Assessment of a Preparatory MOOC in Biology

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Unpublished data. Contact adriw@uci.edu before disseminating
Rationale

Average Math SAT scores for students at each final letter grade, Bio 93

N = 803, Fall 2012 Bio 93.
URM = under-represented minority students
Experimental Question

Will a preparation MOOC help students do better in introductory biology?
Experiment 1 Design

Preparation for Introductory Biology MOOC

UCI Irvine
Preparation for Introductory Biology: DNA to Organisms

Through this class you should be able to explain basic concepts in cellular and molecular biology using correct terminology, as well as develop critical thinking and problem-solving skills that can be applied to all of your studies of biology.

UCI students
Introductory Biology at UCI

~ 1800 students
MOOC Course Design

Basics Lecture Videos
Basics Quizzes

Unit Peer Assessments
Write your answers
Grade answers of peers

Research Packet

Research Peer Assessments
Write your answers
Grade answers of peers

Normal Certificate

Distinction Certificate
Unpublished data. Contact adriw@uci.edu before disseminating
Results

Math SAT scores for all participation levels

<table>
<thead>
<tr>
<th>MOOC Participation</th>
<th>Average Math SAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did not take</td>
<td>560</td>
</tr>
<tr>
<td>Low Participation</td>
<td>570</td>
</tr>
<tr>
<td>Normal</td>
<td>580</td>
</tr>
<tr>
<td>Distinction</td>
<td>570</td>
</tr>
</tbody>
</table>

N = 1313

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Results

All ethnicities participate similarly

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Results

All Math SAT scores do not respond identically

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Results

All ethnicities do not respond identically

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Experimental Design for Summer 2014

“Practice for Intro Bio”

N ~ 300

“Control” Course:
• Videos
• Quizzes
• Sample problems
• Exam

N ~ 300

“Real” MOOC:
• Time constraints
• Videos
• Quizzes
• Peer Assessments
• Discussion Forum

Introductory Biology at UCI