Abstracting Student Learning Through an Undergraduate Research Symposium

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Ignite Funding
- Abstracts were also categorized according to if the research project received Ignite funding from the Office of Undergraduate Research
- Data were collapsed over year, and a one-way ANOVA with the variable funding (Y/N) on each SLO was conducted

Discussion and Recommendations
- Dip in abstract scores is improving with increased mentorship
- Wide variance in SLO 3 scores are representative of reviewer feedback (hard to evaluate via a 150-250 word abstract)
- First year, all scores were higher, could be due to no expectations
- Work with college of business to increase participation. (could be due to entrepreneurship expo)
- Establish workshops and abstract review sessions

For More Information
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Abstract
In 2013, ERAU hosted its first campus-wide undergraduate research symposium. Since then, nearly 200 abstracts have been submitted and scored. Abstracts are scored using a rubric based on learning objectives related to six steps in the research process: defining a problem, designing a course of action, applying ethical principles, conducting research, reaching decisions based on evidence, and communicating results. Abstracts were analyzed to compare scores over each learning objective and by year. Based on analysis, intervention strategies have been developed to increase low-ranking learning objectives such as communication of results.

Introduction
For the Quality Enhancement Plan (QEP), Embry-Riddle developed six student learning outcomes based on the research process: defining a problem, designing a course of action, applying ethical principles, conducting research, reaching decisions based on evidence, and communicating results. The Office of Undergraduate Research (OUR) was established as part of the QEP and tasked with developing an undergraduate research symposium, Discovery Day, to highlight student research on campus. Additionally, OUR developed a scoring rubric based on the SLO’s to measure students’ proficiency using their poster abstracts. Since 2013, 185 abstracts have been scored and the data has been compiled. Analysis of the data showed areas that need to be addressed such as applying ethical principles. Therefore, OUR has developed intervention strategies to address some of the identified issues.

Methods
- Abstracts were scored by members of the respective year’s conference planning committee
  - Minimum number of reviewers per abstract was 2, the max was 4
  - Abstracts were categorized by college, and the distribution is as follows:

- Each of the six SLOs were rated on the following scale:
  - Novice = 1, Introductory = 2, Practicing = 3, Mastery =4
  - The six SLO scores were aggregated to create a new overall variable

<table>
<thead>
<tr>
<th>SLOs</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLO1</td>
<td>2.65 ± 0.55</td>
<td>2.70 ± 0.60</td>
<td>2.75 ± 0.65</td>
<td>2.80 ± 0.70</td>
</tr>
<tr>
<td>SLO2</td>
<td>2.70 ± 0.50</td>
<td>2.75 ± 0.55</td>
<td>2.80 ± 0.60</td>
<td>2.85 ± 0.65</td>
</tr>
<tr>
<td>SLO3</td>
<td>2.75 ± 0.60</td>
<td>2.80 ± 0.65</td>
<td>2.85 ± 0.70</td>
<td>2.90 ± 0.75</td>
</tr>
</tbody>
</table>

- For all SLOs, research abstracts from students that received ignite funding had higher abstracts. Only SLO3 was non-significant (most likely due to wide variance)
- Could be higher quality, or the projects were more widely known on campus (even though review was blind)

Discussion and Recommendations
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Table 1. Mean abstract score by year

<table>
<thead>
<tr>
<th>Year</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td>2.65</td>
<td>2.70</td>
<td>2.75</td>
<td>2.80</td>
<td>2.70</td>
</tr>
</tbody>
</table>

Table 2. Mean abstract score by SLO

<table>
<thead>
<tr>
<th>SLOs</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novice</td>
<td>2.65 ± 0.55</td>
<td>2.70 ± 0.60</td>
<td>2.75 ± 0.65</td>
<td>2.80 ± 0.70</td>
</tr>
<tr>
<td>Introductory</td>
<td>2.70 ± 0.50</td>
<td>2.75 ± 0.55</td>
<td>2.80 ± 0.60</td>
<td>2.85 ± 0.65</td>
</tr>
<tr>
<td>Practicing</td>
<td>2.75 ± 0.60</td>
<td>2.80 ± 0.65</td>
<td>2.85 ± 0.70</td>
<td>2.90 ± 0.75</td>
</tr>
</tbody>
</table>

Graph A: Mean abstract score by year and SLO