the prior knowledge about factors affecting soil formation. Take students outside to explore the soil types. Note the findings and share in the class. Students use the link to supplement the knowledge.

<https://www.youtube.com/watch?v=QtwMIIRX8TM>

**Activity 2:** In groups, discuss the importance of soil and suggest measures to conserve the soil. Students write findings on the chart and do a Gallery Walk.

**Activity 3:** <https://www.youtube.com/watch?v=dnvk-mP3FCE>

Use the link or refer, Principles of General Geography (chapter 13) to explore about the composition of the atmosphere. Students describe about the composition of the atmosphere. Draw a labelled diagram showing the layers of the atmosphere.

**Activity 4:** Assign a project work on the weather instruments.

## **Instructional Guide: Geography for classes IX -X**

**Activity 5:** Students in groups, prepare power point presentation on ‘the sources of rivers and agents of denudation’. Students use library, IT lab or any other relevant resources to prepare their presentation.

**Activity 6:** Take the students for a field trip and note the various features formed by the rivers.

**OR**

Students prepare model of different features formed by rivers in the different stages.

**Activity 7:** <https://www.youtube.com/watch?v=nsK4hq29gWE>  
<https://www.youtube.com/watch?v=q8HmRLCgDAI>

Using basic questioning strategy, discuss the importance of rivers in the socio-economic development of our country. Students use the link for more information.

### **3.4 Assessment**

Use assessment tools such as rubrics, checklist, rating scale, anecdotal record, quiz, question and answer, and any other relevant tools and techniques.

### **3.5 Resources**

<https://www.youtube.com/watch?v=7iyxocIhfu0> (Soil formation)

<https://www.youtube.com/watch?v=QtwMIIRX8TM> (Types of soil)

<https://www.youtube.com/watch?v=dnvk-mP3FCE> (Composition of atmosphere)

<https://www.youtube.com/watch?v=nsK4hq29gWE> (Generation of hydroelectricity)

<https://www.youtube.com/watch?v=q8HmRLCgDAI> (Generation of hydroelectricity)

[https://www.youtube.com/watch?v=XJ\\_FNS8Z\\_ek](https://www.youtube.com/watch?v=XJ_FNS8Z_ek) (Landforms in different stages of river)

Principles of General Geography by Charles Farro

A Geography of Bhutan (Course book for class IX-X)

## Strand III: People and Environment

### 5 Theme: Natural Environment and Hazards

**4.1 Competency Four** - Examine the role of society in minimizing pollutions for conservation to promote harmonious co-existence.

#### 4.2 Objectives

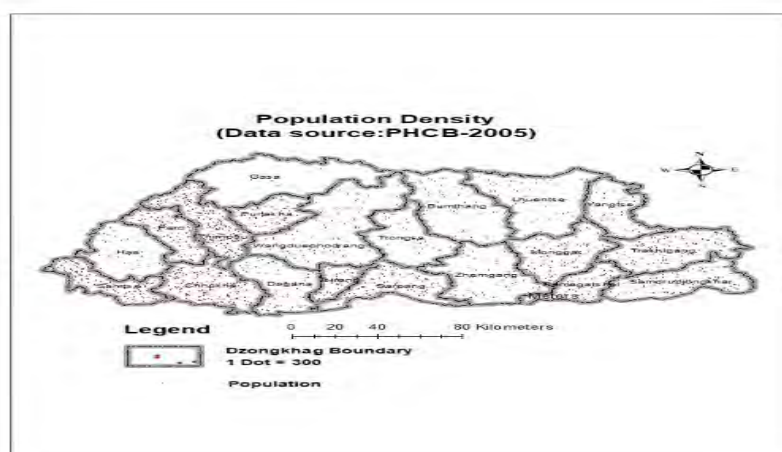
- i. Interpret population pyramid.
- ii. Interpret data on distribution of population.
- iii. Explain the factors affecting the distribution of population.
- iv. Differentiate nucleated, dispersed, and linear settlement with examples.
- v. Analyse the factors affecting patterns of settlement.

#### 4.3 Pedagogy or Learning Experiences

Brainstorming, basic questioning, power point presentation, fieldtrip, video lesson, Numbered Heads Together, RoundTable, Think Pair Share, lecture method, cooperative learning, Gallery Walk, and fish bowl are some of the suggestive methods or teachers may use any other relevant teaching learning strategies.

**Activity 1:** Distribute a copy of population pyramid to the students. Students in shoulder partner discuss and write the characteristic of population pyramid (Shape, male, female, age group).

**Activity 2:** Study the population distribution map of Bhutan and in pair complete the table.



Sparsely populated Dzongkhag	Moderately populated Dzongkhag	Densely populated Dzongkhag

**Activity 3:**

Teacher checks the prior knowledge of students about the factors affecting the distribution of population. Assign the factors to the groups for further discussion followed by presentation (Climate, Landforms, Topography, Soil, Energy, Mineral Resources and other factors).

**Activity 4:**

Use cooperative learning method (home group and expert group) to explain the patterns of settlement (nucleated, dispersed and linear settlement).

**Activity 5:**

Brainstorm on the factors affecting the patterns of settlement. Assign the factors to the groups to further explain on how it affects the distribution of settlement (weather and climate, soil type and quality, water supply, vegetation, flat river valleys, raw materials/natural resources).

**Activity 6:**

Gather information on land use pattern using RoundTable (CL structure).

**4.4 Assessment**

Use assessment tools such as rubrics, checklist, rating scale, anecdotal record, quiz, question and answer, and any other relevant tools and techniques can be used to assess student's task.

**4.5 Resources**

<https://www.youtube.com/watch?v=Cx7KFyasW6A> (Population pyramid)

<https://www.populationpyramid.net/bhutan/2019/> (Population pyramid of Bhutan, only 2019)

<https://www.youtube.com/watch?v=b-ilETXFRIk> (Pattern of settlement)

## **Strand III: People and Environment**

### **5. Theme: Ecosystem and Biodiversity**

**5.1 Competency Five** - Analyse the complex interaction amongst the spheres and its impact on people and biodiversity.

#### **5.2 Objectives**

- i. Describe the components and types of ecosystem.
- ii. Explain the structure of ecosystem.
- iii. Identify the external and internal factors responsible for the change in the ecosystem.
- iv. Describe various land use pattern.
- v. Describe farming as a system.
- vi. Differentiate between traditional and modern farming.
- vii. Explain the factors influencing agriculture.
- viii. Analyse the importance of agriculture.
- ix. Identify causes and problems associated with farming.
- x. Suggest measures to overcome/mitigate problems of farming.
- xi. Discuss the environmental concerns and conservation measures.
- xii. Discuss the major disasters and their causes.
- xiii. Describe common disasters in Bhutan.
- xiv. Explain disaster management approaches.

#### **5.3 Pedagogy or Learning Experiences**

Use of methods such as field trip, project method, cooperative learning, brainstorming, basic questioning, power point presentation, video lesson, Numbered Heads Together, RoundRobin & RoundTable, Think Pair Share, lecture method, Gallery Walk, and Fish Bowl are some of the suggestive methods or teachers may use any other relevant teaching learning strategies.

#### **Activity 1:**

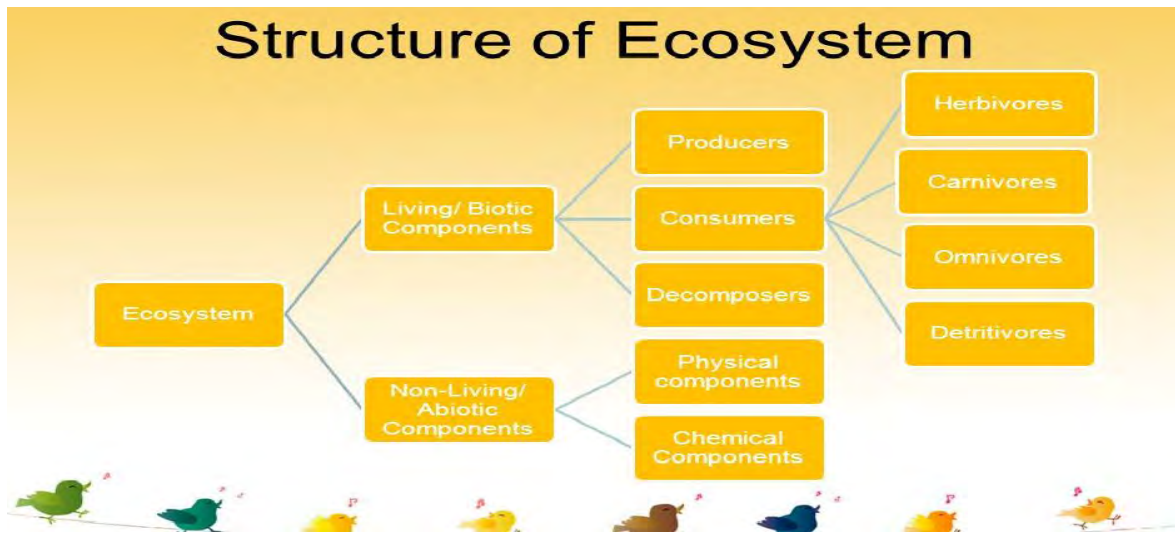
Assign types of ecosystem as an individual project work incorporating the following areas:

- i) Terrestrial ecosystem
- ii) Forest ecosystem
- iii) Grassland ecosystem
- iv) Desert ecosystem
- v) Tundra ecosystem
- vi) Freshwater ecosystem
- vii) Marine ecosystem

(The format of the project work needs to be oriented by the teacher)

**Activity 2:**

Display the structure of the ecosystem on the board. Students study and explain it in their own words.



**Activity 3:**

Students classify internal and external factors that change the ecosystem.

Decomposition, habitat change, root competition, shading, invasive alien species, disturbances, pollution, succession, climate change, types of species present.

<i>Internal Factor</i>	<i>External Factor</i>

**Activity 4:**

Explain the problems of environment like pollution, global warming, over population, waste disposal, ocean acidification, loss of biodiversity, deforestation and ozone layer depletion and simultaneously suggest the measures.

**Activity 5:**

Students classify the following under input, farm processes and output to learn farming as a system. (Soil, climate, ploughing, food crops, cash crops, sowing seeds, relief, seeds, watering, fodder crops, meat, weeding, plants, fertilizers, animals, dairy products, harvesting, labour, water, eggs)

<b>Inputs</b>	<b>Farm Processes</b>	<b>Outputs</b>

**Activity 6:**

Students in groups, discuss and differentiate between traditional and modern farming using images or pictures. Prepare poster or power point presentation.

**Activity 7:**

Individually, students list the factors influencing agriculture. Students select two important factors and explain to the whole class using popcorn method (family's livelihood, primary source of food products and income, direct employment).

**Activity 8:**

Students list and discuss the problems associated with farming such as level of literacy, the subsistence nature of farming, the inheritance system with regard to land, pests causing damage and losses, access to market for surplus produce, rural to urban migration and natural and human made disasters.

Students suggest measures to overcome the problems discussed and share it to the class.

**Activity 9:**

[youtube.com/watch?v=Cx7KFyasW6A&t=239s](https://www.youtube.com/watch?v=Cx7KFyasW6A&t=239s)

Students watch the video lesson from the link and identify the major disasters and their causes.

**Activity 10:**

Check prior knowledge about common disasters in our country by asking questions. Conduct poster competition in the class.

**Activity 11:**

Teachers invites school disaster management focal person to conduct lesson on disaster management approaches.

**5.4 Assessment**

Use assessment tools such as rubrics, checklist, rating scale, anecdotal record, quiz, question and answer, and any other relevant tools and techniques that can be used to assess student's task.

**5.5 Resources**

<https://www.youtube.com/watch?v=aYmdrJWLQ4Y> (Ecosystem)

[https://www.google.com/search?q=farming+system+in+bhutan&source=lnms&tbm=isch&sa=X&ved=2ahUKEwjLiJO5spPvAhVh7nMBHUG0DiAQ\\_AUoAXoECBAQAw&biw=1366&bih=625](https://www.google.com/search?q=farming+system+in+bhutan&source=lnms&tbm=isch&sa=X&ved=2ahUKEwjLiJO5spPvAhVh7nMBHUG0DiAQ_AUoAXoECBAQAw&biw=1366&bih=625) (Land use & Farming system, pictorial information only)

<https://www.youtube.com/watch?v=Cx7KFyasW6A&t=239s> (major Disaster)

A Geography of Bhutan, Course book for class IX-X (Chapter 8)



**Instructional Hours and Weighting Based on Competency**

Sl No.	Strand	Competencies	Weighting (%)	Instructional time (minutes)	Periods (40 minutes)
1	Time and space	Explore the significance of solar system to comprehend relative motions.	10	440	11
		Apply appropriate technology to design maps for interpretation of geographical concepts.	30	1000	25
2.	Physical Environment	Assess the significance of natural resources to conserve the eco system for long term sustainability.	20	640	16
3.	People and environment	Analyse the complex interaction amongst the spheres and its impact on people and biodiversity.	20	640	16
		Examine the role of society in minimizing pollutions for conservation to promote harmonious co-existence.	20	640	16
Total (140 Instructional Days)			100	3360	84

**Note: Suggested question components**

**Section A:** *Time and Space (Topographical Map, Map Works-Bhutan, South Asia, Asia)*

**Section B:** *Physical Environment*

**Section C:** *People and Environment*

# CLASS X

## Strand I: Time and Space

### 1. Theme: The Origin of the Earth

**1.1 Competency One** - Apply appropriate technology to design maps for interpretation of geographical information.

#### 1.2 Objectives

- i. Discuss the origin of the earth with reference to the big bang theory and solar nebula.
- ii. Evaluate the significance of latitudes and longitudes.
- iii. Determine longitude and time.
- iv. Discuss the basic techniques of layout and numbering of topographical maps
- v. Interpret the topographical map.
- vi. Represent human made features on a map.
- vii. Interpret diagrams, graphs, illustrations and maps to draw logical conclusions
- viii. Demonstrate skills of using geographic technologies and ICT.
- ix. Explain concept of survey.

#### 1.3 Pedagogy or Learning Experiences

Pedagogies such as brainstorming, project based learning, cooperative learning, basic questioning, and inquiry based learning, KWL, and 5Es are suggestive and may use any relevant pedagogy in teaching learning process.

#### Activity 1:

<https://www.youtube.com/watch?v=HdPzOWILrbE> (Big Bang Theory)

<https://tmsd.us/documents/Middle%20School/8th%20Grade%20Science/Big%20Bang%20TheoryJM.ppt> (Big Bang PPT)

Using the links, students watch the video and identify the relevant term related to Big Bang Theory from the crossword. Students explain and write five terms that they have identified.

S	R	A	T	S	O	L	E	P	T	O	N	F	G
K	S	R	O	U	N	I	V	E	R	S	E	D	G
E	T	A	D	R	C	S	F	R	E	A	U	I	A
T	A	N	S	I	A	E	O	O	S	S	V	S	L
H	R	B	D	R	O	S	R	C	N	C	O	C	A
E	T	N	N	I	O	C	M	K	O	I	P	O	X
E	E	S	E	O	I	O	E	S	T	E	T	V	I
O	S	R	R	S	R	R	D	G	O	N	I	E	E
R	O	E	Y	I	N	S	T	T	R	C	B	R	S
B	I	G	B	A	N	G	O	S	P	E	R	Y	S
Y	U	E	T	R	O	N	R	L	A	E	O	H	U
N	R	I	S	O	R	O	O	R	P	O	I	R	H
R	U	A	N	O	R	T	S	A	T	X	O	L	P
N	E	G	O	R	D	Y	H	O	B	T	E	R	E

**Activity 2:**

<https://www.youtube.com/watch?v=PL3YNQK960Y> (Solar Nebula Hypothesis)

<https://www.youtube.com/watch?v=2ESGUAU2Du0>(Solar Nebula Hypothesis)

<https://www.slideshare.net/prabhu97/nebular-hypothesis-theory>

Using the links or any other relevant resources on the Solar Nebula Hypothesis. Students identify the key ideas of Solar Nebular hypothesis and discuss it in the class. Compare the two theories and list the differences. Share the findings to the class.

**Activity 3:**

<https://www.youtube.com/watch?v=iPp2KZWBR5k> (Latitude and Longitude)

<https://www.slideshare.net/yaryalitsa/lines-of-latitude-and-longitude-powerpoint>

Using the links, students differentiate between latitude and longitude. Draw diagram of important parallels of latitude and explain the climatic zones of the world.

Use the sample or any other relevant questions to calculate time and longitude.

1. What is the time and day at Trongsa 90°E when it is Sunday 1.30 A.M at Tokyo 140°E?

2. Calculate the longitude of a place where the local time is 6:00 A.M., when the time is 3:00 P.M. in Kolkata 88°E.

**Activity 4:**

<https://www.youtube.com/watch?v=7FBeIHEmaAU> (Map Numbering System)

Students use the link or refer Intermediate Geography Class X (Chapter 3) to discuss and write about India and Adjacent Countries (IAC) map numbering systems used by India and adjacent countries.

In groups, discuss and explain how topographic map of Bhutan 78 M/11 and 78 E/11 were generated.

**Activity 5:**

In groups, students discuss the features of topographical map (marginal information, physical features, and cultural features) and prepare MS power point presentation.

(**Map Work:** *Bhutan, South Asia and Asia* - Teacher to use revised map work guidelines).

**Activity 6:**

<https://www.youtube.com/watch?v=PE04XuxgXzI> (How to locate places using Google Earth)

Using Google Earth or Google map, students explore the location of their school. Discuss the advantages of using Google Earth and share it in the class using Power Point presentation.

**Activity 7:**

<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.slideshare.net%2Fmohitkumarpanchal%2Fplane-table-surveying-ppt&psig=AOvVaw33O41H3L5mycR23b7qgqgf&ust=1615599779803000&source=images&cd=vfe&ved=0CAMQjB1qFwoTCNDV4bXQqe8CFQAAAAAdAAAAABAJ>

<https://www.engineersupply.com/What-is-Plane-Table-Surveying.aspx#:~:text=What%20is%20Plane%20Table%20Surveying%3F%201%20You%20need,fixed%20by%20a%20triangulation%20or%20theodolite%20traversing%20method> (Concept of plane table survey)

Students use the links to learn about the concept of survey (definition, plane table survey and instruments used in plane table survey). Teacher supplements if required.

### **1.4 Assessment**

Use assessment tools such as rubrics, checklist, anecdotal record, quiz, question and answer, any other relevant tools to assess student's task.

### **1.5 Resources**

<https://www.youtube.com/watch?v=HdPzOWILrBE> (Big Bang Theory)

<https://tmsid.us/documents/Middle%20School/8th%20Grade%20Science/Big%20Bang%20TheoryJM.ppt> (Big Bang PPT)

<https://www.youtube.com/watch?v=PL3YNQK960Y> (Solar Nebula Hypothesis)

<https://www.youtube.com/watch?v=2ESGUAU2Du0> (Solar Nebula Hypothesis)

<https://www.slideshare.net/prabhu97/nebular-hypothesis-theory>

<https://www.youtube.com/watch?v=iPp2KZWBR5k> (Latitude and Longitude)

<https://www.slideserve.com/elkan/longitude-and-time>

<https://www.slideshare.net/misterbatroms/topographic-maps-presentationmine>

<https://www.youtube.com/watch?v=7FBeIHemaAU> (Map Numbering System)

<https://www.youtube.com/watch?v=PE04XuxgXzI> (How to locate places using Google Earth)

<https://www.youtube.com/watch?v=nNM6B6yAMcc> (Survey equipment of survey)

Principles of General Geography by Charles Farro

Globes

## **Strand II: Physical Environment**

### **2. Theme: Landforms**

**2.1 Competency Two** - Analyse the role of places and regions in shaping the cultural identity and unifying the societies.

#### **2.2 Objectives**

- i. Interpret the geological time scale.
- ii. Explain the formation of Himalayan mountain system with reference to continental drift theory and plate tectonics.
- iii. Discuss groundwater and karst topography.
- iv. Discuss gradational agents and their activities.
- v. Compare climatic zones with vegetation zones of Bhutan.
- vi. Discuss the impact of climatic zone on its inhabitants.
- vii. Represent climatic zones on a map

#### **2.3 Pedagogy or Learning Experiences**

Brainstorming, basic questioning, power point presentation, fieldtrip, video lesson KWL and 5Es are some of the suggestive pedagogies and teachers may use any relevant methods of teaching learning.

**Activity 1:**

<https://sci.waikato.ac.nz/evolution/Geoltimescale.pdf>

Using the link, students in groups explain Phanerozoic, Proterozoic, Archen/Hadean with respect to eon, era, period and epoch.

**Activity 2:**

<https://www.youtube.com/watch?v=PDrMH7RwupQ> (Formation of Himalayas)

<https://www.youtube.com/watch?v=QbomCXrW0v8> (Formation of Himalayas)

In groups, explore from internet the evidences to prove that the Himalayas were formed from the Tethys Sea. Prepare a power point and present in the class.

Discuss the continental drift and plate tectonic theory for the formation of the Himalayas and prepare a note.

**Activity 3:**

Teacher checks the prior knowledge of students about the agents of gradation. Individual student explains the agents of gradation such as running water, wind, glacier and sea waves.

Students in pairs, discuss which agent is more prominent in Bhutan.

**Activity 4:**

<https://www.youtube.com/watch?v=TklLvoPXgH8> (Ground Water)

a) Using the link, students in groups discuss underground water as an agent of change in formation of different landforms. Share the findings to the class.

b) In groups, students discuss Karst Topography using the link:

<https://www.youtube.com/watch?v=wh8AvuX12-E> (Karst Topography)

<https://www.slideshare.net/pramodgpramod/karst-topography-160977772>

Students describe stalagmite, stalactite and cavern.

**Activity 5:**

a) Students refer course book for classes IX and X (Geography of Bhutan, chapter five) or any other relevant resources to learn about climatic and vegetation zones of Bhutan. In pairs, complete the table.

<b>Climatic Zone</b>	<b>Vegetation Characteristics</b>	<b>Tree</b>	<b>Wildlife</b>
Sub-Tropical Zone			
Temperate Zone			
Sub Alpine Zone			
Alpine Zone			

b) Students discuss the impact of climatic conditions in relation to farming activities. Present the findings to the class.

### **Activity 6:**

Students draw map showing climatic zones of Bhutan using different colours.

### **2.4 Assessment**

Use assessment tools such as rubrics, checklist, rating scale, anecdotal record, quiz, question and answer, and any other relevant assessment tools and techniques to assess student's task.

### **2.5 Resources**

<https://sci.waikato.ac.nz/evolution/Geolimescale.pdf>

<https://www.youtube.com/watch?v=PDrMH7RwupQ> (Formation of Himalayas)

<https://www.youtube.com/watch?v=QbomCXrW0v8> (Formation of Himalayas)

<https://www.youtube.com/watch?v=sC9iqGb94hc> (Geological time scale)

<https://www.youtube.com/watch?v=TklLvoPXgH8> (Ground Water)

<https://www.youtube.com/watch?v=wh8AvuX12-E> (Karst Topography)

<https://www.slideshare.net/pramodgpramod/karst-topography-160977772>

Course book for classes IX and X (Geography of Bhutan)

## **Strand III: People and Environment**

### **3. Theme: Ecosystem and Biodiversity**

**3.1 Competency Three** - Analyse the impact of interactions amongst the spheres to comprehend the components of biodiversity.

#### **3.2 Objectives**

- i. Recognize regional differences and similarities both locally and globally.
- ii. Explain the components of biodiversity.
- iii. Compare ecosystem with biodiversity.
- iv. Analyse the significance of biodiversity.

### **3.3 Pedagogy or Learning Experiences**

Pedagogies such as brainstorming, project based learning, cooperative learning, basic questioning, and inquiry based learning are suggestive and may use any relevant pedagogy in teaching learning process.

#### **Activity 1:**

In teams, brainstorm and discuss similarities and differences among the different regions of Bhutan and relate with Japan (culture, food, language, clothes). Students prepare power point presentation.

#### **Activity 2:**

Teacher probes questions to check prior knowledge about the biodiversity. In groups, prepare poster presentation followed by Gallery Walk.

- a) Genetic biodiversity
- b) Species diversity (wild flora and fauna, domesticated flora/agricultural flora, domesticated fauna)
- c) Ecosystem diversity (Forest, aquatic, agricultural)

#### **Activity 3:**

<https://www.youtube.com/watch?v=BSkk2R5psp4> (Biodiversity and Ecosystem)

Students use the link to compare biodiversity with ecosystem. Students in pairs list the similarities and differences and present their findings to the class.

#### **Activity 4:**

Students study, identify and explain the best option of their choice on the importance of biodiversity.

- i. Provisioning services such as food, water, timber, fibre, genetic resources and medicines.
- ii. Regulating services such as regulation of climate, water and soil quality and pollination.
- iii. Cultural services such as recreational, aesthetic and spiritual benefits.
- iv. Supporting services such as soil formation and nutrient cycling.

### **3.4 Assessment**

Use assessment tools such as rubrics, checklist, rating scale, anecdotal record, quiz, question and answer, and any other relevant tools and techniques to assess student's task.



### **3.5 Resources**

Website link:

<https://www.youtube.com/watch?v=BSkk2R5psp4> (Biodiversity and Ecosystem)

<https://www.slideshare.net/SMZahidHasan1/ecosystem-and-biodiversity-76475879>

<https://slideplayer.com/slide/9086205/> (Importance of biodiversity)

## **Strand III: People and Environment**

### **4. Theme: Population and its Impact**

**5.1 Competency Four** - Examine the role of society in minimizing pollutions for conservation to promote harmonious co-existence

#### **4.2 Objectives**

- i. Discuss the causes of population growth.
- ii. Assess the impact of population growth.
- iii. Project the population trend.
- iv. Discuss spatial distribution of settlement with reference to central place theory.
- v. Explain migration and its type.
- vi. Describe common disasters in Bhutan.
- vii. Suggest mitigation measures to reduce impact of disaster.
- viii. Demonstrate measures to reduce risk during disaster.

#### **4.3 Pedagogy or Learning Experiences**

Pedagogies such as brainstorming, project based learning, cooperative learning, basic questioning, KWL, 5Es and inquiry based learning are suggestive and may use any relevant pedagogy in teaching learning process.

#### **Activity 1:**

Using cooperative learning method, students discuss causes of population growth (fertility, mortality and migration) in home group and expert group. Teacher supplements and provides feedback.

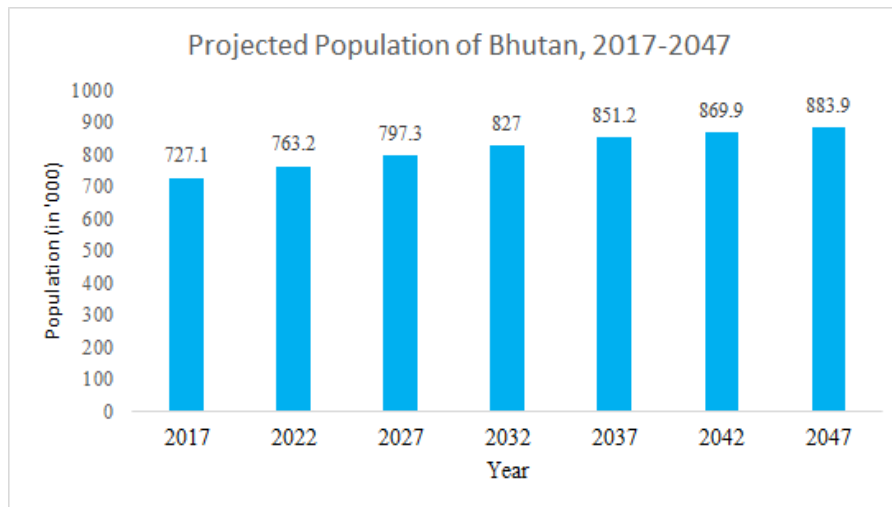
#### **Activity 2:**

<https://www.slideshare.net/AiyzaKhan/impact-of-population-growth-on-national-development>

Using the link, students explore positive and negative impacts of population growth and share to their shoulder partner.

**Activity 3:**

Students in groups, analyze the graph and discuss the future scenario if this trend of population growth continues. Suggest methods to overcome the problems.



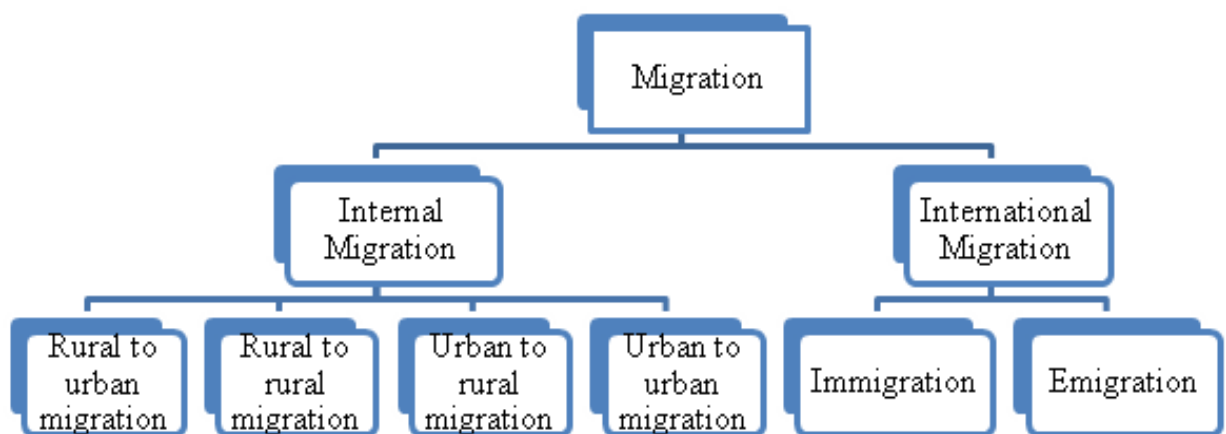
**Activity 4:**

<https://www.youtube.com/watch?v=u5XuY04D23s> (Central place theory)

Using the link, students in groups study the concept and assumptions of central place theory and present the findings to the class.

**Activity 5:**

In groups, students brainstorm on migration. Study the flow chart and explain the types of migration with suitable examples.



**Activity 6:**

[https://www.youtube.com/watch?v=9WIwljva\\_s&t=104s](https://www.youtube.com/watch?v=9WIwljva_s&t=104s) (Types of disaster)

<https://www.youtube.com/watch?v=mekJcjoe0ws> (Floods in Bhutan)

- a. Students watch the video and discuss the common disasters of Bhutan such as Earthquake, Landslide, GLOF, Flashfloods, Fire and Winds.
- b. Students in groups suggest measures to reduce the risk of disasters. Display the work and do a Gallery walk.

#### **4.4 Assessment**

Use assessment tools such as rubrics, checklist, rating scale, anecdotal record, quiz, question and answer, and any other relevant tools and techniques to assess student's task.

#### **4.5 Resources**

[https://www.youtube.com/watch?v=9WIwlljva\\_s&t=104s](https://www.youtube.com/watch?v=9WIwlljva_s&t=104s) (Types of disaster)

<https://www.youtube.com/watch?v=mekJcjoe0ws> (Floods in Bhutan)

<https://www.slideshare.net/AiyzaKhan/impact-of-population-growth-on-national-development>

<https://www.youtube.com/watch?v=u5XuY04D23s> (Central place theory)

<https://www.slideshare.net/AiyzaKhan/impact-of-population-growth-on-national-development>

## **Strand III: People and Environment**

### **5. Theme: Industry and Natural Resources**

**5.1 Competency Five** - Assess the significance of natural resources to conserve the eco system for sustainability.

#### **5.2 Objectives**

- i. Classify the different sectors and types of industries.
- ii. Explain factors affecting location of industries.
- iii. Analyse the impact of industries.
- iv. State the importance of agriculture with reference to agro-based industries.
- v. Discuss mineral resources and its distribution.

### **5.3 Pedagogy or Learning Experiences**

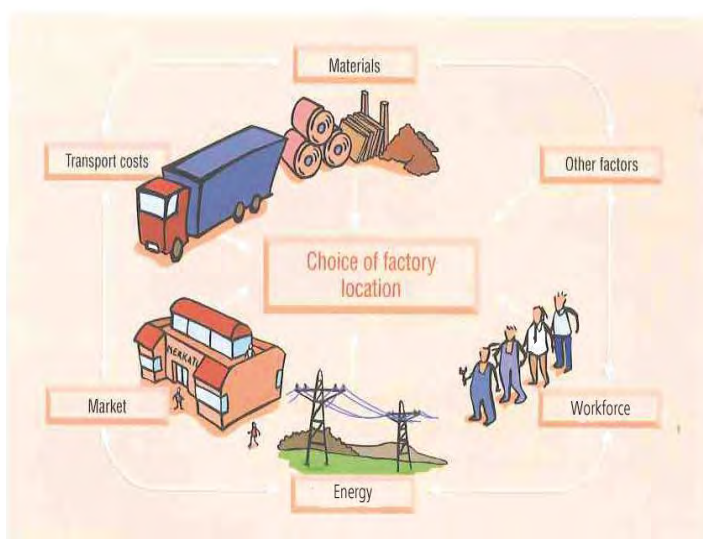
Use of methods such as field trip, project method, cooperative learning, brainstorming, basic questioning, power point presentation, video lesson, Numbered Heads Together, RoundRobin & RoundTable, Think Pair Share, lecture method, Gallery Walk, KWL, 5Es and Fish Bowl are some of the suggestive methods or teachers may use any other relevant teaching strategies.

#### **Activity 1:**

Students use library resource, IT lab or any other relevant resources to explore the types of industries and share the findings to the class. Teacher supplements and provides feedback.

#### **Activity 2:**

Students in pairs, study the picture and explain the factors affecting the location of industries.



#### **Activity 3:**



Refer the image and discuss various impacts of an industry. Students suggest ways to reduce the adverse impacts. Share the findings to the class.

**Activity 4:**

“Agriculture contributes about 19.9% GDP for the year 2020-2021 in Bhutan.”

Students in groups, discuss the statement and explore how agriculture promotes agro-based industries in Bhutan. Share findings to the class. Teacher provides necessary feedback.

**Activity 5:**

<https://www.youtube.com/watch?v=8a7p1NFn64s> (Types of minerals and uses)

- a) Using the link, students explore the characteristics, types and uses of mineral resources and prepare a power point presentation.
- b) Students study the map of Bhutan showing mineral resources and its distribution. Students locate mineral deposits in Bhutan using Google Earth application.



**5.4 Assessment**

Use assessment tools such as rubrics, checklist, rating scale, anecdotal record, quiz, question and answer, and any other relevant tools and techniques to assess student’s task.

**5.5 Resources**

<https://www.youtube.com/watch?v=8a7p1NFn64s> (Types of minerals and uses)

Principles of General Geography by Charles Farro

A Geography of Bhutan (Course book for class IX-X)

**Instructional Hours and Weighting Based on Competency**

Sl No.	Strand	Competencies	Weighting (%)	Instructional time (minutes)	Periods (40 minutes)
1	Time and space	Apply appropriate technology to design maps for interpretation of geographical information.	30	1000	25
2.	People and environment	Analyse the impact of interactions amongst the spheres to comprehend the components of biodiversity.	15	520	13
		Examine the role of society in minimizing pollutions for conservation to promote harmonious co-existence	20	640	16
		Assess the significance of natural resources to conserve the eco system for sustainability.	15	560	14
3.	Physical Environment	Explore characteristics of various landforms to understand the process of gradation and relate the landforms to our culture	20	640	16
<b>Total (140 Instructional Days)</b>			<b>100</b>	<b>3360</b>	<b>84</b>

**Note: Suggested question components**

**Section A:** *Time and Space (Topographical Map, Map Works - Bhutan, South Asia, Asia)*

**Section B:** *Physical Environment*

**Section C:** *People and the Environment*

**APPENDIX**

Assessment Rubrics and Criteria (Class IX-X)

*Criteria for Project work and field work*

Name	Criteria					Total 20
	Content (4)	Language (4)	Presentation (4)	Process (4)	Originality & creativity (4)	

*Rubrics for project and field work*

Criteria	Marking Range				Score
	4	3	2	1	
<b>Content</b>	Information presented is relevant, accurate and in logical order.	Information presented is substantially relevant, accurate and in logical order.	Information presented is to some extent relevant, accurate and in logical order.	Information presented is not relevant, accurate and in logical order.	
<b>Presentation</b>	Exceptionally clear and precise expression of ideas, transfer of ideas into product with appropriate illustrations.	Clear and precise expression of ideas, transfer of ideas into product with appropriate illustrations.	Little expression of ideas, transfer of ideas into product with appropriate illustrations.	No clear and precise expression of ideas, transfer of ideas into product with appropriate illustrations.	
<b>Process</b>	Proper planning with regular consultations.	Partial planning with some consultations.	Little planning with little consultations.	No proper planning and Consultation.	
<b>Language</b>	Language without grammatical error	Language with few grammatical errors.	Language with few grammatical errors.	Language full of grammatical errors.	
<b>Originality &amp; Creativity</b>	Display of original and creative ideas.	Partial display of original and creative ideas.	Little display of original and creative ideas.	No display of original and creative ideas.	
<b>Total Score</b>					

**Teachers may use the above rubric for assessing project and field work.**

*(Sample rating scale for Affective domain)*

Name	Criteria										Teacher's comments
	<i>Participation in learning Activities</i>	<i>Respect for others views</i>	<i>Curiosity for exploration</i>	<i>Responsibility</i>	<i>Empathy for others</i>	<i>Punctuality</i>	<i>Honesty</i>	<i>Intellectual drive</i>	<i>Concern for environment</i>	<i>Collaboration</i>	

**Note:** The above parameters to be rated as: **A**-Outstanding, **B**- Very Good, **C**- Good, **D**- Fair and **E**- Need improvement. This rating scale is to be used at least once a term to assess the development of values and attitudes.





