Beyond the Numbers: Unlocking Student Engagement in Statistics

Team08: Senam Adedze, Sonia Zhu, Wangle Soares Martins, Mia Lam, Sam Reid
Relationship of Engagement and Performance

Mean: 5 mins
Mode: 4 mins
Standard Deviation: 2.74, meaning 68% of students take about 2-8 min on any given page
Correlation and PCA to identify important predictors

**Correlation Matrix**

```
<table>
<thead>
<tr>
<th></th>
<th>chapter_number</th>
<th>points_percentage</th>
<th>time_spent</th>
<th>response_cost</th>
<th>response_expectancy</th>
<th>response_intrinsic_value</th>
<th>response_utility_value</th>
</tr>
</thead>
<tbody>
<tr>
<td>chapter_number</td>
<td>1</td>
<td>-0.77</td>
<td>0.2</td>
<td>0.34</td>
<td>0.49</td>
<td>0.51</td>
<td>0.73</td>
</tr>
<tr>
<td>points_percentage</td>
<td>-0.77</td>
<td>1</td>
<td>-0.26</td>
<td>-0.34</td>
<td>-0.16</td>
<td>-0.31</td>
<td>-0.49</td>
</tr>
<tr>
<td>time_spent</td>
<td>0.2</td>
<td>-0.26</td>
<td>1</td>
<td>0.37</td>
<td>0.14</td>
<td>0.013</td>
<td>-0.14</td>
</tr>
<tr>
<td>response_cost</td>
<td>0.34</td>
<td>-0.34</td>
<td>0.37</td>
<td>1</td>
<td>-0.28</td>
<td>-0.022</td>
<td>-0.15</td>
</tr>
<tr>
<td>response_expectancy</td>
<td>0.49</td>
<td>-0.16</td>
<td>0.14</td>
<td>-0.28</td>
<td>1</td>
<td>0.66</td>
<td>0.81</td>
</tr>
<tr>
<td>response_intrinsic_value</td>
<td>0.51</td>
<td>-0.31</td>
<td>0.013</td>
<td>-0.022</td>
<td>0.66</td>
<td>1</td>
<td>0.65</td>
</tr>
<tr>
<td>response_utility_value</td>
<td>0.73</td>
<td>-0.49</td>
<td>-0.14</td>
<td>-0.15</td>
<td>0.81</td>
<td>0.65</td>
<td>1</td>
</tr>
</tbody>
</table>
```

**Principal Components**

- Principal Component 1
- Principal Component 2

**Bar Chart**
- response
- EOC
- points_percentage
- construct
- chapter_number
- attempt
- time_spent
## Conclusion

**Insights:**
- Keep the content of each page under 5 minutes to align with students' attention span
- Low-engagement students are in greatest need of intervention to improve overall performance.

**Future actions:**
- Identify types of questions that lead to higher engagement and student accuracy
- Narrow bounds to identify low-engagement students