

2011-12 RET Program
Curriculum Element Implementation Synopsis

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1. Student Reaction

Student reaction to this curriculum element was overwhelmingly positive. Students provided feedback in a focus-group environment immediately following their group presentations. Dr. Kris Juffer asked students to respond (written and oral) to a series of five questions. The questions and select responses are provided below (student quotes in italics):

Q1: To what degree was this exercise appropriate for this class? (5 = very appropriate)

- **12/13 students answered 4 or 5**
- *It challenged teams to expand thinking.*
- *The analysis difficulty was at our level, but critical thinking was challenging.*

Q2: Was this element effective in meeting the stated goals? (5 = highly effective)

- **13/13 students answered 4 or 5.**
- *Highly effective. **I went from knowing nothing to designing a bridge!***
- *Good experience of real-life researching situations.*
- *It showed us how much work is required to put together a project.*
- *Very effective. We had to apply skills learned in class and gave us a look at how design in engineering is done.*

Q3: How was this curriculum element different from the rest of the course?

- *This was very different; involved meeting with group members, presenting, and collaborating. Was a nice change of pace.*
- *Much more team-work; team-work is not fun.*
- *I believe it simulates the requirements that the field would bring to me. It shows how our knowledge can be applied through design.*
- *Instead of the answer to the problem being given to us, teams have to **creatively think** of the answer and **make assumptions**.*
- *I was forced (in a good way) to, in a sense, **define my own problem**. It was hard, but I enjoyed doing it.*
- *Design instead of analysis.*

Q4: Should this project be repeated in the future?

- **12/13 students responded YES, with 1 MAYBE**
- *It should definitely be pursued next semester so that others can see how **engineering is so deeply tied into design**.*
- *Yes. This project gave me a detailed perspective of actually solving an extremely open-ended problem.*
- *Yes...it forces students out of the traditional rut.*
- *Absolutely! It is a phenomenal experience of the engineering process. It allows engineering students an opportunity to take a **glimpse into the "real world" of engineering**.*
- *Yes, it increases skills and brings professionalism.*

Q5: What was the most important thing you learned from the project?

- *Design process; structural analysis*
- *How to submit a proposal in response to a RFP. The format in which it was given was an excellent lesson in working as an engineer.*
- *Group communication is key to success.*

- ***Making assumptions*** is easily the most important aspect of solving a ***real-world problem***.
- There is ***no best answer*** to a question like this; simply how it is approached.
- Use of different software (Excel, truss software)

2. Future Plans

I will definitely continue to use this curriculum element. I felt that it succeeded in meeting most of the stated goals for the project. It also taught the students some important lessons that I did not intend (e.g. professionalism in engineering). Almost every student recommended that the project should be repeated in the future. I plan to use it (or something very similar) every semester and recommend it to adjuncts teaching the same course.

In future implementations, I will make some minor changes to the project. Currently, I plan to make the following changes:

- Meet with each student group twice (instead of once) during the project, and make the initial meeting earlier than the third week.
- Prepare students better for the presentation by providing clear expectations, tips on presenting technical material, etc.
- Incorporate the construction of a scale-model bridge, possibly using an instrumented truss kit from Pasco (<http://www.pasco.com/family/structures-systems/index.cfm>) or a similar vendor.