A Research Paper by Silver Oaks
on
Problem Solving Skills
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NOTE FROM SILVER OAKS

In the realms of education that we dwell in, all our efforts are to raise a class of young people who will create a better world. Integrity and honesty are the aspirations we have for them. As a School we are striving to share our experiences with all those involved in educating people for a better world.

Our objective is to share and add to the knowledge pool.

We would be delighted to hear from those who appreciate our work and would like to use some of our design models in their realms of education.

Nothing can be more satisfying than the feeling that our experiences have come of use to someone somewhere.

Research:

'Fear of math' or 'Fumbling in math' is the common syndrome found in students. Investigations and inquiries on a range of students from different grade levels revealed that the missing link is cognitive mental process.

On probing we discovered that it is a combination of attitude and skills which are deterring them from solving the math problems. Even those who mechanically or easily solve the math problems are found to be fumbling when asked to explain the sequence of the solution.

While the process of solving a math problem is happening involuntarily, we looked for clear explanation from students but found more incoherent responses. Math becomes a skill when concepts develop through a set of mental processes. We have also noticed that focus is more on problem than on solution.

We identified that attitude, reflective thoughts and conscious steps are more essential in problem solving.

Design Model for Developing Problem Solving Skills

Discovery: Once we discovered that problem solving is more to do with gaps in attitude and reflective actions, we began to work on it.

Interpretation: That problem solving skills are required as a life skill and one needs to see their potential in different spheres of life. Students face problems in peer group, playground, public places and in their learning. Problem as a 'form' is more apparent in math due to the nature of the discipline. Students see math and problem as synonyms. We worked on delinking problem and math to highlight 'problem' as a situation rather than a discipline.

Ideation: We began to design a model a series of physical and mental activities as the prelude to problem solving. Every activity is followed by a reflective session wherein students have to identify the conscious actions taken by them to solve the problem. To ensure cognitive mental process, discussion and reflective writing are the summing up tasks for every activity planned. Once the students are tuned into using required set of attitudes, they will be given math problems involving, logic and reason. Reflective discussion will prepare the students towards problem solving skills.

Experimentation: Once the design was ready, we used it on a group of teachers and then on a group of Grade XI students. Wherever required we refined our design which was more to do with our instructions than the design itself. A second set of teachers and students were exposed to the design. After trying with another set of Grade IV, the design model for problem solving skills is gaining prominence in the rest of the school.

[Click here to view Snap Shots](#)

Evolution: This is being used with a group of Grade X who are identified with learning gaps.

The first activity is an individual task and the rest are all group activities. Group learning methods with cooperative learning techniques were used as the learning spaces.

The teacher and the researchers noted down the learner behaviour and responses. Reflective discussions and work helped the learners focus on solving the problems.

A rubric is developed to map the students' progress in the classroom. Every week the researchers meet the group and their teacher to record the progress. With intended outcomes and often unexpected outcomes, researchers believed that this model is largely successful.

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