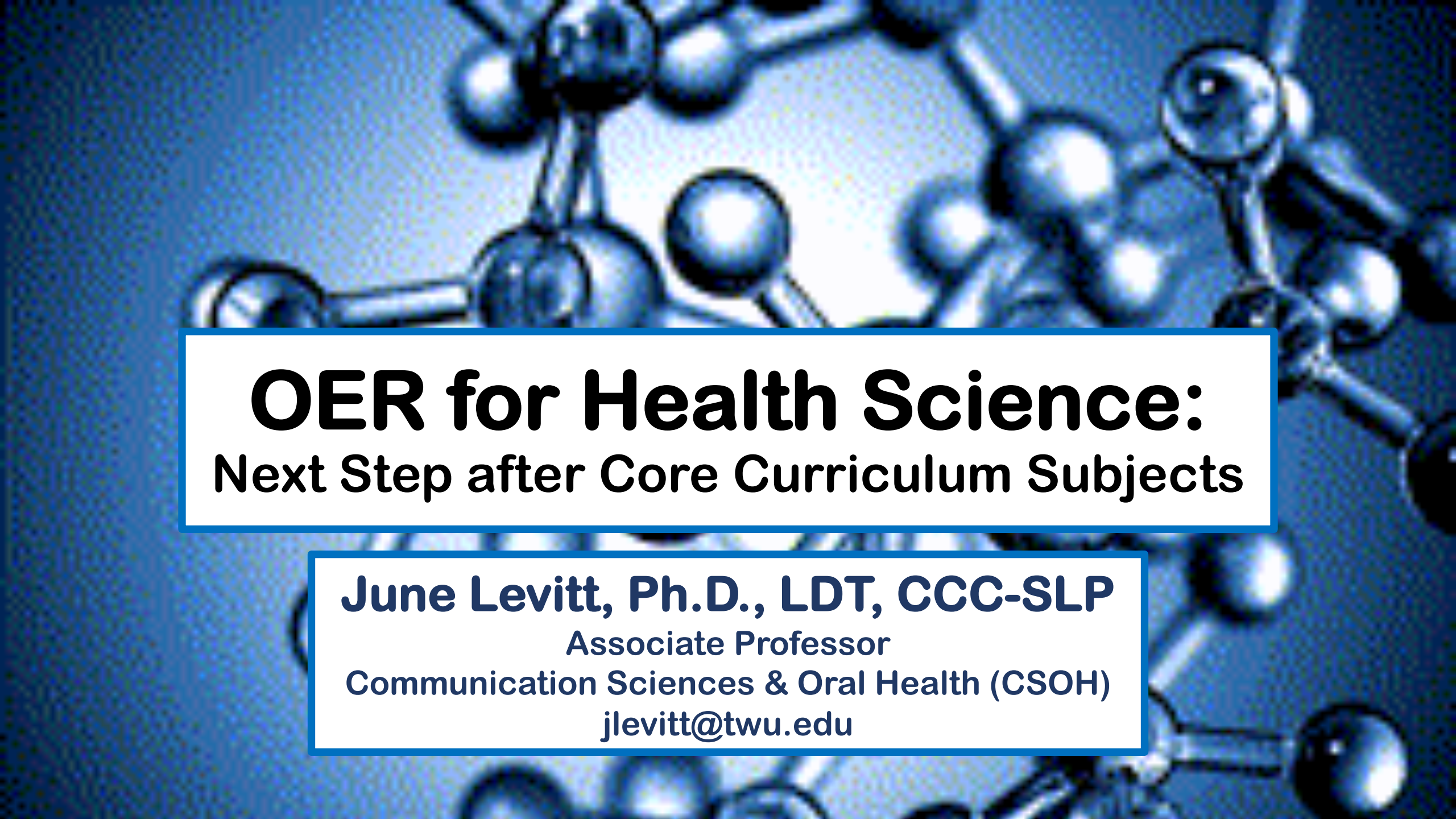
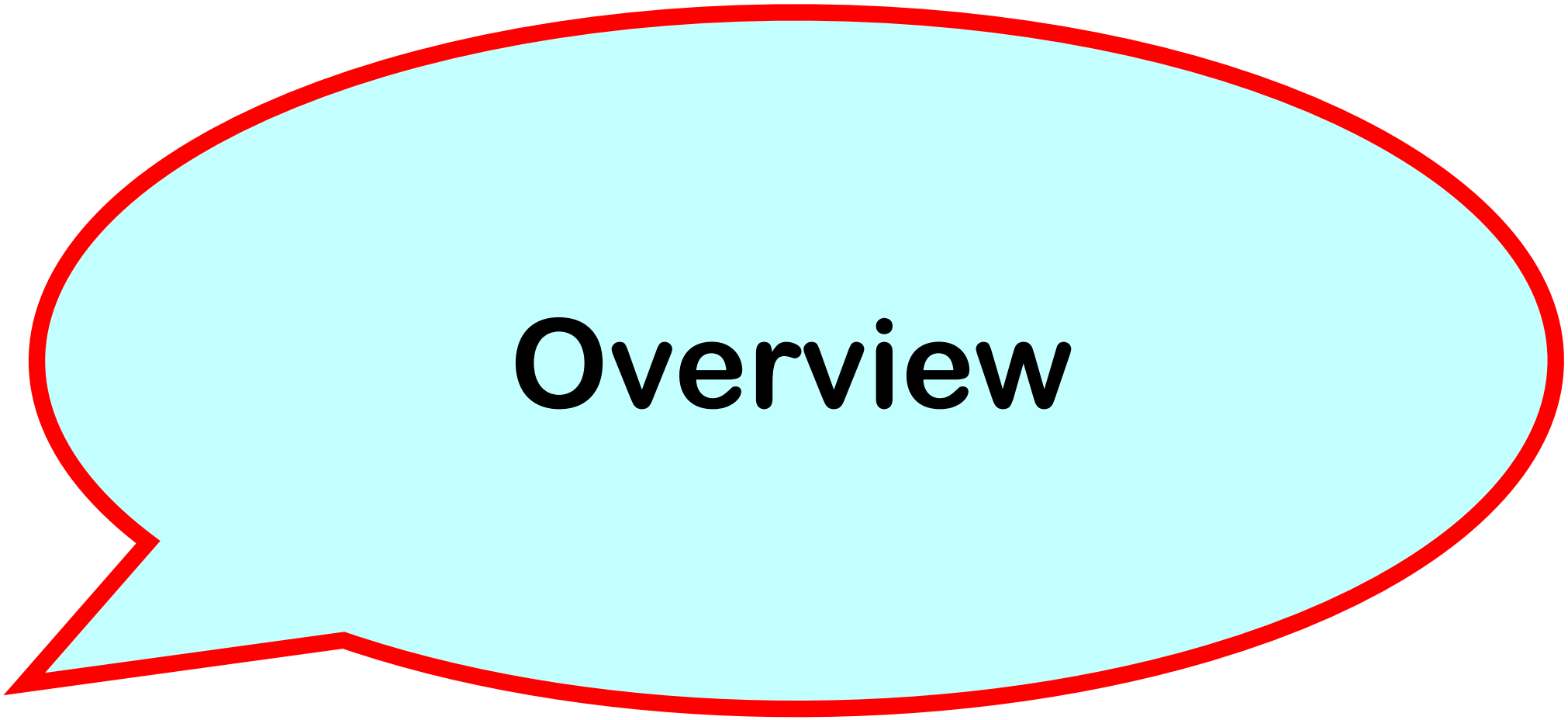
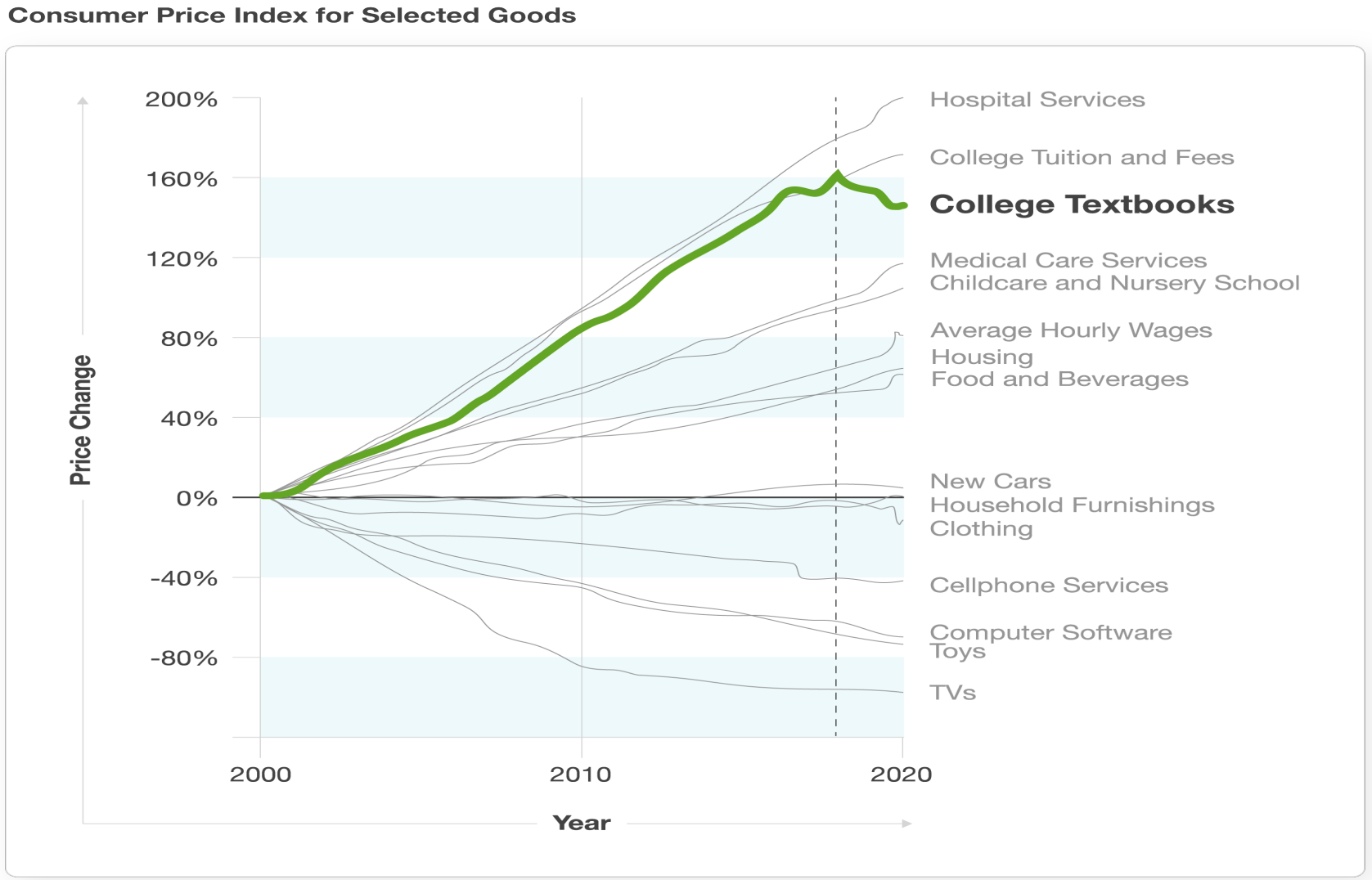


OER for Health Science:
Next Step after Core Curriculum Subjects

June Levitt, Ph.D., LDT, CCC-SLP
Associate Professor
Communication Sciences & Oral Health (CSOH)
jlevitt@twu.edu


Overview

College Textbooks: Price Change



Source: Bureau of Labor Statistics data, compiled by Mark Perry, AEI.org

https://openstax.org/impact

OER in Higher Education: Current Status

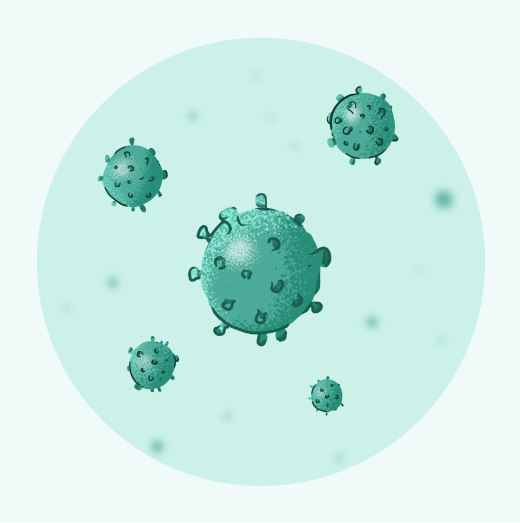
OER Effort	OER Support
Core Curriculum Subjects	

• Extensive OER development focusing on:
  • High Impact indicated by number of students
  • Retention
	• State-wide grant support
	• Intra-mural grant of different levels
	• Encouragement with faculty Awards

Health Science Subjects	
• Limited OER development.	• Intra-mural grant of limited levels = TWU Minigrant: $1,000

My Motivation to OER Projects

Pandemic and its impact	Textbooks in Market	Student's Situations
• Lost jobs and income • Living conditions change • Concerns about future semesters	• Health Science textbooks often use many images and are expensive. • Many reputable textbooks are comprehensive, containing materials that we cannot cover in one semester. • Students often find textbooks not "student-friendly."	• Can't depend on others • Depression: more or less • Uncertain about future • Limited support • Limited $$ **BUT…** **They want to continue their studies at TWU.**



PIX: https://app.us.lifeology.io/viewer/lifeology/lillytrialguide/what-is-covid-19

OER Project: Steps

Health Science OER Textbook Development

Step 1: Design the "Architecture"

- If you are developing an OER textbook for the course you are teaching, review your syllabus and the book you are currently using.
- Develop a skeletal structure of your book.

COMS 4623
Neural Foundations of Communication

Module 1: Introduction to Speech-Language Neurology
History of neurology
How do we learn about human brain?
Domain general vs. Domain specific
Brain mapping: Penfield and Brodmann's contributions.
Body orientations/planes

Module 2: Organization of Nervous system
- Brain
  - Size
  - Weight
  - Development
  - Brain coverings (meninges)
- Human vs. Brains of others
- Foundation of nervous system
  - Divisions: CNS, PNS, ANS
  - Neurons vs. glial cells
  - Neurons vs. other cells
  - Myelin
  - RNA and DNA

Module 3: Neuronal functions in the nervous system
- Gyri, Sulci
- Major landmarks
- Corpus Callosum
- Four lobes and their structures/functions
- Brodmann's areas
- Broca's and Wernicke's areas; arcuate fasciculus
- Pyramidal, extrapyramidal, and cerebellar system
- Subcortical structures
  - Hippocampus
  - Amygdala
  - Basal ganglia (in detail)
  - Thalamus
  - Hypothalamus
  - Limbic system
- Cerebellum
  - Diadochokinetic speech test

Module 4: Sensory organizations of speech and hearing
- Afferent pathways
- Special senses
- General senses
- Multi-sensory integration
- Somatosensory system

Module 5: Motor control of speech
- Efferent pathways
- Somatomotor system
- Sensory system's contribution to our movements.
- Four elements of movements
- Peripheral Motor ending
- Motor integration: from intention to effect
- Reflex activity

Module 6: The cranial nerves
- Upper/lower neurons
- Cranial nerves: directly related to speech/language
- CN I, CN II-III-IV-VI, CN V: talk about the muscles under these CN's control
- CN V, VII, VIII, IX, X, XI, XII
- Auditory system review
- Agnosia

Module 7: Autonomic nervous system
- Sympathetic and parasympathetic divisions
- Contrast ANS and somatic nervous system

Module 8: Motor Speech Disorders
- Dysarthrias (subtypes and lesion sites)
- Apraxia of Speech

Module 9: Central Language mechanism and learning
- Neocortex and review on our knowledge of neurons
- Neuroanatomy of language
- Circuits and models for language and its disorders
- Right hemisphere and its damage
- Stem cells
- Alteration of brain by invasive and non-invasive methods
  - Restorative and substitutive SLP approaches

Module 10: Adult disorders of language
- CVA (stroke) and its impact to life and society
  - Aneurysm
  - Types of strokes
- Aphasia
  - subtypes
- Neurocognitive disorders
  - Alzheimer's disease
  - Frontotemporal dementia (language and behavioral types)
  - Vascular dementia
  - Dementia with Lewy bodies and Parkinson's dementia
  - Other cases
- Minor Neurocognitive Disorder: Mild Cognitive Impairment (MCI)
- Traumatic brain injury

Module 11: The developing brain
- Development of the Nervous System: Overview (neural plate to neural tube; and to five encephalons) (OpenStax A/P: pp. 551 and 1335)
  - Anencephaly
  - Spina Bifida
- Development of the Nervous System: Seven steps
- Postnatal development of the brain
  - Communication and motor function: development phases
- Primitive reflex: types and future development
- Various syndromes and their effects

Module 12: Pediatric clinical speech disorders
- Diagnosis of neurogenic disorders with primitive reflex
- Oral and pharyngeal reflex
- Relations between reflexes, brain development, and speech development
- Cerebral palsy
- Childhood Suprabulbar paresis
- Muscular dystrophy

Module 13: Pediatric disorders of language
- Bilingualism vs. disorders
- Pediatric stroke and tumor
  - Sickle cell disease
  - Landau-Kleffner Syndrome
- Attention Deficit Hyperactivity Disorder (ADHD)
- Specific Language Impairment
- Down Syndrome
- Williams Syndrome
- Fetal Alcohol Syndrome (FAS)/Prenatal Exposure to Alcohol (PEA)
- Autism Spectrum disorder
- Developmental dyslexia

        - Size
        - Weight
        - Development
        - Brain coverings (meninges)
    - Human vs. Brains of others
    - Foundation of nervous system
        - Divisions: CNS, PNS, ANS
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        - Neurons vs. other cells
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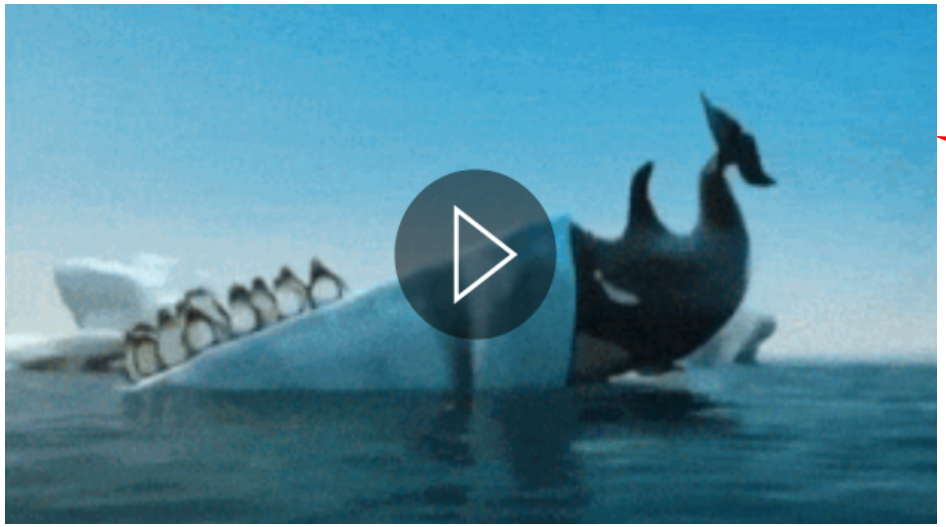
    - Thalamus
    - Hypothalamus
    - Limbic system
- Cerebellum
    - Diadochokinetic speech test

Health Science OER Textbook Development

Step 2: Define the Team Member(s)

- Decide whether you want to work on the OER project alone or form a team.
- If you decide to work with co-authors or collaborators, define each person's role before approaching others.



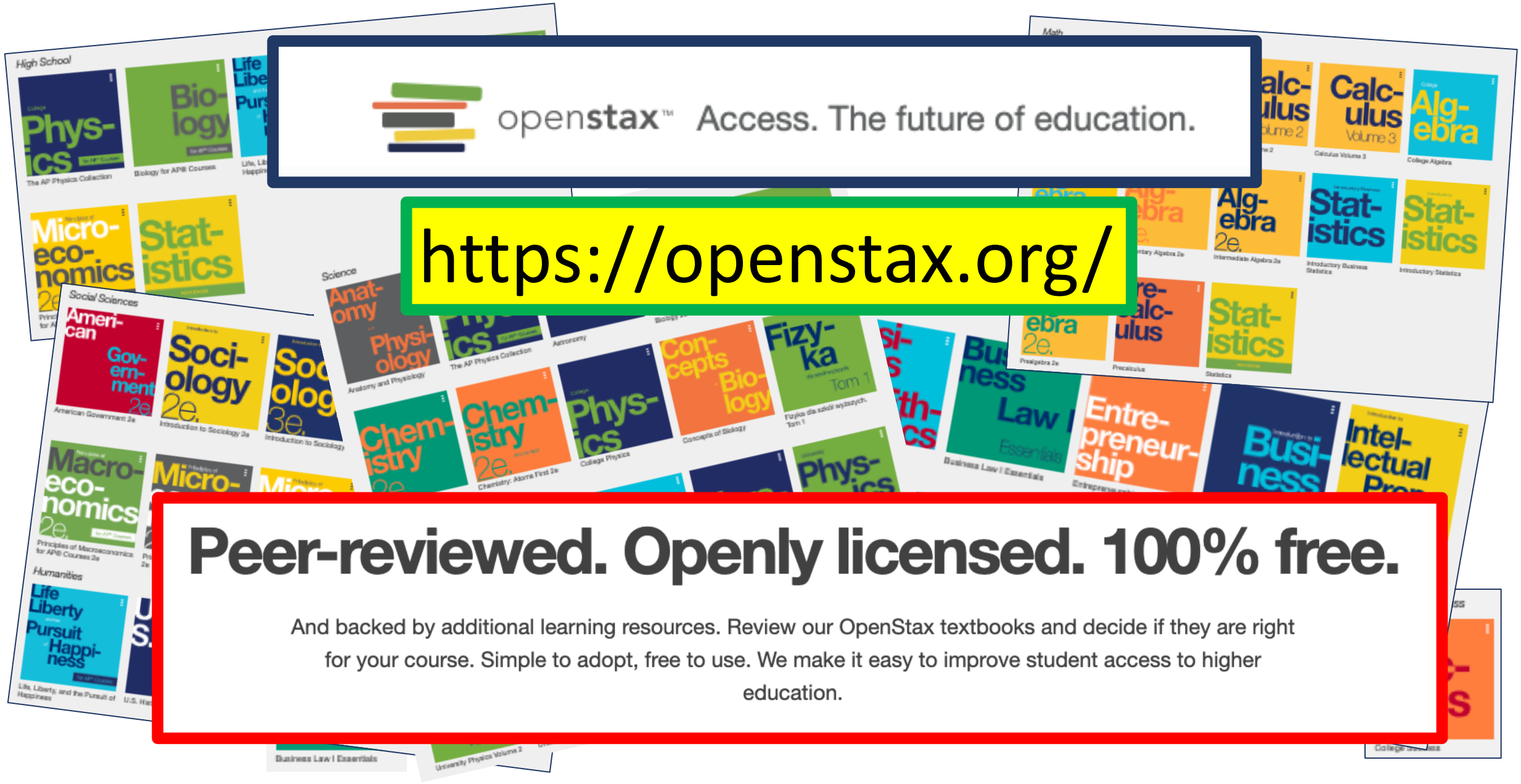
Let's find accountable and reliable team members

https://community.atlassian.com/t5/Teamwork-Lab-discussions/poll-Teamwork-Lab-message-post-feedback-wanted/td-p/1839177

Health Science OER Textbook Development

Step 3 – 1/3: Find OER Materials to Utilize

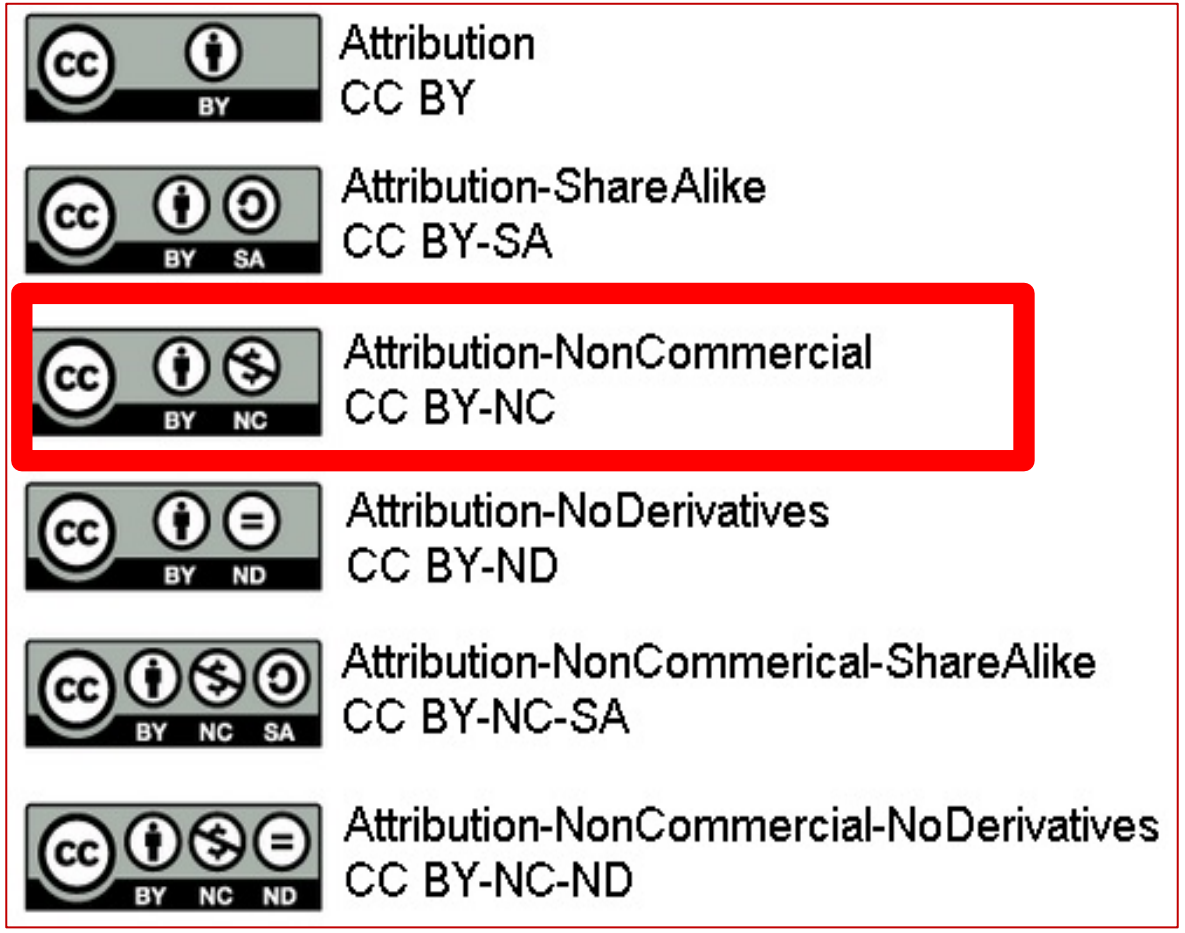
- Search for the resources: existing OER books and other open resource materials that allow “remix.”
- **EXAMPLES**: Openstax, U.S. government-issued information, etc.


openstax™ Access. The future of education.
https://openstax.org/
Peer-reviewed. Openly licensed. 100% free.
And backed by additional learning resources. Review our OpenStax textbooks and decide if they are right for your course. Simple to adopt, free to use. We make it easy to improve student access to higher education.

Health Science OER Textbook Development

Step 3 – 2/3: Review Creative Common Licenses

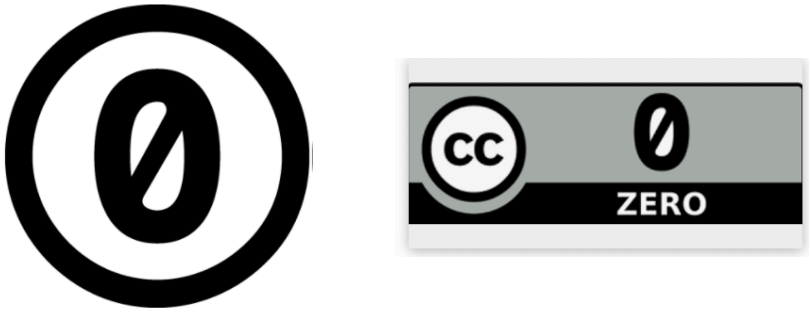
BY	**Attribution** Others can copy, distribute, perform and remix your work if they credit your name as specified by you.
ND	**No Derivative Works** Others can only copy, distribute, or perform verbatim copies of your work.
SA	**Share Alike** Others can distribute your work only under a license identical to the one you have chosen for your work.
NC	**Non-Commercial** Others can copy, distribute, display, perform or remix your work but for non-commercial purposes only.



PIX: https://subjectguides.library.skagit.edu/c.php?g=170839&p=1434999; https://creativecommons.org/about/cclicenses/

Health Science OER Textbook Development

Step 3 – 3/3: Review Creative Common Licenses

	CC0, as known as “cc Zero” is Creative common’s sign for public dedication. others may freely build upon, enhance and reuse the works for any purposes without restriction under copyright or database law.
	Public Domain Mark (PDM). Free of known copyright restrictions, and public domain. The Public Domain Mark indicates that the marked material is free of known copyright around the world.

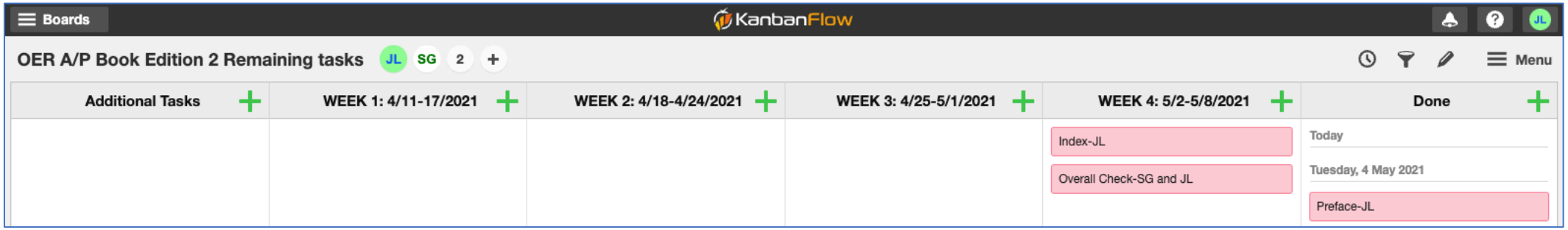
https://opensource.com/article/19/5/creative-commons-certificiation; https://creativecommons.org/share-your-work/public-domain/cc0/

PIX: https://creativecommons.org/2015/03/30/great-news-for-the-commons-flickr-now-supports-cc0-and-the-cc-public-domain-mark/; https://commons.wikimedia.org/wiki/File:CC-Zero-badge.svg

Health Science OER Textbook Development

Step 4: Project Timeline

- Estimate:
  - The areas you can utilize OER materials of others and remix them for your needs
  - The areas you need to write up
  - The scope of tasks to organize your original and other OER materials and integrate them.
- Make a project timeline:
  - You can make your project management system, or

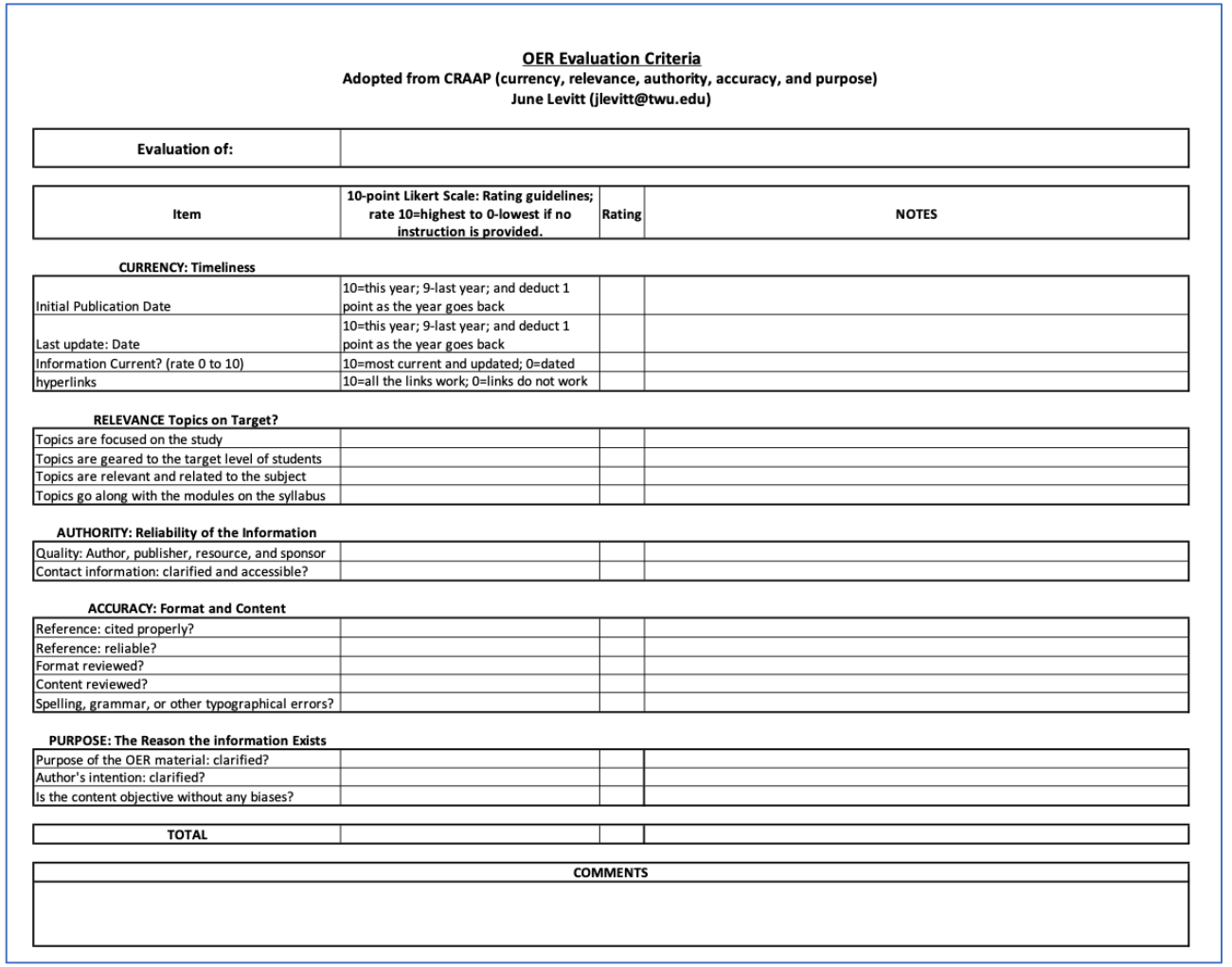


Health Science OER Textbook Development

Step 5: Establish Reviewers and Review Process

- Find a review protocol or rubric you would use for your book.

  EXAMPLE: CRAAP Criteria
  - ✓ **C**urrency,
  - ✓ **R**elevance,
  - ✓ **A**uthority,
  - ✓ **A**ccuracy, and
  - ✓ **P**urpose
- Communicate with potential reviewers and ask to review.



OER Evaluation Criteria
Adopted from CRAAP (currency, relevance, authority, accuracy, and purpose)
June Levitt (jlevitt@twu.edu)

Evaluation of:			
Item	**10-point Likert Scale: Rating guidelines; rate 10=highest to 0-lowest if no instruction is provided.**	**Rating**	**NOTES**
CURRENCY: Timeliness			
Initial Publication Date	10=this year; 9-last year; and deduct 1 point as the year goes back		
Last update: Date	10=this year; 9-last year; and deduct 1 point as the year goes back		
Information Current? (rate 0 to 10)	10=most current and updated; 0=dated		
hyperlinks	10=all the links work; 0=links do not work		
RELEVANCE Topics on Target?			
Topics are focused on the study			
Topics are geared to the target level of students			
Topics are relevant and related to the subject			
Topics go along with the modules on the syllabus			
AUTHORITY: Reliability of the Information			
Quality: Author, publisher, resource, and sponsor			
Contact information: clarified and accessible?			
ACCURACY: Format and Content			
Reference: cited properly?			
Reference: reliable?			
Format reviewed?			
Content reviewed?			
Spelling, grammar, or other typographical errors?			
PURPOSE: The Reason the information Exists			
Purpose of the OER material: clarified?			
Author's intention: clarified?			
Is the content objective without any biases?			
TOTAL			
COMMENTS			

Health Science OER Textbook Development

Step 6: OER Textbook Creation

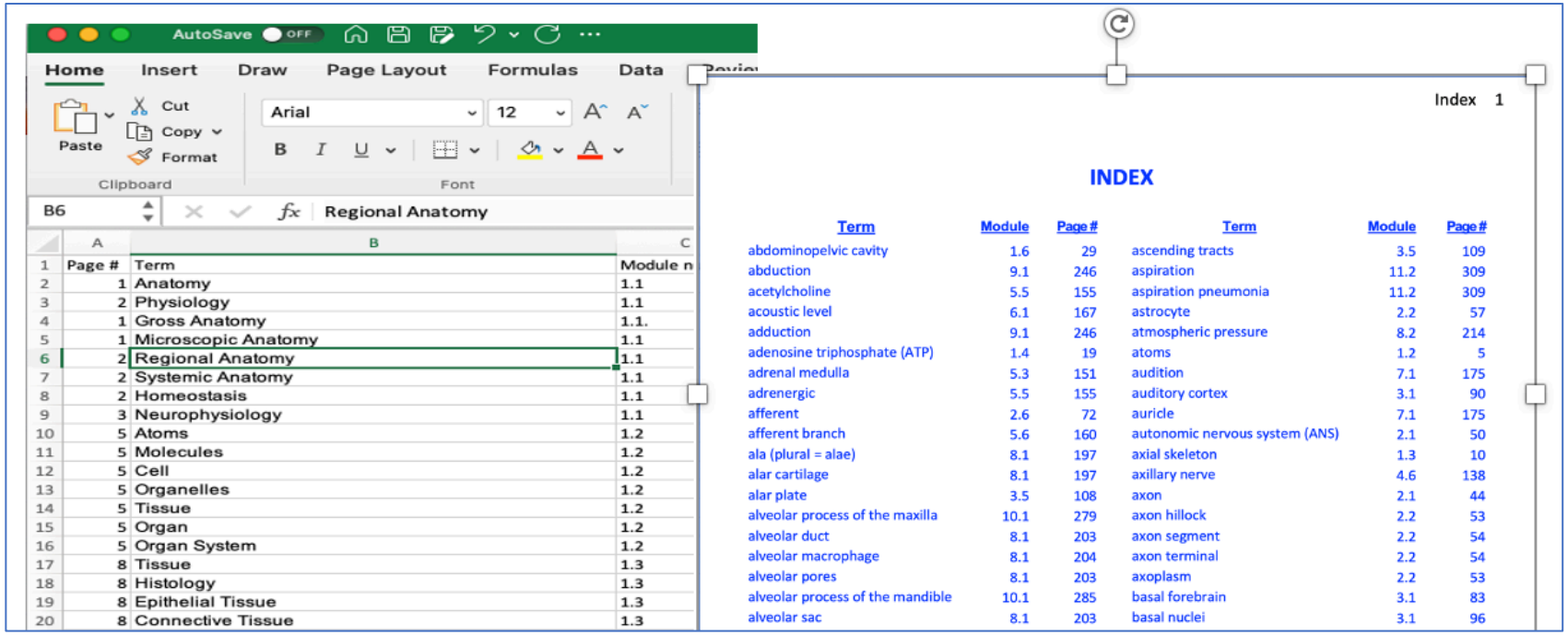
PIX: https://edwinweitenberg.com/typing

- Write the book with proper citations.
- When you utilize parts from the OER materials of others, know the format you need to cite.
  EXAMPLE: OpenStax instructs us to cite the specific areas on every page of your book.
- Edit. If you have co-authors or collaborators, exchange the assigned parts and edit each part. If you are a single author, ask your colleagues to read your work and edit it.

Health Science OER Textbook Development

Step 7: Integration and Touchup

- Integrate the modules into one cohesive book.
- Create an index ➔ Excel is a handy tool to make an index.
- **[Optional]** hyperlink the modules on your table of contents to the actual pages.



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B6 Regional Anatomy

	A	B	C
1	Page #	Term	Module n
2	1	Anatomy	1.1
3	2	Physiology	1.1
4	1	Gross Anatomy	1.1.
5	1	Microscopic Anatomy	1.1
6	2	Regional Anatomy	1.1
7	2	Systemic Anatomy	1.1
8	2	Homeostasis	1.1
9	3	Neurophysiology	1.1
10	5	Atoms	1.2
11	5	Molecules	1.2
12	5	Cell	1.2
13	5	Organelles	1.2
14	5	Tissue	1.2
15	5	Organ	1.2
16	5	Organ System	1.2
17	8	Tissue	1.3
18	8	Histology	1.3
19	8	Epithelial Tissue	1.3
20	8	Connective Tissue	1.3

Index 1

INDEX

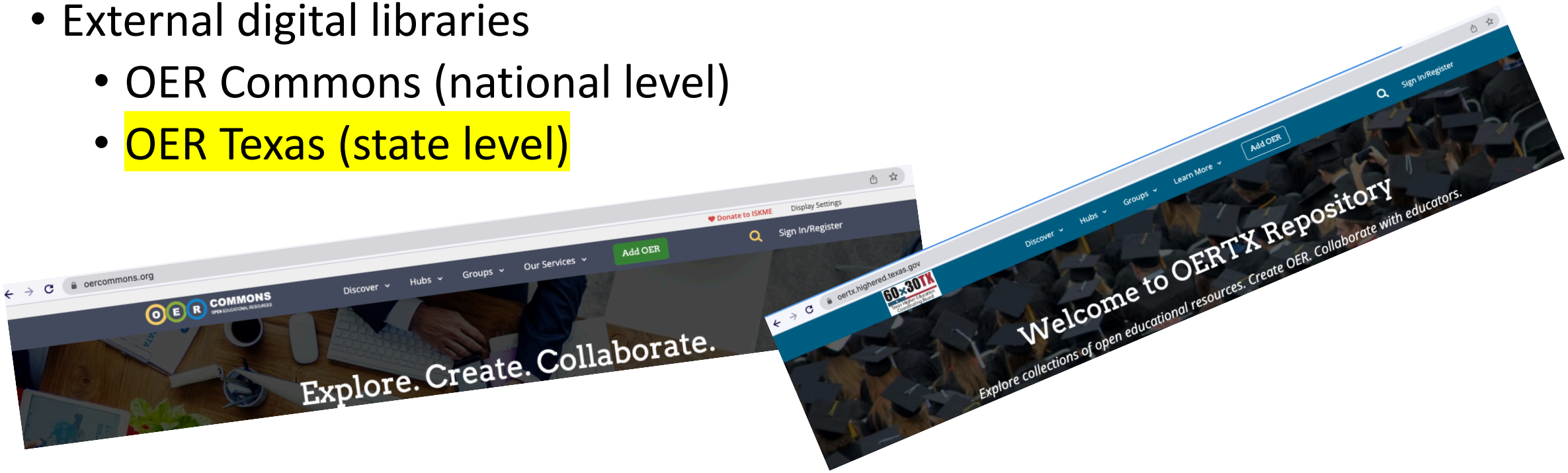
Term	Module	Page #	Term	Module	Page #
abdominopelvic cavity	1.6	29	ascending tracts	3.5	109
abduction	9.1	246	aspiration	11.2	309
acetylcholine	5.5	155	aspiration pneumonia	11.2	309
acoustic level	6.1	167	astrocyte	2.2	57
adduction	9.1	246	atmospheric pressure	8.2	214
adenosine triphosphate (ATP)	1.4	19	atoms	1.2	5
adrenal medulla	5.3	151	audition	7.1	175
adrenergic	5.5	155	auditory cortex	3.1	90
afferent	2.6	72	auricle	7.1	175
afferent branch	5.6	160	autonomic nervous system (ANS)	2.1	50
ala (plural = alae)	8.1	197	axial skeleton	1.3	10
alar cartilage	8.1	197	axillary nerve	4.6	138
alar plate	3.5	108	axon	2.1	44
alveolar process of the maxilla	10.1	279	axon hillock	2.2	53
alveolar duct	8.1	203	axon segment	2.2	54
alveolar macrophage	8.1	204	axon terminal	2.2	54
alveolar pores	8.1	203	axoplasm	2.2	53
alveolar process of the mandible	10.1	285	basal forebrain	3.1	83
alveolar sac	8.1	203	basal nuclei	3.1	96

Health Science OER Textbook Development

Step 8: Make OER Textbook Available

Options:

- Contain in CANVAS or Google Drive folder
- TWU's library system
- External digital libraries
  - OER Commons (national level)
  - OER Texas (state level)



Health Science OER Textbook Development

Step 9: Continuous Surveys and Refinements

- Conduct surveys to learn how your OER book is received.

  Responses I received:

  - Easy to follow because it goes along with the course sequence.
  - Target is clear.
  - Dr. Levitt's lecture comes back to me when I read the book for review.

- Ask students to offer comments to improve your OER books.

  Responses I received:

  - Want review questions with answers ➔ I implemented it.
  - Want more glossary of terms at the end of each module ➔ in progress…
  - I found a typo…. ➔ I revise as needed.

- Keep refining your OER materials in future editions.

My OER Experience…

Introduction to Anatomy and Physiology for Communication Sciences: Edition 2

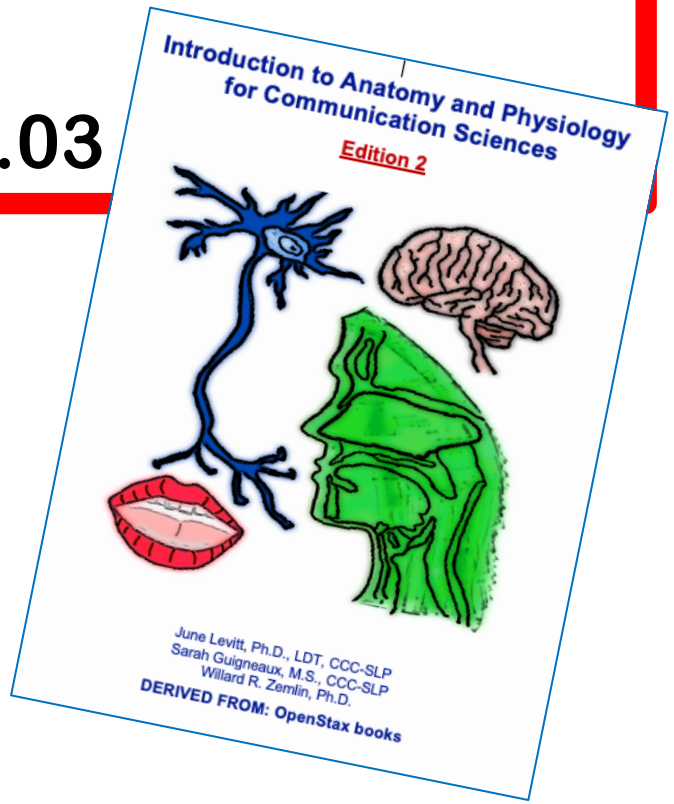
Use: 132 students over three semesters

Savings: $33,231.00

$251.75 (previous textbook) x 132 (# of students)

Rating: 9.03 (STDV: 1.12)

by Students: 10-point Likert Scale: 9.03



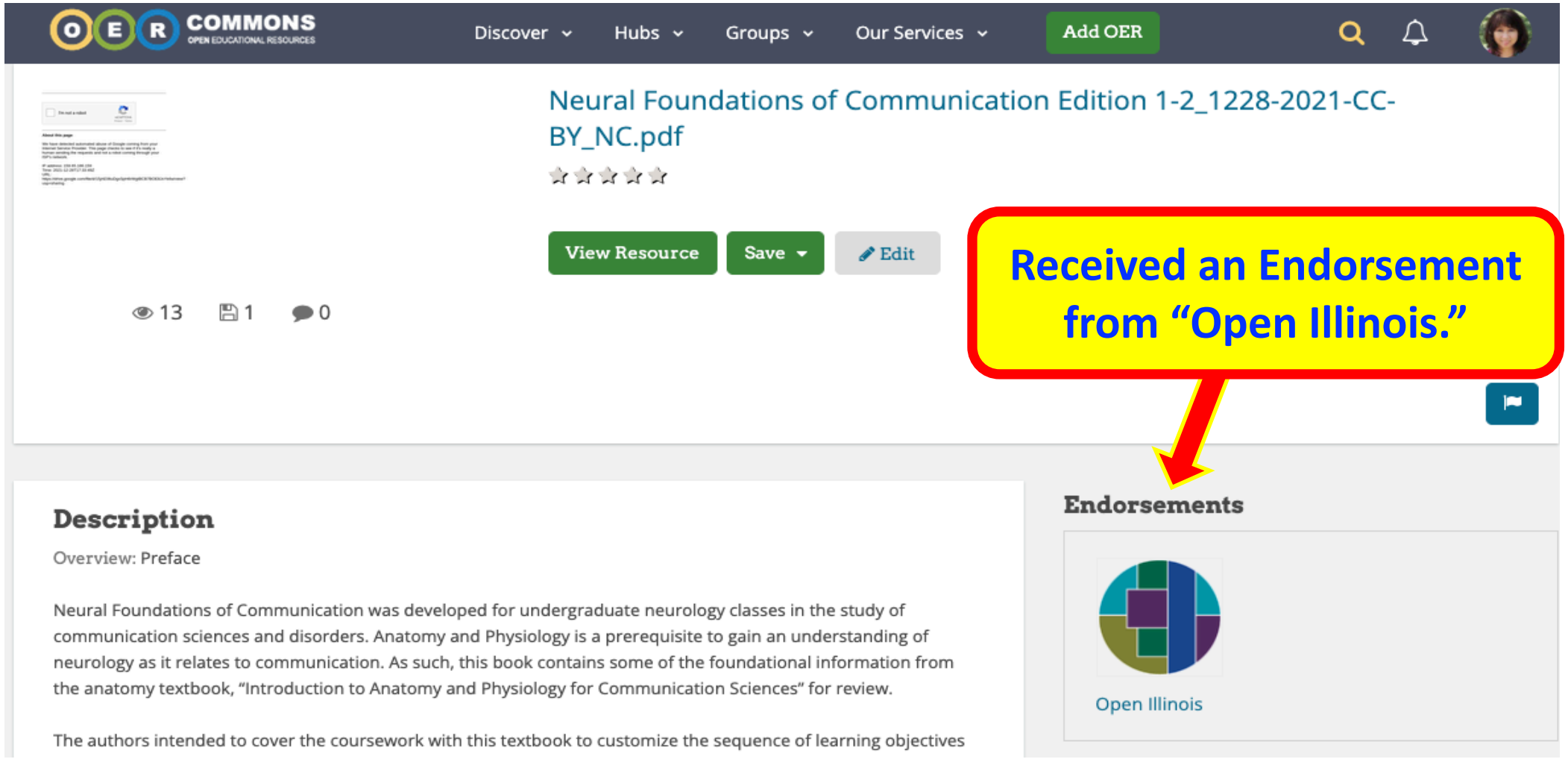
This book is accessible in two OER libraries:

OERTX
https://oertx.highered.texas.gov/courses/introduction-to-ap-for-comsci-edition-2-may-2021-cc-by_nc-pdf

OER Commons
https://www.oercommons.org/courses/introduction-to-ap-for-comsci-edition-2-may-2021-cc-by_nc-pdf

Neural Foundation of Communication: Edition 1.2

2022 Spring Semester is the first time to use it 100%.



Neural Pathways of Communication: Edition 1

2022 Fall Semester will be the first time to use it 100%.

Other development

- I introduced my OER books in the Higher Education Special Interest group of the **American Speech-Language-Hearing Association**, and received…
  - Offer to review my future editions from a reputable scholar, and
  - Offers to collaborate in future OER development from some others.
- Found another colleague in a different university who wrote a workbook in my area and connected, and
- One of the UTD professors made my OER textbook links available on his website for his students.

PIX: https://www.deafumbrella.com/post/thumbs-up-a-historical-mistake

Challenges

- Find “gold” in the sand: Searching for the information I need for my field.
- Develop the "workbook" component relevant to my field.
- Examine the reliability of the materials to use.

Benefits

- Customized materials to go along with the lectures.
- Remix and rephrase information to make it “students friendly.”
- Two-way ownership: Students own the book with me for future refinement.

My Future OER Plans

GOAL 1: Make OER textbooks for all my science-related courses (not clinical courses).

ACTION: Write two more OER textbooks.

(COMS 3333 and COMS 5233)

GOAL 2: Develop topic-specific workbooks to enhance learning

ACTION: Neuroanatomy, Muscles, and Phonetics workbooks.

GOAL 3: Continue refining and revising my textbooks with new editions.

ACTION: Maintain my OER books up to date and evidence-based.

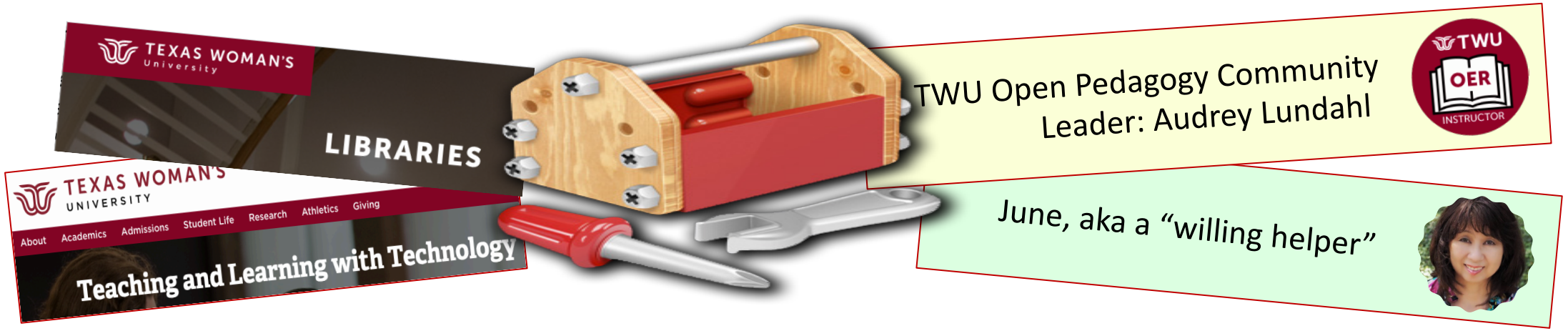
GOAL 4: Expand OER effort in the College of Health Science

ACTION: Promote, facilitate, encourage, and assist colleagues in getting started with OER.

Summary

Taken together….

- OER does not compete against commercially available textbooks.
- OER does not always need to be textbooks.
- There are many different resources that we can “remix.”
- OER development is the faculty’s contribution to teaching, scholarly, and service dimensions.
- TWU has resources in our OER toolbox.



Toolbox_icon.jpg: Tanemoriderivative work: ויקיג'אנקי, CC BY 2.1 JP <https://creativecommons.org/licenses/by/2.1/jp/deed.en>, via Wikimedia Commons

Feel free to let me know if you want to start your OER. I will be happy to assist you.

Open Educational Resources

Jonathasmello, CC BY 3.0 <https://creativecommons.org/licenses/by/3.0>, via Wikimedia Commons

Do you have any questions?

PIX: https://www.animatedimages.org/img-animated-thank-you-image-0076-118619.htm