The quality of online higher education is difficult to evaluate. Many online course quality standards and benchmarks are available, but research that measures quality quantitatively is limited. Our study proposes a data analysis approach to evaluating the quality of online English composition courses. We address the challenge of measuring course quality standards and benchmarks are available, but research that measures quality quantitatively is limited. Our study proposes a data analysis approach to evaluating the quality of online English composition courses. We analyze students’ learning outcomes, including their academic performance and self-reported measures of satisfaction and learning experiences. We identified four types of learners (Low Attainment, Positive Experience, Mixed Experience, and Negative Experience) who had different perceptions about the quality of their online learning. We propose that the quality of online courses can be inferred by the perspectives from students.

**Variables**
- Learning experiences (survey)
- Learning outcomes (performance)
- Overall satisfaction (survey)
- Academic Performance (Grades)

**Analysis**
- Multivariate analyses:
  - Exploratory Factor Analysis
  - Cluster Analysis on grouping learners
  - ANOVA on differentiating the perspective of quality level in learner groups

**Quality of Student Learning**

**Learning quality represented by four student groups:**
- **Indifferent learners**: These students received a failing final grade and conveyed a range of satisfaction and online experiences.
- **Positive Experienced learners**: They showed high satisfaction and academic performance.
- **Mixed Experienced learners**: They received good academic performance, but conveyed mixed experiences and outcomes.
- **Negative Experienced learners**: They had good academic performance, but conveyed unsatisfied experiences.

**Research Questions**
1. How can we infer objective quality from perceived quality?
2. How can the quality of the course be inferred from students’ self-evaluation?
3. Can the quality of online education be identified and compared in a quality improvement and assurance process?

**Methodology**
- Multivariate analyses:
  - Exploratory Factor Analysis (EFA)
  - Cluster Analysis
  - ANOVA

**DISCUSSION 1**

**Measure of Course Quality**
The measure of course quality is inferred by the perspectives from student learning.

<table>
<thead>
<tr>
<th>Learning experience (survey)</th>
<th>Learning outcomes (performance)</th>
<th>Overall satisfaction</th>
<th>Academic Performance (Grades)</th>
<th>Course Design (score of 100)</th>
<th>Course Design (score of 100)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Attainment learners</td>
<td>6.04</td>
<td>1.12</td>
<td>5.35</td>
<td>0.54</td>
<td>4.35</td>
</tr>
<tr>
<td>High Attainment learners</td>
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<td>1.12</td>
<td>5.35</td>
<td>0.54</td>
<td>4.35</td>
</tr>
<tr>
<td>Positive Experience learners</td>
<td>6.04</td>
<td>1.12</td>
<td>5.35</td>
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<td>4.35</td>
</tr>
<tr>
<td>Mixed Experience learners</td>
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<tr>
<td>Negative Experience learners</td>
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<td>1.12</td>
<td>5.35</td>
<td>0.54</td>
<td>4.35</td>
</tr>
</tbody>
</table>

**DISCUSSION 2**

**Continuous Quality Improvement**
The quality improvement can be assessed from the numbers of each student group in three semesters.

**CONCLUSION & FUTURE WORK**
The literature lacks objective measurement of learning quality. Measurement in this study infers from the students’ perspective of their learning. This study presents a model for quality assurance, with continuous data collection in the long run.

The significance of this study is the establishment of a scientific approach of measuring the quality of student learning. Future work will expand the data collection to other stakeholders so that we can have a more complete picture of the quality of online education.