Understanding the URM Student Perspective in Large Enrollment Active Learning Classrooms
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1. Background and Introduction

College enrollment rates of traditionally underrepresented minorities (URMs) in science, technology, engineering, and mathematics (STEM) fields are improving, yet these individuals have higher attrition rates than their non-URM peers. This perpetuates a STEM population that is not representative of the United States’ diverse society.

This study defines URM as a student who belongs to one or more of the following groups: person with a disability, first-generation college student (FGCS), member of the LGBTQ+ community, need-based financial aid recipient (NBFA), racial minority (non-White, non-Asian), and a transfer student.

Research suggests that incorporation of active learning strategies in college classrooms has positive impacts on achievement outcomes and persistence factors among STEM URM students.

2. Research Questions and Design

This study addresses an area of research that is lacking; namely, the student perception and relative value of events that take place in the classroom. The following research questions were examined:

RQ1 Which learning events do URM students perceive as most useful for learning?
RQ2 How do URM students’ perceptions of task-value and performance compare in different learning environments?

Study Setting: Two sections of an introductory biology course for science majors. The same instructor teaches both sections and uses a segmented combination of lecture and intentionally designed activities.

Study Design: Convergent parallel mixed-methods study, wherein data were collected throughout the entirety of one semester to examine student perception of active learning from multiple sources.

3. Theoretical Frameworks

Social Cognitive Theory of Human Behavior and Learning

4. Participants and Perception Measures

Total participants: n = 315, SCALE-UP: n = 95, Lecture: n = 220

STUDENT REPRESENTATION

<table>
<thead>
<tr>
<th>Single URM</th>
<th>Multiple URM</th>
</tr>
</thead>
<tbody>
<tr>
<td>162</td>
<td>188</td>
</tr>
<tr>
<td>124</td>
<td>107</td>
</tr>
<tr>
<td>97</td>
<td>28</td>
</tr>
<tr>
<td>56</td>
<td>30</td>
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</tbody>
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5. Research Findings

RQ1 Which learning events do URM students perceive as most useful for learning?

Findings From Qualitative Analysis
- Real-time application of course content.
- Seeing different perspectives via peer interactions.
- Instructor follow-up that confirms understanding.
- Critically thinking via low-stakes concept reinforcement.
- Discovering real-world relevance of class material.

Findings From Quantitative Analysis

URM TOP RANKED LEARNING EVENTS BY PERCENTAGE

<table>
<thead>
<tr>
<th>Event Type</th>
<th>SCALE-UP</th>
<th>Lecture</th>
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</thead>
<tbody>
<tr>
<td>Listening to Lecture</td>
<td>45.7%</td>
<td>43.1%</td>
</tr>
<tr>
<td>Instructor Events*</td>
<td>15.9%</td>
<td>18.3%</td>
</tr>
<tr>
<td>Peer Events*</td>
<td>34.1%</td>
<td>16.5%</td>
</tr>
<tr>
<td>Individual Events*</td>
<td>4.4%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Lab and Lecture Alignment</td>
<td>12.8%</td>
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</tbody>
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6. Implications and Limitations

URMs value activities that include critical thinking and peer collaboration, especially when the class format centers around collaborative, active learning as compared to the traditional classroom seating.

PRACTICAL TAKEAWAY: Incorporate well-planned peer activities frequently.

Students place high value on lecture and instructor events. This may be linked to how students were trained to learn in high school – viewing the instructor as the expert, and lecture as a familiar learning format. Students can benefit from regular exercises to develop metacognitive awareness.

PRACTICAL TAKEAWAY: If lecturing, structure it around active learning. Scaffold peer trust and collaboration. Provide regular opportunities for student reflection.

Limitations: This study does not consider the impact of lecture and activity dispersion. The various URM sample sizes are not large enough to statistically analyze differences between groups. The research context does not allow for generalizability due to study size and scope.