The Importance of Open Educational Resources (OER) & Active Learning for Student Success

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Outline

• Student success and the educator role
  1. Open education resources
     • Textbooks
     • Peer collaboration
  2. Generative learning skills
     • Self-testing strategies
  3. Active learning techniques
     • Technology in the classroom
A vision of students today

https://www.youtube.com/watch?v=dGCJ46vyR9o

After watching the video, discuss the following:
1. What factors define student success?
2. List 4-5 barriers to student success?
3. Based on the information and statistics in the video, what are some areas that we as educators can target (in the classroom) to enhance student success?

Student success requires...

1. Reducing barriers to education
2. Emphasizing the importance of generative learning skills
3. Bringing fun into the classroom with active learning techniques
Open educational resources

Our role as educators

[Diagram showing roles and responsibilities]

https://extend.ecampusontario.ca/
Why use open educational resources (OER)?

• To increase access to higher education
• Remove barriers to resources
• Reduce student costs
• Allow faculty more control over their instructional resources

Benefits of OER

5000 post-secondary students using OER
11,000 control students using commercial textbooks
10 institutions across U.S.
15 different undergraduate courses

3 measures of success:
1. course completion
2. final grade of C- or higher, and
3. course grade
OER textbooks in the classroom

Adapting a textbook → generative learning skills

OER involves more than textbooks...

- Project files
- Learning activities
- Assessments
- Homework help
- Powerpoint decks
OER collaborations

ChemWiki: The Dynamic Chemistry E-textbook
- Most visited chemistry website in the world

Welcome to the Chemistry LibreTexts Library
This Living Library is a principal hub of the LibreTexts project, which is a multi-institutional collaborative venture to develop the next generation of open-access texts to improve postsecondary education at all levels of higher learning. The LibreTexts approach is highly collaborative where an Open Access textbook environment is under constant revision by students, faculty and outside experts to replace conventional paper-based books.

- Course LibreTexts
- TextBooks & TextMaps
- Homework Exercises
- Worksheets
- Exemplars and Case Studies
- Visualizations and Simulations
- Demos, Techniques, and Experiments

My Open Textbook

• **Robin DeRosa**, Plymouth State University
• With students, she built a textbook using the Pressbooks platform
• Public digital note-taking in class
My Open Textbook

http://robinderosa.net/wp-content/uploads/2016/05/Hypothesis-copy.png

Roundup of the Geography Open Textbook Sprint

If you are looking for the finished Geography textbook, BC in a Global Context, it is available in our open textbook library.

On June 9th, 2014 a group of educators and technologists gathered at the University of British Columbia with a unique challenge: create a first year university level Geography open textbook in just four days.

The collaborative authoring model is known as a book sprint. Inspired by code sprints from the software development world, the goal of a book sprint is to create a book from scratch in a very short time frame.

The event was facilitated by BookSprint, and organized by BCcampus.

For more information about book sprints and the event itself, take a look at these resources:

- The #bcbooksprint Twitter hashtag
- A Sprint Thru the Pages - CTLT UBC
- How to turn a great idea into a textbook in just 4 days - BCcampus
- Clint Lalonde (BCcampus): Reflections on an Open Textbook Sprint- OER Research Hub
- BCcampus and BookSprint Flickr accounts
- Live blog of the event: open.bccampus.ca/tag/booksprint

https://open.bccampus.ca/2014/07/03/book-sprint/
The “Great Psychology Test Bank Sprint” offers new OER for instructors

September 9, 2014

B.C. now has its first psychology open test bank to complement our existing psychology open textbooks: 851 questions on 15 topics, created over two days by a dedicated team of instructors.

Rajiv Jhangiani, Ph.D.
Open Education, SoTL, Psychology

Well, we did it. Seventeen psychology faculty from six post-secondary institutions in British Columbia came together on July 18 & 19 and worked intensively for two days to create a testbank designed to accompany open textbooks for introductory psychology. As I have previously written about, the absence of ancillary materials (a testbank most of all) presents a significant challenge to instructors who wish to adopt an open textbook.

Visual course syllabi

Visualizations ➔ generative learning skills

https://twitter.com/seankheraj/status/936319063290269696
The power of OER

“….Results indicated that the majority of the faculty have benefited from course materials (syllabus, reading pack, presentation files, quizzes, etc.) available on the Internet. They have a very strong consensus on potential benefits of freely publishing course materials. The most agreed upon benefit of OER among participants was the opportunity to access and learn from more experienced faculty members’ materials.”

- Kursun et al., 2014 on OER


Generative learning skills
Truth or Lie?

“Our brain prefers images over text. According to neuroscience research, participants in studies only remember about 10% of information presented orally when they are tested 72 hours after instruction. However, that number jumps by about 65% when an image is added to the learning process.”

Truth

“Our brain prefers images over text. According to neuroscience research, participants in studies only remember about 10% of information presented orally when they are tested 72 hours after instruction. However, that number jumps by about 65% when an image is added to the learning process.”

What type of learner are you?

This is how we normally like to teach...

Generative learning theory

Learning:
“An act of construction, in which people invest effort after meaning by integrating new experiences with their existing knowledge, structures or schemas.”

Select-organize-integrate


8 drivers of metacognition

Self-testing strategies

SELF-TESTING
11% of college students use self-testing as a learning strategy; 1% say it is their top strategy

RE-READING
84% of college students re-read material to learn it; 55% say it is their top strategy


Self-testing vs re-reading

“. . . learning involves actively constructing meaning from to-be-learned information by mentally reorganizing it and integrating it with one’s existing knowledge.”

“. . . generative learning depends not only on how information is presented to learners (i.e., instructional methods) but on how learners try to make sense of it (learning strategies).”

How I use my OER textbook to enhance generative learning

1. Image-only lectures

[Diagram of a bacteria cell with labels for Capsule, Pili, Cell wall, Cell membrane, Ribosome, Chromosome (DNA), Nucleoid region, and Flagellum.]

https://openstax.org/details/books/biology-2e
1. Image-only lectures

Which of the 8 metacognition strategies were used in image-only lectures?

- Summarizing
- Self-explaining
- Self-testing
- Teaching
- Mapping
- Drawing
- Imagining
- Enacting
2. Group presentation projects
2. Group presentation projects

Assignment options?

Which of the 8 metacognition strategies were used in group presentation projects?

- Summarizing
- Self-explaining
- Self-testing
- Teaching
- Mapping
- Drawing
- Imagining
- Enacting
Activity on generative learning

1. On your own, answer Q1 on your activity sheets.

2. Your group has been given an assignment summary.

ON THE WHITEBOARD:

A) Make a list of the skills a student would need (think of all the tasks they would have to undertake) to be able complete this assignment.

B) Put a tick beside the things you don’t explicitly teach the students how to do because you assume the student(s) already know how to do these things successfully.

Activity examples

1. “Write a 1000-word research essay on the globalization of health care, focused on innovations in a single country of your choice. Please cite your sources using APA format.”

2. “With a partner, create a 30-second stop-motion animation using any 2-D or 3-D material that demonstrates at least two of the gestalt principles.”

3. “Give a 20-minute group presentation that identifies a problem in technology design and suggests three possible solutions.”
Activity reflection

3. Take two minutes to jot down at least 3 things you can do in class or as part of an assignment to encourage in your students an awareness of their own learning behaviors.

Active learning techniques
Bringing fun into the classroom with active learning techniques

Activities that bring fun into the classroom

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<td>Specific class activities</td>
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<td>Kahoot Video clips Drawing/labeling Crosswords Image-only lectures</td>
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<td>Case studies Skits Dissections Field trips Student teaching</td>
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Games: kahoot.it

Example of Kahoot
Online Labs: learngenetics.com
Endoplasmic Reticulum

Surface Area
The ER makes up roughly half the membrane in a cell. So there's a lot of surface area to perform chemical reactions and store important enzymes in the smooth ER.

Ribosomes Build Proteins
Ribosomes carrying RNA from the nucleus attach to the rough ER. Here they read the RNA molecules and translate them into proteins that will carry out jobs in a cell membrane or outside of the cell.

Packing Proteins
Freshly made proteins and fats are packed into vesicles and sent from the ER to the Golgi apparatus.
Presentation summary

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