

Chile - The effectiveness of OER use in developing students' mathematical skills: A case study of first- and second-year higher education students in Chile, ROER4D Sub-project 9

Research on Open Educational Resources for Development (ROER4D) - University of Cape Town

Report generated on: July 18, 2016

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Overview

Identification

ID NUMBER

zaf-roer4d-rscaoersa-2016-v1

Version

VERSION DESCRIPTION

v1: Edited, anonymised dataset for public distribution

PRODUCTION DATE

2016

NOTES

Version 1 of the dataset was deposited with DataFirst on 5 July 2016.

Overview

ABSTRACT

This study aims to examine the effect of the use of two Open Educational Resources (OER) (a Khan Academy online tutorial and an open textbook hosted on Wikibooks) with respect to the increase of logical-mathematical outcomes of first- and second-year higher education Chilean students. It also aims to uncover teacher and student perceptions about the use of OER in order to understand how these resources are used and valued. For these purposes, quantitative and qualitative methods were used to analyse student performance data and data produced from semi-structured interviews, focus groups and a survey.

The research process was comprised of a student survey, student focus group, generation of an impact analysis database, and teacher interviews. The published dataset does not include the student survey instrument and microdata, as access to this is restricted due to ethical constraints.

Findings indicate that students in a contact-study mathematics course who used a Khan Academy online mathematics tutorial obtained better examination results than students who did not use any additional resources, or those who used the open textbook. Moreover, it was also found that teachers and students have positive perceptions about the use of Khan Academy and Wikibooks materials.

This study is Sub-project 9 of the Research on Open Educational Resources for Development (ROER4D) project, hosted by the Centre for Innovation in Learning and Teaching (CILT) at the University of Cape Town, South Africa, and Wawasan Open University, Malaysia.

KIND OF DATA

Sample survey data [ssd]

UNITS OF ANALYSIS

Units of analysis were individuals

Scope

NOTES

The research collected data on students' and instructors' perceptions of the value of OER materials over traditional teaching and learning materials. This was supplemented by record data from the institution on student performance and retention rates.

KEYWORDS

Open textbooks, Open Data, Open Educational Resources, Mathematics, Khan Academy

Coverage

GEOGRAPHIC COVERAGE

The interviews and survey data were conducted at one institution in Chile and are not representative of the country as a whole.

GEOGRAPHIC UNIT

The lowest level of geographic aggregation of the data is individual university.

UNIVERSE

The survey covered students and instructors in the single institution involved in the study.

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

| Name | Affiliation |
|---|-------------------------|
| Research on Open Educational Resources for Development (ROER4D) | University of Cape Town |

OTHER PRODUCER(S)

| Name | Affiliation | Role |
|------|-------------|------|
| | | |

FUNDING

| Name | Abbreviation | Role |
|---|--------------|--------|
| International Development Research Centre | IDRC | Funder |

Metadata Production

METADATA PRODUCED BY

| Name | Abbreviation | Affiliation | Role |
|-----------|--------------|-------------------------|-------------------|
| DataFirst | | University of Cape Town | Metadata producer |

DATE OF METADATA PRODUCTION

2016-07-15

DDI DOCUMENT VERSION

Version 1

Sampling

No content available

Questionnaires

No content available

Data Collection

Data Collection Dates

| Start | End | Cycle |
|--------------|------------|--------------|
| 2016 | 2016 | N/A |

Data Collection Mode

Face-to-face [f2f]

Data Collection Notes

The interviews were conducted with two instructors and three students, and comprised 20-30 (modal average 22) questions and lasted between 1 and 1 hours. Based on the data surfaced in this initial qualitative phase, an online survey was designed to measure student perceptions of the use of OER which gathered 49 responses.

Data Processing

No content available

Data Appraisal

No content available

File Description

Variable List

rscaoersa-2016-blended-v1

Content

Cases 62

Variable(s) 10

Structure
Type:
Keys: ()

Version

Producer

Missing Data

Variables

| ID | Name | Label | Type | Format | Question |
|------|----------|--|----------|---------|----------|
| V110 | id | Student ID | contin | numeric | |
| V111 | group | Comparison group | discrete | numeric | |
| V112 | gender | Gender | discrete | numeric | |
| V113 | age | Age | contin | numeric | |
| V114 | p_m | Presentation mark - before the exam | contin | numeric | |
| V115 | exam | Exam mark | contin | numeric | |
| V116 | f_m | Final mark - after the exam | contin | numeric | |
| V117 | income | Student's household average monthly income (Chilean Pesos) | contin | numeric | |
| V118 | mot_ed | Mother's education level | discrete | numeric | |
| V119 | mot_ed_y | Mother's education years | discrete | numeric | |

rscaoersa-2016-contact-v1

Content

Cases 96

Variable(s) 13

Structure
Type:
Keys: ()

Version

Producer

Missing Data

Variables

| ID | Name | Label | Type | Format | Question |
|------|------------|--|----------|---------|----------|
| V120 | id | Student ID | contin | numeric | |
| V121 | group | Comparison group | discrete | numeric | |
| V122 | gender | Gender | discrete | numeric | |
| V123 | age | Age | contin | numeric | |
| V124 | region | Region of origin | discrete | numeric | |
| V125 | attendance | Percentage of attendance of the student during the term | contin | numeric | |
| V126 | p_m | Presentation mark - before the exam | contin | numeric | |
| V127 | exam | Exam mark | contin | numeric | |
| V128 | f_m | Final mark - after the exam | contin | numeric | |
| V129 | income | Student's household average monthly income (Chilean Pesos) | contin | numeric | |
| V130 | mot_ed | Mother's education level | discrete | numeric | |
| V131 | mot_ed_y | Mother's education years | discrete | numeric | |
| V132 | reg_rec | Region of the student recoded | discrete | numeric | |

Student ID (id)

File: rscaoersa-2016-blended-v1

Overview

| | |
|------------------|------------------------|
| Type: Continuous | Valid cases: 62 |
| Format: numeric | Invalid: 0 |
| Width: 2 | Minimum: 2 |
| Decimals: 0 | Maximum: 63 |
| Range: 2-63 | Mean: 32.5 |
| | Standard deviation: 18 |

Comparison group (group)

File: rscaoersa-2016-blended-v1

Overview

| | |
|-----------------|-----------------|
| Type: Discrete | Valid cases: 62 |
| Format: numeric | Invalid: 0 |
| Width: 1 | |
| Decimals: 0 | |
| Range: 1-4 | |

Gender (gender)

File: rscaoersa-2016-blended-v1

Overview

| | |
|-----------------|-----------------|
| Type: Discrete | Valid cases: 62 |
| Format: numeric | Invalid: 0 |
| Width: 1 | |
| Decimals: 0 | |
| Range: 1-2 | |

Age (age)

File: rscaoersa-2016-blended-v1

Overview

| | |
|------------------|--------------------------|
| Type: Continuous | Valid cases: 62 |
| Format: numeric | Invalid: 0 |
| Width: 2 | Minimum: 19 |
| Decimals: 0 | Maximum: 65 |
| Range: 19-65 | Mean: 33.3 |
| | Standard deviation: 10.1 |

Presentation mark - before the exam (p_m)

File: rscaoersa-2016-blended-v1

Overview

| | |
|------------------|-------------------------|
| Type: Continuous | Valid cases: 57 |
| Format: numeric | Invalid: 5 |
| Width: 3 | Minimum: 2.9 |
| Decimals: 0 | Maximum: 6.7 |
| Range: 2.9-6.7 | Mean: 5.5 |
| | Standard deviation: 0.9 |

Exam mark (exam)

File: rscaoersa-2016-blended-v1

Overview

| | |
|------------------|-------------------------|
| Type: Continuous | Valid cases: 57 |
| Format: numeric | Invalid: 5 |
| Width: 3 | Minimum: 1.6 |
| Decimals: 0 | Maximum: 7 |
| Range: 1.6-7 | Mean: 5.6 |
| | Standard deviation: 1.3 |

Final mark - after the exam (f_m)

File: rscaoersa-2016-blended-v1

Overview

| | |
|------------------|-------------------------|
| Type: Continuous | Valid cases: 57 |
| Format: numeric | Invalid: 5 |
| Width: 3 | Minimum: 2.7 |
| Decimals: 0 | Maximum: 6.6 |
| Range: 2.7-6.6 | Mean: 5.5 |
| | Standard deviation: 0.9 |

StudentTM's household average monthly income (Chilean Pesos) (income)

File: rscaoersa-2016-blended-v1

Overview

| | |
|----------------------|------------------------------|
| Type: Continuous | Valid cases: 62 |
| Format: numeric | Invalid: 0 |
| Width: 7 | Minimum: 80000 |
| Decimals: 0 | Maximum: 3000000 |
| Range: 80000-3000000 | Mean: 723741.9 |
| | Standard deviation: 649457.2 |

MotherTM's education level (mot_ed)

File: rscaoersa-2016-blended-v1

Overview

| | |
|-----------------|-----------------|
| Type: Discrete | Valid cases: 60 |
| Format: numeric | Invalid: 2 |
| Width: 2 | |
| Decimals: 0 | |
| Range: 0-18 | |

MotherTM's education years (mot_ed_y)

File: rscaoersa-2016-blended-v1

Overview

| | |
|-----------------|-----------------|
| Type: Discrete | Valid cases: 60 |
| Format: numeric | Invalid: 2 |
| Width: 2 | |
| Decimals: 0 | |
| Range: 4-17 | |

Student ID (id)

File: rscaoersa-2016-contact-v1

Overview

| | |
|------------------|--------------------------|
| Type: Continuous | Valid cases: 96 |
| Format: numeric | Invalid: 0 |
| Width: 3 | Minimum: 1 |
| Decimals: 0 | Maximum: 106 |
| Range: 1-106 | Mean: 53.7 |
| | Standard deviation: 30.3 |

Comparison group (group)

File: rscaoersa-2016-contact-v1

Overview

| | |
|-----------------|-----------------|
| Type: Discrete | Valid cases: 96 |
| Format: numeric | Invalid: 0 |
| Width: 1 | |
| Decimals: 0 | |
| Range: 1-3 | |

Gender (gender)

File: rscaoersa-2016-contact-v1

Overview

| | |
|-----------------|-----------------|
| Type: Discrete | Valid cases: 96 |
| Format: numeric | Invalid: 0 |
| Width: 1 | |
| Decimals: 0 | |
| Range: 1-2 | |

Age (age)

File: rscaoersa-2016-contact-v1

Overview

| | |
|------------------|-------------------------|
| Type: Continuous | Valid cases: 83 |
| Format: numeric | Invalid: 13 |
| Width: 2 | Minimum: 18 |
| Decimals: 0 | Maximum: 54 |
| Range: 18-54 | Mean: 26.7 |
| | Standard deviation: 8.2 |

Region of origin (region)

File: rscaoersa-2016-contact-v1

Overview

| | |
|-----------------|-----------------|
| Type: Discrete | Valid cases: 96 |
| Format: numeric | Invalid: 0 |
| Width: 1 | |
| Decimals: 0 | |
| Range: 1-9 | |

Percentage of attendance of the student during the term (attendance)

File: rscaoersa-2016-contact-v1

Overview

| | |
|------------------|--------------------------|
| Type: Continuous | Valid cases: 96 |
| Format: numeric | Invalid: 0 |
| Width: 3 | Minimum: 61 |
| Decimals: 0 | Maximum: 100 |
| Range: 61-100 | Mean: 84.5 |
| | Standard deviation: 10.2 |

Presentation mark - before the exam (p_m)

File: rscaoersa-2016-contact-v1

Overview

| | |
|------------------|-------------------------|
| Type: Continuous | Valid cases: 96 |
| Format: numeric | Invalid: 0 |
| Width: 3 | Minimum: 2.8 |
| Decimals: 0 | Maximum: 6.8 |
| Range: 2.8-6.8 | Mean: 4.8 |
| | Standard deviation: 0.9 |

Exam mark (exam)

File: rscaoersa-2016-contact-v1

Overview

| | |
|------------------|-------------------------|
| Type: Continuous | Valid cases: 84 |
| Format: numeric | Invalid: 12 |
| Width: 1 | Minimum: 1 |
| Decimals: 0 | Maximum: 8 |
| Range: 1-8 | Mean: 5.2 |
| | Standard deviation: 1.2 |

Final mark - after the exam (f_m)

File: rscaoersa-2016-contact-v1

Overview

| | |
|------------------|-------------------------|
| Type: Continuous | Valid cases: 96 |
| Format: numeric | Invalid: 0 |
| Width: 3 | Minimum: 2.5 |
| Decimals: 0 | Maximum: 6.8 |
| Range: 2.5-6.8 | Mean: 5 |
| | Standard deviation: 0.8 |

Student's household average monthly income (Chilean Pesos) (income)

File: rscaoersa-2016-contact-v1

Overview

Student€™s household average monthly income (Chilean Pesos) (income)

File: rscaoersa-2016-contact-v1

Type: Continuous

Format: numeric

Width: 6

Decimals: 0

Range: 50000-900000

Valid cases: 83

Invalid: 13

Minimum: 50000

Maximum: 900000

Mean: 364216.9

Standard deviation: 171912.6

Mother€™s education level (mot_ed)

File: rscaoersa-2016-contact-v1

Overview

Type: Discrete

Format: numeric

Width: 2

Decimals: 0

Range: 0-18

Valid cases: 80

Invalid: 16

Mother€™s education years (mot_ed_y)

File: rscaoersa-2016-contact-v1

Overview

Type: Discrete

Format: numeric

Width: 2

Decimals: 0

Range: 2-17

Valid cases: 80

Invalid: 16

Region of the student recoded (reg_rec)

File: rscaoersa-2016-contact-v1

Overview

Type: Discrete

Format: numeric

Width: 1

Decimals: 0

Range: 0-1

Valid cases: 83

Invalid: 13

Documentation

Technical documents

ROER4D [SP9] dataset description

Title ROER4D [SP9] dataset description
Author(s) Werner Westermann
Date 2015-01-01
Country Chile
Language English
Contributor(s) This is the technical report on the study
Filename rscaoersa-2016-description.pdf

Variable description of the Impact Analysis Data Base

Title Variable description of the Impact Analysis Data Base
subtitle Students blended
Country Chile
Language English
Filename rscaoersa-2016-variable-description-students-blended.pdf

Variable description of the Impact Analysis Data Base

Title Variable description of the Impact Analysis Data Base
subtitle Students contact
Country Chile
Language English
Filename rscaoersa-2016-variable-description-students-contact.pdf
