DAVID A. SOUSA

The Evidence Is in Classrooms

The Hunter model has helped teachers understand how students really learn.

In my 18-year career as high school science teacher, K-12 science supervisor, and supervisor of instruction, I have seen the positive effects of the Hunter training on science teachers. I strongly disagree with Berg and Clough's conclusions. Berg and Clough give no evidence of having observed teachers using the Hunter model in science classes. After observing hundreds of science classes I am convinced that, when properly implemented, the Hunter training expands rather than limits the teacher's creativity in the classroom.

Berg and Clough have severely misjudged how teachers use the lesson design model. Rarely have I observed teachers following such a mechanical and unthinking process as they imply. More often I have seen them trying new and effective techniques that promote an understanding of the nature of scientific inquiry, for example:

- A shift from lecture presentations to higher-level questioning and extensive student discussions,
- A change in emphasis from acquiring facts to understanding and applying the processes of science,
- An increase in discovery lessons where students infer the learning objective through data gathering and interpretation,
- A recognition of different cognitive styles and abilities.

Berg and Clough have severely misjudged how teachers use the lesson design model.

Science teachers tell me the Hunter training has raised their awareness about how students learn and has helped them to select more varied strategies that lead to greater student achievement. I invite Berg and Clough into these classrooms to see this impressive evidence for themselves.□

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The Essential Elements *Enhance* Science Teaching

The wise use of the Hunter model helps students learn science concepts and apply them in solving problems.

Berg and Clough have attempted to discredit the Hunter model by selecting one component—lesson design—to indicate that the model is not appropriate for science teaching. But most science teachers would do a *better* job teaching science *if* they applied Madeline Hunter's Instructional Theory into Practice.

Many common misconceptions in learning science result from the failure of science teachers to do a task analysis of the concept being taught. To avoid this problem, Hunter recommends that teachers perform task analyses and diagnose students' knowledge to help them build upon prior knowledge and construct new knowledge. She encourages teachers to ask questions at different levels of thinking, assign appropriate activities, and

respond to students' efforts in ways that will encourage higher-level thinking. Thus, Berg and Clough's charge that the Hunter approach is appropriate only for low-level skills acquisition is highly inaccurate.

For example, the concepts of *mitosis* and *meiosis* are not understood by most students. This may be due, in part, to the fact that both concepts are taught at the same time. According to Hunter, it's fine for teachers to teach more than one objective at a time, providing that they and their students are capable of dealing with multiple objectives. However, when concepts are similar, Hunter recommends that they be taught separately because, if taught at the same time, they may be confusing. She feels that new teachers should probably teach one objective at a time to make sure they promote understanding rather than confusion.

Further, Berg and Clough charge that Hunter's approach excludes discovery learning. But Hunter contends that learning by discovery or inquiry *is* effective for learning science, just not too efficient. She considers the selective use of inquiry desirable but, since teachers are accountable for presenting numerous concepts in the curriculum, they usually need other methods of teaching that are more efficient. Thus, inquiry may well be part of a lesson in Hunter's approach, as well as formulating hypotheses, experimentation, predicting, and interpreting data.

Berg and Clough's charge that the Hunter approach is appropriate only for low-level skills acquisition is highly inaccurate.

The Hunter repertoire has enhanced science teaching by providing research-based strategies for use before, during, and after instruction. The wise use of Hunter's elements of instruction will promote retention, increase rate and quantity of concepts learned, keep students on task, and enable them to apply the concepts learned. Berg and Clough are simply mistaken.□

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