Authoring to Enable Future Adopters

My Journey Creating Ancillaries for OpenStax Astronomy

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Link to LCC Astronomy OER on OER Commons

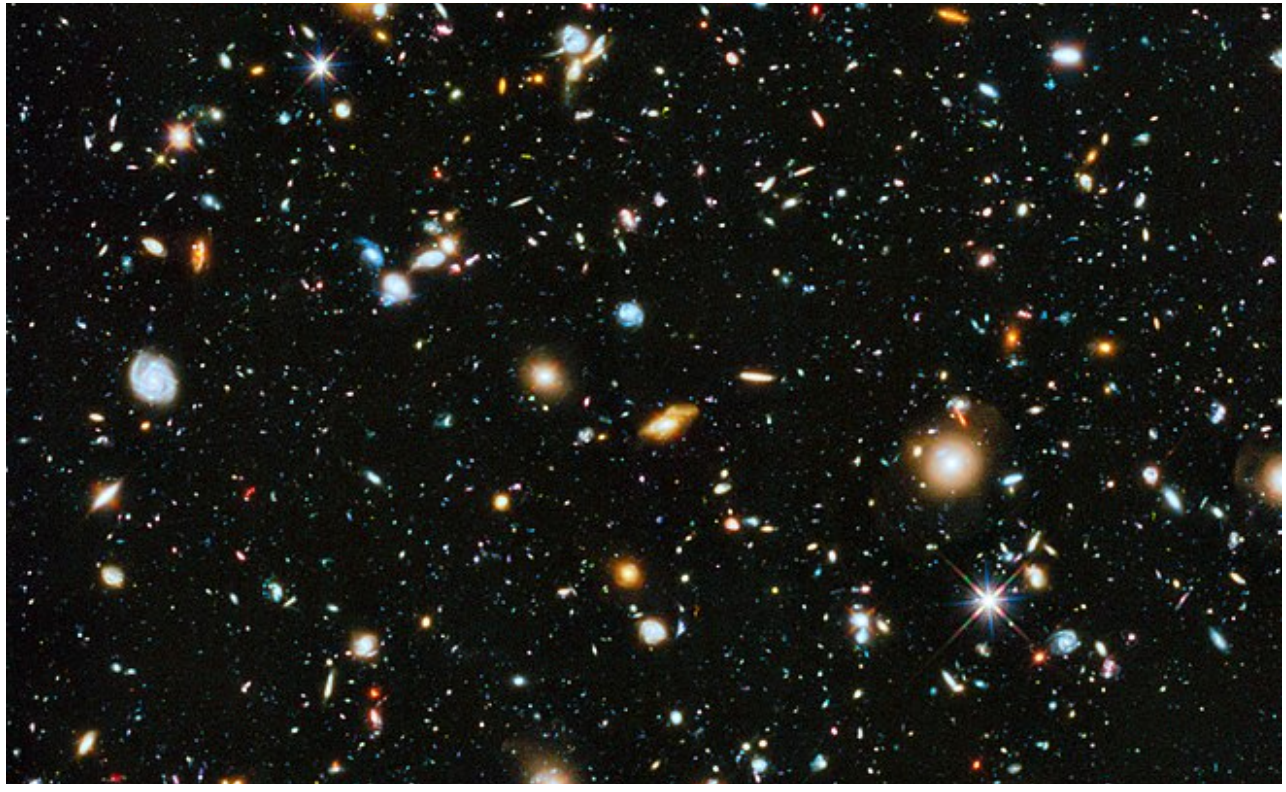


Image modified from "Hubble Ultra Deep Field" by NASA / ESA in the public domain.

It takes more than a textbook to teach a class!

From 2020 - 2022, Richard Wagner and myself (Andrea Goering) authored OER ancillaries aligned with OpenStax Astronomy

Today's Questions:

- Why did we pursue this project?
- How were we supported?
- How did we collaborate?
- What did we create?
- What are the side benefits of writing OER?

Why this project?

Context: Our Courses

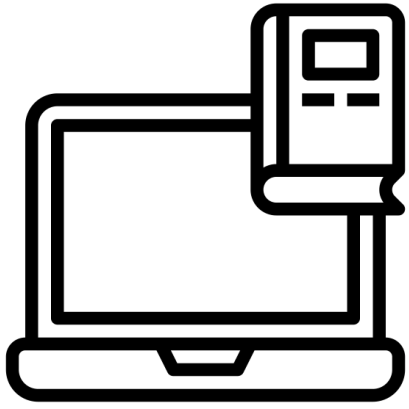
Three independent courses covering:

- ASTR 121: Solar System Astronomy (Fall)
- ASTR 122: Stellar Astronomy (Winter)
- ASTR 123: Galaxies and Cosmology (Spring)

Same Course Numbering as UO, but differences:

- At LCC, there is a lab credit for the course
- At LCC, course is hybrid. At UO, it is in-person.

Original Course Structure



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Original:

- Traditional textbook
- Traditional lecture class
- Online homework platform
- $80 / term

Some students didn’t buy materials due to financial constraints.

This undermined our pedagogy!

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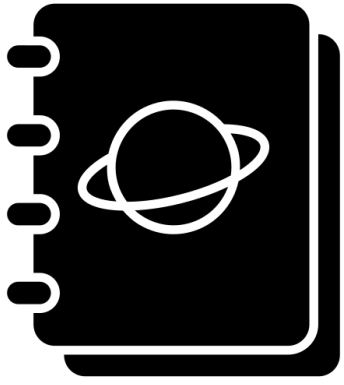
Reformed Course Structure

Reformed:

- OpenStax Astronomy textbook
- $0 / term!



What we needed to build:

- Daily in-class activities / labs
- Original homework / quiz bank

How were we supported?

OER Training and Support

Online Course Design Workshops

- Accessibility

Equity and Open Ed Faculty Cohort

- Representing Diversity in OER
- Open Pedagogy

LCC Open Education Summer Camp

- Investigate OER
- Learn about copyright & creating

Development funding for ASTR classes

What Resources Did We Use?

Resources we already used

- Activities, labs, and slides from original courses
- “Clicker” questions and simulations from The Nebraska Astronomy Applet Project (NAAP)

Other OER Resources Identified

- OER lecture slides from various sources
- 170+ labs from 10+ online sources. ~30% were OER
  - Indexed and aligned with OpenStax Astronomy during summer 2020 (OER Summer Camp)

46 resources Aligned with OpenStax ASTR

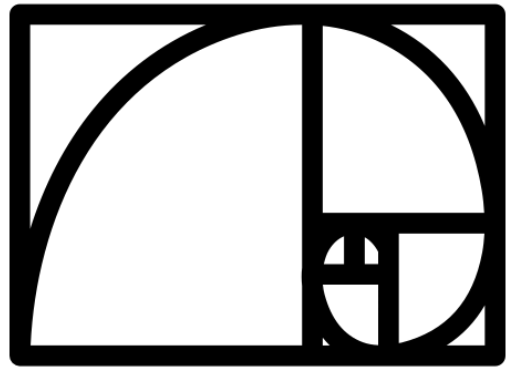
- 18 resource link collections by Andy Fraknoi
- 9 activities, labs, homework, projects
- 4 slide / video lecture sets
- 2 complete courses

OER COMMONS
OPEN EDUCATIONAL RESOURCES

What did we create?

Design Principles

Slides & Activities:



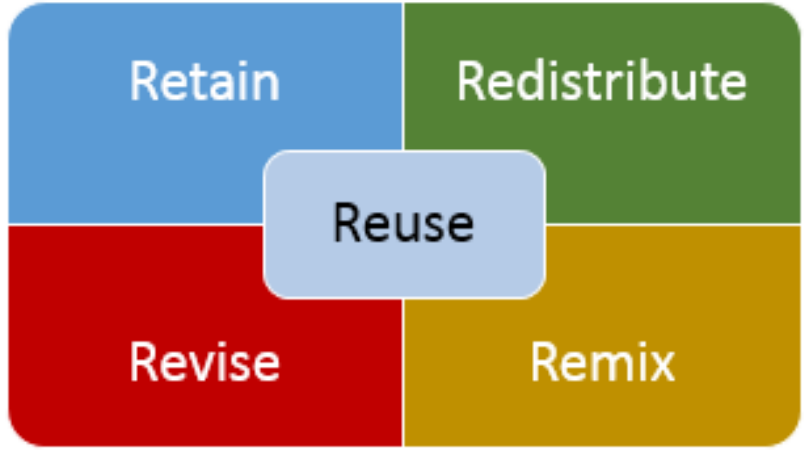
- Use multiple representations
  - Simulations, videos, images
- Scaffold complex ideas

Projects:

- Promote relevance to students
- Teach research and attribution skills

Whole Collection:

- Work seamlessly together
- Modular and re-mixable
  - Google Docs!
- Accessible and engaging!



The LCC Astronomy OER Collection

Goals and Achievements

Accessible, OpenStax aligned lecture slides with built in "clicker" questions, discussions, activities, etc.	Active learning slides decks for all chapters with course-specific decks for introductory chapters Built in accessibility (accessible colors and image alt-texts)
Daily (or better) in-class activities	126 activities (labs, article analysis, tutorials, quantitative work, jigsaws)
Project-based assessments	16 project prompts (student research, lab reports, society impacts, scientist spotlights, etc)
Resource Collection Online	Published Google Docs on OER Commons (July 2022)

How did we collaborate?

Year One: Drafting and Testing

Summer 2020: OER investigation summer camp (AEG)

Decided to switch to OER 2 weeks prior to day 1!!!

AY 2020-2021: Drafting

Decide chapters/topics to include for each course

Drafting slides, activities and projects:

- Modify original course material
- Design new activities
- Incorporate existing OER material (found during summer camp)
- Write homework, exam, quiz questions

Weekly meetings to assign tasks for upcoming weeks

Year Two: Editing for Release

Summer 2021: OER adoption summer camp

Rewrite course learning objectives

Choose material types to release

OER-ize & update material for Fall 2021

AY 2021-2022: Prep for Release

Material to release: Slides, Activities, Projects
Material to not-release: question banks, homework*

Prioritize and organize editing existing material

 *Internal Astronomy OER Inventory*

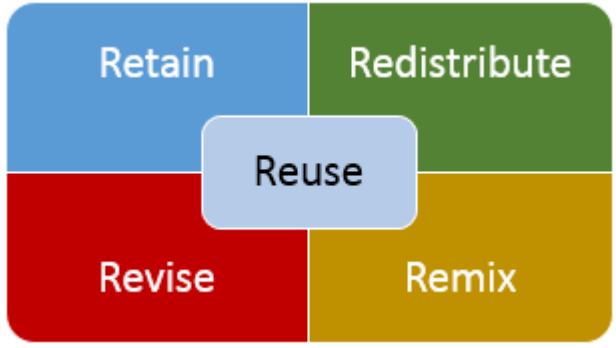
OER-ize & update material for Winter and Spring 2022

Monthly meetings to check in on updated work

Publication!

July 2022: Published!

- Organized by topic and textbook chapter
- Slides are broken by to textbook section
- Activity pages note type and tech requirements
- Includes directions for active learning techniques (gallery tours, Jamboards, scaffolded discussions)
- Includes sample syllabi for 10-week term
- Google Docs makes the 5Rs easy!

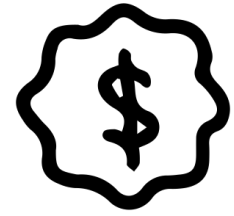


What are the side benefits of creating OER?

Provide Access to Students

Savings for Students:

- At LCC: Nearly $52,000 since AY 2020
  - $5760 per term (across 3 sections)
- At UO: Over $100,000 just this year!
  - $17,600 per 220-student course



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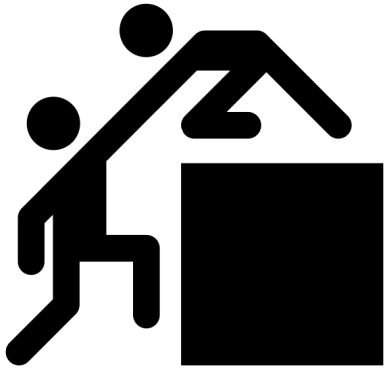
Enable Adopters & Spread Engaged Pedagogies



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Within Our Institutions:

- Part-time faculty at LCC new to ASTR
- Tenure-track faculty at UO who want to teach ASTR without reinventing the wheel

Outside Our Institutions:

- High school teachers across the country
  - “Just dropping a note to say how much I appreciate all of the time and work put into these resources… The labs, interactive slides and ease of use- fantastic. Thank you!”
- Have you used our resources? Let us know!

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Highlight Diversity

Student-Created Scientist Spotlights

- Build sense of belonging (Schinske 2016, Aranda 2021)
- Students see many “possible selves”

Collage of Spotlight assignments from Andrea’s ASTR 123 course, Spring 2021. Student works are under varying CC licenses.

Other Benefits and Lessons

More Side Benefits:

- Ask for permission! Multiple instructors allowed us to remix their non-OER resources.
- Supporting this OER work also helped support needed curriculum development.
- Utility beyond one course: material and lecture style influence future courses
- Now we openly license most work!

Lessons Learned:

- Consider different formats from the outset (online vs in-person, class size, etc.)
- Plan for accessibility up-front (retrofitting is daunting).
- Keep track of image sources as you go!

Key Takeaways

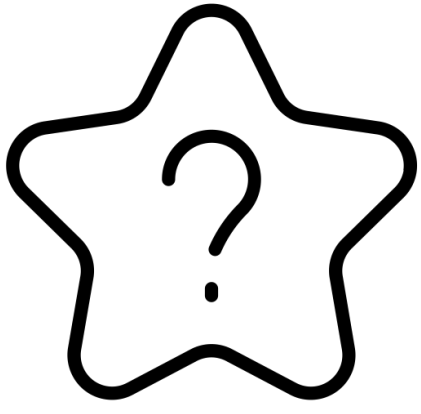
OER is more than just the textbook!

Today's Questions:

- Why did we pursue this project?
  - Support student access!
- How were we supported?
  - LCC's OER Librarian and Open Oregon Training
- How did we collaborate?
  - Google Sheets and Regular Communication
- What did we create?
  - Interactive Lecture Slides, Activities, and Projects
  - Homework / quiz bank (not yet shared)
- What are the side benefits of writing OER?
  - Enable new adopters
  - Spread active and engaged pedagogies
  - Highlight diversity in your field

Thank You!

Contact Me: Dr. Andrea Goering (goeringa@lanecc.edu, ayocom@uoregon.edu)



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Reflection Questions:

- Are you a future author?
  - Do you have sharable materials?
  - Would sharing help promote your pedagogical and community values?
  - Our work is CC-BY-NC-SA - feel free to borrow our formats!
- Have you published OER ancillaries?
  - How do you enable new adopters to find and use your materials?
  - How do you gather feedback and maintain your materials?

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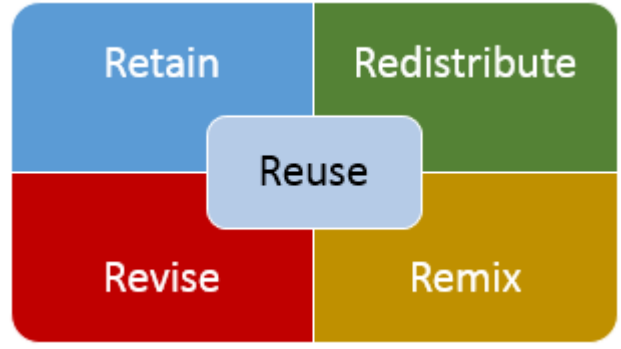
Tour the Resources

https://www.oercommons.org/courseware/lesson/96705

or

https://tinyurl.com/lcc-astr-oer

Please reuse, revise, remix, redistribute!



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Let us know you've used the resources or sign up for email updates:
https://forms.gle/un49RUNs55GU3ZNF6

Credits

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This talk includes material from:

- Authoring to Enabling Future Adopters: Supplemental Materials Aligned with OpenStax Astronomy by Andrea Goering and Richard Wagner, CC-BY-NC-SA 4.0
  - Presented at OpenEd22
- New Astronomy OER: Activities, Interactive Lectures, and Projects Aligned with OpenStax Astronomy by Andrea Goering, CC-BY-NC-SA 4.0
  - Presented at the Astronomical Society of the Pacific 2022 Annual Meeting