“How Will I Know if My Students Learned What They're Supposed to?"— Curriculum Evaluation in the NCLB Era: Instructor Guide

Title

“How Will I Know if My Students Learned What They're Supposed to?"— Curriculum Evaluation in the NCLB Era

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Discipline

Education

Target Audience

Intermediate, majors

Keywords

Curriculum evaluation, science education, teacher education

Length of Time/Staging

Three weeks

Abstract

In this problem designed for teacher education majors, students evaluate science curricula for (1) their coverage of state and national science education standards, (2) the extent to which they use research-supported models of inquiry, (3) their sensitivity to research on students' prior conceptions, (4) their promotion of significant content understandings, and (5) the extent to which the curricular activities are aligned with standards, content objectives, and authentic assessments. In final stages, students reflect on the appropriateness of the curricula given state responses to the No Child Left Behind legislation. Final products include a poster presentation and final report of the evaluation.

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Format of Delivery

The problem extends over a two to three week period in which students go through three major stages in developing their evaluation. Whole group time is spent developing learning issues and working in groups on issues and sections of the evaluation in consultation with faculty. Laboratory time is spent examining curricula and trying out lessons for teaching to peers.

Student Learning Objectives

Content-based goals:

1. Understand the importance of context and content when making decisions about curriculum selection and implementation.
2. Learn the components of a lesson plan and the underlying reasons for including each of these components.
3. Become familiar with NCLB legislation, the approaches taken by state and district level administrators to meet the requirements.
4. Be able to take and defend a position on the use of large-scale assessments in the evaluation of students and teachers.
5. Understand the importance of adapting curriculum to meet the needs of all learners.

Performance-based goals:

1. Evaluate a curriculum for its alignment with big ideas, standards, students' prior knowledge, models of inquiry, and forms of assessment at local, state and national levels.
2. Plan, enact, and reflect on science lessons from the curriculum.

3. Recommend modifications to the curriculum to improve its alignment with standards, assessments, and inquiry, and recommend assessment practices to best show student learning.
4. Examine assessments at local, state and national levels for the types of knowledge assessed.
5. Organize and present the results of your investigation in a poster conference session.

Student Resources

Content resources

At this point in the semester, you are expert content researchers. Please use your usual google-type searching skills for background content information on your topic.

Standards

Delaware State Science Standards

National Science Education Standards

Prior knowledge

Leeds materials are on reserve in the Education Resource Center

See additional resources from EDUC 341 regular resources page.

Assessment

General assessments of student knowledge of science: NAEP, TIMSS

Methods of Instruction

National Science Education Standards—look at Chapter 3 for TEACHING standards

Inquiry and the NSES—check out this book for ideas about inquiry

Instructor Resources

In addition to the attached web resources page, students read several articles and book chapters:

Darling-Hammond, L. (2003). Standards and assessments: Where we are and what we need. Teachers College Record.

Krajcik, J.S., Czerniak, C.M., & Berger, C. (2003). *Teaching children science: A project-based approach* (2nd Ed.). Boston, MA: McGraw-Hill.

Reardon, J. (1996). It takes more than a kit. In Saul & Reardon, Beyond the Science Kit. Elsevier.

Author's Teaching Notes

This problem was originally designed for use in the University of Delaware's "Science Semester" for sophomore Elementary Teacher Education (ETE) majors. In the Science Semester, ETE majors take four integrated courses; three science and one science education. Four PBL problems are the central focus of the semester. The problems run sequentially, each lasting approximately three weeks. With each problem, all course time is dedicated in an intensive manner to the problem. This problem was designed for a three week implementation, and had available 18

classroom hours per week (ten hours large group, two hours section groups, six hours laboratories). This may not be a realistic setting for others wishing to use the problem; however, a modified version could easily fit into a curriculum or methods course.

This problem is of the more structured PBL variety. In order to meet the learning objectives I have set for this problem, I use a structured format with many mini-targets to step the students through the problem. There is plenty of room for student-directed creative problem-solving, however.

Introduction to the Problem

Students, in groups of five, are introduced to the problem by reading the Problem Statement. They then have two tasks: first, to develop focus questions to help them with the curriculum evaluation component of the problem, and second, to assign expert roles for each group member. The experts meet primarily in their own groups, though I do also use them in a jigsaw format occasionally.

Early Stages.

The first tasks the students are given are to familiarize themselves with the commercially prepared curricula they are assigned for the task. This includes selecting a lesson to be taught in a microteaching format to peers and using expert roles to individually evaluate aspects of the curricula.

1. Lesson planning and enacting. Each group selects a pair of connected lessons from the curriculum to teach to their peers. As the students are new to lesson planning, this phase of the problem allows them to learn what goes into a teaching plan, what considerations about learners and context must be addressed, and the like. They also will use this experience in their evaluation of the curriculum. Using a plan developed by a commercial curriculum designer gives the students a sense of the teaching philosophy underlying the curriculum, and the customization possible with these kits.
2. Expert evaluations. Each student has an expert role to research and bring to the group. These include a standards expert, a prior knowledge expert, a models of inquiry expert, a content expert, and an assessment expert. Each expert gathers information about their area and brings it to group sessions as material to help with the evaluation of the curriculum. These experts also take the lead at recognizing within the curriculum where aspects of the expert role are found (*e.g.*, how the curriculum addresses standards, what assessments are included, etc). Each student prepares a preliminary report (individually) on the curriculum evaluated just for their expert role.

Middle stages.

Students teach and reflect on their lessons and begin to synthesize the expert area information into an 'alignment table' and 'rubric'.

1. Teaching and reflecting on lessons. Each team uses the lesson plans they develop (with minor modifications to the kit to take into consideration principles of inquiry as well as the audience) to teach two lessons to their peers. Some peers serve as students, while others serve as observers who provide feedback on the implementation of the lessons. After the instruction, all students produce an individual written reflection on the lessons.

2. Alignment table and group rubric. The experts in each area come together and develop a three-level rubric for evaluation of the kits. This allows students to learn about developing rubrics, as well as to produce a student-generated common rubric. This rubric allows for comparison across the kits in the final evaluations. Each group produces an 'alignment table,' a graphical representation of their evaluation that shows the alignment (or lack thereof) of the major content areas, the standards in these areas, the curriculum components that address this content, and the means of assessment that allow teachers and students to measure progress.

Final Stages.

Students find resources to improve the curriculum, prepare a poster to present to the education community, and prepare a final report.

1. Based on their evaluation, students find resources that will help contextualize the kit for local learners, fill in missing gaps, and/or align the kit more thoroughly with models of inquiry. Students look for books, additional materials, local experts or speakers, and also develop additional assessments if they are missing from the kit.
2. Groups prepare a poster to represent their evaluation, and present it to the greater community. We invite science and education faculty, local school district personnel, and state education officials to attend and discuss the evaluations with the students.
3. Groups write a final report of their evaluation, extending the evaluation to consider the extent to which these curricula will help children in performance on large-scale, and sometimes high-stakes, state and national assessments.

Assessment Strategies

The following documents are provided in the problem folder:

Assignments (pdf) - describes all formative and summative assessments from the course,

Final Products (pdf) - describes the final products for the problem.