Improving Math Instruction with Open Educational Resources

Power in Numbers

Advancing Math for Adult Learners

LUMINARY LABS

Overview

1. Meeting the needs of adult learners
2. The opportunity in OER
3. Making OER work for you
4. How to get started
5. Lessons learned

Meeting the needs of adult learners

The Problem

Math skills significantly affect employability and career options.

The Need

Many adults lack access to high-quality education and training experiences.

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How can we better support educators and adult learners?

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The Need

Many adults lack access to high-quality education and training experiences.

How can we make math education more accessible?

How can we better support educators and adult learners?

Could edtech be part of the solution?

Power in Numbers: Advancing Math for Adult Learners is working to help adults develop the applied math skills they need to succeed in the real world.
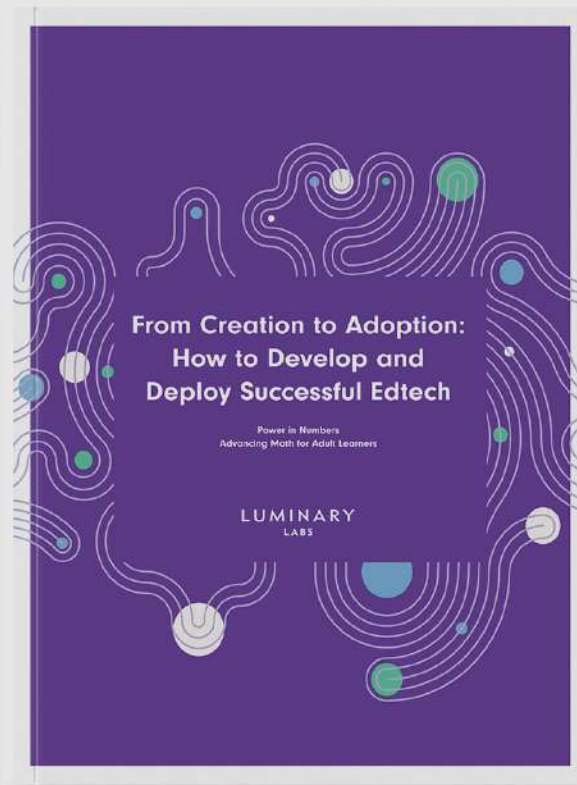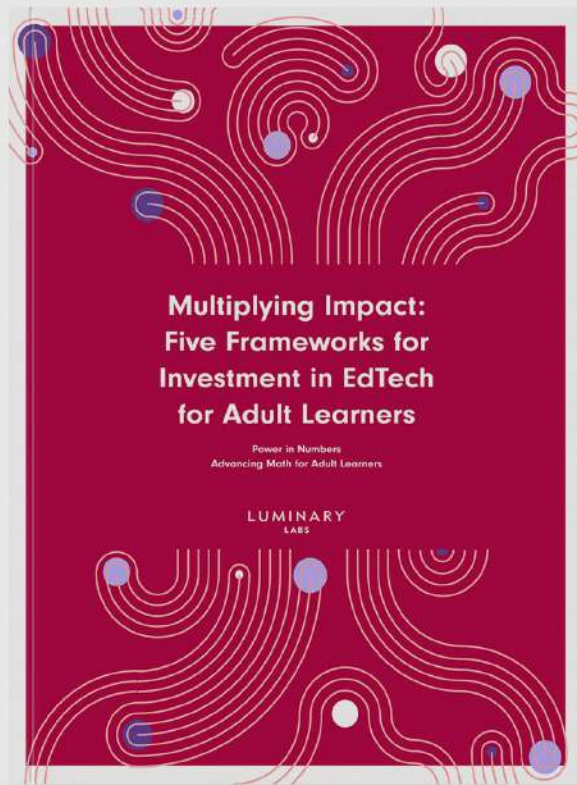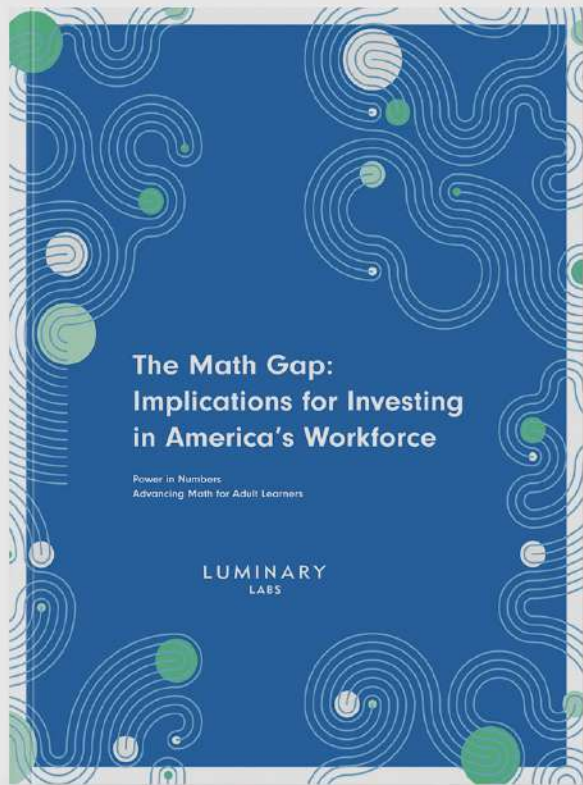
Our work, at a glance:

9 — **Subject matter experts**

4 — **SME summits**

37 — **Educators from 21 states**

100+ — **Resources reviewed**

The Math Gap:
Implications for Investing
in America's Workforce

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Multiplying Impact:
Five Frameworks for
Investment in EdTech
for Adult Learners

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From Creation to Adoption:
How to Develop and
Deploy Successful Edtech

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Power in Numbers reports available on LINCS!

The Math Gap

Multiplying Impact

From Creation to Adoption
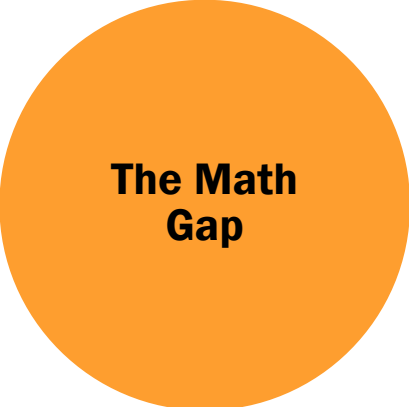
Coming 2019

Market Scan 1:

Identify adult learning market needs

Market Scan 2:

Define high-impact edtech categories

Market Scan 3:

Clarify pathways to edtech development

In progress:

Summary report with case studies

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The opportunity in OER

OER are teaching, learning, and research resources that are in the public domain or have been released under a license that permits free use and repurposing by others.

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OER can be:
Lesson plans
Tests
Experiments
Simulations
Course designs
Videos
Software
Teaching techniques
Group activities
Writing prompts
Textbooks
Learning modules

How does OER help?

Reduce cost

Increase efficiency

Improve instruction

Encourage contextualization

Expand access and equity

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OER's flexibility is particularly beneficial to multimodal math learning

Solving math problems in more than one way

Show with numbers

Show with a picture or graph

Show with words

Explain your thinking

OER's flexibility is particularly beneficial to multimodal math learning

Solving math problems in more than one way

Subtraction

4 – 1 = 3

I bought four bagels and gave one to my friend. I was left with three.

Step 1

Step 2

Step 3

How does OER help?

Reduce cost

Increase efficiency

Improve instruction

Encourage contextualization

Expand access and equity

94%

of educators who participated in our Power In Numbers user group said they would continue to use OER in their classrooms.

"OER...engage our non-traditional students in ways that allow them to develop conceptual understandings and to **redefine what it means to do math** and who they are (and can be) in a math classroom."

User Group Member

Making OER
work for you

How to make OER work for you

1

Connect with communities and circles of support.

2

Trust in your experience to adapt OER to your needs.

3

Use OER as a professional development opportunity.

#PowerinNumbers

Connect with communities and circles of support.

OER adoption and usage does not happen in isolation

Educators expressed interest in more circles of interaction and more opportunities for inter-teacher collaboration.

"I could not believe the powerhouse of teachers that were gathered for this project, **I would have loved to work with them more**."

User Group Member

"We kept in touch and did just that and our proposal was accepted! **Since then, we've worked together on various projects** and in strengthening the ties…with other math communities. I've learned a lot…as a result of all this collaboration."

User Group Member

Circles of support

Different types of connections provide complementary tiers of support, ranging from direct, peer-to-peer discussion to extended professional development communities.
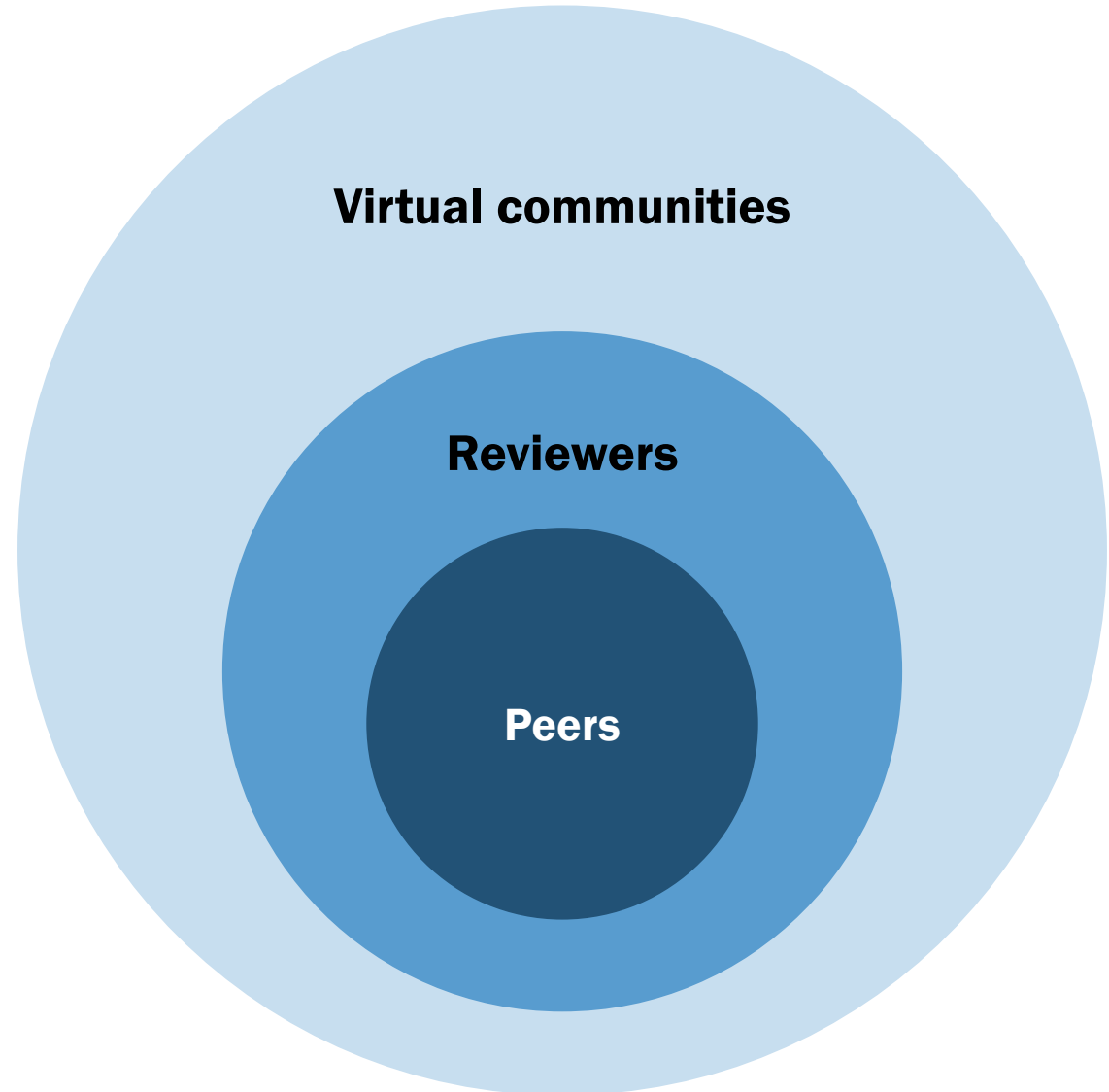
Virtual communities

Reviewers

Peers

Recommendations for educators

1

Expand your circles of support using different channels, including online groups, social media, and conferences.

Seek out like-minded peers and form your own communities of practice.

2

Trust in your experience to adapt OER to your needs.

Lesson integration is a hurdle to implementing OER

33%

of educators who participated in our Power In Numbers user group cited difficulties with integration as a major issue while testing OER in their classrooms.

"...was **hoping for more lessons that integrated technology into the classroom**. Maybe it was just the lessons that I chose, but when there was interactive games or documents, they seemed to be added just because and not integrated into the lesson."

User Group Member

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Recommendations for educators

2

___

Check OER Commons for curriculum guides to help integrate OER into your lesson plans.

Support other educators by **sharing tips and tricks** with the broader community.

3

Use OER as a professional development opportunity.

Develop your expertise by using and creating OER

100+

educators applied to be part of our Power In Numbers user groups — demonstrating the appetite for OER usage and creation within adult math.

User groups rated, reviewed, and categorized 70+ OER and created 20 new OER.

"I thoroughly enjoy working on math content and finding ways to **help teachers and students become comfortable and proficient** with math topics."

User Group Member

"It would be a good experience for me to not only become more familiar with OER, but also help me **develop and share my own materials**."

User Group Member

Recommendations for educators

3

___

Consider **creating your own OER** as a professional development opportunity.

Explore resources available through **online professional development platforms.**

Recommendations for educators

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How to get started

How to identify OER

Questions to ask

Is it free?

Can it be revised or remixed?

Is it openly licensed?
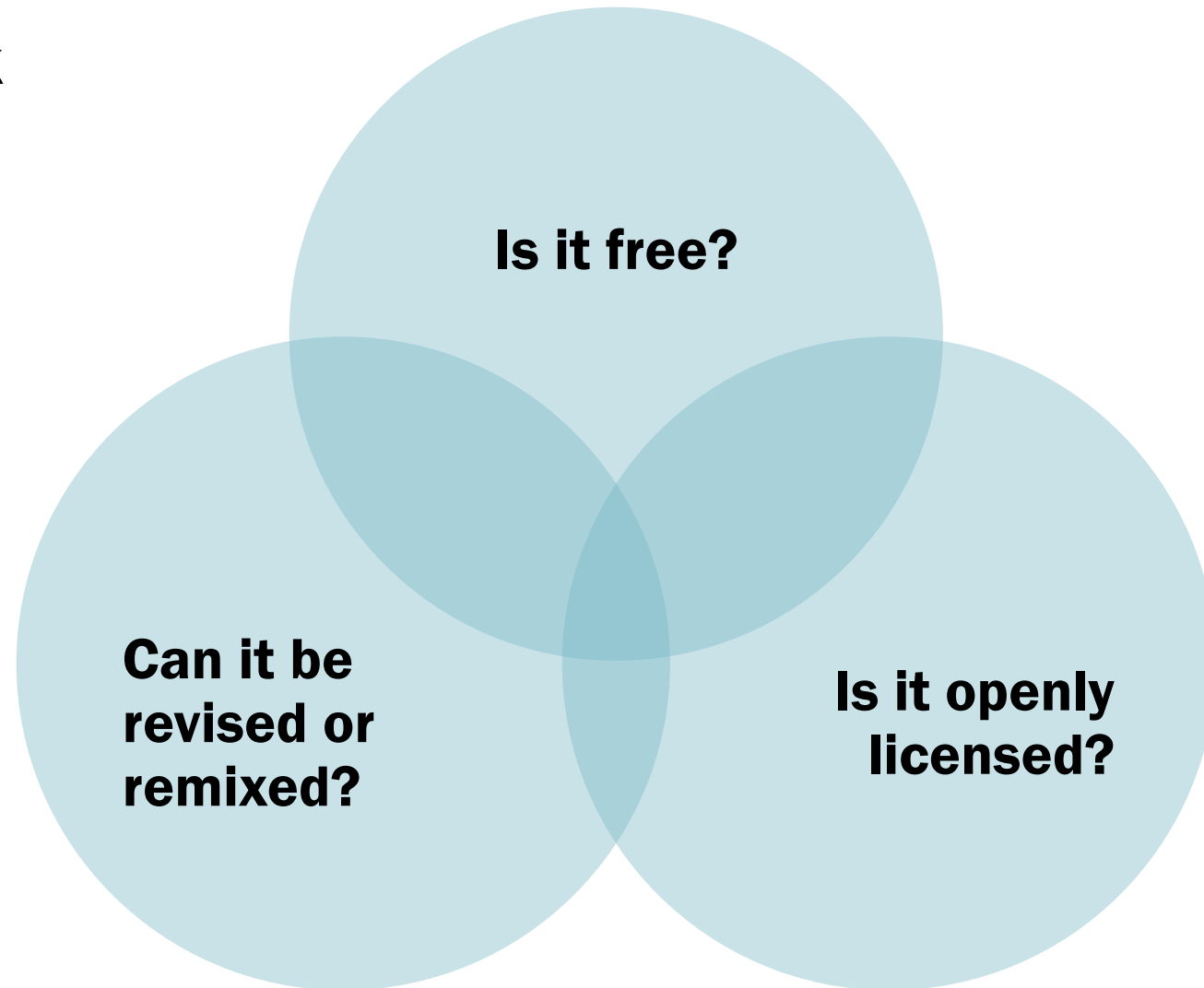
How to identify OER

Recommended resources

OER Commons *(recommended)*
oercommons.org

Merlot
merlot.org/merlot/index.htm

Creative Commons Search
search.creativecommons.org

National Science Digital Library
nsdl.org

SkillsCommons
skillscommons.org

How to identify OER on OER Commons

HOMEPAGE

How to identify OER on OER Commons

Use the "Discover" function to find relevant OER

HOMEPAGE

How to identify OER on OER Commons

SEARCH RESULTS VIEW

How to review OER using the Achieve Rubrics

The Achieve Rubrics are designed to assess alignment to Common Core, quality, and effectiveness in meeting key educator needs and requirements.

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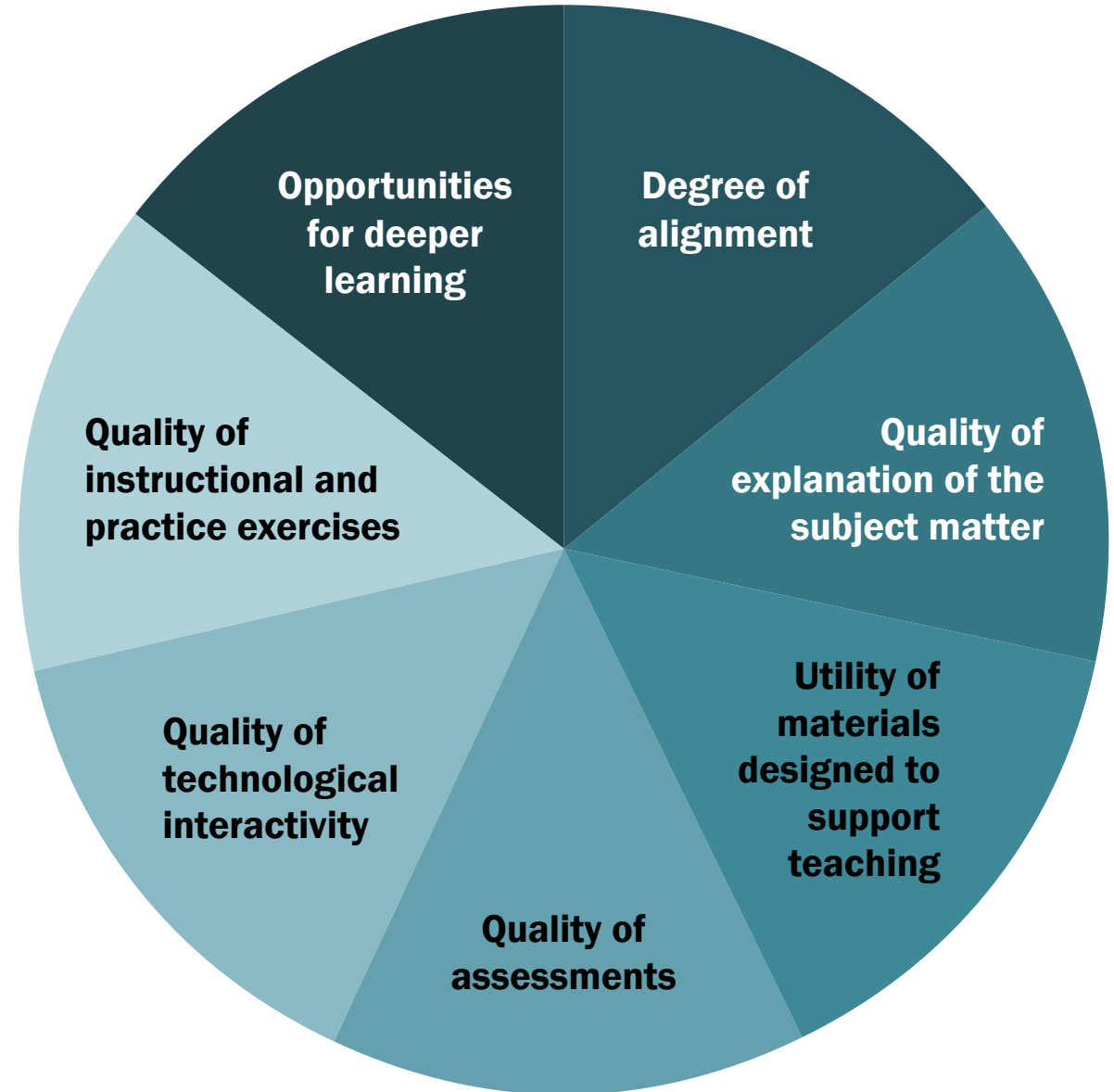
How to review OER using the Achieve Rubrics

The Achieve Rubric is embedded into OER Commons

How to review OER using the Achieve Rubrics

What the review looks like

How to review OER on OER Commons

Best practices

Score across **all seven criteria**

Leave a comment for each review

Add adult education "tags" as necessary

Be honest

How to make OER

Exercise: Remix existing OER

Goals: To create a curriculum guide for a course using two or more existing OER

To post new OER curriculum guide on OER Commons

EXAMPLE

Remix existing OER
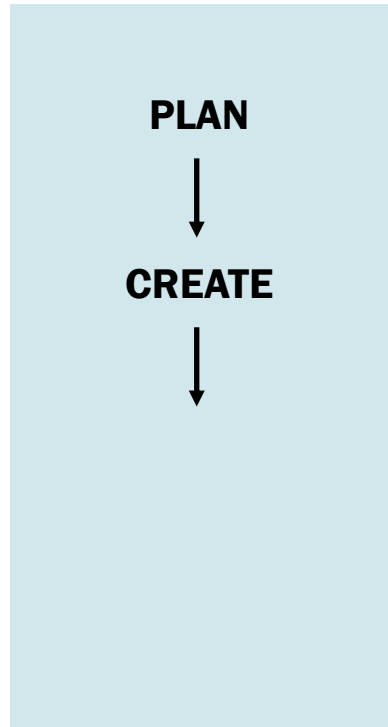
PLAN

↓

Step 1: Plan

- Browse OER guides on OER Commons; discuss findings with colleagues.

- Choose a focus area for your curriculum guide.

- Brainstorm and share 3-5 ideas with a colleague.

EXAMPLE

Remix existing OER

PLAN

↓

CREATE

↓

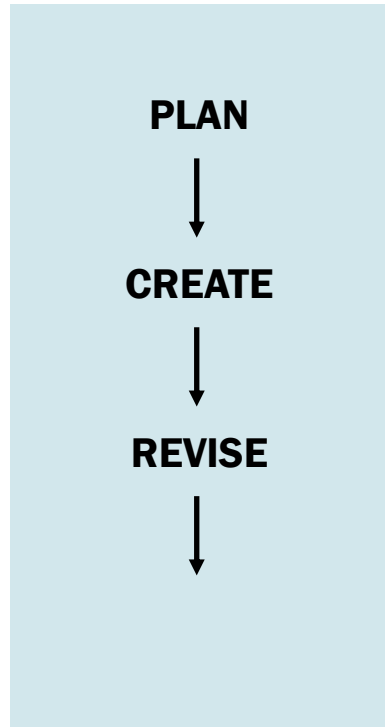## Step 2: Create

- Choose one idea.

- Create a draft OER curriculum guide using Microsoft Word or Google Docs.

EXAMPLE

Remix existing OER

PLAN

↓

CREATE

↓

REVISE

↓

Step 3: Revise

- Exchange draft curriculum guide with one to two colleagues.

- Review colleagues' curriculum guides; provide and collect feedback.

- Incorporate feedback into your draft.

EXAMPLE

Remix existing OER

PLAN

↓

CREATE

↓

REVISE

↓

SHARE

EXAMPLE

Step 4: Share

After drafting and revising your OER in your preferred software, use **Open Author** to submit it.

Lessons learned
Affordable Learning Georgia

Affordable Learning Georgia
The University System of Georgia

USG identified the link between affordability and student success.

ALG was created to support the adoption of OER like OpenStax textbooks to **increase rates of student retention, progression, and graduation**.

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Results:
170 OER projects completed and **60 projects currently in progress**

320,996 students saved **$55 million**

Students provided with free course materials achieve **significantly better academic results**

Student surveys show **positive perceptions of OER**

CASE STUDY

Affordable Learning Georgia
Lessons learned

1   **Academic freedom** should always be at the core.

2   **Meet educators where they are** with different OER offerings.

3   **Librarians, instructional designers, and administrators** are critical OER stakeholders.

4   **Build collaborative communities** to improve responsiveness and remixability.

CASE STUDY

Power in Numbers Resources

Visit

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lincs.ed.gov/state-resources/
federal-initiatives/power-in-numbers

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Power in Numbers
Final report and case studies

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