**Ground School Checkpoint Development**

*Curriculum Ambassadors*: Hanna Burch and Jacob Gindi
*Advisors*: Marieke Kruidering and Raga Ramachandran

### INTRODUCTION

- **The “testing effect”:** Immediate, low-stakes testing after reading improves long-term retention and performance on high-stakes exams. (1,2,3)
- UCSF’s Bridges Curriculum emphasizes open-ended examinations to actively assess students’ ability to synthesize and apply their knowledge.
- Checkpoints are required, weekly, low-stakes assignments designed to address the principles of testing for learning and help students prepare for the open-ended examinations of Bridges.
- This Curriculum Ambassador project assisted the faculty in developing the checkpoints for Ground School (GS), the first block in the Bridges curriculum (launched in August 2016).
- Each checkpoint consisted of 20-25 multiple choice questions (MCQs) and 2 multi-part open-ended questions (OEQs).
- GS checkpoint assignment requirements:
  - Complete 5 out of 6 checkpoints
  - Each checkpoint:
    - Attempt all MCQs and achieve at least 50% correct, multiple attempts allowed
    - Attempt 1 of 2 OEQs

### METHODS

**Checkpoint development:**
- MS2s reviewed GS material and learning objectives
- Part A: MCQs
  - Faculty drafted questions
  - MS2s read through questions and assigned GS objective and level of Bloom’s taxonomy to each question
  - MS2s provided feedback on question wording, scope, and level of difficulty
- Part B: OEQs

**Checkpoint data collection and analysis:**
- **Assessment data:**
  - 100% (n=152) MS1s completed 5 out of the 6 checkpoints during GS
  - 1-2 min median time spent per MCQ
  - 4-7 students per week answered reconciliation question with “missed many key points” or were “confused”
  - This answer triggered faculty outreach to support these students

**Evaluation data:**

- **Student quote:** “This is a strong point about the curriculum. I not only reinforce concepts by practicing what I know, but I also reflect on what I do not know. I think it’s awesome that the administration reaches out to those students who do struggle in OEQ.”

### RESULTS

**MCQ Performance By Week**

**Checkpoint component** | **Checkpoint function**
--- | ---
MCQ | Test Preparation
OEQ | Facilitated Learning
MCQ and OEQ Checkpoints with Reconciliation for your learning.

**MCQ Performance By Week**

<table>
<thead>
<tr>
<th>Week</th>
<th>MCQ Performance %</th>
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<tbody>
<tr>
<td>1</td>
<td>90%</td>
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<tr>
<td>2</td>
<td>85%</td>
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<tr>
<td>3</td>
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<td>4</td>
<td>75%</td>
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<td>5</td>
<td>70%</td>
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<td>6</td>
<td>65%</td>
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</tbody>
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**Comment on the value of the weekly MCQ Checkpoints and OEQ Checkpoints with Reconciliation for your learning.**

**MCQ**

<table>
<thead>
<tr>
<th>Number</th>
<th>MCQ Performance %</th>
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<tr>
<td>1</td>
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<td>6</td>
<td>75%</td>
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**OEQ**

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<thead>
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<th>Number</th>
<th>OEQ Performance %</th>
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<td>1</td>
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<td>2</td>
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**Facilitated Learning**

- Weekly, low-stakes checkpoints were valuable learning tools for MS1s
- Students were motivated to complete the MCQs: they performed well beyond the 50% correct requirement on all checkpoints
- Timely outreach based on weekly reconciliation question responses allowed GS faculty to identify and support struggling learners early in GS
- New OEQ development:
  - Requires faculty involvement and development, assessment specialist support
  - MS2s are valuable and effective team members in writing OEQs for MS1s

### DISCUSSION and FUTURE STEPS

**Discussion:**
- Weekly, low-stakes checkpoints were valuable learning tools for MS1s
- Students were motivated to complete the MCQs: they performed well beyond the 50% correct requirement on all checkpoints
- Timely outreach based on weekly reconciliation question responses allowed GS faculty to identify and support struggling learners early in GS
- New OEQ development:
  - Requires faculty involvement and development, assessment specialist support
  - MS2s are valuable and effective team members in writing OEQs for MS1s

**Future Steps:**
- Develop survey to further study student perceptions of the GS checkpoints
- Explore relationship between checkpoint and exam performance
- Utilize MS4s in developing MS2 Bridges Curriculum checkpoints
- Dissemination: present project at 2017 AAMC WGEA Conference

### Sources:
Ground School Checkpoint Development

Curriculum Ambassadors: Hanna Burch and Jacob Gindi
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INTRODUCTION

• The Bridges curriculum emphasizes open-ended examinations to actively assess learning.
• The checkpoint assignments are weekly low-stakes assessments that include open-ended questions (OEQs) and multiple choice questions (MCQs).
• The checkpoints are designed to allow first year students to assess their knowledge iteratively and practice responding to open-ended prompts.
• Checkpoint assignment requirements:
  • Complete 5 out of 6 checkpoints
  • Each checkpoint:
    At least 50% MCQs correct, multiple attempts allowed
    Attempt 1 of 2 OEQs
• This Curriculum Ambassador project assisted the faculty in developing the checkpoints for Ground School, the first block in the Bridges curriculum.

METHODS

Checkpoint development:
• Reviewed course material from the Ground School (GS) curriculum
• MCQs:
  o Read through questions and assigned GS objective and level of Bloom’s taxonomy to each question
  o Provided feedback on question wording, scope, and level of difficulty
• OEQs:
  o Designed open ended questions using Bloom’s taxonomy and GS objectives
  o Wrote model answers for open ended questions
  o Submitted questions for feedback from faculty and assessment team
  o Communicated with course directors and faculty instructors via email and in person in multiple rounds of checkpoint editing
  o Repeated process
  o Demonstrated the checkpoints in CLE
  o Provide feedback on assignment length, difficulty, and user experience

Checkpoint data collection:
• User data: number of students completing the checkpoints and average time spent on each checkpoint
• Student performance: average MCQ score
• Reconciliation question: self-reflection on how the DISCUSSION and FUTURE STEPS

RESULTS

• Successfully helped complete the checkpoints for GS weeks 1-3
• Checkpoint data:
  o 100% (n=152) MS1s completed 5 out of the 6 checkpoints during GS
  o Time spent per MCQ portion of checkpoint: change to median time per question range
  o Average score: bar graph?
  o Evals: “valuable,” look at data
  o Reconciliation question: each week 4-7 students (different students each week) selected “I missed many key points and/or was confused about how to approach the question” (ven diagram)
  o 43 out of 48 volunteered comments mentioned that the checkpoints were valuable
  o Student quote: “I find [the checkpoints] extremely helpful and am so glad we have them!”

DISCUSSION and FUTURE STEPS

- Students clearly motivated to complete MCQs: went beyond requirement
- Checkpoints help students prepare

OEQs

• New OEQ development:
  o Need faculty involvement and development with learning specialists
  o MS2s are helpful and effective designers of OEQs
Cycle figure:

Faculty and CURAMs (MS2s) design questions
Design team comments on Bloom’s taxonomy
Designers incorporate discuss and incorporate feedback
Roll out assignments
Analyze data from MS1 students: user data and evaluation