EFFECTIVENESS OF OER USE IN STUDENTS’ MATHEMATICAL OUTOMES: A CASE STUDY IN CHILE TO PROMOTE OER POLICY

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Cape Town Open Education Declaration
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Effectiveness of OER use in students’ mathematical outcomes: A case study in Chile to promote OER Policy

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Open Education Global Conference

Cape Town 2017
GENERAL OBJECTIVE:
IMPROVE EDUCATIONAL POLICY, PRACTICE and RESEARCH in developing countries by better understanding the use and impact of OER

August 2013 - February 2017

PROJECT CLUSTERS
- OER Desktop Review
- OER Survey
- Academics’ adoption of OER
- Teacher educators’ adoption of OER
- OER adoption in one country
- OER impact studies
- Baseline educational expenditure

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Research on Open Educational Resources for Development

created by Randine Cortens and the ROER4D team
Rationale Sub-Project 9

• 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
**Scenario 1:** Contact mode

*School of Education*

*Courses: Arithmetics (2nd Semester, 1st Year)*

*Teacher 1: Rebeca Parra*

- Control Group (n=30)
- Treatment Group 1 with Semi-open OER (n=35)
- Treatment Group 2 with More-open OER (n=31)

**Scenario 2:** e-Learning mode

*School of Engineering*

*Courses: Algebra (1st Semester), Calculus (2nd Semester)*

*Teacher 2: Celso Soto*

- Control Group (n=41)
- Treatment Group with OER (n=21)
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 Wikiboks
  – Printed copy from day 1
ÁLGEBRA

NÚMEROS NATURALES

Números primos:

VER EN: KHAN ACADEMY
Conclusions

• Contact Mode students that used a Khan Academy (Treatment Group 1) obtain significantly better exam grades than students:
  – that did not use any extra resource (Treatment Group 2)
  – that used an open textbook as an extra resource (Control Group)
• Contact Mode students that used Khan Academy have significantly less attendance levels than other examined students
• No significant effectiveness of Khan Academy on Blended Mode nor Open Textbook
Case 1

- Enlaces, Chilean Ministry of Education ICT program for K-12 schools
- “Pedagogical Integration Models”: personalized, web-based content/assessment platforms for Math and English
- Third- to eighth-grade students (nearly 190,000, 5%) in public-funded schools (nearly 1,450, 12%)
- USD$ 2 million, cost mostly related to proprietary individual licenses of the user-subscription web service
Case 1

- Use in hours of the platforms, in both English and Math, analysis disaggregated by type of platform and month, reported that use by students was near zero.
- Correlation between the subject, in both English and Math, and the standardized national tests was also close to zero.
- Accessibility issues because not being enough licenses led to:
Case 1

- Programme ceased operations at the beginning of the 2014 school year
- Should the Ministry consider a no-cost alternative, high quality, award-winning OER platform like the Khan Academy, which guarantees permanent online access to every student in Chile?
- Can the investment be directed towards the process of adopting and appropriately using OER, mainly by teachers and learning supporters, but also by parents and guardians, instead of spending on expensive “per-seat”
Case 2

- Textbook program, Ministry of Education spends each year USD$ 40 Million
  - 2 foreign companies dominate 80% of public market
  - Bids integrate Production-Printing-Distribution

  - public and private marketplace did not encourage competition for better quality content and products:
    - lower printing costs in order to win public contract bids
    - "incentives" to local authority and school managers to require textbooks of an specific year or edition
Case 2

- Textbook program, Ministry of Education spends each year USD$ 40 Million
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  - Bids integrate Production-Printing-Distribution

- Quality, Format and Market of Textbooks (Ortuzar, 2014)
  - public and private marketplace did not encourage competition for better quality content and products:
    - lower printing costs in order to win public contract bids
    - "incentives” to local authority and school managers to require textbooks of an specific year or edition
    - same contents were reused repeatedly in both public and private markets
Case 2

- Previous studies around the poor quality and limited use of textbooks in schools in last two decades
- Quality shortcomings concerned substantial features of a textbook:
  - limited and irrelevant information
  - poor clarification of objectives
  - reduced uptake by the authors of the contributions of current and innovative pedagogy and fundamental aspects of the discipline involved
  - neglected details of presentation, planning and sequences
  - scant regard for users
Case 2

- Can openness contribute a solution to fixing the broken public and private textbook market in Chile and strengthening competitiveness, particularly in the promotion of the local/national publishing industry?
- Can openness provide a setting for incremental quality improvement of key learning resources, as well have high return on public investment?
- Yes!! Let’s Go Open!!