

## Reflection 240:232 Selection and Integration of Materials

### 1. What was the context (the course, purpose, situation, etc.) in which this artifact was created?

This artifact was created to fulfill the final project requirements for 240:232 Selection and Integration of Materials. Throughout this class we created lessons and discussed strategies for selecting and integrating materials and technology into our classes. This lesson was designed to incorporate Universal Design for Learning strategies, Gradual Release of Responsibility principles, Common Sense Media, and technology.

### 2. What outcome(s) (ECIT standards) were you to demonstrate in creating it? For each outcome, describe how the artifact addresses the standard. (A review of aligned indicators will assist you in completing this response.)

#### Design

*1.1.a Utilize and implement design principles which specify optimal conditions for learning.*

This lesson is designed using the Gradual Release of Responsibility method and specifies the learning objectives and the conditions for learning.

*1.1.1.a Write appropriate objectives for specific content and outcome levels.*

I wrote objectives for a lesson on Power and Energy.

*1.1.1.d Compare and contrast curriculum objectives for their area(s) of preparation with federal, state, and/or professional content standards.*

I used the Standards for Technological Literacy and the Iowa Core Math, Science and 21<sup>st</sup> Century Skills standards and benchmarks to determine appropriate objectives for a lesson on Power and Energy.

*1.1.5.c Demonstrate congruency among goals/objectives, instructional strategies, and assessment measures.*

In the lesson I designed for this project, students help design the rubric for assessing their presentations. As a class, we use the goals and objectives in order to design appropriate assessment measures.

*1.3.a Select instructional strategies appropriate for a variety of learner characteristics and learning situations.*

The Energy and Power Lesson uses hands-on learning, simulations, presentations, and group activities.

*1.3.d Select motivational strategies appropriate for the target learners, task, and learning situation.*

For the Energy and Power Lesson, I closely analyzed learner characteristics to determine strategies to focus student attention on the concepts and objectives. I applied Universal Design for Learning strategies to minimize anxiety and increase motivation.

#### Development

*2.0.1 Select appropriate media to produce effective learning environments using technology resources.*

Students work in pairs to research an energy source and create a presentation, and students choose which software meets their needs. I encourage students to use Google presentation or other collaborative web-based tool because they can collaborate from different locations on one document.

*2.0.3 Apply instructional design principles to select appropriate technological tools for the development of instructional and professional products.*

I integrated the concepts from the Research unit from Common Sense Media into this lesson. The Searching Unit Overview describes one lesson in which students learn strategies for conducting online research.

*2.0.4 Apply appropriate learning and psychological theories to the selection of appropriate technological tools and to the development of instructional and professional products.*

This activity falls under the Constructive and Adoption cell of technology integration matrix. It is in the Constructive characteristic because students are constructing relationships between the prior knowledge provided during a presentation and their own understanding of the relationship between voltage, current and resistance. It is in the Adoption phase of technology integration because students are provided a link to the online simulation without the choice to use something else.

*2.1.1 Develop instructional and professional products using a variety of technological tools to produce text for communicating information*

This lesson plan includes online and print materials. The activity uses a voltage, current and resistance (VIR) table in order to help examine the relationship between voltage, current and resistance.

## **Utilization**

*3.1.1 Identify key factors in selecting and using technologies appropriate for learning situations specified in the instructional design process.*

Part of the lesson uses scaffolding to help students learn to use multimeters and provides experience with both a hands-on multimeter and a simulated multimeter. I work to minimize the anxiety students might feel dealing with new equipment and concepts by supporting learning and providing different ways to use tools.

*3.1.2 Use educational communications and instructional technology (SMETS) resources in a variety of learning contexts.*

This lesson incorporates materials from Common Sense Media.

*3.3.1 Use appropriate instructional materials and strategies in various learning contexts.*

This lesson uses demonstrations, hands-on activities, simulations and presentations to facilitate learning about energy.

*3.3.2 Identify and apply techniques for integrating SMETS innovations in various learning contexts.*

This lesson integrates various presentation applications, simulations, and hands-on tools

*3.4.1 Identify and apply standards for the use of instructional technology.*

This lesson requires students to use electronics components safely and therefore includes a safety demonstration and lecture.

## Evaluation

*5.1.1 Identify and apply problem analysis skills in appropriate school media and educational technology (SMET) contexts (e.g., conduct needs assessments, identify and define problems, identify constraints, identify resources, define learner characteristics, define goals and objectives in instructional systems design, media development and utilization, program management, and evaluation).*

Based on previous experience teaching this lesson, I determined that there were problems with the lesson and rewrote it in order to improve student learning based on time constraints, resources and learner characteristics.

*5.3.1 Develop and apply formative and summative evaluation strategies in a variety of SMET contexts.*

Formative evaluations during this assignment occur when students are working in groups with the breadboards. The teacher circulates amongst the groups to correct misconceptions and answer questions.

### **3. What problem(s) did you encounter in creating this artifact? What did you learn from encountering this problem, and how can you apply this in your current or future professional life?**

The only problem I encountered in creating this artifact is the disappointment I felt knowing that I would not actually be able to implement it. It was a very good exercise to create a lesson including Universal Design for Learning strategies, Gradual Release of Responsibility principles, Common Sense Media, and technology, but time constraints and a change in my responsibilities will prevent me from implementing this modified lesson. I will use the strategies and principles, which I described here, in future lesson planning and design.

### **4. What does this work show about you and your capabilities?**

This work demonstrates that I can create a sophisticated lesson based on the theories and principles of good instructional design. I can identify the level of an activity in the Technology Integration Matrix, implement Universal Design for Learning strategies in order to appeal to more students, and support and scaffold student learning through Gradual Release of Responsibility.

### **5. What did completing this work teach you about yourself within the field of instructional technology?**

Content comes first. That is a theme throughout the master's courses; from my Emerging Instructional Strategies reflection:

Content comes first. Throughout this class, we discussed how we need to choose technology based on the content and objectives. If I use technology without a clear goal, it negates the effectiveness of the technology. I need to have a plan before I jump on a technology band wagon. If I identify my goals and

objectives, I can find the appropriate technology for implementation or possibly find that technology is not the answer.

I really enjoyed deconstructing the Energy and Power lesson and changing it for the better. The concepts and objectives were provided by Project Lead the Way, but I changed the structure and content of the lesson in order to make it more accessible to students. Ohm's law is a pretty straightforward algebraic equation, but applying it to hands-on situations can be difficult. I believe the way I re-wrote the lesson will provide more time and support for learning how electricity works.