PROCESS AND INQUIRY APPROACHES TO SCIENCE TEACHING

by Lolita M. Salmorin

Science teaching has changed significantly during the past forty years. At one time, much of science teaching is focused on the content of science. But after the launching of the Sputnik Satellite by the Soviet Union in 1957, the US took a new look at science education which eventually changed the whole world view on science teaching. The teaching of science has shifted from content towards process.

Process approach in science teaching is a way of working on, thinking about, and studying problems. The use of process approach in teaching science helps students develop the following skills: analyzing, classifying, collecting data, communicating, comparing, contrasting, controlling variables, demonstrating, describing, drawing conclusions, estimating, evaluating, experimenting, forming theories, generalizing, graphing, identifying, inferring, interpreting, measuring, observing, predicting outcomes, questioning, recording data, and verifying.

But does process approach really help in teaching science effectively? Many teachers have found that process without so much emphasis on content did not produce positive results in students' academic performance. Thus, to teach science more effectively, both content and process should be taught. This can be done if teachers resort to the use of inquiry approach.

The National Research Council of America as cited by Alfred Friedl (1997) defines inquiry approach as the shift in emphasis from teachers presenting information to students learning through active involvement. Science educators have agreed that inquiry is the desired goal in science teaching.

Today, however, science educators are still working on achieving a more globally scientific literacy. According to Hodson (1998) as cited in Science and Math Teaching-Learning Processes and Strategies in Preservice Teacher Education Program, scientific literacy has three major elements: (1) learning science which involves acquiring and developing conceptual and theoretical knowledge; (2) learning science which helps develop and understand the nature of science and its corresponding strategies, an appreciation of the history of science, and an awareness of the interactions among science, technology, society, and environment; and (3) doing science which involves engaging and developing expertise in scientific inquiry and problem solving.

The above components of scientific literacy are in consonance with the following major objectives of effective science teaching (Lawson 1995):

1. Develop creative and critical thinking skills
2. Construct understanding of the major conceptual thought
3. Develop self-confidence in giving questions and problems to seek answers and solutions.

These objectives are achieved once teachers vary their teaching strategies. They should be open to try out new ways of introducing or demonstrating lessons or be on the lookout for more effective ways of conducting experiments.

It must be remembered that there is no single best strategy to teach science and other subject areas. It is up to teachers to determine what, when, why, and how they should teach a subject. At best, they should consider coming up with the right mix of strategies that will suit students' learning styles, grade level, culture, and environment.

These responsibilities are best summed up by the following poem of an anonymous author:

The Teacher's Task Today

The teacher's task today
is
not to complete the learning process
but to continue it;
not to cover the whole subject matter,
but
to help students understand
the process of acquiring knowledge;
not to encourage the answering of questions;
but
to question the answer and the question itself;
not to stress remembering and receiving;
but
to build a program of practical application,
so that
the students will remember and review,
not to dictate
but
to guide the students
towards
having fuller
and
more responsible lives.

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