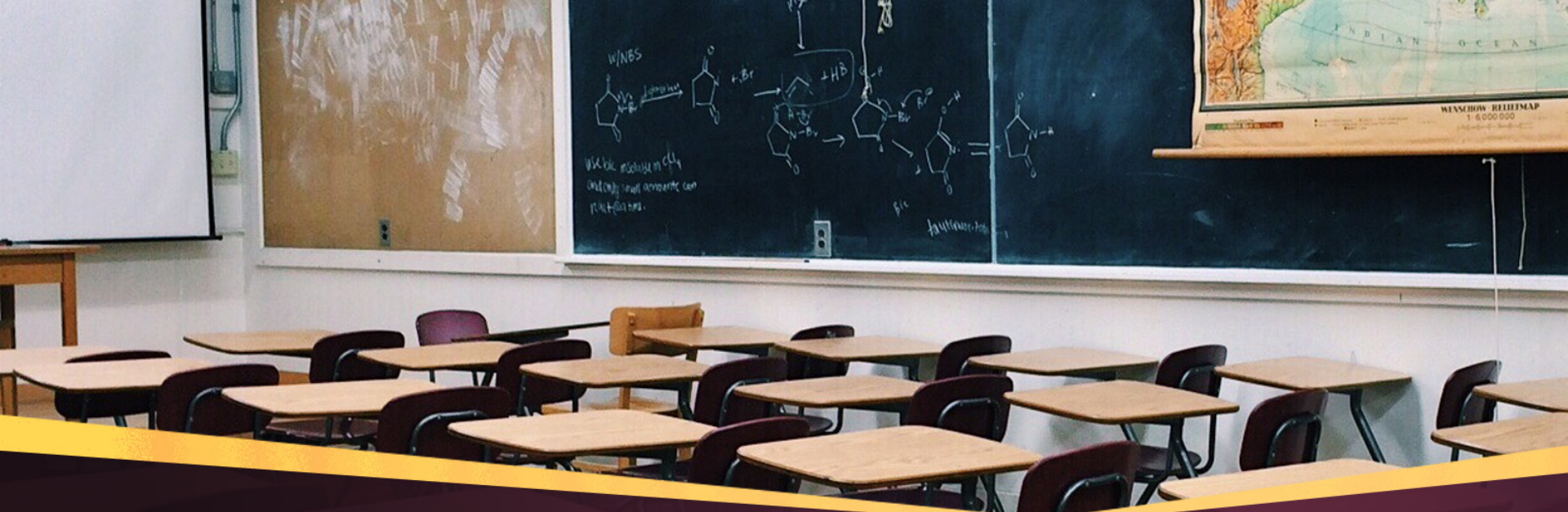


The World of Open

Yang Wu, Open Resources Librarian, Clemson Libraries
305E Cooper Library, ywu9@clemson.edu



Defining “Open”:

Open Educational Resources



Textbooks



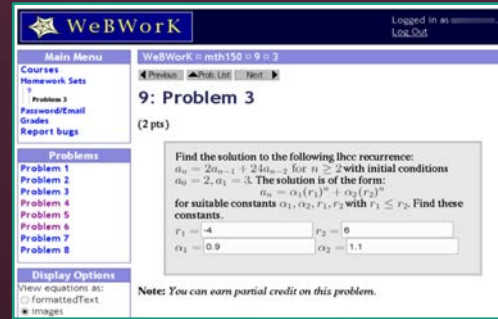
Courses/Courseware



Interactive Simulations/labs



Videos

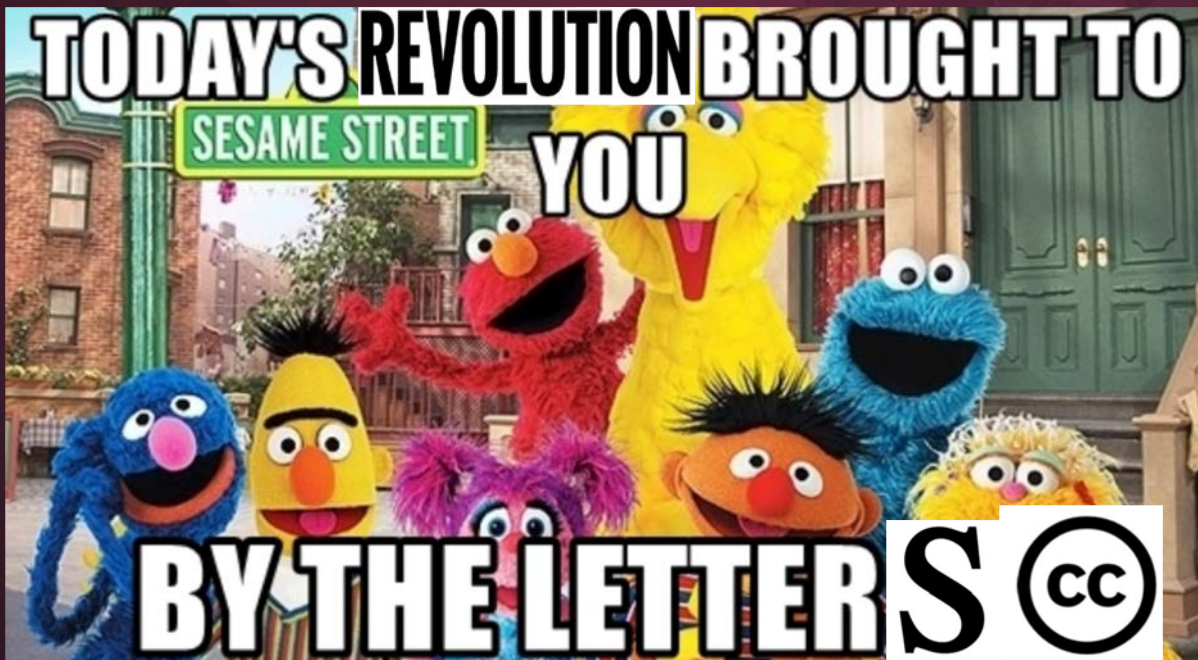


Open Source Homework Systems



Technologies for Open Creation





Creative Commons

Open License:

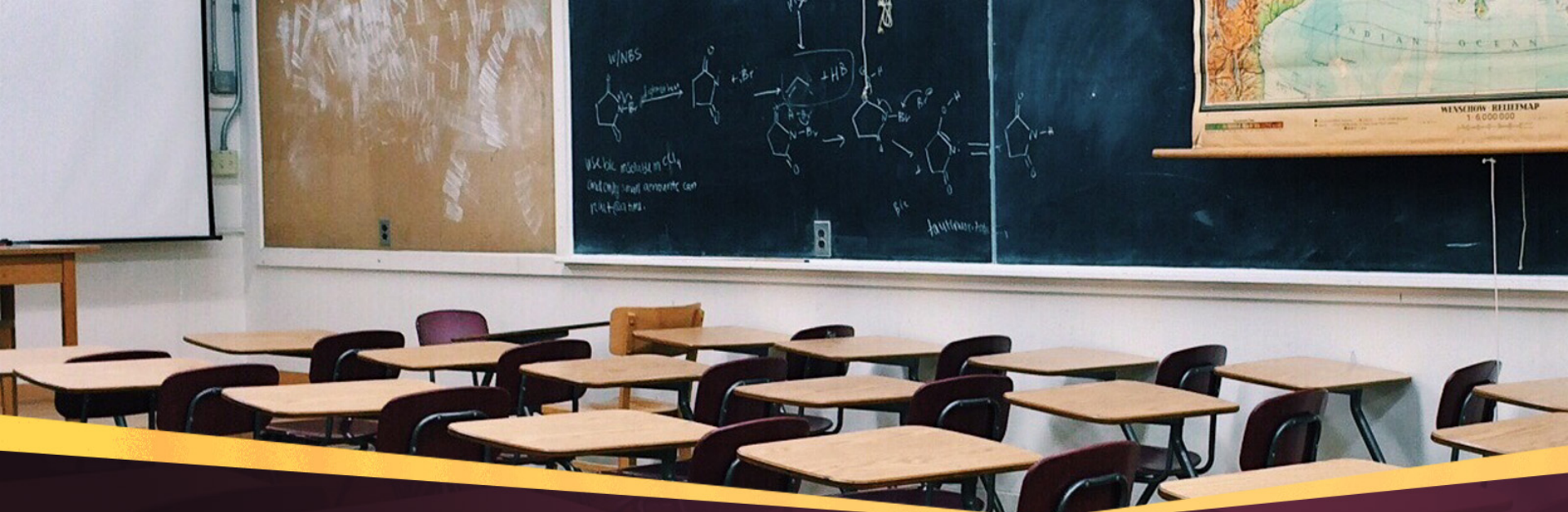
- Document that lets people use or modify a work for free.
- Allows copyright owners to set permissions and restrictions on how their works can be used.
- Response to current academic publishing.





5 Rs

- **Retain**- make, own, and control copies of the content (e.g., download, duplicate, store, and manage)
- **Reuse**- use the content in a wide range of ways (e.g., in a class, on a website, in a video)
- **Revise**- adapt, adjust, modify, or alter the content itself (e.g., translate into another language)
- **Remix**- combine the original or revised content with other material to create something new (e.g., a mashup)
- **Redistribute**- the right to share copies of the original content, your revisions, or your remixes with others (e.g., give a copy to a friend)



Benefits of Open



1. Supporting Student Learning

- Addresses basic needs of students
- Overcoming imposter syndrome
- Ensuring that students read textbooks



OpenStax



Lumen
Learning



LibreTexts

2. Giving Instructors Flexibility

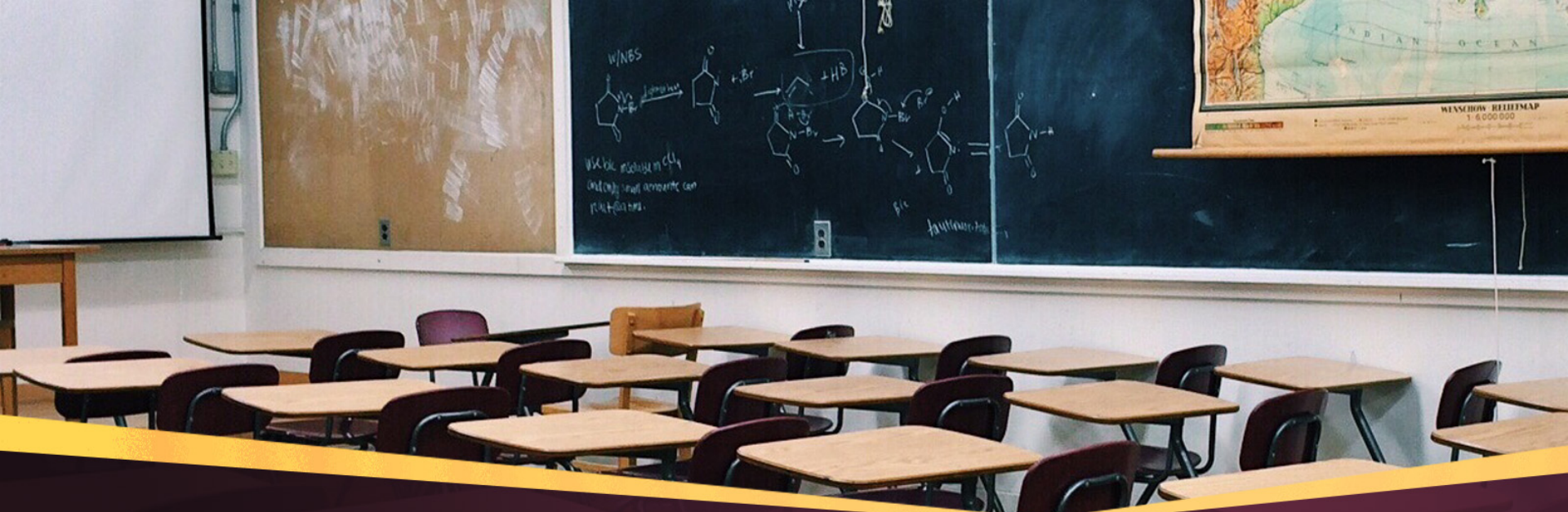
- Designing the ideal learning materials for students





3. Guiding Students to CT

- Foster active and critical self reflection
- Foster group reflective dialogue
- Develop new learning experiences



What is Open Pedagogy?

- Creative approach to undergraduate education
- Combines creative educational practices and new technologies
- Practiced by hundreds of instructors across the nation



Inquiry based, real life learning
(Constructivism)



Learner choice/collaborative learning
and student creation of learning
content

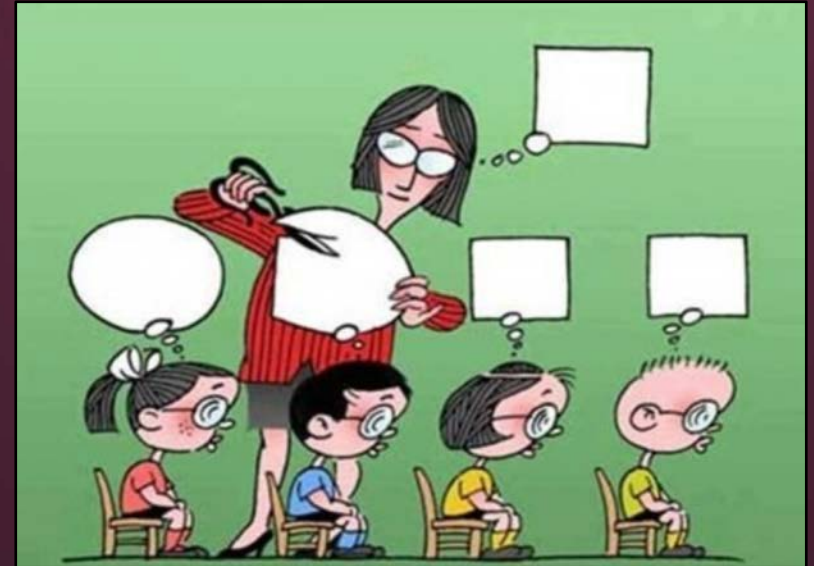
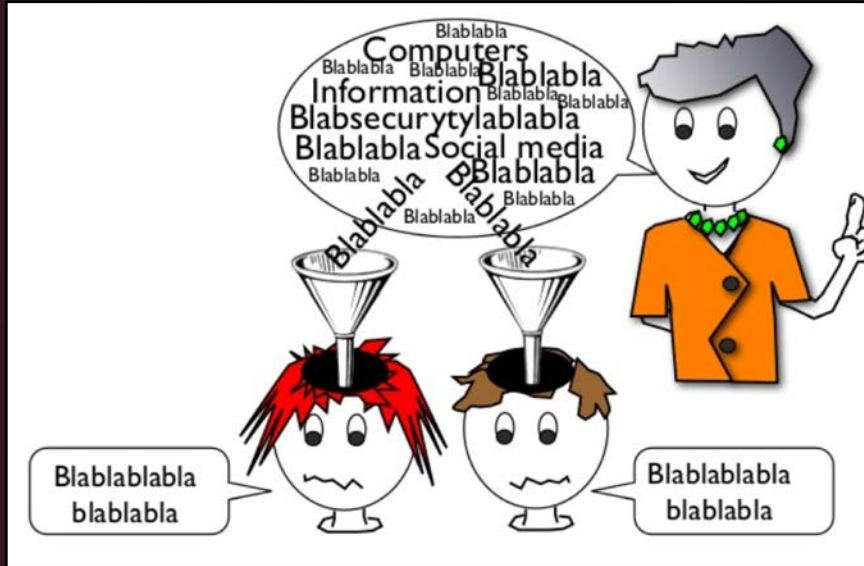


Critical thinking (Critical
Pedagogy)



Facilitate connections
across the boundaries of
learning experiences

Rejection of the “banking” model of education

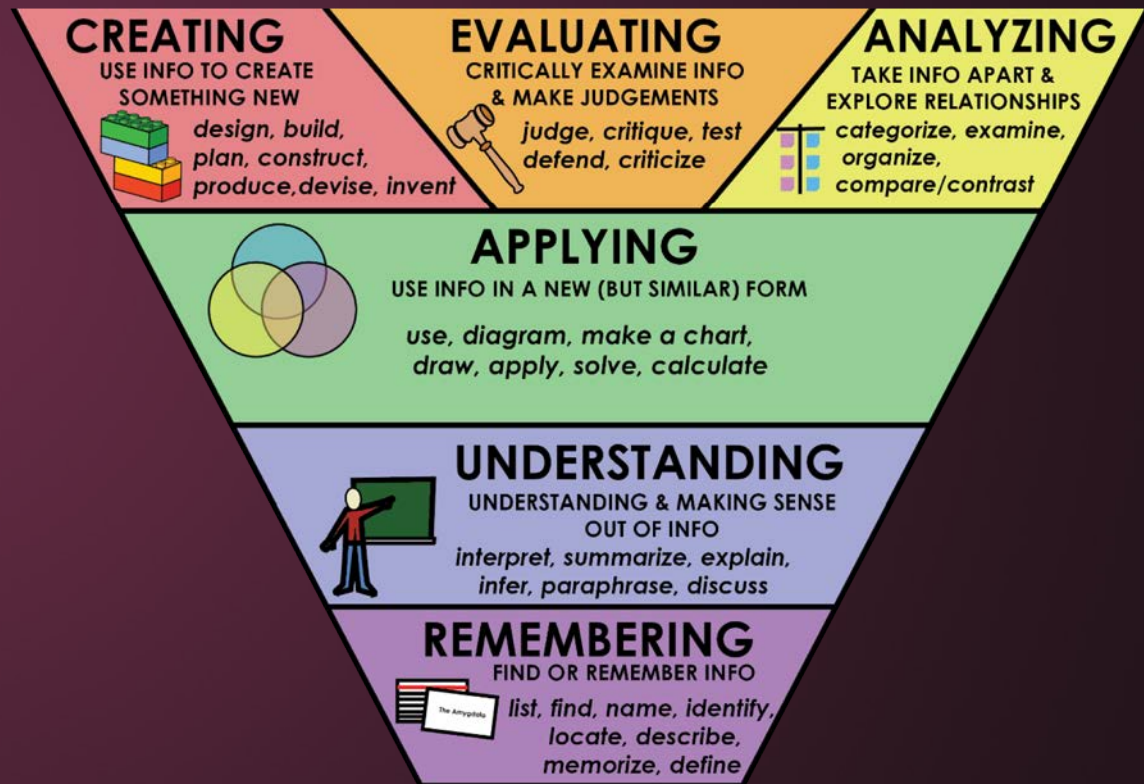




Encourage Students to:

1. Become creators of information rather than consumers.
2. Learn and demonstrate critical thinking through information creation.
3. Work together and show creativity.
4. Shape the public knowledge commons of which they are a part.

Bloom's Taxonomy



Example 1:

Traditional Education:

- Instructor gives students exams and asks them to answer questions.

Open Pedagogy:

- Having students create and peer review exam questions and answers to them as a way to help them gain a deeper understanding of concepts learned in class.





Example 2:

Traditional Education:

- Instructor gives students core readings for course

Open Pedagogy:

- Students examine why core readings are core.
- They develop a bibliography that explains that role.
- Subsequent classes update the bibliography, adding perspective to the original readings.
- Adding readings they believe are now core and describing why for the next group of students.



Student Motivation:

- “Renewable” as opposed to “disposable” assignments
- Student controlled learning environments

Simple Examples:

Collaborative Syllabus Design

Inquiry based critical thinking discussion that is collaborative, and learner driven



Multiple Choice Questions

Collaborative critical thinking exercise with creation of content

Multiple Choice Question

Stem

1. To ensure the quality of multiple-choice questions

Distractors

- a. make some of the options and distractors negative.
- b. include qualifiers and absolutes.
- c. **make all options and distractors similar in length.**
- d. include several correct answer options.

Correct Answer

Op Ed Writing

Expanding learning to real life issues

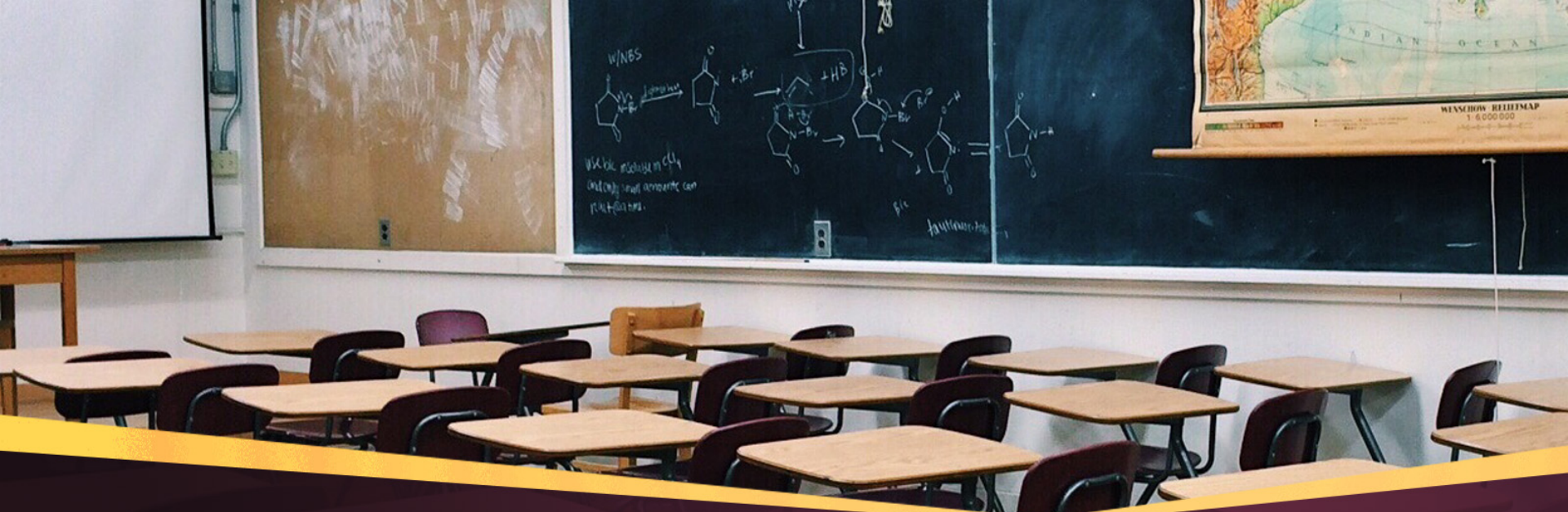
KENT STATE UNIVERSITY

Kent State Online
Office of Continuing & Distance Education

Assignment Type: Op-Ed

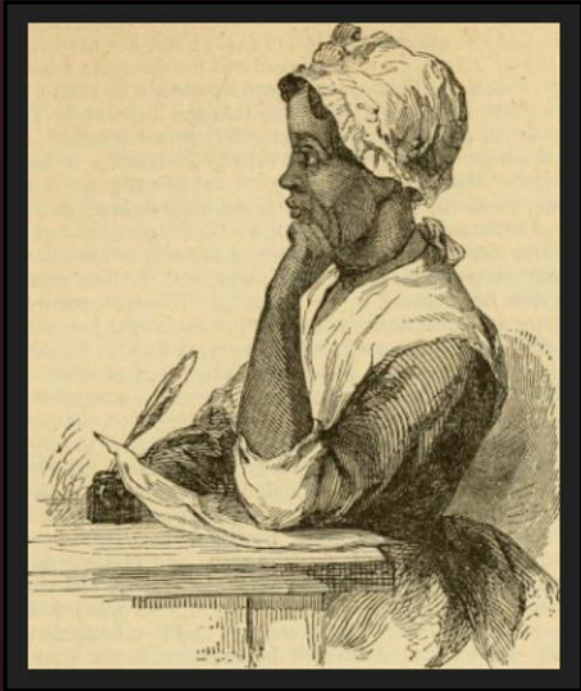
What is it

OpEd, short for Opposite the Editorial, is a newspaper opinion piece from contributors not affiliated with the editorial board. Limited in most newspapers to 700 to 1200 words, writing and getting published is no easy task. Yet, an Op-Ed is the type of real-world writing skill students need to flourish in the 21st century.



Examples of Digital Open Pedagogy

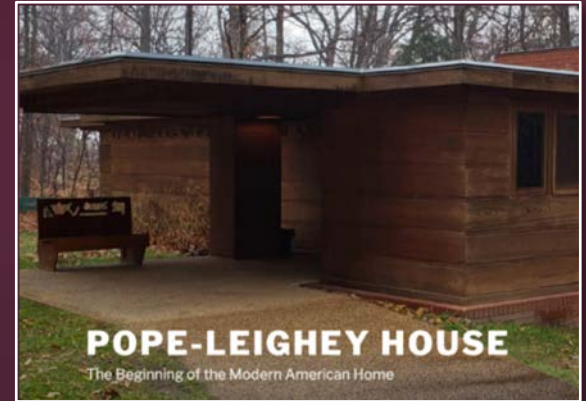
Web Publishing as a Tool of Teaching



- Student learning and motivation through textbook creation
- Modifying and adding perspectives to existing OER
- Work done collaboratively, with student peer editing each other's works
- Example: *The Open Anthology of Earlier American Literature*, edited by Robin Derosa

Personal Cyberinfrastructures

- Turning students into bloggers
- Learn to create authoritative information
- Create their own personalized learning architecture and manage their own data, collaboration etc.
- Decide how public or private these are
- Learn how to license their information



Wiki Teaching

- Teach your students how to edit Wikipedia articles.
- Students make direct contributions to public knowledge.
- Students engage with and understand the politics of editing, including how “truth” is negotiated by those who have access to the tools that shape it.

The Atlantic | Popular | Latest | Sections v | Magazine v | More v | Subscribe | Search

TECHNOLOGY

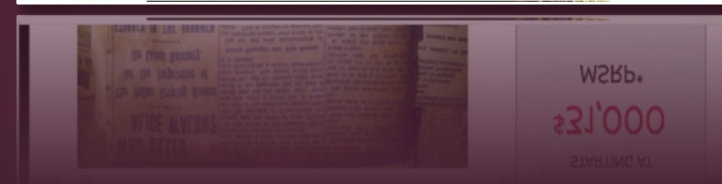
How the Professor Who Fooled Wikipedia Got Caught by Reddit

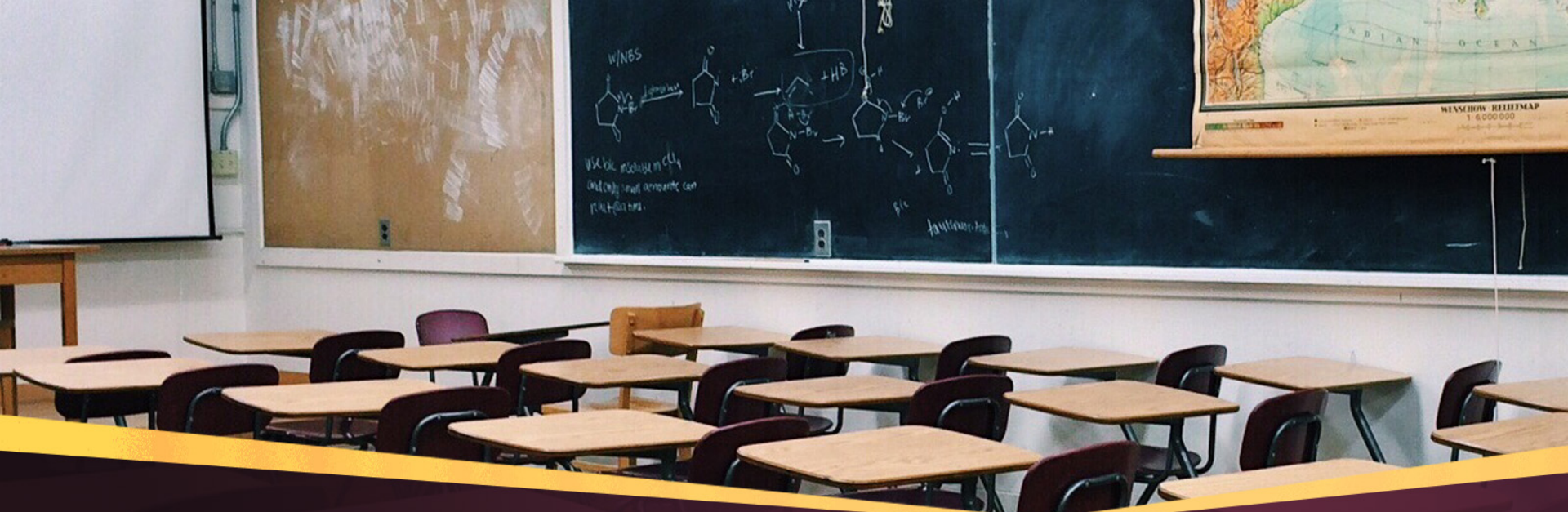
YONI APPELBAUM | MAY 15, 2012

T. Mills Kelly encourages his students to deceive thousands of people on the Web. This has angered many, but the experiment helps reveal the shifting nature of the truth on the Internet.

STARTING AT
\$31,000
MSRP*

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Open Pedagogy in Action

STS 1010: A Clemson Case Study



Course on the history of science and technology, also designed to train students in research skills

Students do factual research on the history of science and technology and find credible research sources.

Explain and analyze ways in which society is affected by science and technology, and vice versa

Analyze and critique arguments concerning the function and significance of scientific ideas and technological developments in social contexts

Incorporation of Open Pedagogy:



1. Students collectively write a textbook on important scientific and technological innovations that have shaped human history
2. Each selects a specific scientific or technological invention and write a chapter in the textbook explaining its significance
3. Students each write questions for other students testing them on major concepts behind their science and technology
4. Students critique other views on their science or technology

Collaborative Assignment Structure

Students choose a topic based on themes of the course

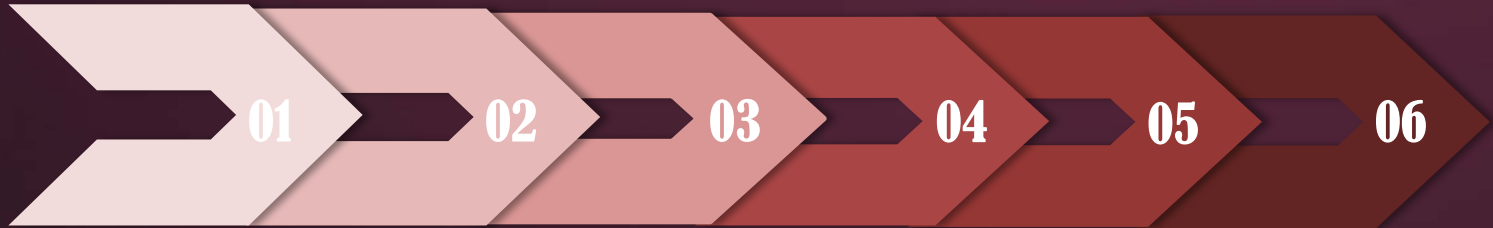
- ✓ Receives instructor approval

Create a second draft of their bibliography

- ✓ Again, peer input was provided

Write first draft of their chapters and submit them in Canvas

- ✓ Peer review and instructor grading



Create a first draft of an annotated bibliography on their chosen topic

- ✓ Receive peer feedback

Develop argument and chapter questions for other students

- ✓ Receive more peer feedback

Write a second draft and upload it on Pressbooks

- ✓ Peer review this time is focused more on editing and quality of content

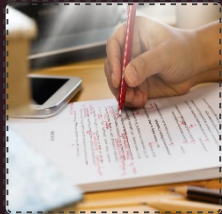
Learning/Practicing Critical Thinking



How do you write for a public audience? How is this different from traditional class assignments?



Copyright issues and legal structure of information on the internet



Editing and book design from the perspective of students

Outcome 1.



<https://anne1.pressbooks.com/>

CHAPTER 17

The First Transcontinental Railroad

KELLY MOYD

THE FIRST TRANSCONTINENTAL RAILROAD



Figure 1: Map of the Union Pacific Railroad and its connections by Union Pacific Railroad Company

INTRODUCTION

The highly acclaimed sociologist, Steve Fuller, describes the progress of science and technology as singular events that changed society at the time that it was introduced.

The Ford Company began using a form of computer simulations reflecting both the economy and the company overall to determine the best possible technological advances and how to best improved quality for consumers and revenue for the business ("Innovation: 100 Years," 2015).

Company has continued to make great strides in further developing Ford's initial assembly line into a powerful force in the automobile industry.



Figure 3: Ford Factory - Chicago provides footage of the present-day manufacturing line in Ford Motor Company's Chicago production plant.

collected from the computer simulations improved the assembly line by making the line more compatible with human physicality and size. In addition, the assembly line was geared towards minimizing environmental harm. According to D.E. Nye, highly regarded author of America's Assembly Line, Ford's assembly line was implemented with energy-saving features, and many factories have even been rebuilt to use an abundance of natural light (Nye, 2013). Over the hundred years since Henry Ford first implemented his idea of a moving assembly line, the Ford Motor

Throughout history, societal circumstances have motivated the development of many significant technologies related to warfare. Within the medieval period (400s - 1600s AD), some of the most impactful technological innovations were the advancements in armor worn on the battlefield. While the invention of chainmail predates the medieval era, it's important to consider its impact on warfare leading into this period. Chainmail (figure 1) can be simply described as a shirt made of interlocking metal rings designed to protect the wearer from cuts and slashes. As improvements were made upon chainmail forging methods, the diameter of the interlocking rings became smaller, and the armor more effective. The reason for this being that the smaller the diameter of the rings, the more fine-tipped a weapon must be to pry them apart. The key result of this advancement was that it forced enemy militaries to adapt their weapon styles over time from specialized slicing weapons, to weapons designed more optimally for piercing. In the medieval era, body armor technology took another leap forward with the development of fully-plated armor (figure 2). The tactical versatility and durability of this new armor forced a large variety of adaptations on weapon styles, combat styles, and battle formations, making it one of the most significant advancements of the medieval period.



Figure 1 - Shirt of Chainmail

Figure 2 - Full Suit of Steel-Plated Armor

EXERCISES

QUESTION 1: THINK ABOUT IT:

In what ways did the discovery of the tuberculosis bacteria lead to new scientific advancements?

- 1) Development of new antibiotics to fight bacteria
- 2) Improved use of quarantine of tuberculosis patients
- 3) The formation of antibiotic-resistant bacteria
- 4) Vaccinations

- a) 1&2
b) 3&4
c) 1,6,3
d) all of the above

QUESTION 2: SHORT ANSWER - PAST TREATMENTS

In what ways have tuberculosis treatments changed from before the development of streptomycin to now?

How are modern treatments better than those before the discoveries by Koch?

QUESTION 3: MULTIPLE CHOICE-THINK ABOUT IT:

What has been the greatest side effect of antibiotics on society and the path to defeating Tuberculosis?

Outcome 2.

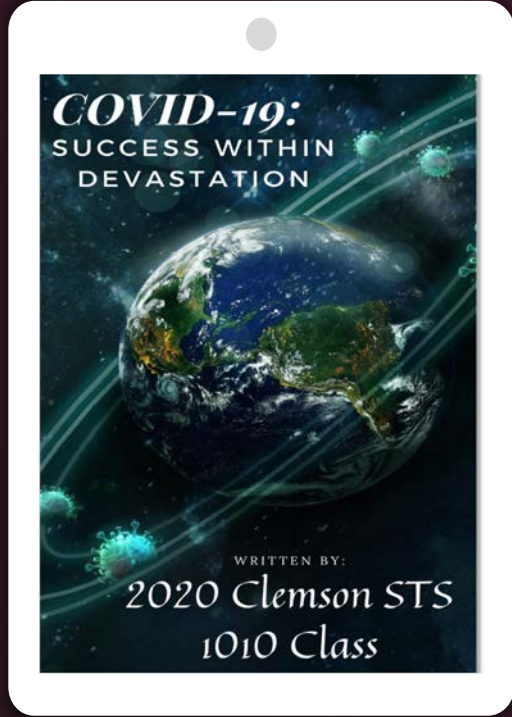


Figure 1: This image shows the program that was put in place to limit the interaction and possible spread of the virus.

Most people cannot tell how long six feet is so the stickers that are placed on the floor deletes the guessing game. The other sticker that is commonly used in grocery stores are the one-way aisle stickers. These stickers are like one-way street signs that are seen while driving on a one-way road. Customers are only supposed to enter and exit from one direction. This is used to limit people walking by others in hopes of decreasing the amount of person to person contact one has while in the store (Robman) (Figure 3).



Figure 2: This image shows the social distancing stickers that were put in place in grocery store lanes to ensure that people were not waiting in line too close to one another.



Figure 3: This image shows the one-way aisle stickers that were used in grocery stores to limit the foot traffic and person to person contact on the aisle.

Specific stores have provided more regulations that may or may not appear in other grocery stores across the United States. Walmart is an example of a store that has put many precautions and regulations for the safety of both customers and the employees in place, including the ones previously mentioned. Like most grocery stores and many other places of business, masks are required for both the customer and the employee to be in the store. Masks have been proven to lower the rate of possible transmission, so that is why they are required at Walmart and many other stores. Also, "enhanced cleaning routines" were put in place, which includes but is not limited to sanitizing the carts between each customer's use (Walmart). To limit person to person contact, separate en-

Another major regulation used in grocery stores during the COVID-19 pandemic includes the use of stickers on the floor throughout the store. These stickers are used as directional signs to limit the amount of people near one another. They include social distancing stickers that are used primarily in checkout lines to ensure that customers are waiting in line six feet apart (Figure 2).



The lack of face to face interaction is another factor that has heavily affected the spread of misinformation in society. In this image, a family is sitting together, but the individuals are more interested in their cell phones rather than interactions. Accurate information is spread by talking face to face and discussing accurate information, not through social media.

Social media and news companies with certain motives are also creating a problem for public health officials. The officials are having to work even harder to get their accurate information to the public. They are competing with information that is not even true. Lee Kum Kee, a Professor of Health Communication at the Harvard T.H. Chan School of Public Health, said this pandemic of misinformation is, "making our work a bit more difficult" (Perezpence). Public health officials are having to work overtime in order to get people accurate information. This obstacle social media and news companies are creating is helping nobody in the long run (Umed & Herli). Society needs to focus on the information that is backed up by facts and coming from public health officials. This is the only way everyone will be on the same page and the only way we can work towards a solution together.



The above image represents both the severe pandemic (masks) and the dependency on technology. Communication with the online world has become so addictive that people cannot put it down even while walking through a busy city street.

Government's Management of Data



This picture illustrates the type of private data governments have under "lock and key".

It cannot be denied that extreme monitoring of citizens can be effective in containing the virus. Some Asian countries, like China, have reported great successes with their intrusive methods of tracking the virus's spread. Countries are collecting data from any source they can find, even mobile networks (BBC Future). Nevertheless, considering these privacy invasions a necessity in the moment can lead to severe harm for our future. Who can say if or when these measures will be rolled back? It is trivial to expand the usage of facial recognition and contact tracing after the pandemic is over. The technology is already installed in camera and cellphones everywhere. Even the data that is already collected can be used for ulterior motives. Personal information stored in healthcare systems have been used to help with the fight against COVID-19. While this cause is understandable, this same data can be used for more negative causes like the social control and deportation mentioned in previous sections. There are no limits once it is in a company's or the government's hands, no matter what cause they give for the data collection.

Despite all the information being collected in the name of effectively containing the virus, some doctors still argue that they are receiving incomplete datasets from their governments. Charles Piller of Science magazine chronicled the complaints of doctors and researchers from several institutions. They argued that privacy is not a major concern because the data can be "de-identified." Though the risk of someone being identified from this data is slim, the same risk is present with any other publicly available dataset if a person is determined enough to track someone. To Rajiv Bhatia, a professor at Stanford University in California, it seems like their state government is not making a genuine effort to provide the data at all. Some researchers in states with looser restrictions on shared information (like Florida, where residents are provided with information such as age brackets, residential status, and totals by city) still argue that what they are given is not enough (Lamb). Epidemiologist Thomas Hladik argued that the more inclusive datasets given by the Florida government are inadequate for creating unique plans to target the pandemic in local areas (Pitt). Ultimately, it is a question of how much individual privacy should be traded in exchange for the health of everyone. While there is no simple, straightforward answer, there is certainly no excuse for disregarding privacy entirely. A line must be drawn somewhere.

Student Feedback (Outcome 1 Course)



Has the textbook writing and editing activity helped you learn the course content more effectively than a traditional learning activity?



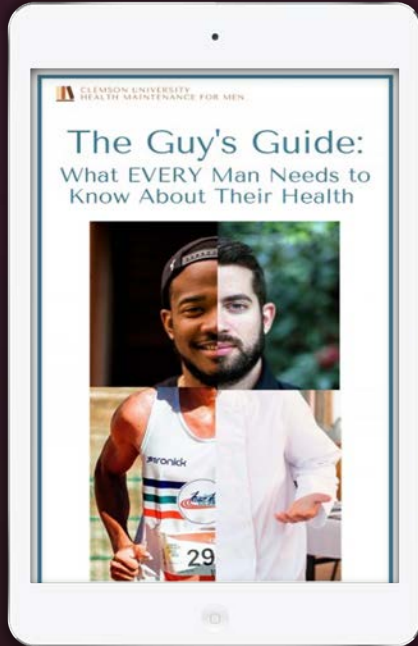
Student Feedback (Outcome 2 Course)

“Even though this project was a lot of work, I think I gained a tremendous amount of benefit from creating a chapter.”

Having something to be proud of and show for in the end served as motivation to take the project more seriously and learn more.

My favorite part is that I can now say I'm a published author in a textbook, that's a super cool accomplishment that most people don't have.

Other Works



<https://btugman2021.pressbooks.com/>

Prevention

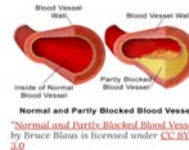
In order to prevent abdominal obesity, men must prioritize exercising and eating healthier. Participating in daily physical movements has been found to reduce abdominal weight in both men and women (Ekelund et al., 2011). Physical activity can include recreational activities such as swimming and jogging as well as maintaining a job that requires manual labor or frequent standing. Aim to participate in activity at least 30 minutes a day.



"Eat Plant Based Diet" by Dr. Lorenzo Cohen is licensed under CC BY 4.0

Types of Cholesterol

The two main types of cholesterol include low-density lipoprotein (LDL) and high-density lipoprotein (HDL). LDL is considered "bad" cholesterol because it can cause a buildup of **plaque** in the arteries, which is known as atherosclerosis. The more the arteries narrow, the higher the risk is for a heart attack, stroke, and **peripheral artery disease**. HDL on the other hand is considered "good" cholesterol. It is able to carry about 1/4 of the LDL cholesterol through the bloodstream back to the liver where it is broken down (American Heart Association, 2020). By doing this, HDL is able to decrease the risk for heart disease and stroke.



"Normal and Partly Blocked Blood Vessel" by Bruce Blaus is licensed under CC BY 3.0

METABOLISM & HEALTH

What to Know and When to Take Action

WHAT IS METABOLISM?



Metabolism is the process by which chemical changes in living cells provide energy for the body to perform vital processes and activities for daily function (Better Health Channel, 2020).

WHAT AFFECTS METABOLISM?



Diet



Physical Activity



Drug Use



Age



Genetics



Hormones

HOW DOES METABOLISM DIFFER FOR GENDER?

Normally have a faster metabolism (NHS, 2020)

Store more fat in the abdomen (Rogers, 2016)

Burn more fat after exercise (Wu & O'Sullivan, 2010)

Larger body size + more muscle mass requires more energy to maintain (NHS, 2020)



Have more slow-twitch muscle fibers to burn more fat during exercise (Wu & O'Sullivan, 2010)

Store more fat in the thighs + hips (Chantal & Kravitz, n.d.)

Have more body fat than men overall (Wu & O'Sullivan, 2010)

Burn less fat after exercise (Wu & O'Sullivan, 2010)

WHY IS METABOLISM IMPORTANT?



A healthy metabolism helps prevent heart disease (NHS, 2020).



A healthy metabolism helps prevent obesity (NHS, 2020).



Sitting too often can decrease the number of calories burned and reduce bone health (Gibbs et al., 2017).

WHY SHOULD YOU SEEK HELP?



It's important to maintain a balance of calories to keep a healthy metabolism.



Problems with losing or gaining weight may have to do with how many calories are consumed vs. burned.



Meeting with a doctor can help you understand metabolism and what you can do to improve it.

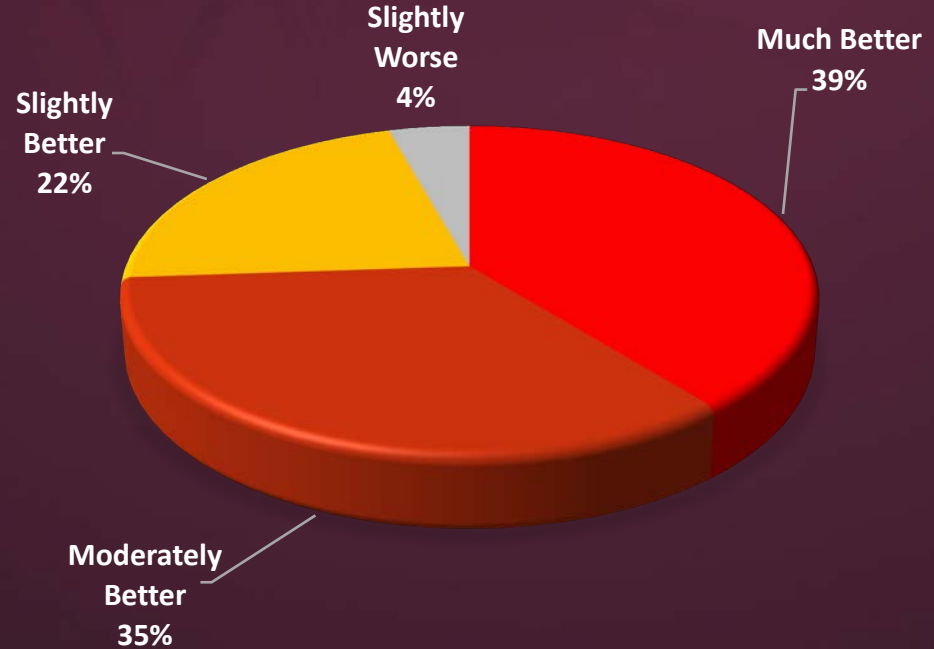
Student Feedback

- Content: *“It helps me gather information differently because I have turn around and relay information in a manner that would teach someone without an instructor. Also, it allowed for me to focus in on one topic specifically, while also learning about other topics through my classmates.”*
- Peer Feedback: *“Having peer feedback gives you the opportunity to see many different perspectives on your writing style rather than just one perspective of your instructor. It makes you have to work with your content to make it understandable to a variety of people and doing so makes you have to really understand the content.”*

Student Feedback

23 students

How would you rate this activity compared to traditional learning activities (ex. Writing papers, exams)?



Student Feedback

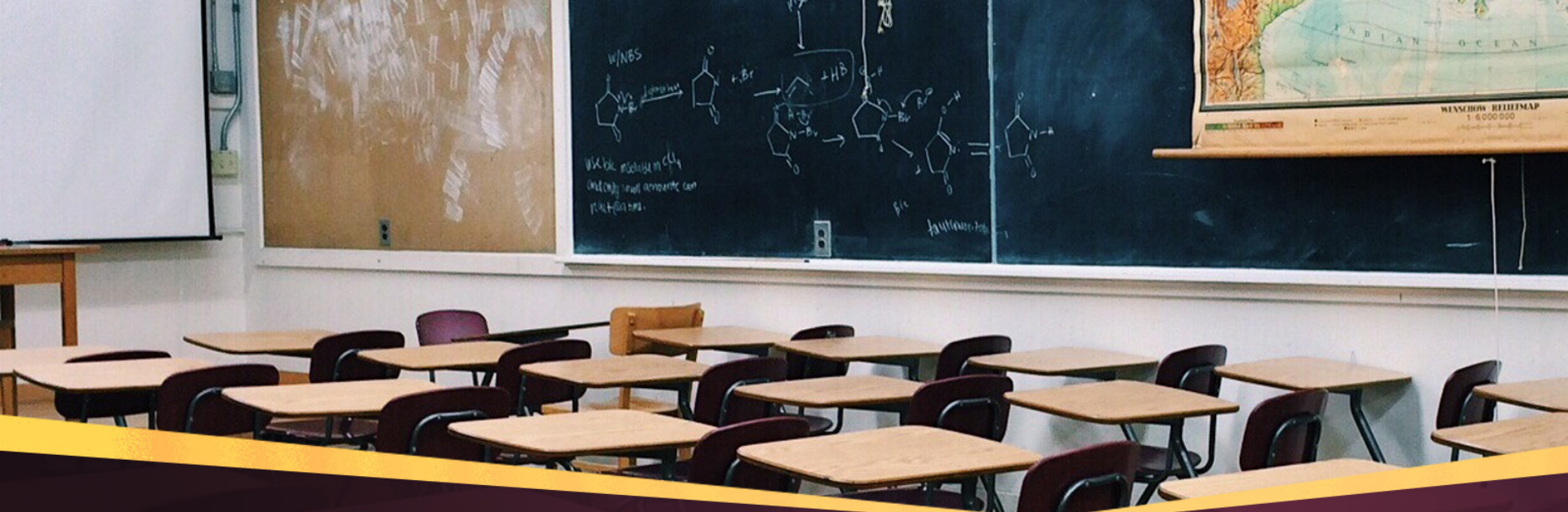


If you were given a choice in another course of doing this activity or traditional activity (like a term paper or short response paper), which activity would you prefer?

Textbook writing assignment
82.6%

I do not have a preference
17.4%

Term paper or short response paper
0%



Open Resources

Library Resources:

<https://libraries.clemson.edu/teaching/oer/>



Yang Wu



ywu9@clemson.edu

Lots of Other Support!

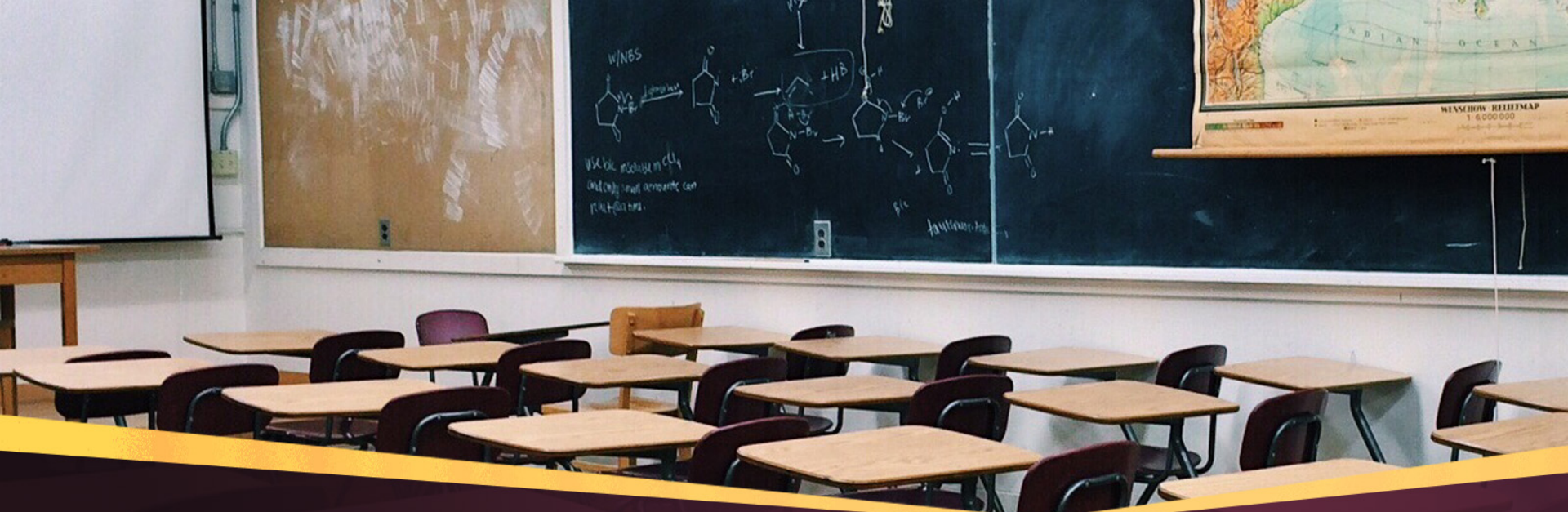
OPEN PEDAGOGY NOTEBOOK

Sharing Practices, Building Community



SUSTAINABLE DEVELOPMENT GOALS





Thank You!

Questions/Comments