Embry-Riddle Aeronautical University

From the SelectedWorks of John Griffith

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Relationship Between Grades and Learning Mode

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Available at: https://works.bepress.com/john_griffith/18/
Introduction

– Course completion - Grades
– ERAU study, 1,600 grades, differences based on mode – recommended larger sample Dunn, (2013).

– n= 20,667 from 2013 grades
Introduction

Compared Mode:

- Classroom/Lecture
- Online
- EV Classroom
- EV Home

With Type of Class Taught

- Economics, English, Humanities, Math
Literature

– 1.6 million to 6.7 million from 2002-2011
– Online course 9% to 32%
– ERAU distance learning now at 59%
– Differences based on mode Dunn (2013)
Previous ERAU Research

Dunn (2013) n=1,398

- Preference order
  - Classroom
  - Online
  - Synchronous Video Learning

- Differences noted between modes n=1600

- Student satisfaction
  - “No significant relationship between learning mode and quality of instruction (p=.695) or course content (p=.9998).
2014 ERAU Quantitative Study (n=2,400)

– Classroom, Online, EV-H, EV-C (p=.000)
– For those with EV Experience, EV-H was second, online was third (F p=.0007, S p=.000)
– Faculty and students believed instructors were technically competent (p=.000)

(Griffith & Schultz, 2014)
2014 ERAU Quantitative Study (n=2,400)

- EV-H more effective than EV-C (F p=.0001, S p=.000)
- Use of blended was effective (p=0.000)
- VA students would choose EV-C over EV-H due to increased VA benefits
  - (Undergraduate p=.0358, Graduate p=.0001)

(Griffith & Schultz, 2014)
Method/Treatment of Data

– Examined student grades in Campus Solutions (Aggregate Data)
  • n= 20,667

– Treatment of Data
  • $\alpha=.05 \ X^2$
  • 2013 data
Example: Economics

| Table 1: Economics Courses  (Hₐ Difference in Failures between the Four Modes) |
|-----------------------------|----------------|-----------------|-------------------|
|                             | EV-H | EV-C | Online | Classroom |
| Pass                        | 559  | 548  | 1604   | 843        |
| Fail                        | 27   | 27   | 91     | 26         |
| % fail                      | 5%   | 5%   | 5%     | 3%         |

Direct Mode Comparison

<table>
<thead>
<tr>
<th></th>
<th>EV-C</th>
<th>Online</th>
<th>Classroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>EV-H</td>
<td>p=0.9432</td>
<td>p=0.4733</td>
<td>p=0.1067</td>
</tr>
<tr>
<td>EV-C</td>
<td></td>
<td>p=0.5298</td>
<td>p=0.0919</td>
</tr>
<tr>
<td>Online</td>
<td></td>
<td></td>
<td>p=0.0063*</td>
</tr>
</tbody>
</table>
### Table 2: Economics Courses (Ha2 Differences in Grade Distribution between the Four Learning Modes)

<table>
<thead>
<tr>
<th>Grade</th>
<th>EV-H n</th>
<th>EV-H %</th>
<th>EV-C n</th>
<th>EV-C %</th>
<th>Online n</th>
<th>Online %</th>
<th>Classroom n</th>
<th>Classroom %</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>312</td>
<td>53%</td>
<td>340</td>
<td>59%</td>
<td>802</td>
<td>47%</td>
<td>515</td>
<td>59%</td>
</tr>
<tr>
<td>B</td>
<td>164</td>
<td>28%</td>
<td>136</td>
<td>23%</td>
<td>546</td>
<td>32%</td>
<td>230</td>
<td>26%</td>
</tr>
<tr>
<td>C</td>
<td>71</td>
<td>12%</td>
<td>56</td>
<td>10%</td>
<td>201</td>
<td>12%</td>
<td>75</td>
<td>9%</td>
</tr>
<tr>
<td>D</td>
<td>12</td>
<td>2%</td>
<td>16</td>
<td>3%</td>
<td>55</td>
<td>3%</td>
<td>23</td>
<td>3%</td>
</tr>
<tr>
<td>F</td>
<td>27</td>
<td>5%</td>
<td>27</td>
<td>5%</td>
<td>91</td>
<td>5%</td>
<td>26</td>
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Direct Mode Comparison

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</thead>
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<tr>
<td>EV-H</td>
<td>p=0.1951</td>
<td>p=0.0823</td>
<td>p=0.0440*</td>
</tr>
<tr>
<td>EV-C</td>
<td></td>
<td>p=0.0001*</td>
<td>p=0.3654</td>
</tr>
<tr>
<td>Online</td>
<td></td>
<td></td>
<td>p=0.0000*</td>
</tr>
</tbody>
</table>
Findings – Failing Grades and Learning Environment

- Economics, \( p=0.054 \), English \( p=0.001* \), Humanities, \( p=0.392 \), Mathematics \( p=0.000* \)

- Online more failures
  - Economics, \( 5\% \), English \( 13\% \), Mathematics \( 11\% \)

- Classroom Lecture, fewer failures
  - Economics, \( 3\% \), English \( 9\% \), Mathematics \( 5\% \)
Findings – Grade Distribution and Learning Environment

- Economics, English, Humanities, and Mathematics (all $p = 0.000^*$)
- EV-Classroom, more “A”s,
  - Economics (59%), Humanities (68%), Math (57%)
- Online fewer “A”s,
  - Economics (47%), Humanities (48%), Math (40%)
Conclusions

– Failure rate and learning mode not related in Economics and Humanities (Hrastinski, 2008; Lou et al., 2006)
– Failure rate and learning mode related in English and Math (Bernard et al., 2004; Dunn, 2014)
– Grade distribution and mode were related in Economics, English, Humanities and Math courses
– Online, fewest “A”s and most “F”s in Economics, Humanities and Math
– Online highest proportion of “A”s in English
Recommendations

– Is face to face more personal while distance learning (standardized courses/delivery) provides a more clear cut objective grading system?

– Replicate as new technology emerges

– Include both quantitative and qualitative measures in assessing stakeholder perceptions with regard to learning modes
Questions?

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