

**DEVELOPING THE
'NEED TO KNOW' IN A
SCIENCE CURRICULUM COURSE
FOR PROSPECTIVE
ELEMENTARY TEACHERS.**

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SUMMARY

This is an account of a PBL case that I have developed for elementary teacher education majors enrolled in a science curriculum course. The problem-based learning experience described here took place over a period of 5 weeks (meeting 3 hours/week). Students worked in groups of 4-6. This poster presentation describes the problem and some of the related tasks. The problem addresses major objectives in the course. Teacher candidates who worked with this problem seemed to acquire important knowledge and skills that enabled them to engage with the second (typically central) project in the course more competently. More importantly, I believe that this experience has enabled students to think of themselves as teachers more readily than other activities I have tried previously in this course.

Project I: PBL, *New Teacher scenario*, Project II: PBL, *Curriculum Evaluation scenario* (science semester) or lesson planning for practice teaching (regular semester).

Course Objectives	Assignment
Understand how to integrate the science education standards in curriculum.	Projects I & II
Develop an understanding of students' prior conceptions and developmental abilities.	Interviews & Planning Research in Projects I & II.
Master the science content that underpins projects I & II	Research on concepts for Projects I & II.
Plan and teach science lessons that are consistent with best research on student learning in classroom settings	Projects I & II
Develop appropriate observational/ analytical tools and assessment techniques for planning and evaluating student learning and your own teaching.	Assessment tasks in Projects I & II.
Plan effective classroom management techniques that promote a positive and safe environment for science learning.	Projects I & II.
Promote and encourage the participation of <i>all</i> pupils in science	Discussions, videocases. Projects I & II.
Develop connections between science & other content areas in the curriculum.	Projects I & II.
Adapt multimedia technologies to meet your goals and pupils' needs.	Projects I & II.
Identify a wide a variety of resources and become critical consumers of them.	Projects I & II.

THE EXPERIENCE

NEW TEACHER: WHAT'S THE PROBLEM?!!

You have been hired! Congratulations!!!!

The School's science coordinator tells you that you are expected to use a science textbook that was recommended by the School District's office. Excited about teaching in a newly constructed building, you turn to your fellow teachers for help and direction but you are shocked to find out that not only the building is new but also new to the profession are your fellow teachers. You form a team to help each other in this situation knowing that, should you need help, your school science coordinator is always ready to assist you. But the science coordinator cannot do your work, You have to assume full responsibility for making decisions about which unit to start the school year with, which lessons to teach first, how to teach them, what resources to find for them, and how to evaluate students' learning as well as your teaching methods.

It is a daunting task and there are many details and considerable planning and deliberation awaiting you!

Day 1

Task 1: As a group decide on the science unit with which you wish to start your teaching.

Task 2: Determine which aspects of the unit (i.e. key ideas) you want to focus on for the first five lessons of the school year.

Task 3: Determine the science education standards that are covered within the unit.

Once you are ready for Task 3, coordinate your group effort according to the following scheme:

Member 1: Examine the first 4 National Science Education Standards.

Member 2. Examine the second 4 Delaware Science Education Standards.

Member 3: Examine the first 4 Delaware Science Education Standards.

Member 4: Examine the second 4 Delaware Science Education Standards

Member 5: Examine Standards 1, 3, 5, 7 of the Delaware Science Education Standards.

Exchange and discuss your findings. Then submit your report to the science coordinator. In your report, include your group number and names of participants, the title and publisher of the textbook assigned to you, and the specific unit/chapters you are focusing on.

Interview Report

Day 4

Name:

Group#:

Topic:

Information about the interviewee: Pseudonym, age, grade level, context of interview

Interview questions: List all the questions and the follow-ups you asked.

Findings: List what the student knows and what the student does not know either in bullets or in Table form.

Reflection: Evaluate your interview skills. Use the Bell et al. chapter to reflect on what you did well and what you need to improvement. Do so either in bullets or in Table form.

Connections: Report on the similarities/differences between your findings and those reported in the misconception article your brought to class on Tuesday. If none exist explain why that is the case.

References: Use APA style to reference in text and for the list of references at the end to cite any resources you used in preparing this report.

Lesson Planning Form
Day 7

KEY Science concepts to be covered in the Lessons:

KEY Standards (brief reference):

KEY Misconceptions:

Brainstorm and determine lesson sequence:

Lesson 1:

Lesson 2:

Lesson 3:

Lesson 4:

Lesson 5:

Teaching Methods, Procedures, Activities (use a modified learning cycle): Orientation/Exploration, Concept introduction and development, Concept application leading to continuation of inquiry.

References used (APA style):

Full Lesson Plan
Day 10
Lesson Plan Form for EDUC 341

1. GUIDING INFORMATION

2. PURPOSES

- a. Major concepts**
- b. State standards**

3. RATIONALE

4. CLASSROOM PREPARATION

- a. Materials**
- b. Management/Safety**

5. METHODS, PROCEDURES, ACTIVITIES

6. EVALUATION STRATEGIES

7. ANNOTATED BIBLIOGRAPHY

8. OVERALL