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Grading by Experience Points: An Example from Computer Ethics

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Grading by Experience Points: An Example from Computer Ethics

Edward F. Gehringer
Computer Science, NC State University

"Good morning … you all have an F…"

- Lee Sheldon’s 2012 book is on grading by experience points (XP).
- Each student begins as a level-1 avatar, can rise to level 12.
- Students can never lose points by doing assignments, only gain.

Our course—Ethics in Computing

- Required 1-credit course for computer-science majors.
- Major topics
  - Ethical principles
  - Intellectual property
  - Security
  - Malware
  - Software safety

The grading scheme

- Students choose a topic for the various rounds of ethical analyses.
- ... then submit their work.
- After two rounds of peer review, the instructor/TA assign scores.
- ... then score the students’ reviews.

What the data shows

- Grades: Bimodal at the extremes
  - This is what the grade distribution would have been if I hadn’t lowered cut-offs for grades below B.

Survey results

- Students in the XP class were moderately supportive of the peer-review process, but less supportive than students in other classes.

Other examples of grading by experience points

- High-school biology class
  - Points for doing homework, passing quizzes.
  - Successive levels require twice as many points as previous levels.

- Teaching with Technology
  - U. of Arizona South
  - Multiple assgts. in each content area, successive levels of Bloom’s taxonomy.
    - Hundreds of available assgts. in dozens of context areas
    - Achievements recognize accomplishments
    - Exemplary performance on an assignment
    - Aggregate skill point totals
    - 5 categories of skill points, secret achievements

- LSU Intro. to the Study of Education
  - Reflective blogs — achievements
  - Shine: posting 4-6 comments/week
  - Super Shine: posting 7-9 comments
  - Mega Shine: posting ≥ 10 comments
  - Achievements for content
    - High Five
    - Hmm: For a comment that they believed now but might reconsider later
    - Good sport: For not taking teacher’s comments personally

Grades: Bimodal at the extremes

- This is what the grade distribution would have been if I hadn’t lowered cut-offs for grades below B.

Survey results

- Students in the XP class were moderately supportive of the peer-review process, but less supportive than students in other classes.

<table>
<thead>
<tr>
<th>Question</th>
<th>Green – good outcome, ≥ 4 out of 5</th>
<th>Red – suboptimal, ≥ 3 out of 5 on neg.-phrased question</th>
<th>CSC 379</th>
<th>2012 DOD course</th>
<th>&quot;Typical&quot; (course without XP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students</td>
<td>75</td>
<td>130</td>
<td>107</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response rate</td>
<td>58.65</td>
<td>58.45</td>
<td>54.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I found it hard to understand what was expected</td>
<td>3.36</td>
<td>2.20</td>
<td>2.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I put a lot of effort into writing my articles for the wiki textbook</td>
<td>3.83</td>
<td>4.23</td>
<td>4.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The material I read in order to write my chapter gave me new insight into the topic I was writing on</td>
<td>3.57</td>
<td>4.45</td>
<td>4.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The textbook articles I wrote are credible entries for a textbook</td>
<td>2.81</td>
<td>4.11</td>
<td>3.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am proud of my contributions to the wiki textbook</td>
<td>3.34</td>
<td>4.31</td>
<td>3.97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having students write a textbook supplement for a course like this course is a good idea</td>
<td>3.05</td>
<td>4.11</td>
<td>3.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I clearly understood what was expected of me in reviewing a textbook chapter</td>
<td>2.95</td>
<td>4.21</td>
<td>4.04</td>
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</tr>
<tr>
<td>The chapters I read that were authored by other students gave me new insight into the material they covered</td>
<td>3.21</td>
<td>4.12</td>
<td>3.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The reviews I received helped me to improve my work</td>
<td>3.26</td>
<td>3.76</td>
<td>3.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The scores assigned by the reviewers were fair</td>
<td>3.07</td>
<td>3.76</td>
<td>3.44</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>