

PTSA

The Physics Teacher Self-Assessment

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BH01

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Origins – Dimensions of Inquiry

In 1999, Diane Ebert-May (Northern Arizona University) and Julie Luft (University of Arizona) developed a two page inventory of classroom practices with four degrees and six dimensions. Each square in the 6x4 grid contained several statements about the participant's course.

A significant difference¹ was found between self-reported scores on this instrument and scores given by an external rater, as much as a full point on the four-point scale.

¹ Ebert-May D, Luft J. 1999. How faculty change their teaching: community college biology instructors engage in long-term professional development. National Association for Research in Science Teaching. Annual Meeting, Boston, MA. 155.

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Origins – Science Classroom Practices Inventory

In Spring 2002, the author got involved in an attempt at Michigan State University to create an updated version of the Dimensions of Inquiry that would reduce the problem of internal/external rater disagreement.

Each dimension was expanded into 4-5 separate items, each with four statements corresponding to the original four-point scale of the DoI. The intention was to determine a weighting system for these items based on expert opinions.

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Origins – Science Classroom Practices Inventory

Several different methods were attempted, but in the end, none produced satisfactory results. In late Fall 2002, the project was abandoned at MSU in favor of the RTOP².

On reflection, the author decided to continue working on the basic idea, but change the emphasis.

Just because a tool doesn't pound in nails very well doesn't automatically make it a bad tool. Maybe it's just not a hammer.

² <http://ecept.net/rtop>

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PTSA – Goals

1. Help physics teachers become aware of some of the results of Physics Education Research.
2. Provide physics teachers with a rough picture of where they stand in their classroom with respect to these results.
3. Avoid the drawbacks of a more formal teacher evaluation – time, stress, fear of negative results, etc.

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PTSA – The Six Statements

- 1) **It is better for the instructor to actively engage the students, as opposed to passive "learning by listening."**
- 2) **Student activities should go beyond drilling on facts and procedures.**
- 3) **The learning environment should be flexible** (i.e. a room where all the desks are bolted down and facing the front is bad).

(References provided to back each up in the text of the PTSA.)

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PTSA – The Six Statements

- 4) **Content, process (i.e. the scientific method) and teaching methods should be linked. One size does not fit all.**
- 5) **Assessment is an important tool in helping students learn, and should do more than assign a final grade.**
- 6) **The role of argument in the classroom should give a better idea of how science is really done, instead of just following single-path proofs.**

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PTSA – Sample Page

Section 1: It is better for the instructor to actively engage the students, as opposed to passive "learning by listening."

1) What are the sources of information for students in the classroom?

- A The teacher is the only source of information.
- B The teacher is the primary source of information, but other sources exist.
- C The teacher is an important source of information, but other sources are common.
- D The teacher is a source of information, one among many.

2) What is the style of questioning in the classroom?

- A The teacher poses questions and then answers questions her/himself.
- B The teacher poses recall and content-based questions and usually allows students to answer them.
- C The teacher poses questions that clarify or direct students' ideas, and only the students answer these questions. If no student answer is forthcoming, the teacher does not supply one.
- D Student work determines the choice of questions, students pose the questions themselves to guide their understanding. The teacher asks questions aimed at cognitive skills such as analysis and evaluation. The teacher does not answer questions related to the content (but will still answer purely procedural questions).

3) How are problems solved in class?

- A The teacher directs student work by solving problems in class. Student work focuses on exercises similar to problems solved in class.
- B The teacher encourages students to solve problems themselves in class, then presents his or her own solution if no student reproduces it.
- C Problem solving is done primarily by the students. The teacher listens, observes and asks questions, sometimes providing correct solutions.
- D The teacher frequently listens, observes and questions as students solve problems on their own or in groups, but rarely provides solutions or even correct answers.

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PTSA – A Call For Comments

If you are interested in helping "beta test" the Physics Teacher Self-Assessment, please contact me at:

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(Granted exemption by KSU IRB, project 2737)

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