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Lessons in Adopting OER in a Biology Course

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Lessons in adopting OER in a Biology Course @ NSCC

Young Bae Kim, Ph.D.

— North Shore Community College —

NE OER Summit 2018

Switching to OER course

Some courses are:

- Great – better as an OER course
- Easy
- Doable
- Challenging
- Giving you tons of trouble

Switching to OER course

Is it truly something

- Worth your time and extra work?
- Helping students learn better and more?
- Students like? (Really?)
- Worth the money students save?
- Fit your need and above all your course objectives?

Affordable @ NSCC

- NSCC Open Textbook Initiative
- NSCC offers many OER courses.
 - No/Low-cost course – less than \$40
 - \$232,588.40 savings to date (Dec. 2017)
- Affordable Options
 - Open Educational Resources
 - eBooks
 - Library Digital Resources
 - Library Course Reserves
 - Publisher Direct Digital Access

Non-affordable Biology courses @ NSCC

- Non-majors and science majors courses
- ~100 section and 2,000 students a year
- Required course materials
 - Course textbook – \$200-\$400
 - Lab manual – \$70-\$200
 - Publisher's online access code
 - Multiple texts often required

**NO OER course before
the Fall, 2017**



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Affordable Biology courses @ NSCC

- ✓ Bio105, the Major's General Biology 1
 - *1st no/low-cost (OER) biology course*
 - *Information rich, challenging, demanding and difficult! Pre-req for everything*
- ✓ 3 years long preparation: ~300-400 hours of work due to the lack of acceptable quality OER textbooks

Affordable options - biology course

- OpenStax, Boundless, Khan Academy *etc.*
 - Not as great as expected (not even close to your expectation), at best mediocre.
 - Partial, incomplete, difficult to navigate, *etc.*
 - Too many clicks required – Khan Academy
- Cheap books
 - Cell Biology for Dummies or earlier editions of more expensive textbooks
- Youtube and webpages

Affordable options - biology course

Previous versions or editions

Include in the search result

Publication date

- 1 year
- 5 years
- 10 years
- Custom range...

Added to Bookshelf

- 60 days
- 1 year
- 5 years
- Custom range...

Resource types






- Report
- Book
- Collection
- Documentation
- Database

Clear all

Show additional filters

Display Settings: Summary, 20 results per page, Sorted by Relevance

Results: 1 to 20 of 1396 books

-  [Molecular Biology of the Cell](#)
Alberts B, Johnson A, Lewis D, et al., editors.
New York: Garland Science; 2008.
▶ [Top results in this book](#)
-  [Molecular Cell Biology](#)
Lodish H, Berkman M, Zipursky L, et al., editors.
New York: W. H. Freeman & Co.; 2008.
▶ [Top results in this book](#) [Table of Contents](#)
-  [Autoimmunity: From Bench to Bedside \[Internet\]](#)
Anaya JM, Shoenfeld Y, Rojas-Villarraga A, et al., editors.
Bogota (Colombia): El Rosario University Press; 2013 Jul 18.
▶ [Top results in this book](#) [Table of Contents](#)
-  [The Cell: A Molecular Approach. 2nd edition](#)
Cooper GM.
Sunderland (MA): Sinauer Associates; 2000.
▶ [Top results in this book](#) [Table of Contents](#)
-  [Madame Curie Bioscience Database \[Internet\]](#)
Austin (TX): Landes Bioscience; 2000-2013.
▶ [Top results in this book](#) [Table of Contents](#)

- Great collection
- 10~20 years old materials (still usable and great)
- too high level for the course

See more (140)...

Search details

```
"molecular biology"[KWWD] OR  
("molecular"[All Fields] AND "biology"  
[All Fields]) OR "molecular biology"  
[All Fields]
```

Search

See more...

Recent activity

Turn Off Clear

Affordable options - biology course

- The biggest (and practical) challenge of adopting any of these resources

No Instructor resource (lecture slides, quiz/exam problems, *etc.*)

- Develop new (my own) instructor materials – slides, quiz/exam problems and handouts, lab manual, *etc.* → **3 years**

Biology texts depend heavily on visual materials.

– Figures, photos, graphs, multimedia components, *etc.*

Generating OER Biology course

- Course materials
 - Text
 - OpenStax Biology
 - NCBI Bookshelf texts – on as needed basis
 - Webpages – on as needed basis
 - youtube videos – CC-BY only
 - No hardcopies – NSCC no/low-cost course
- Cost of all required materials: **less than \$40**

Generating OER Biology course

OER Content Tracker_Bio105_R.xlsx - Excel

Young Bae Kim

File Home Insert Page Layout Formulas Data Review View Help ACROBAT Search Share

Clipboard Font Alignment Number Styles Cells Editing

	A	B	C	D	E	F
1		All materials - creative commons materials indicated otherwise.				
2	Content	URL				
3	OpenStax OER Biolo	http://cnx.org/contents/GFy_h8cu@10.61:7MmMR-pY/Introduction	chapter 15			
4	OpenStax OER Biolo	http://cnx.org/contents/GFy_h8cu@10.61:mg3jT_xX@3/Introduction	chapter 16			
5	RNA transcription	https://www.ncbi.nlm.nih.gov/books/NBK22085/	NCBI bookshelf			
6	RNA transcription 2	https://www.ncbi.nlm.nih.gov/books/NBK26887/	NCBI bookshelf			
7	Post-transcriptional	https://www.ncbi.nlm.nih.gov/books/NBK26890/	NCBI bookshelf			
8	Protein translation	https://www.ncbi.nlm.nih.gov/books/NBK9849/	NCBI bookshelf			
9	Protein translation 2	https://www.ncbi.nlm.nih.gov/books/NBK26829/	NCBI bookshelf			
10	Post-translational m	https://www.ncbi.nlm.nih.gov/books/NBK21741/	NCBI bookshelf			
11	Post-translational m	https://www.thermofisher.com/us/en/home/life-science/protein-biology/p	Non OER or CC			
12	DNA to proteins	https://www.youtube.com/watch?v=LqHnOn3Pk-w				
13	Translation	https://www.youtube.com/watch?v=lkq9AcBcohA				
14	Epigenetics	https://www.youtube.com/watch?v=Tj_6Dc1UTRnM				
15	Epigenetics 2	https://www.youtube.com/watch?v=eYrQ0EhVCYA				
16						

Molecules of genetics

Flow of genetic information

Ready

100%

Generating OER Biology course

- **In the beginning.....**
- Mission accomplished!! – Be proud!!
- Students love it!!!! – especially, at the time of registering
 - Some students choose a no/low-cost section over traditional sections of the same course.
 - Immediate access to course materials from the first day of classes
 - Any Wi-Fi enabled device to be used

But, but, but.....

- **Now face the reality**
- Students love fades away pretty quickly – within a month students will start to bother instructors with:
 - Non-working web pages, hyperlinks, non-HD video quality, volume too high/too low, color looks weird, my dog chewed my internet router.....

But, but, but.....

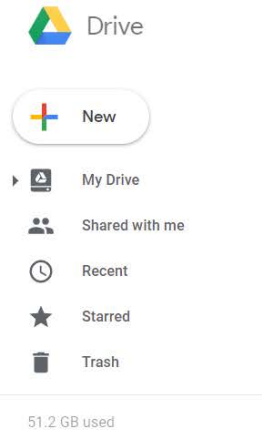
- Many students prefer printed hard copies - not cheap at all (then no need to have OER)
 - Think about this: older edition of a commercial publisher's textbook – often around \$10
 - **Navigating and using multiple materials – new to students too!**

Take-away lessons

- One of the biggest drawbacks – no college bookstore support
 - No financial aid, VA (GI) money, *etc.*
- Another drawbacks (actually more serious problem to instructors)
 - No free lunch – no quiz questions, no test problem sets, no handouts, *etc.* → *I had generated, but tested in the class*
 - Constant maintenance of the course contents is required → **time-consuming!!!!**

Let us take a look at a example!

Materials for a single chapter



Drive

New

My Drive

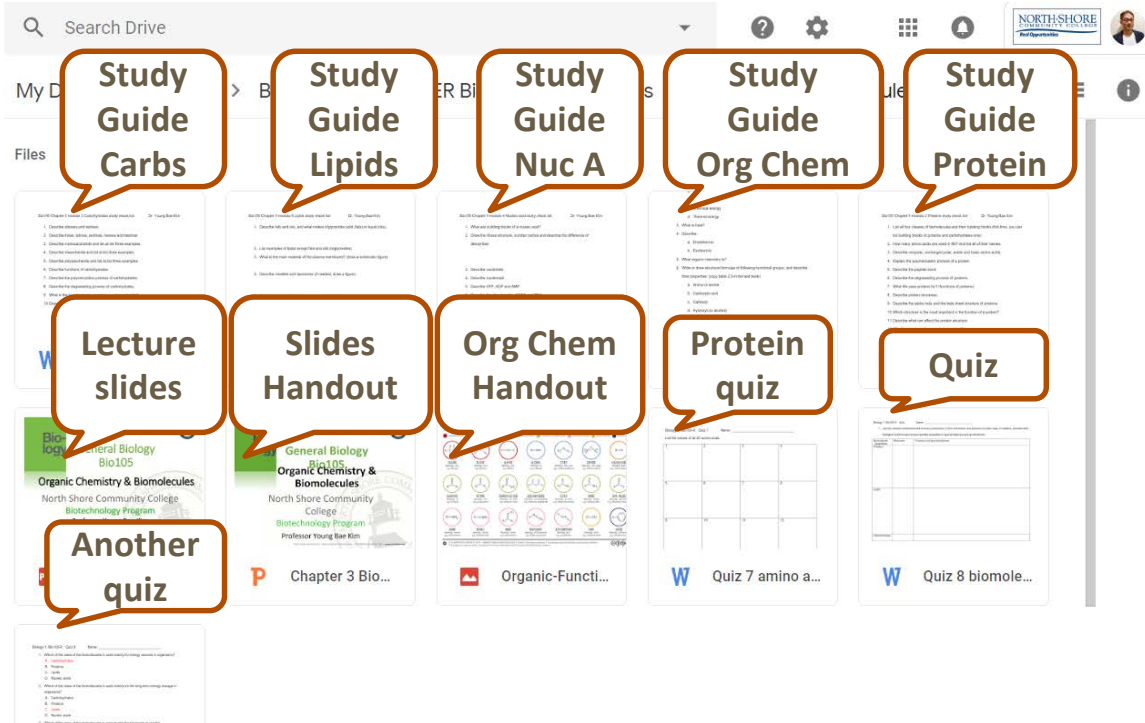
Shared with me

Recent

Starred

Trash

51.2 GB used



Search Drive

Study Guide Carbs

Study Guide Lipids

Study Guide Nuc A

Study Guide Org Chem

Study Guide Protein

Lecture slides

Slides Handout

Org Chem Handout

Protein quiz

Quiz

Another quiz

General Biology Bio105

Organic Chemistry & Biomolecules

North Shore Community College

Biotechnology Program

Professor Young State Kim

Chapter 3 Bio...

Organic-Functi...

Quiz 7 amino a...

Quiz 8 biomole...

Take-away lessons and thoughts

- Which is worth your time?

Maintaining, preparing
and polishing
(publisher's) high
quality course
materials for a regular
course

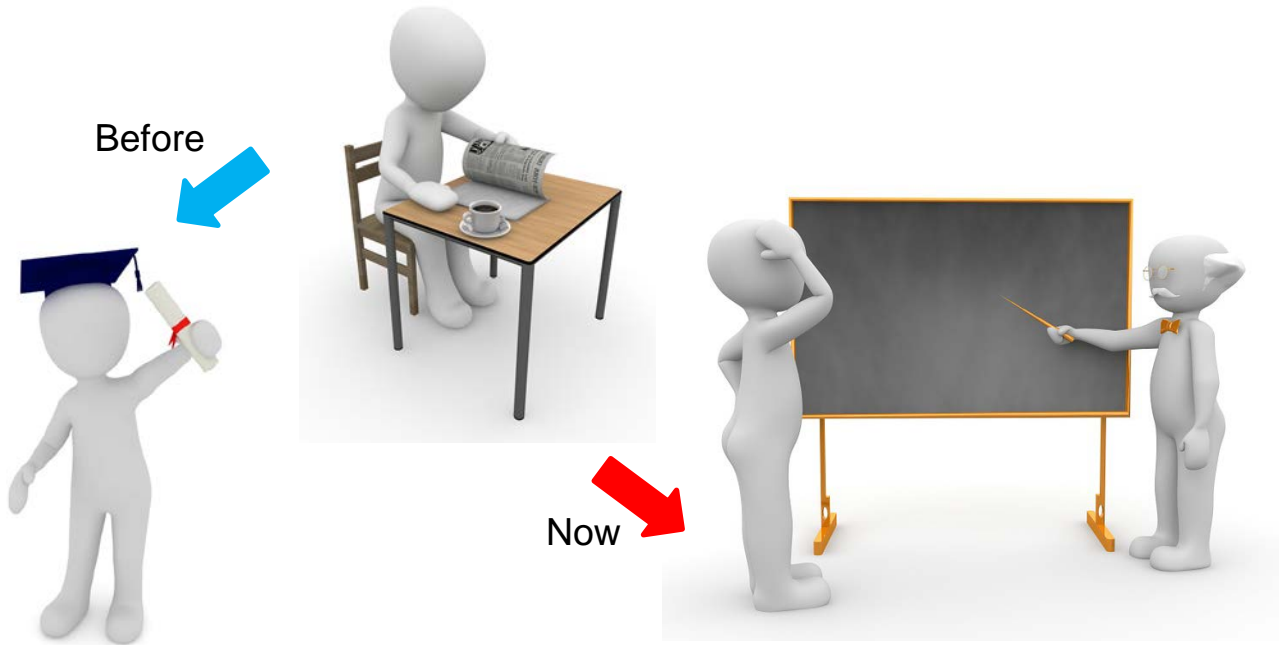
vs

Generating, finding,
adopting, and
maintaining (your)
low/no-cost materials
for an OER course

- or Which could produce a better course outcome?

Take-away lessons and thoughts

- Mind the preparedness and capability of students
- Dire situation (enrollment keeps going down)



Students are busier than ever

Make life easier (even at some expense)

- Now more than a half of NSCC Biotechnology students are part-time credit takers (increased from ~30% in 2012).
- Full-time students are also working! – part-time or even full-time.
- No time to extra work (even a couple of more clicks).
- Under-prepared – simple math, writing and others

Take-away lessons and thoughts

- Hard science course – challenging and demanding and of high-stake even with high quality materials
 - Students – nervous about everything; even with a low grade, a student blames others (not themselves)
- Pointing at and blaming the texts or their instructor (for every missing thing!!)



pixabay CCO

**Babysitting needed!!
(even more time-consuming)**

Take-away lessons and thoughts

- Even with every possible effort made

A year before
(regular course)

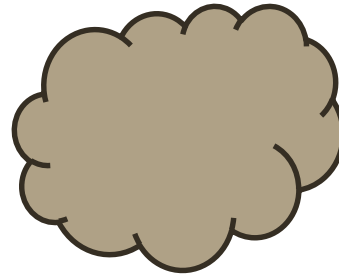


A year later
(OER course)



FindMeLost, CC-AS

vs



End of semester course evaluation by students
– student satisfaction went down significantly

- OER section must compete with other sections of the same course

Take-away lessons and thoughts

Suggestion!!

- Strategy for the course evaluation
- Having someone who is to blame for anything!!!!
- Expect extra workload!!



- **Administration!!! → stipend!!!!**

There have been many grant opportunities for developing OER → but no stipend/grants for actually adopting OER for a course (at least @NSCC)

Take-away lessons and thoughts

Was it worth?

- Definitely **'YES'** for the reasons we are told during this OER summit!!!

Am I going to use the OER again for the course?



Sadly 'NO'

Not because of the extra work, evaluation fear, *etc.* But because of the students preparedness and capability I expect for the science major's course this fall semester.

Suggestions to generate a better OER Science Course

One stop shopping	Collect and post everything on LMS, no more than 2~3 clicks
Minimum resources	Have one major resource
Check list	Have students responsible for checking and studying with correct materials
Support person	Have someone who complaints and blames can be directed to
Cooperation (or outcompetition)	Have other instructor's section(s) use similar OER
Backup plan	Have a high quality conventional text available if OER does not work