Teaching Signals and Systems in a Project Based Learning Environment

Robert Sleezer, Eleanor Leung, and Rebecca Bates
Projects provide context for design, professional, and technical learning.

- Military Service
- Job Training
- Hobbies
- Life Experiences

Integrated Engineering

- Design
- Professionalism
- Seminar
- B1 Competencies
- B2 Competencies

General Education

Pre-engineering
Connection to the big picture mitigates students perception that Signals and Systems is all abstract theory.
Connection to the big picture mitigates students perception that Signals and Systems is all abstract theory.
Experiences like “4S” (sunny sidewalk signals and systems) day make some of the tedious work more fun.
Connecting signals and systems learning to student projects.

Real World Application

Metacognition
Learning Conversations
Close Ended Problems
Some real world applications are . . .
Some real world applications are . . .
Some real world applications are . . .
Student feedback to this method is generally positive.

<table>
<thead>
<tr>
<th>Question</th>
<th>% Positive Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students were engaged in the learning conversation.</td>
<td>66</td>
</tr>
<tr>
<td>Instructor followed the 1/x rule.</td>
<td>66</td>
</tr>
<tr>
<td>The learning environment was safe (i.e., ask questions, make errors, and learn from mistakes without negative repercussions).</td>
<td>83</td>
</tr>
<tr>
<td>I learned a lot from this module.</td>
<td>50</td>
</tr>
<tr>
<td>I believe my grade will reflect my capabilities in this area.</td>
<td>80</td>
</tr>
<tr>
<td>The professional expectations were adhered to.</td>
<td>100</td>
</tr>
<tr>
<td>Assignments were helpful, appropriate in scope, &amp; relevant.</td>
<td>66</td>
</tr>
<tr>
<td>The information learned was valuable to my future.</td>
<td>50</td>
</tr>
</tbody>
</table>
Faculty reflections on Signals and Systems in a PBL context.

- Motivation
- Contextualization
- Scaffolding
- Iterative Improvement
Questions?

Feel free to contact us at:

• Robert Sleezer
  robert.sleezer@mnsu.edu

• Eleanor Leung
  eleanor.leung@mnsu.edu

• Rebecca Bates
  rebecca.bates@mnsu.edu

More information on our program can be found at:

http://cset.mnsu.edu/ie/

http://www.ire.minnstate.edu