

Open Educational Resources

Mathematics and Engineering

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OERs and M.E.

- But first, a word of caution...
- This whole OER idea will be a fantastic disaster...If there is not faculty buy in!
- I am soooo grateful to the math faculty for their support. A vote was taken and it had 80-85% approval.
- Our OER is MyOpenMath (M.O.M).

OERs and ME

- We ran a pilot in summer 2016 for 2 sessions of our Basic Arithmetic (Mat 80) class (lowest level).
- Textbook cost: \$20.00 per student (including software).
- The previous summer the textbook cost was \$234.00 (including software).

Data from 1st OER Math 80 Pilot (2016)

- Summer 2015 (non-OER)
 - Day class: $20/24 = 83\%$.
 - Night class: $13/17 = 77\%$
 - Totals: $33/41 = 81\%$
- Summer 2016 (OER/MOM)
 - Day class: $12/14 = 86\%$
 - Night class: $13/19 = 68\%$
 - Totals: $25/33 = 76\%$

Same 2 sections, same instructors.

BCCC OERs and ME

- The next semester (Fall 2016) we did not expand the use OERs because we had yet to find a textbook for our Introductory and Intermediate Algebra.
- ... And in math, we wanted textbooks.

OERs in the Fall Semester 2016

- Fall 2016 (OER)
- Mat 80 had 4 sections.
- 51/83 passed
- 61%
- Fall 2015 (non-OER)
- Comparing the same 4 sections.
- 51/82 passed
- 62%
- If counting all Basic Arithmetic sections:
 - $121/215=56\%$

OERs in the Spring Semester 2017

- While attending AMATYC in New Orleans, 2016 I found an OER textbook for Introductory and Intermediate Algebra.
- After looking it over our department agreed to expand the OER use for Introductory Algebra (Mat 91) in the spring 2017.
- They also agreed to use it in Intermediate Algebra (Mat 9) beginning in the Summer 2017.

Cost Comparison Spring 2016

- Spring 2016 Mat 91 textbook cost \$262.30.
- $\$262.30 \times 236$ students...
- \$61,902.80 cost to students.
- OER cost would have been $\$32.50 \times 236 = \$7,670.00$

Cost Comparison Spring 2017

- Spring 2017 OER F2F Mat 91 enrollment was 105 students. $\$32.50 \times 105$ students ...
- \$3,412.50 cost to student.
- If we did not switch this spring:
- $\$262.30 \times 105$ students...
- \$27,541.50.

Cost Comparison Spring 2017

- We saved students \$24,129.00 spring semester! For one course!
- What were the results of this \$24,129.00 savings?

OERs in the Spring Semester 2017

- Spring 2016 (non-OER)
- Mat 91 had 14 F2F sections
- $111/198 = 56\%$ passed F2F sections.
- $125/236 = 53\%$ including 3 online sections.
- Spring 2017 (non-online OER section).
- Mat 91 had 7 F2F OER sections.
- $55/105 = 52\%$ passed.
- $62/127 = 49\%$ including 1 online section.

Digging Deeper

- Again, spring 2017
Mat 91 had 7 F2F
OER sections.
- $55/105 = 52\%$
passed.
- Comparing the exact
same 7 sections from
spring 2016.
- $55/102 = 54\%$
passed.

I especially like those numbers when you consider it was the first Mat 91 semester and it was offered thru Canvas.

BUT...

- The result that has most meaning for us is how students perform in the *next* semester...
- So we will need results from fall 2017 to make that comparison.
- Here is one interesting statistic however...

BUT...

- Those students who passed mat 91 in spring 2016 only 71/125, 57%, took a math class next semester. Of those, 33/71, 46% passed.
- Let's hope MOM doesn't bring that number down.

Summer 2017

- We welcomed 83 H.S students in the P-TECH (Pathways in Technology Early College High school) program to BCCC.
- They took Statistics and the program's budget could not pay for a \$238.50 book so they used the OER book, \$32.70.

Summer 2017

- 53/83 received an A, B or C. 64% rate.
- In Spring 2017, with the \$238.50 textbook, our A,B,C rate was 194/305. 55% rate.
- Clearly, the OER caused no problems for our HS students.

Fall 2017

- In fall 2016 Statistics (Mat 107) was the 3rd most enrolled course at BCCC (362 students).
- It had an A,B,C success rate of 62% (15 lowest).
- The textbook and software cost \$238.20.
- Currently, we are using the summer OER textbook for 4 sections of Statistics.

Fall 2017

- We also have 4 sections of College Algebra and two of them are using an OER book.
- \$267.20 vs. \$16.90

Other subjects...

- I will go out on a limb and make this statement:
- If students did OK with OERs in a math class...
- I believe they will do OK in virtually all other subject matters as well.

MOM (MyOpenMath)

- The software that we use with our OER is:
 - www.myopenmath.com

- Other math OERs can be found at:
 - www.opentextbookstore.com

- “Anything for Sofya”

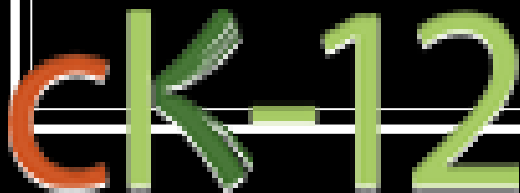
OER Pros

- MUCH, MUCH cheaper for student
- Instructors never have to buy new editions.
- Research has reported a 10% increase in successful completion because all students actually had the book!
- OER promote equality by ensuring students had all materials from first day and throughout the semester.

OER Cons

- MUCH, MUCH more preparation required by professors (up to 100 hrs, first time only).
- This time could possibly double if offering an online class.
- MOM is not as robust as MLP.
- Instructors will have to create more supplemental material as well.
- Less revenue for the college via the bookstore.
- Faculty will have to get their own books.

Open Content Repositories



OER Organizations & Resources

- OER Commons <http://www.oercommons.org/>
- OpenStax <http://openstaxcollege.org/>
- Open Education Consortium <http://www.oecconsortium.org/>
- Open Course Library <http://www.opencourselibrary.org/>
- College Open Textbooks <http://www.collegeopentextbooks.org/>
- Saylor Academy <http://www.saylor.org>
- Howard Hughes <http://www.hhmi.org>
- MERLOT <http://www.merlot.org>
- Open Textbook Library <http://open.umn.edu/opentextbooks/>
- BC Campus <http://open.bccampus.ca/>
- CCCOER <http://www.oerconsortium.org/>
- MIT OCW <http://ocw.mit.edu/index.htm>
- Lumen Learning <http://lumenlearning.com/>
- Creative Commons <http://creativecommons.org/>

Also see Khan Academy, TedEd, YouTube, Internet Archive, Wikipedia, Google, etc.

Questions?

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