DOES IT MATTER HOW MUCH OPEN? IMPACT IN LEARNING AND DEGREES OF OPENNESS

Westermann, W.;

© 2018, WESTERMANN, W.

This work is licensed under the Creative Commons Attribution License (https://creativecommons.org/licenses/by/4.0/legalcode), which permits unrestricted use, distribution, and reproduction, provided the original work is properly credited.

Cette œuvre est mise à disposition selon les termes de la licence Creative Commons Attribution (https://creativecommons.org/licenses/by/4.0/legalcode), qui permet l’utilisation, la distribution et la reproduction sans restriction, pourvu que le mérite de la création originale soit adéquatement reconnu.

IDRC Grant/ Subvention du CRDI: 107311-001-Research into Open Educational Resources for Development
Does it matter how much open? Impact in learning and degrees of openness

Werner Westermann J.

13th Open Education Conference

Richmond, Virginia 2016
Research on Open Educational Resources for Development in the Global South

**GENERAL OBJECTIVE:**

IMPROVE EDUCATIONAL POLICY, PRACTICE and RESEARCH in developing countries by better understanding the use and impact of OER

August 2013 - February 2017
Rationale

• OER Adoption looking to assess its Effectiveness
  – Student 1st year Outcomes (performance)
  – Very low retention (46%)
  – Lack of basic knowledge and academic skills
    • No prerequisite to enroll
    • Very low socio-demographic profile

• Mixed methodology approach
  – Quantitative
  – Qualitative
    • Focus groups with Students / Interview with teachers
    • Survey to students
Treatment

• Comparison of groups:
  – randomly assign students to the groups
  – same teacher for all groups in each scenario
  – alternatives to assure comparison
    • Propensity Score Matching: estimation of the probability of receiving an specific treatment
  – mechanism of comparison
    • Inverse Probability Weight: matching algorithm compare results of most similar individuals
**Scenario 1: Contact mode**

*School of Education*

*Course:* Arithmetics (2nd Semester, 1st Year)
*Teacher 1:* Rebeca Parra

- Control Group (n=30)
- Treatment Group 1 with Semi-open OER (n=35)

**Online Platform**

**Scenario 2: Contact mode**

*School of Education*

*Course:* Statistics (3rd Semester, 2nd Year)
*Teacher 1:* Rebeca Parra

- Control Group (n=30)
- Treatment Group 2 with More-open OER (n=31)

**Online/Printed Open Textbook**

**Scenario 3: Blended mode**

*School of Engineering*

*Courses:* Algebra (2nd Semester, 1st Year), Calculus (3rd Semester, 2nd Year)
*Teacher 2:* Celso Soto

- Control Group (n=41)
- Treatment Group with OER (n=21)

**Online Platform**
OER Selection

• Khan Academy
  – Extensive in resources and content
  – “Mentor” creates a “Course” selecting and sequencing resources to enrolled students (Remix)

• Open Textbook
  – Created by the teacher’s notes/resources
  – Hosted in Wikibooks
  – Printed copy from day 1
ÁLGEBRA

NUMEROS NATURALES

Números primos:

VER EN: KHAN ACADEMY

Estudiantes en un aula con sus trabajos.
Conclusions

• students of the face to face classes that used a **semi-open OER** obtain significantly **better exam grades** than students:
  – that did not use any extra resource
  – that used an open textbook as an extra resource

• face-to-face students that used **semi open OER** have significantly **less attendance** levels than other examined students
Does it matter how open?

<table>
<thead>
<tr>
<th>OER</th>
<th>Type of Open License</th>
<th>Level of Openness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khan Academy</td>
<td><em>Creative Commons Attribution-NonCommercial-ShareAlike 3.0 United States License (CC BY-NC-SA)</em></td>
<td>Less open, “Quasi open” (1)</td>
</tr>
<tr>
<td>Open Textbook</td>
<td><em>Creative Commons Attribution 4.0 International (CC BY)</em></td>
<td>Most Open, “True open” (3)</td>
</tr>
</tbody>
</table>

• Policy: as much open as possible
• Pedagogy: what better suites learner/teacher
  – Where’s the crossover?
Does it matter how open?

<table>
<thead>
<tr>
<th>1 Level of Openness</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Free to use, but not modify;</td>
</tr>
<tr>
<td>(2) Free to use, copy, distribute, modify, and incorporate into derivative noncommercial works;</td>
</tr>
<tr>
<td>(3) Free to use, copy, distribute, modify, and incorporate into derivative works, including commercial works.*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 Grain Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program/course sequence; whole course; unit of study; learning object; learning platform; assessment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3 Implementation Modality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholly online; blended with reduction in face-to-face (FTF) time; blended with no reduction in FTF time</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4 Education Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early childhood; K-12 school; higher education institution; informal out-of-school</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5 Learner Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learner-selected; recommended to learner; required of learner</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6 Subject Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities, language arts, mathematics, science, technical including programming, other occupational</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7 Type of Learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedural skills; declarative knowledge; deeper learning</td>
</tr>
</tbody>
</table>

*These levels are a simplification of the four levels of OER access described in Smith 2013.
Does it matter how open?

• Kimmons, R. (2015), OER Quality and Adaptation in K-12: Comparing Teacher Evaluations of Copyright-Restricted, Open, and Open/Adapted Textbooks
  – open textbooks were of higher quality than copyright-restricted textbooks
  – open/adapted textbooks were evaluated as having the highest quality
Larry Cuban

- *How Teachers Taught: Constancy and Change in American Classrooms, 1890-1980*
- *Teachers and Machines: The Classroom Use of Technology Since 1920*
- *Teaching History Then and Now: A Story of Stability and Change in Schools*
- *Inside the Black Box of Classroom Practice: Change Without Reform in American Education*
## Project-based Learning

### Connecting Instructional Design and Project Management

<table>
<thead>
<tr>
<th>ADDIE Model</th>
<th>Analysis</th>
<th>Design</th>
<th>Development</th>
<th>Implementation</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audience</td>
<td>Training need</td>
<td>Learning objectives</td>
<td>Authoring, coding, &amp; scripting</td>
<td>Duplicate or distribute</td>
<td>Did it solve the problem?</td>
</tr>
<tr>
<td>Budget</td>
<td>Delivery options</td>
<td>Curriculum outline &amp; treatment</td>
<td>Build and test prototypes</td>
<td>Support &amp; maintain</td>
<td>Did it meet the financial targets (ROI)?</td>
</tr>
<tr>
<td>Constraints</td>
<td>Constraints</td>
<td>“Look &amp; Feel” (Interface, navigation, etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time &amp; Deadline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Project Management Life Cycle Model</th>
<th>Concept</th>
<th>Definition</th>
<th>Development (Detailed Design)</th>
<th>Execution</th>
<th>Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope Statement</td>
<td>Project Plan</td>
<td>Project Deliverables</td>
<td>Project Sign-Off</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Justification</td>
<td>Planning Assumptions</td>
<td>Product Elaboration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer &amp; Sponsor</td>
<td>Baseline Scope</td>
<td>Documentation of changes to baseline scope, budget, and schedule</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product description Deliverables</td>
<td>Detailed Budget</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project objectives: Milestones Cost Quality &amp; Performance</td>
<td>Detailed Schedule</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Evaluation
Evaluation is not normally part of project scope. It may be a separate project, or it may be part of a higher level - possibly referred to as program or project portfolio management.
Design-based Learning

Design Principle #2: Craft the driving question.

Design Principle #1: Begin with the end in mind.

Design Principle #3: Plan the assessment.

Design Principle #4: Map the project.

Design Principle #5: Manage the process.
LOM Learning Design
Paulo Freire (1921-1997)

- Critical Pedagogy
  - Pedagogy of the Oppressed
  - Pedagogy for Liberation

"Todo acto educativo es un acto político"

Paulo Freire
Brasil