Open educational resources: adoption, curation, and customization

organized by
Veronika Furst, Shahla Nasserasr, and Violeta Vasilevska

Workshop Summary

Overview

The AIM workshop, held May 12–16, 2025, at the University of Northern Colorado in Greeley, CO, focused on the creation of accessible open educational resources (OERs) in the mathematical sciences. The workshop was organized by Veronika Furst, Shahla Nasserasr, and Violeta Vasilevska, with additional early organizational help from Lon Mitchell. Participants were introduced to the open-source authoring language PreTeXt and received instruction on authoring content, collaborating via version control tools, and integrating external resources into their OER projects.

Instruction and Expert Support.

Morning sessions were led by three core facilitators: **David Farmer** (AIM), **Oscar Levin** (University of Northern Colorado), and **Christina Safranski** (Franciscan University of Steubenville). They delivered structured instruction on PreTeXt, GitHub, and foundational OER workflows, guiding both new and experienced users through the capabilities of these tools. These facilitators remained available throughout the week to provide personalized support to participants as they worked on their projects.

Additional expert contributors included **David Austin** (Grand Valley State University), **Rob Beezer** (University of Puget Sound), **Anurag Katyal** (Palm Beach State College), **Mitchel T. Keller** (University of Wisconsin–Madison), and **Virginia Mae** (University of Minnesota). Their sessions covered advanced workflows, including the use of PreFigure, Doenet, and collaborative practices using GitHub.

Workshop Format and Engagement.

Afternoon sessions were dedicated to hands-on project work. Participants were encouraged to apply the tools and techniques introduced earlier in the day, often in teams or individually, with roaming experts offering support and guidance. This flexible structure allowed participants to explore the tools most relevant to their goals and to make meaningful progress on their OER projects.

To ensure the workshop content remained responsive to participants' needs, organizers distributed a daily questionnaire to collect feedback on desired topics and areas for clarification. Each day's agenda was then adjusted based on this input, resulting in a participant-centered experience that emphasized relevance and adaptability.

Panel Discussion and Broader Context.

Midweek, a panel discussion featuring all six PreTeXt experts addressed topics related to copyright, licensing, and intellectual property. This session offered participants practical insights into the legal considerations surrounding open educational publishing, helping them make informed decisions about sharing and licensing their own materials.

Individual Group Reports

Each team or individual participant sent a brief description of their work and continuation plans. Here are their summaries in their own words:

- **University of Nebraska at Omaha-Calculus: Janice Rech, Nick Kass, and Cong Wang** attended the OER workshop, sponsored by AIM. Prior to attending, we were not familiar with PreTeXt. Our goal was to learn how to take materials that we had previously developed for calculus 1 from a LaTeX format into PreText, so they could be shared in an OER format. We worked diligently through our five days at the workshop to learn PreText, including how to "branch" from existing materials, and how to use PreFigure (which was awesome). We also had time during the workshop to explore existing OER Calculus materials, specifically "Active Calculus." At the end of the week, we had answers to questions we came with, but we also had many questions! We are now considering whether we should "branch" from Active Calculus, editing and adapting it to fit our needs. During the 2025-26 academic year, we will continue to work with our existing materials, organizing and converting them to PreText. We will also continue to investigate using "Active Calculus" and making it work for our courses.
- **Utah Valley University: Harish Bhatt, Wiktor Mogilski, and Violeta Vasilevska**. During the week of the AIM workshop, we learned the PreTeXt language and how to work with GitHub. We also learned how to make accessible figures using PreFigure. We practiced implementing all of this in our course materials for the Fall 2025 semester (e.g. by creating syllabi). We also began working on an OER book chapter titled Conic Sections, which consists of three sections (each team member is assigned to a single section). The chapter will be for the OER book we use for our Pre-Calculus class. The current book does not have that chapter. We will be working on completing this book chapter during the coming academic year.
- **University of Nebraska at Omaha: Keith Gallagher and Taran Funk.** The online textbook we are working on is for College Algebra. During the workshop we learned of several different ways to get students engaged in the textbook and keep everything accessible. We spent most of our time putting some exercises and graphs into our textbook that use the methods taught to us so we would have them as a reference later when working independently (and getting the handle on how to use GitHub). We do not plan to have this textbook done by Fall 2025, but hope to have it usable by Fall 2026. Keith and I plan to keep track of useful examples we provide our students during class throughout this coming fall and use them to help fill our textbook.
- **Fort Lewis College: Veronika Furst, Hannah Kurzweil, and Erich McAlister.** During our week in Greeley, each team member worked on a different aspect of integrating OER course materials into the Fort Lewis curriculum via PreTeXt.
  - V. Furst is planning on adopting an AIM-approved OER text in the coming Fall term for her combinatorics course. Activities undertaken at the workshop and

continuing through the Summer and Fall include customizing material that will appear in the text (through both additions and deletions) and editing so that the text integrates better with Fort Lewis College's LMS (Canvas).

- H. Kurzweil used the workshop to learn to author in PreTeXt. During the workshop, she produced a text for a proposed first-year general education course in data science and is converting her other course lecture slides to PreTeXt format.
- E. McAlister used the workshop to develop PreTeXt templates for use at Fort Lewis College to distribute accessible syllabi, worksheets, and exams using PreTeXt and Canvas. These templates will be completed in time for a training session in the Math department at FLC before the beginning of the Fall 2025 term.

- **LaGuardia Community College: Marina Dedlovskaja, Bukuri Gjoci, and Shenglan Yuan** explored the structure and use of PreTeXt, Prefigure, and Doenet. As part of the workshop, we set up a PreTeXt file reflecting the structure of the workbook we plan to develop. Below is an overview of the project plan and timeline.

  Project Components

  The project will include the following key tasks:
  (1) Developing a comprehensive workbook containing 12 reading assignments, worksheets, and worked-out problems. These will be used for classwork, homework assignments, and exam review.
  (2) Piloting the new materials in at least two sections of MAT231 and MAT210.
  (3) Revising the materials based on feedback from instructors and students.
  (4) Evaluating additional resources: Alongside the required course textbook, we will review several OER textbooks, including Discrete Mathematics: An Open Introduction by Oscar Levin.
  (5) Creating supplemental materials (including Calculus 1) to address topics currently missing or underrepresented in the existing OER texts.

  Timeline
  - June–July 2025: Review OER textbooks; design the workbook structure; create initial reading assignments and draft worksheets.
  - September–October 2025: Pilot reading assignments and worksheets in selected sections; compile homework assignments and exam review problems.
  - November 2025: Finalize the workbook.
  - January–February 2026: Develop additional textbook chapters to address missing or underrepresented topics.
  - March–April 2026: Revise all materials based on feedback from both instructors and students.
  - May–June 2026: Create an online course incorporating the new learning materials.

- **Winston-Salem State University: Mark Hunnell** worked on two projects. The first was an original book for use in the Elementary Statistics course that serves health science pre-majors at WSSU. The second project is an adapted book for use in the Linear Algebra course that serves primarily mathematics and computer science majors. Both projects are focused on increasing accessibility for the institutions

students, while incorporating the interactive exercises and in-browser coding capabilities of texts written with PreTeXt. The adapted linear algebra course is being used as a primary reference in a summer course, while the Elementary Statistics book is intended to be used in Fall 2026. Additional faculty have joined the projects at WSSU, and there is substantial interest in adapting the majority of course materials used by the department to PreTeXt over the next few years.

- **Lewis University: Amanda Harsy, Adam Schultze, and Cara Sulyok.** During the workshop, our three-person team worked together to combine our activities and to create an OER lab and activity book for faculty teaching Multivariate Calculus which we hope to implement in Fall 2025. We also started development of Lewis University and Villanova University syllabus templates using PreTeXt. Over the next year, we plan to continue to use PreTeXt to create note-taking guides for new preps including History of Mathematics and Differential Equations with Linear Algebra in addition to continuing to work through converting Amanda's 300+ Calculus III LaTeX document into PreTeXt (and combining the best of Adam and Amanda's Calculus III curriculum). After we complete this process for Calculus III, we plan to extend this process to other courses, including Linear Algebra, Calculus I and II, Applied Probability and Statistics, and Discrete Mathematics.

- **Rochester Institute of Technology: Bonnie Jacob, Shahla Nasserasr, and Adam Towsley** worked during the workshop week on materials for our Math 190: Discrete Mathematics for Computing course. We developed a course syllabus, examples using PreTeXt and prefigure, and initial section drafts. Our long-term goal is to produce a complete set of course notes using PreTeXt. As a first step, we plan to create a worksheet for each topic, which Nasserasr will use in her Fall 2025 class.

- **Villanova University (Katie Haymaker) and University of Nebraska - Lincoln (Christine Kelley).** During the week of the AIM workshop Open educational resources: adoption, curation, and customization, we developed ideas for an OER textbook on coding theory for a mathematics major-level course. Using notes we have from previous teaching experiences, we started building out sections and examples in PreTeXt, within a shared document on GitHub. We practiced updating and syncing our document, and made a plan for new sections to add over the course of the next few months. During summer 2025 we plan to meet weekly to touch base and add new material to the textbook. In Fall 2025 and Spring 2026 we will expand the content, add interactive exercises, and incorporate images using PreFigure. The projected completion date for an initial version of the book is Summer 2026.

- **University of Delaware: Sebastian Cioaba and Novi Bong.** We are very grateful to participate in this workshop. We learned a lot and it is really inspiring. We have been working on the notes for our 2nd undergraduate Discrete Math course at University of Delaware. We worked on the shared repository, hosted by Sebi and here is what we could deploy. https://sebicioaba.github.io/Incercare1/frontmatter.html. Novi is currently having an issue accessing the codespace right now, but she will continue working on this once the codespace problem is resolved. We hope to have a rough draft by the end of the year. There is a possibility that Novi will work on worksheets for her Calculus course.

- **Palm Beach State College (Tamara Johns, Anurag Katyal) and University of Minnesota Twin Cities (Virginia Mae):** The AIM workshop was instrumental

in advancing our work with Doenet and its integration with PreTeXt books. One of the most valuable outcomes was the clear recognition of the need for more accessible and user-friendly documentation for embedding Doenet activities within PreTeXt. To help users move at their own pace, we plan to create some short videos to live alongside the existing Doenet documentation. These videos will hopefully make the process more approachable for novice users by providing step-by-step walkthroughs for those interested in adding interactive Doenet activities to their textbooks.

Beyond technical clarity regarding Doenet documentation, the workshop also fostered meaningful professional collaboration. By the end of the week, we had conversations with at least two workshop attendees willing to contribute in editorial and curatorial roles.

One highlight of the workshop was a fireside chat with David Farmer, which offered valuable insight into how best to move Doenet and its integration with PreTeXt forward. This conversation prompted us to begin drafting a style guide for Doenet activities and a set of guiding principles for Doenet, in general. Our hope is that this framework will support and guide future authors as they develop new content for the platform.

Finally, the workshop opened doors to broader engagement as we were invited to lead Doenet authoring workshops at several mathematics departments across the country. These invitations underscore the growing interest in interactive content and the potential impact of Doenet on teaching and learning.

Additionally from Tamara Johns: The workshop was a truly valuable experience. It was my first time working with PreTeXt, and it inspired me to begin organizing my class notes for the College Algebra course—and possibly for other courses in the future. The platform offers a great way to make course materials more accessible, cohesive, and easier for students to navigate. It will also allow me to efficiently update content, adjust lessons, rearrange topics when needed, and even create new activities to better support student learning.