

Artifact Reflection- Engineering Final Exam

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05/30/08

This exam was developed at the end of my student teaching experience in May of 2008 to assess students' ability to function as engineers. Since the course was not focused on textbooks, my cooperating teacher and I decided to plan for a hands-on exam. He asked me to write an exam that would require the students to design and build a mouse trap car. The course was geared toward metals, so naturally I limited the criteria to structural components made out of metal.

I had to develop a set of design limitations for the students to follow, as well as a grading rubric. I started by researching the internet to see how other teachers had set-up rules. Then I chose the ones that I felt were important and added some of my own limitations. The main challenge was to develop a car that could go the longest distance with one standardized mousetrap with all structural components made out of metal. They had to have parts lists, drawings, and step-by-step procedures. The students could demonstrate their knowledge of metal fastening by using pop rivets, nuts and bolts, or welds.

This exam could be altered to meet the needs of different courses at any time by changing the limitations. When I had been in a role reversal situation, I had to design a car that launched an egg and returned to the starting point, so I was aware of what the students had to be able to achieve.

I found the students excited to take a final that was hands-on. As a teacher, you notice evidence of gears turning in the students' heads when they ask questions pertaining to what they can and can't do.

I tried imagining my students as being a professional team of engineers when I offered them a problem which has almost infinite unique solutions. I told them that as engineers they would be expected to follow research and design procedures, safety considerations, and limitations that they would have to follow in a real life situation.

Because the semester was coming to a close, I found it easier to offer recognition for each student's strengths and point out how they can be valuable in completing their final exam project. The work ethic is very noticeable when the students can see that they have attributes that the teacher notices.

The Wisconsin Teaching Standards that this exam addresses are "How Children Learn," "How to Teach," "How to Communicate," "How to Plan Lessons," and "How to Evaluate Learners." The domains that these fall under, are "Planning and Preparation," "Learning Environment," "Instruction," and "Professional Responsibilities." All of the other courses were evaluated with a written exam, so I was glad I had the opportunity to evaluate an exam that incorporated physical evidence of knowledge. I believe that the students felt like they were engineers and prove their abilities.

Choosing appropriate limitations allowed me the chance to assess the students' knowledge and understanding of the course. Making the project entertaining, competitive, and challenging encouraged the students to give it their all.