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Fostering Student Engagement: Four Strategies

Erica Marti  
*University of Nevada, Las Vegas, erica.marti@unlv.edu*

Ryan Sherman  
*University of Nevada, Las Vegas, ryan.sherman@unlv.edu*

Haroon Stephen  
*University of Nevada, Las Vegas, haroon.stephen@unlv.edu*

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Fostering Student Engagement: Four Strategies

Background
In response to studies demonstrating that poor teaching was the cause of many students leaving math, science, and engineering programs, the American Society of Civil Engineers (ASCE) developed the ExCEEd (Excellence in Civil Engineering Education) Teaching Workshop. Several faculty from the UNLV Department of Civil & Environmental Engineering and Construction have attended the highly intensive five-day workshop. To evaluate the impact on student engagement, four basic instructional strategies from the ExCEEd workshop, applicable to all fields, were tested and assessed during the Fall 2018 semester.

- Questioning Techniques
- Physical Models
- Instructor Movement
- Group Work

Goal/Objective
Implement questioning techniques, physical models, instructor movement, and group work from the ASCE ExCEEd workshop were implemented to increase student engagement, thereby encouraging active class participation.

Engagement - Best Practices
Literature on student learning reveals common themes or best practices for instructors. Among these themes are active learning, interaction between students and instructor, and interaction between students (1,2,3,4). Overall, these practices constitute student engagement, and increasing student engagement has a positive effect on learning.

We asked UNLV engineering students if they felt that they benefited from these “best practices” in the classroom. Most students indicated a positive effect from questioning, physical models and group work, but fewer students found instructor movement to be important to their learning.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Benefit</th>
<th>Yes (%)</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you feel that you pay more attention</td>
<td></td>
<td>83%</td>
<td>17%</td>
</tr>
<tr>
<td>because you know your instructor will ask you</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>questions during class?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you feel that physical models and</td>
<td></td>
<td>59%</td>
<td>41%</td>
</tr>
<tr>
<td>demonstrations help you to understand concepts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>better?</td>
<td></td>
<td>90%</td>
<td>10%</td>
</tr>
<tr>
<td>Do you find that working in small groups</td>
<td></td>
<td>33%</td>
<td>67%</td>
</tr>
<tr>
<td>improves my learning?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>57%</td>
<td>43%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10%</td>
<td>90%</td>
</tr>
<tr>
<td></td>
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</tbody>
</table>

Resources for Educators
The following list provides valuable resources for educators to support teaching activities and increase student engagement.

On-campus offices or people
- Meet a teaching coach
- Mentoring groups for faculty

Grant opportunities
- US Department of Education
- Foundation Directory Online
- Get Ed Funding

Library resources
- UNLV - Library Instruction
- UNLV - Library Workshops

URLs
- https://cft.vanderbilt.edu/teaching-guides/

Publications
- Mastering the Techniques of Teaching - Joseph Lowman

Building Your Instructional Strategies
Questioning Techniques
- Learn the various question types
- Pre-plan questions into your lesson
- Learn your students’ names
- Call on students once per class
- Walk students through the question (avoid accepting “I don’t know”)

Physical Models
- Have your students make models and keep these models for future years
- Select at least one class per month to add a model (build on this each semester)

Movement
- Avoid the podium and use a slide clicker
- Pause from your writing and leave the board to interact with the students
- Teach from the back of the room periodically

Group Work
- Pre-plan the problems
- Use problems that are solvable in a few minutes
- Move around and encourage discussion

For all areas - Incorporate self-assessment and ask for peer assessment

References: