International Student Collaboration in Biosystems Engineering using Video Podcasts in Design Classes

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Trans-Atlantic Biosystems Engineering Network (TABE.NET)

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- Virginia Tech (VT)
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- University of Bari (UniBari), Italy
- Agricultural University of Athens (AUA), Greece
Trans-Atlantic Biosystems Engineering Network (TABE.NET)

- Internationalization of Biosystems Engineering (BSEN) curricula
- Develop a global awareness within the discipline
- Student & faculty exchanges
- Innovation and entrepreneurship module
- “What is Biosystems Engineering?” module
- Design module
Initial draft proposal for design module / class / course

- 6 students per team (1 from each partner)
- Mentors
- Online collaboration
- Design solution
- Report

- Compare existing design classes in each institution (Curran et al., 2011)
Desired outcomes

• Change in the students’ outlook to utilize in their remaining years within the university
• Take actions that result in a more internationalized resume before they finish
• Second or third language acquisition
• International peer assessment, appropriate peer assessment across cultures, with a cultural awareness, and how to give feedback
Santa Claus – Goal

- To implement a design, to test it and to evaluate its performance is the desirable goal connected to every learning activity regarding design
- Real impact
- Supports learning from experience
Laundry list of approaches for international student collaboration

- Semester or year-long exchange experience
- Study abroad – semester at home, plus 2-8 week field implementation
- Winter session, Maymester (3 weeks), or Summer
- Staff and students go to partner site for short course
- Webinar (live + recording)
Challenges

• Varying semester dates
• Opportunity cost for faculty
• Language
• Resources and costs
• Course credit approval
Advantages of video podcasts

- Prior positive experience among partners
- Low opportunity cost for faculty with high potential payoff
- Technically feasible for students and part of their culture
- Critical evaluation competencies and feedback across cultures
- Flexibility to implement across partners
- Opportunity for language training
Implementation

- Two learning outcomes could be added to classes
- Group work
- 1. Create a video with technical content for an international peer audience
- 2. Assess and provide feedback for content and clarity of videos created by international peers
<table>
<thead>
<tr>
<th>TABE.NET Partner</th>
<th>Module/Class</th>
<th>Number of videos</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>UCD</strong></td>
<td>Biosystems Engineering Design Challenge</td>
<td>8</td>
<td>Micro wind turbines</td>
</tr>
<tr>
<td><strong>UIUC</strong></td>
<td>Introduction to Agricultural and Biological Engineering</td>
<td>10</td>
<td>Varied across discipline</td>
</tr>
<tr>
<td><strong>VT</strong></td>
<td>Introduction to Biological Systems Engineering</td>
<td>20</td>
<td>Varied across discipline</td>
</tr>
<tr>
<td><strong>UCD</strong></td>
<td>Biosystems Engineering Design Challenge</td>
<td>8</td>
<td>Use of biomaterials</td>
</tr>
<tr>
<td></td>
<td>Buildings and Environment</td>
<td>3</td>
<td>Environmental impact of agricultural buildings</td>
</tr>
<tr>
<td><strong>UNIBA</strong></td>
<td>Rural Buildings</td>
<td>12</td>
<td>Farm buildings, poultry units, wine cellars, etc.</td>
</tr>
<tr>
<td><strong>UPM</strong></td>
<td>Agricultural Buildings</td>
<td>13</td>
<td>Farm buildings, animal housing, wineries, rural roads, etc</td>
</tr>
</tbody>
</table>
YouTube view

Olive oil mills in Spain

ALL COMMENTS (5)

Share your thoughts

Top comments

Luca Filanino 1 month ago
1. How well did I attempt to address the technical content? The video addresses the technical content very well, the process of extracting oil from olives is addressed with clarity.

2. How well did the video communicate message - audio, image quality, rhythm and language / vocabulary? That I felt the video ITS message communicated well, using simple language. Which was easy to follow, not a very good quality recording.
UCD – Micro wind turbines
UIUC – Gulf of Mexico Dead Zone
VT – GM Foods
UPM – Poultry housing
Peer Feedback Example

- The video did a good job of discussing wind turbines in a way that was neither confusing nor boring. The images and audio worked together very nicely, especially the timing. The visuals were up long enough to read and didn't distract from the narration. There were a couple of spots where the audio was cut off, but other than that the speaker was easy to understand. Though the visuals were varied, the video could have been more creative with music or a short video clip.
<table>
<thead>
<tr>
<th>Before Video Experience</th>
<th>UNIBA n=40 (%)</th>
<th>UCD n=54 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response rate</td>
<td>90</td>
<td>70</td>
</tr>
<tr>
<td>Has international experience (travel, language, family, friends)</td>
<td>44</td>
<td>89</td>
</tr>
<tr>
<td>First language, used at home</td>
<td>Italian (100%)</td>
<td>English (95%)</td>
</tr>
<tr>
<td>Some competency in a second language</td>
<td>81</td>
<td>66</td>
</tr>
<tr>
<td>Considered improving language skills</td>
<td>89</td>
<td>76</td>
</tr>
<tr>
<td>Considered sharing information with students abroad</td>
<td>67</td>
<td>39</td>
</tr>
<tr>
<td>Think that “students are the same the world over”</td>
<td>39</td>
<td>34</td>
</tr>
<tr>
<td>Prior experience of making videos</td>
<td>17</td>
<td>34</td>
</tr>
<tr>
<td>After Video Experience</td>
<td>UNIBA n=40</td>
<td>UCD n=54</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Response rate</td>
<td>70</td>
<td>61</td>
</tr>
<tr>
<td>Considered to have improved international experience by making video</td>
<td>86</td>
<td>91</td>
</tr>
<tr>
<td>Increased interest in improving language skills</td>
<td>96</td>
<td>79</td>
</tr>
<tr>
<td>Positive experience of sharing information with international students</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Changed view of students from other countries</td>
<td>29</td>
<td>36</td>
</tr>
<tr>
<td>Experience of making a video has improved communications skills</td>
<td>100</td>
<td>94</td>
</tr>
<tr>
<td>Feedback from international students was valuable</td>
<td>100</td>
<td>97</td>
</tr>
</tbody>
</table>
Conclusions

• Video podcast with peer assessment and feedback is a very practical way of facilitating international collaboration

• Students said it was a positive experience and they had improved their communication skills

• Increased interest in language skills training

• Students found peer assessment interesting but challenging
Acknowledgements

• Faculty – special thanks to Prof. Giovanni Russo (UNIBA)
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