

**SUBJECT: Specific Teaching Skills/METHODS(SEM 2)**  
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**TOPIC: Problem Solving and Higher order Thinking Skills**

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As we all know, some problems have easy solutions and others require a bit more thought. By that, we obviously don't mean thinking about a problem for a longer period of time while using the same parameters and variables.

Problem-solving entails examining a situation from a variety of perspectives and with a host of different aspects to arrive at the best solution – not just for that problem but for the larger framework in which it manifested.

Problem-solving is generally defined as the ability to manage difficult situations and complex challenges.

Problems demand logical thinking, not critical thinking which leads to problem-solving.

We shall talk about higher-order thinking, its component part called problem-solving and how critical thinking skills are vital to the effort.

'I think, therefore I am' – René Decartes

This tells you about the complex mental activity 'thought'.

People who invent things, great mathematicians, philosophers, come under the 'thinkers' category.

Decartes himself was considered a great thinker in his time.

We make use of our cognitive and psychomotor domains of learning to do some thinking i.e. your intellectual knowledge and ability to analyse as well as your perceptions is active.

Our thinking is also affected by our affective domain. Thinking is not just fixed to our intelligence or perceptions.

We draw conclusions after connecting and integrating new facts and concepts. What does a teacher do? She gives you information or prepares some activity. You do it mechanically. Do you think or reason while you become a part of it? Even the home tasks given are just done without thinking or reasoning.

## What Are Problems Solving Skills?

When we give students a certain problems to solve in a group. they use their intelligence , communication and interactive skills, build their listening abilities, understand, reason and set the pace to solve the problem

So its important that we encourage

- **Creativity –**
- **Communication:**
- **Active listening –**
- **Research and analysis:**
- **Team building:**

Do you know the difference between critical thinking and higher-order thinking?

We should encourage active learning, creative thinking in everyday class activities.

Teaching strategies must have questioning skills which would challenge students' understanding of the material at hand.

Discussions, group study, [project-based learning activities](#) could have a formative influence on student learning depending on the subject.

We should encourage student centered learning and teacher should be active, in the sense she asks stimulating questions which sets the stage for stimulating further thought.

The Role of Problem-Solving in Higher Order Thinking is that higher-order thinking comprises of both critical thinking and problem-solving.

The concept of higher order thinking according to Benjamin Bloom, an American educational psychologist says that learning depends on the complexity or specificity of what is to be learnt

There is more than one way that we learn and, to make learning effective, all three domains affective, cognitive and psychomotor should be addressed.

Psychomotor learning starts very early then effective learning follows shortly after followed by emotions and how to manage them.

When the child starts school Cognitive learning happens. Every teacher uses this domain while the other two are silent.

Therefore it is important to teach students to reason according to emotional as well as intellectual knowledge.

Whatever is taught it is important to incorporate both problem-solving and critical thinking.

Higher order thinking questions like relation/differences, asking of examples makes you think critically.

The students' use prior knowledge and reflects on dissimilar or not-conspicuously related concepts.

The teachers role has to be of a facilitator who promotes students to think and relate

Critical thinking is a higher-order thinking skill. It involves observation of facts and memorization. In addition there is evaluation, creativity and innovation.

When most people think of critical thinking has some criteria which differentiates real facts from fiction. It synthesizes and evaluates information. It helps in discussions, towards solving of problems and reach truths

Critical thinking is therefore the foundation of a strong education. We observe in Bloom's taxonomy that we go from

- ➔ lower- to higher-order thinking
- ➔ from knowledge (information gathering)
- ➔ to comprehension (confirming)
- ➔ to application (making use of knowledge)
- ➔ to analysis (taking information apart)
- ➔ to evaluation (judging the outcome)
- ➔ to synthesis (putting information together) and creative generation

We see all this in the learning outcomes

Getting students to think critically depends on the teacher. Open ended questions, discussions , reasoning gives students the opportunity to think and

think critically

**The Socratic style of questioning** also encourages critical thinking. Socratic questioning “is systematic method of disciplined questioning that can be used to explore complex ideas, to get to the truth of things, to open up issues and problems, to uncover assumptions, to analyze concepts, to distinguish what we know from what we don’t know, and to follow out logical implications of thought” (Paul and Elder 2007).

Socratic questioning is most frequently employed in the form of scheduled discussions about assigned material, but it can be used on a daily basis by incorporating the questioning process into your daily interactions with students.

In teaching, Paul and Elder (2007) give at least two fundamental purposes to Socratic questioning:

- To deeply explore student thinking, helping students begin to distinguish what they do and do not know or understand, and to develop intellectual humility in the process
- To foster students’ abilities to ask probing questions, helping students acquire the powerful tools of dialog, so that they can use these tools in everyday life (in questioning themselves and others)

Including higher-order thinking skills in educational aims and objectives is a very common feature of standards-based education reform.

(Please refer to the websites for 1. Problem solving skills and 2. higher order thinking skills . Also look up blooms taxonomy)

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