

Implementing, Scaling and Sustaining OER

Modernizing the Engineering Curriculum,
Scaling a Strategic Priority, and
Sustaining via a Nationwide OER project

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PRINCE GEORGE'S
COMMUNITY COLLEGE

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LibreTexts



Modernizing the Engineering Curriculum

A Community College Approach

Scott Sinex, Scott Johnson, Neeharika Thakur and others
Natural Sciences and Technology, Engineering, & Construction Departments
Prince George's Community College, Largo, MD

Joshua Halpern, LibreTexts,
formerly Howard University, Washington DC










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In the beginning . . .



Program	Participants	Support	Dates
Howard U Community College REU	Sinex, Halpern, deClercq		2001-2004
Howard/Hopkins/PGCC PREM	Sinex, Halpern, Johnson		2005-2011
ChemWIKI @ UC Davis	Larsen		2008
Howard/Hopkins/Cornell/Gallaudet PREM	Sinex, Halpern Johnson, Sabila, Spencer, Harris		2012-2017
ChemWIKI → LibreTexts	Halpern, Larsen +++		2015-2018
CIQM Harvard/MIT/Howard/PGCC/GU	Sinex, Johnson, Sabila, Huber, Harris + +		2013-
First MUREP Proposal	Sinex, Halpern, Johnson		2016
LibreTexts Open Textbook Project	Barrow, Halpern, Larsen + 11 institution inc PGCC		2018-2021
MUREP Project	Sinex, Halpern, Johnson Lookadoo, Thakur		2018-2020

PREM – Partnership for Research and Education in Materials

CIQM – Center for Integrated Quantum Materials

Where the project is now

M.O.S.T. Posters:

OER Supports a New Engineering Curriculum at PGCC

Neeharika Thakur, Joshua Halpern, Scott Sinex and Scott Johnson

General Chemistry for Engineering: Interactive LibreTexts

Scott Sinex (PGCC), Josh Halpern (Howard), & Scott Johnson (PGCC)



Collaboration is key

- Implementing, scaling, and sustaining educational projects require collaborators
- Initial focus was to introduce materials science into a community college engineering curriculum
- With time the collaborators became more ambitious and wanted to modernize the entire engineering curriculum
- OER was a tool which allowed creation of learning materials suited to the goal
- Zero cost was important benefit, but not the driver
- But Zero Cost has become the gateway for OER



PRINCE
GEORGE'S
COMMUNITY
COLLEGE

FY2019-2021
Strategic Plan

SUCCESS > **IMPACT** > **EXCELLENCE**

Student Success = Priority #1

- Cross-functional OER Ad Hoc Committee
 - Led by Faculty (some early adopters and some interested)
 - Student Affairs, Bookstore, RAE, Technology, Communications
 - Included Students
- Recommendations
 - **Create** OER Steering Committee to carry out the PGCC Initiative
 - **Develop** an operational practice that facilitates greater student completion through the adoption of zero-cost resources
 - **Identify** stakeholder responsibilities that support the long-term sustainability of OER/free resources, including identifying budget modules that can be allocated to usage and support

Creating and sustaining optimal conditions for students to design and achieve academic, career, and personal goals.

Early Indicators...

- Spring 2019 (one term)
 - 141 sections
 - 2,154 students
 - \$172,320 in student savings



Time to take it to the next level...

The LibreTexts Project



CSU The California State University
AFFORDABLE LEARNING
SOLUTIONS (AL\$)

MERLOT

UC DAVIS
UNIVERSITY OF CALIFORNIA

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YouTube <https://youtu.be/sxLmeHMgvTg>



Biology



Business



Chemistry



Engineering



Geosciences



Humanities



Math



Health



Physics



Social Sciences



Statistics



Workforce



The OER Balancing Act

Centralized Platform

Decentralized Platform



High Stability/fidelity
Lack of Local Control
Effective Community Sharing
Pooled Resources
Efficient

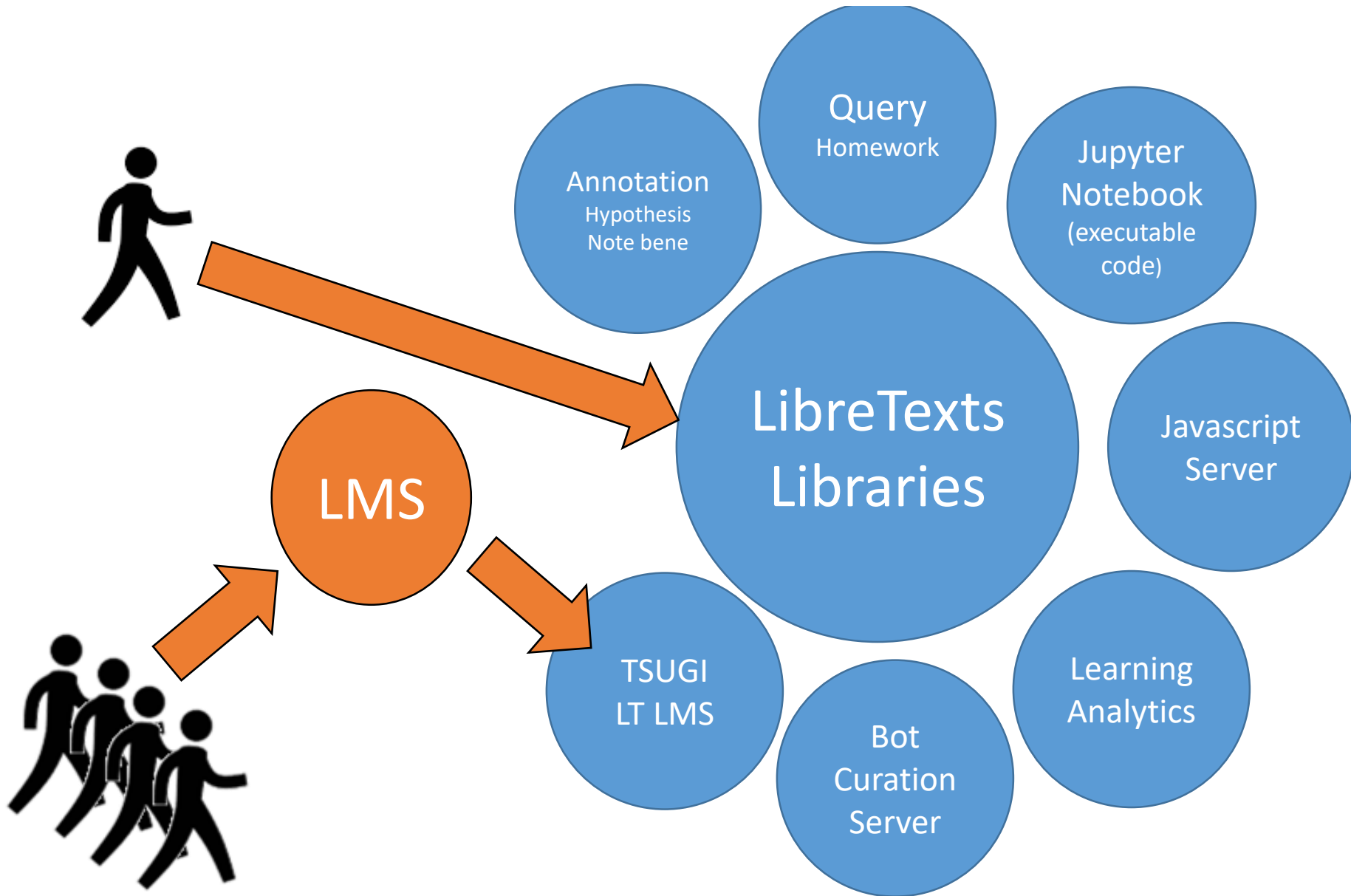
Flexibility
Fragmented Ecosystem
Independent Resources
Inefficient

LibreTexts is designed for easy creation of custom OER for your courses and students

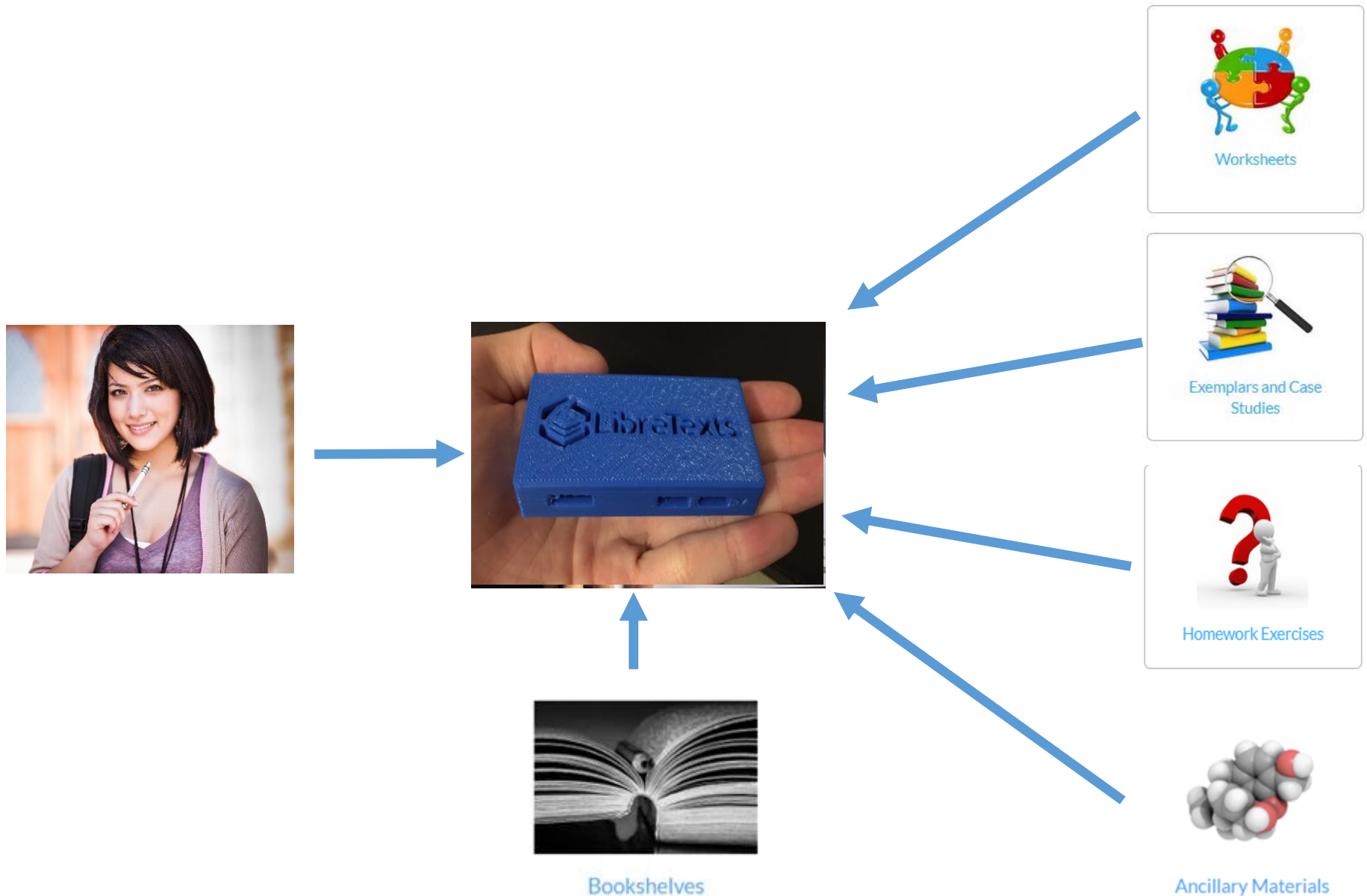
The OER Universe



Scaling the LibreVerse

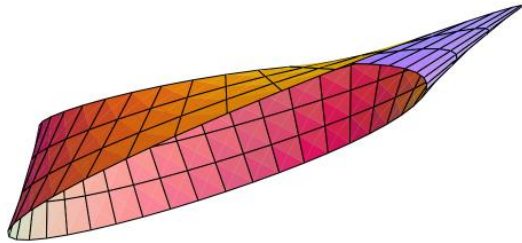


Course shells “decode” LibreTexts for students

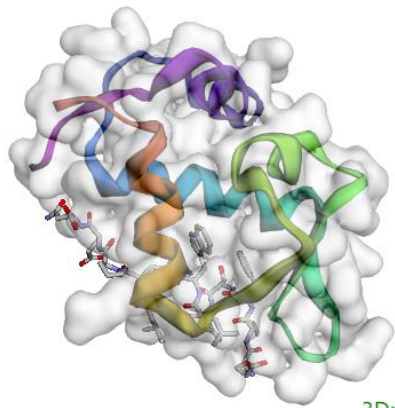


Advanced Features

- <https://libretexts.org/advanced.html>



CalcPlot3D



3Dmol

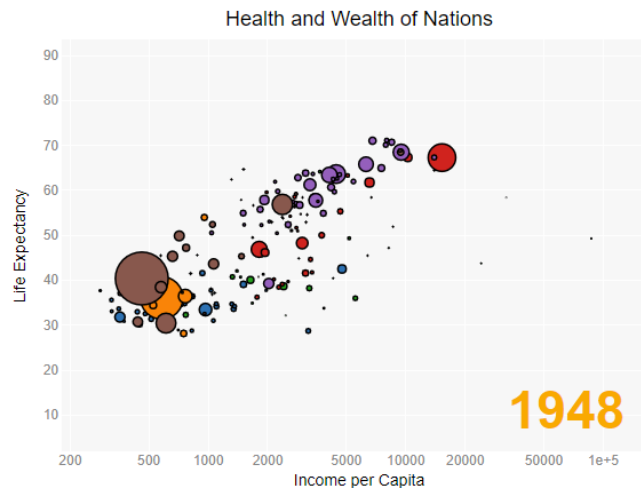
```
#You can scroll this code!  
import pandas as pd  
import numpy as np  
import os  
  
from bqplot import (  
    LogScale, LinearScale, OrdinalColorScale, ColorAxis,  
    Axis, Scatter, Lines, CATEGORY10, Label, Figure, Tooltip  
)  
  
from ipywidgets import HBox, VBox, IntSlider, Play, jslink
```

run

restart



Year



Public

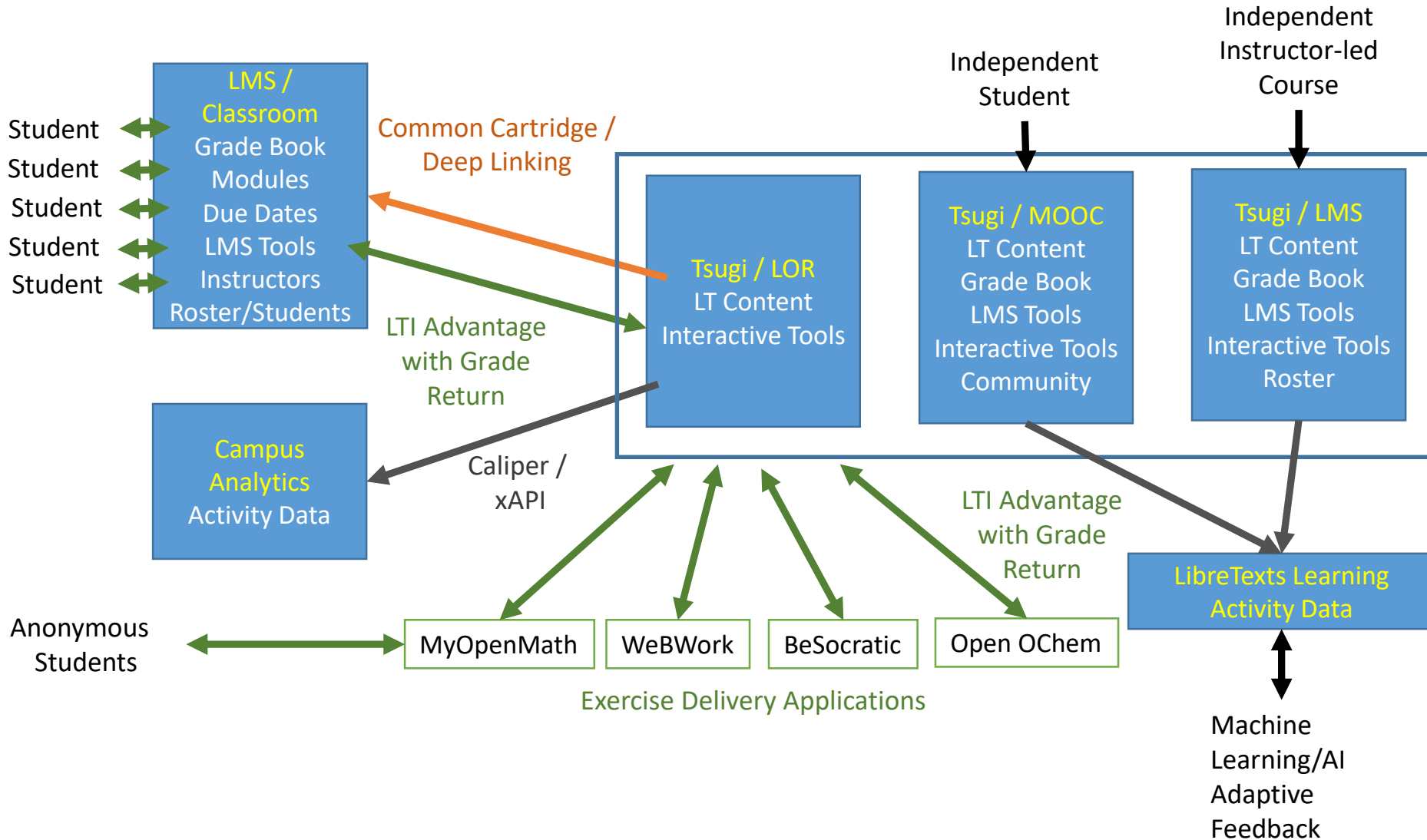
How to get started

1. To create an annotation, select text and click the button.
2. To add a note to the page you are viewing, click the button.
3. To create a highlight, select text and click the button.
4. To reply to an annotation, click the Reply link.
5. To share an annotated page, click the button at the top.
6. To create a private group, select Public, open the dropdown, click + New group.

Annotations Page Notes

There are no annotations in this group.

Advanced Features (coming . .)



Implementing the OER of the Future



SOCIAL SCIENCES

TABLE OF CONTENTS

Growth and development through the lifespan including physical, social, cognitive and neurological development. This course covers topics in each of these areas and provides an overview on subjects such as day care, education, disabilities, parenting, types of families, gender identity and roles, career decisions, illnesses and treatments, aging, retirement, generativity, and dying.

1: LIFESPAN PSYCHOLOGY

- 1.1: Introduction to Life Span, Growth and Development
- 1.2: The Cohort Effect
- ~~1.3: Culture~~
- 1.4: Periods of Development
- 1.5: Research Methods
- 1.6: Life Stages
- 1.7: Introduction to Life Span, Growth and Development
- 1.8: Introduction to Life Span Development
- 1.9: 49 Up
- ~~1.10: Meet Neil~~

2: DEVELOPMENTAL THEORIES

- 2.1: Introduction to Developmental Theories
- 2.2: Psychodynamic Theory
- 2.3: Psychosocial Theory
- 2.4: Exploring Behavior
- 2.5: Exploring Cognition
- 2.6: Research Designs
- 2.7: Lifespan Psychology
- 2.8: Developmental Theories
- 2.9: Developmental Theories

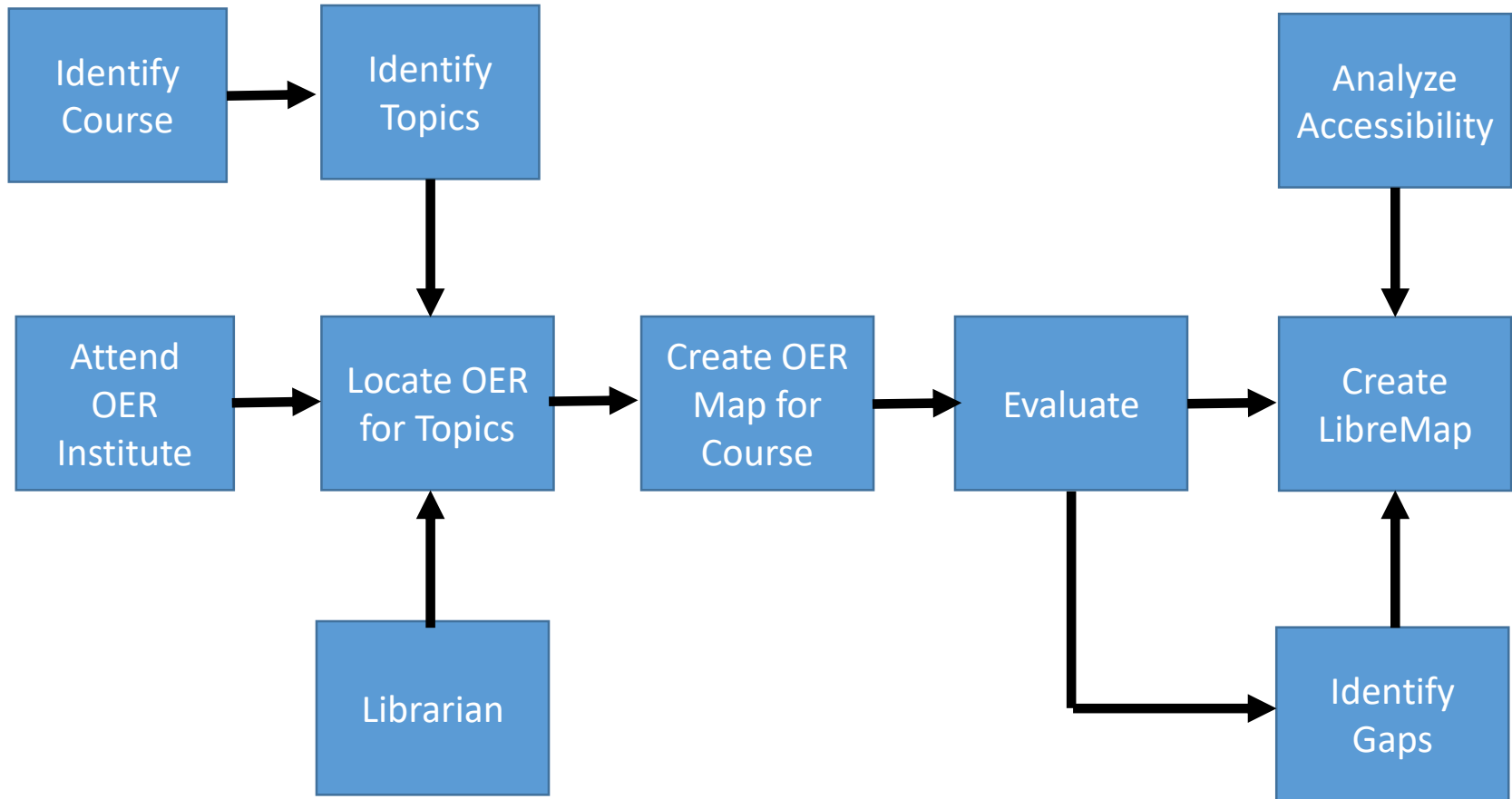
*Insert from
OpenStax Psych*

3: PRENATAL DEVELOPMENT

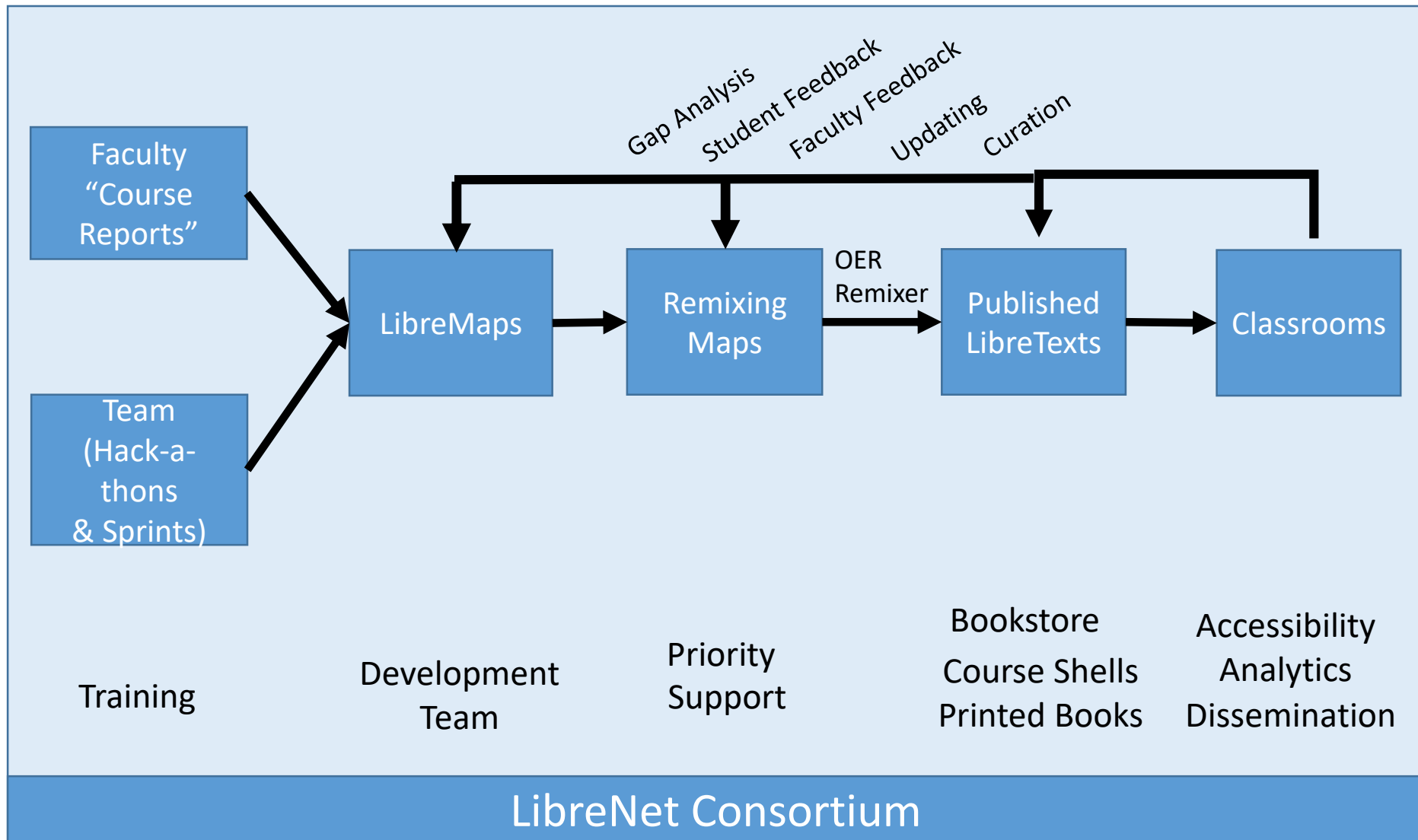
- 3.1: Introduction to Heredity, Prenatal Development, and Birth
- 3.2: Prenatal Development
- 3.3: Environmental Risks
- 3.4: Pregnancy
- 3.5: Childbirth
- 3.6: Maternal Mortality
- 3.7: Prenatal Development
- 3.8: Prenatal Development
- 3.9: Introduction and Prenatal Development
- 3.10: Introduction to Lifespan, Theories and Research, Beginnings
- 3.11: "Life's Greatest Miracle"

Controlling your curriculum requires controlling your textbook

LibreTexts OER On-Ramp



Scaling LibreTexts



Sustaining the LibreNET Consortium

Advanced Membership

- On Campus Training
- Accessibility review
- Support for OER construction
- Ancillary materials (Homework systems, test banks, etc.)
- Priority access to
 - Development, Technology & Assessment Teams

Base Membership

- Single Sign On
- Institutional Portals
- Branding of Physical Texts
- More than 10 Course Shells
- One click ordering from LibreTexts Print Bookstore
- Access to Development, Technology & Assessment Teams
- Closed course annotation (hypothesis and note bene)

Public Access

- OER Remix access
- Hosting of OER materials
- Up to 10 course shells in a Campus Hub
- Printing-on-demand Files for physical texts
- Individual Annotations (hypothesis and note bene)

LibreTexts Platform...At a Glance

- Integrates content over sub-fields and across different fields
- Integrates advanced technologies for **learning and assessment**
 - Online Homework system (adaptive)
 - 3D capabilities
 - Multimedia including videos and simulations
 - Numerical calculations infrastructure
 - Student tracking and assessment
 - Integrated annotation infrastructure
- Can be incorporated into learning management systems
- Can be used by faculty with minimal computer expertise to **quickly create custom OERs** for their classes and students
- Facilitates collaborative and distributed OER building
- No additional IT burden, **> 99.5% uptime**

Discussion



The OER Remix

The OER [Remixer](#) is a self-service tool to rapidly assemble a LibreText from existing sources. A tutorial includes both an explanation of the user Interface as well as a walkthrough of how to do basic tasks.

OER Remix

Last updated: Jun 3, 2019, 6:06 AM by Delmar Larsen **Page restriction:** Public **Page ID:** 113826



[Representative Textmaps and LibreTexts](#)

[Remixer Tutorial](#)



Batch

TOC

LMS

Donate

The OER Remix is a self-service tool to rapidly assemble a Remix text from existing sources. See the [Remixer Tutorial](#) in the Construction Guide for more details for an explanation of the User Interface as well as a walkthrough of how to do basic tasks with the OER Remix. Your Remixing progress is stored automatically.

- **USERNAME:** Remix
- **Password:** ILoveRemixing!

Edit Mode

New Page

Delete

Merge Folder Up

Default Template

Clear All

Source Panel

Chemistry

- + Course Shells >
- + Bookshelves >
- + Homework Exercises >
- + Ancillary Materials >
- + Under Construction >
- + Workshops >
- Redirecting to your page... >

Editor Panel

— Cover Page. Drag onto me to get started

- 1: Chapter 1
- 2: Chapter 2
- 3: Chapter 3
- 4: Chapter 4
- 5: Chapter 5

LibreTexts has grown as a consortium through its members, often in ways that they bring to the table involving their interests and needs and that LibreTexts implemented to lasting benefit. We seek new institutional partners who can bring, new content, new technology, new training, new outreach, new support, a sizable number of new users across an institution and certainly new things we have not thought about but will push LibreTexts forward.

Institutional membership requires a MOU at a high administrative level, in general above that of a department and minimal financial support or participation that will help sustain LibreTexts, both proportional to the size of the institution.



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