

**Sri Sarvajna College of Education**

**Innovative Method of teaching-5E MODEL**

**by**

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## **Innovative Method of teaching-5E MODEL**

# **INTRODUCTION**

**Constructivism** is a learning strategy that proposes learners to **construct new knowledge from their previous experiences /learning**. It works well with learners of all ages. Two of the most prominent constructivist researchers are: **Jean Piaget (stages of cognitive development)** and **Howard Gardner (multiple intelligences)**.

The **examples of constructivist learning** include guided discovery, 5E model, inquiry based learning, problem based learning etc.



The Biological Science Curriculum Study (BSCS), Colorado Springs, USA, a team led by Principal Investigator **Rodger W. Bybee** developed the instructional model called the “5E” in 1987 to advance the teaching of science.

## Meaning:

“The 5E model of Instruction promotes **active learning**. Students are **involved** in more than listening and reading. They **learn to ask questions, observe, model, analyze, explain, draw conclusions, argue from evidence and talk about their own understanding**. Students **work collaboratively with peers to construct explanations, solve problems and plan and carry out investigations.**” —

**Rodger Bybee**

Each of the 5E's describes a phase of learning, and each phase begins with the letter "E":

**1.E – Engage** – Engagement of pupils on a specific issue

**2.E – Explore** – Exploration of the problem

**3.E – Explain** – Explanation of the observed phenomenon

**4.E – Elaborate** – Elaboration of the concepts

**5.E – Evaluate** – Evaluation of what was learned

**TOPICS FOR  
5E MODEL**



## **TOPICS FOR 5E MODEL**

- **Entry of the wild animals into the human habitat**
- **Population Explosion**
- **The rise in the level of the sea water threatens Sundarbans (Climate Change)**
- **Contributions of a Poet / Writer**
- **Contributions of Kings / Kingdom**
- **Historical Events**
- **Experimentation in Science**
- **Earthquake**
- **Solar Eclipse**

- Structure of Leaf / Flower
- Types of Human Teeth
- Food-Nutrition
- Environmental Pollution
- A Part of Prose / Story
- Historical Places
- Environmental Pollution
- Alternative Sources of Energy
- Solution and its types

## **PHASES OF 5E MODEL**

**Example Chosen: Threat to Sundarbans due to the rise in the level of the sea**

# 1. ENGAGE

This phase focuses the minds of students learning new tasks. As far as possible the teacher needs to present real life situations to engage students attention on learning new tasks like concept/process/skill.

This phase engages the students towards constructing new knowledge through the following different ways:

- Making connections between past and present learning experiences;
- Asking open ended questions;
- Acting out a problematic situation;
- Presenting the problem in the puzzled way;
- Taking note of unexpected phenomena;
- Presenting situations where students perceptions vary;
- Showing video/s

## **Example**

The teacher can begin session with the basic concepts like water, forests, atmosphere etc. Later he/she can give a case study through multimedia presentation or video on sundarbans, West Bengal being threatened by the rise in the level of sea water.

## **2. EXPLORE**

In this phase, students are grouped in small groups and encouraged to explore the answers for the problems/questions/issues by referring other sources. At the end of this phase, the students would discover and construct the new knowledge and make a report through the question wise handout given by the teacher.

The following activities can enable the students to get involved in the **investigation** for the construction of new knowledge:

- Have them work in teams (3-6 members in each team) for mutual interaction;
- They can refer sources like books, websites etc. for gathering information.
- Identify sequence or patterns of events;
- Employ problem solving strategies;
- Brainstorm possible solutions/answers;
- Experimentation;



## **Example**

Here the students are divided into groups each comprising of 3-6 members. If needed they can be taken for visit to Sundarbans (in case if their schools are nearby). By referring other sources of information like books, websites etc., students can be encouraged to find out the reason/s for the rise in the level of sea water and its impacts on Sundarbans. Later they should be asked to make a report through the (question wise) handout given by teachers.

### 3. EXPLAIN

This phase involves the students **communicating /demonstrating their understanding of constructed knowledge** through the following forms.

- Explain the constructed ideas;
- Construct and explain a model;
- Represent ideas through pictures/figures/graphs;
- Represent information through symbols;

- Present a summary based on the data;
- Present the data through patterns;
- Review and criticize solutions;

Students oral presentation and written reports should be based on the question wise handouts given by the teacher. If needed **teachers can** introduce formal terms, definitions, and give explanations for concepts, processes etc.

## Example

During this phase the students are motivated to **explain** the constructed reason/s for the threats faced by Sundarbans through the question wise handouts given by the teacher. Additionally, if time permits students can be asked to present the new knowledge also through graphs, pictures and PowerPoint presentation. If needed, the teacher can introduce the formal terms like climate change, melting of glaciers etc.

## 4. ELABORATE

This phase provides an activity which **expands** students understanding of constructed knowledge, often through **application to real-world situations/reasoning**.

During this phase, the teacher can provide the opportunities and guidance to students to **apply the constructed knowledge** and also **correlate it to other related fields**.

Following are the tasks/activities can be provided to the students to apply their constructed knowledge:

- Applying new knowledge and skills in real life situations;
- Develop products and promote ideas;
- Asking new questions;
- Asking for suggestions/measures

## **Example**

During this phase the teacher needs to motivate the students apply their new knowledge. Here students are motivated to come up with measures/suggestions to protect Sundarbans from the rise in the level of sea water.

## 5. EVALUATE

This phase **lets the teacher to evaluate overall** whether students have constructed the knowledge correctly. The evaluation should be diagnostic in nature. The **following tools** can be used by the teacher **for evaluating the students mastery on constructed knowledge**: Checklists for observation; Questions; Projects and problem based learning products; Concept mappings; Performance assessments; Rubrics (similar to rating scale); Student interviews etc.



## **Example**

During this phase the teacher can evaluate the students understanding on the impacts of climate change on Sundarbans through the tool like – oral questions.

# **ADVANTAGES**

- 5E Model is learner centered.
- It can be used for students of different ages.
- Students can understand the process construction of knowledge.
- Learning becomes interesting and joyful for the students.
- Students increase their ability to think and solve problems.
- Students work with and learn from one another.

# **DISADVANTAGES**

- 5E model requires a lot of pre-planning for teachers.
- It is not suitable for all the topics.
- Learners build new knowledge based on the previously learned knowledge. It can make learning difficult for slow learners.
- Instruction would be difficult for whole class as many children have had different levels of exposure to various life experiences.
- Each child can interpret information differently. Thus teacher should ensure that all are interpreting the information correctly.

# **TIPS FOR IMPLEMENTATION OF 5E MODEL**

- Plan and prepare well for 5E lesson which is essentially a group oriented instruction.
- 5E model is not restricted to a single 40/45 minutes class period.
- Organize 5E lesson either inside or outside the class (depending upon the convenience and availability of facilities).
- Divide students into group keeping in view individual differences.
- Plan and prepare handouts and worksheets.

**LESSON PLAN FORMAT  
OF 5E MODEL**



# General Information

**Teaching Points**

**Teaching Aids**

**References**

**Instructional Objectives**

Remembering

Understanding

Applying

Skill

| <b>What the Teacher Does</b> | <b>What the Students Do?</b> | <b>Assessment</b> |
|------------------------------|------------------------------|-------------------|
| <b>ENGAGE</b>                |                              |                   |
| <b>EXPLORE</b>               |                              |                   |
| <b>EXPLAIN</b>               |                              |                   |
| <b>EXPAND</b>                |                              |                   |
| <b>EVALUATE</b>              |                              |                   |

# CONCLUSION

The 5E Instructional Model is grounded in constructivism. It demands students to take various roles and truly invest in their learning. It requires reflection, interaction, investigation, analysis, application and evaluation.

The **constructivist teacher sets up problems and monitors student exploration, guides student inquiry, and promotes new patterns of thinking.** Thus the role of the teacher is a facilitator more often than a teacher!



**Thank You**