

AI Resources in Higher Education: What Instructors Need and How We Deliver

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Abstract As generative AI reshapes higher education, instructors across the globe have become increasingly interested in integrating AI into the classroom, but they require trusted, timely, and relevant resources for such integration. To enable the development of an open educational resource (OER) that could be remixed and adapted to different teaching contexts and support inclusive access, this study examined what instructors want and need from an open resource on AI in teaching and learning in higher education and documented a process for developing professional development resources in a time of rapid technological change. This study employed a multiphase mixed-methods design. First, a statewide needs assessment survey was conducted with 149 instructors to identify needs, challenges, and priorities across diverse institutional and disciplinary contexts. Participants prioritized three core content domains for the resource—AI literacy, pedagogical strategies, and ethics—and favored interactive, adaptable, and open resources grounded in practical classroom applications. These findings were used to develop an OER prototype, on which 75 instructors provided feedback, affirming the utility of the resource and suggesting areas for further refinement. This study contributes an educator-informed process for translating instructors' needs into the design and formative evaluation of an adaptable, openly licensed faculty development resource. This evidence-based, educator-driven approach demonstrates how those tasked with faculty development on AI can develop and refine timely resources that meet the needs of

educators from diverse contexts, offering a flexible, scalable, and community-oriented pathway for bridging institutional resource gaps and advancing inclusive faculty development in the age of AI.

Keywords artificial intelligence, AI literacy, faculty development, open educational resource, higher education

1 Introduction

Generative AI (GenAI) has introduced profound changes in higher education by reshaping established understandings of teaching, learning, and assessment (Crompton & Burke, 2023). AI tools offer new possibilities for instructional support, content generation, personalized learning, and efficiency in academic work (Baker et al., 2019; Torres-Gastelú et al., 2025). However, the use of AI also raises complex questions concerning academic integrity, authorship, bias, privacy, student learning, and the cultivation of critical thinking in higher education contexts (Kooli, 2023; Zhao et al., 2025). These tensions place increasing pressure on instructors to make thoughtful, contextually responsive decisions about whether and how AI should be integrated into teaching, often without adequate institutional support, sustained professional learning opportunities, or access to resources that are sufficiently practical and adaptable to their local contexts (Mah & Groß, 2024). In higher education, where disciplinary norms, institutional missions, and student populations vary considerably, the integration of AI

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cannot be approached uniformly. Instructor development support must build instructors' AI literacy while also addressing the pedagogical and ethical judgments required for responsible classroom practice (Ertmer, 1999; Grassini, 2023; Zhao et al., 2025).

Although research on AI in higher education has expanded rapidly, comparatively little attention has been devoted to the design of AI-related faculty development resources. Limited research has examined what content instructors consider most essential, what formats and modalities they find most useful, and how AI-related professional learning resources can be developed through systematic, evidence-based processes. This omission is notable given that instructors consistently report insufficient AI literacy, a lack of practical guidance, and concerns related to ethics, academic integrity, and student overreliance as central barriers to meaningful AI integration (Grassini, 2023; Zhao et al., 2025).

This study addresses this gap by examining what instructors want and need from an open educational resource (OER) on AI in teaching and learning in higher education and documenting an instructor-informed process for developing and refining such a resource. In doing so, the study makes two contributions to research and practice in faculty development. First, it provides empirical insight into the forms of support educators across diverse higher education contexts identify as most needed. Second, it offers a replicable and scalable model for the development of resources in times of technological and pedagogical disruption. More broadly, the study contributes to ongoing conversations about how institutions can support inclusive, context-sensitive, and equity-oriented professional learning in an era increasingly shaped by AI.

2 Literature Review

2.1 | Barriers to AI Integration Among Instructors

Ertmer (1999) distinguished two types of barriers to instructors' technology use: first-order barriers, which are external (e.g., lack of resources, insufficient training, and limited institutional support), and second-order barriers, which are internal (e.g., low confidence, restrictive pedagogical beliefs, and skepticism about the value of technology). Both significantly influence instructors' attitudes toward AI, their perceived competence and readiness, and, ultimately, the extent and effectiveness of AI integration (Chan et al., 2025).

As of fall 2025 in the U.S., 59% of surveyed faculty felt that "their schools are not very or not at all prepared to use GenAI tools effectively for preparing

students for the future," and 68% indicated "their schools have not prepared faculty for using GenAI for effective teaching and mentoring students" (Watson & Rainie, 2026). International studies have reported similar trends (Alisoy et al., 2025; Chan et al., 2025; Mah & Groß, 2024). Although institutional adaptation to emerging technologies is inherently gradual, the persistence of this unpreparedness three years after the public release of GenAI signals a significant gap between institutions' stated support for AI integration and the actual guidance and support instructors have received.

Technological self-efficacy is a significant positive predictor of technology acceptance and use (Venkatesh & Davis, 1996). Applied to the context of AI integration, this finding suggests that instructors who lack confidence in AI competencies are less likely to adopt and meaningfully integrate these tools into their teaching practice. In a national survey of radiologic technology educators in the United States, 84.5% rated teaching AI as important, yet only 23.7% had incorporated AI content into their curricula. Limited AI knowledge was rated by 59.1% of respondents as the top barrier (Stogiannos et al., 2024). Similar patterns appear internationally: Educators in Azerbaijan reported lower self-assessed AI skills and more cautious attitudes toward AI than students (Iskandarova et al., 2024), and faculty in Germany identified AI illiteracy among both students and faculty as one of the greatest institutional challenges (Mah & Groß, 2024).

Beyond instructors' readiness and confidence, GenAI also requires changes in assessment. Khlaif et al. (2024) found that educators adopted different approaches, ranging from prohibiting AI to intentionally incorporating it into assignments. This highlights the need for faculty development that supports instructors in clarifying acceptable AI use and designing assessments that preserve critical thinking and academic integrity.

Central to addressing these barriers is the development of AI literacy, which scholars define as a multifaceted set of competencies encompassing technical understanding of how AI systems function, critical appraisal of their outputs and limitations, and ethical navigation of their broader societal implications (Laupichler et al., 2023; Long & Magerko, 2020; Ng et al., 2021). The urgency of developing such competencies has been further underscored by recent policy developments, such as the *Regulation (EU) 2024/1689 Artificial Intelligence Act* (European Parliament and Council of the European Union, 2024), UNESCO's *AI competence frameworks for teachers* (Miao & Cukurova, 2024), and the *H.R. 6971: Artificial Intelligence Literacy Act of 2023* (U.S. Congress, 2023), which collectively call for systematic AI education that integrates both technical proficiency and ethical reasoning. AI literacy training and institutional support are top priorities for

effective AI integration (Chan et al., 2025; Figueroa de la Fuente & Farhadian, 2025; Zhao et al., 2025). However, despite these recommendations, translating AI literacy frameworks into effective curricular and instructional design remains an ongoing challenge.

2.2 | Instructors' Professional Development Needs and Preferences

Instructors have expressed a strong interest in professional development and community support as primary solutions for building the competencies and confidence needed for effective AI integration (Mah & Groß, 2024; Zhao et al., 2025). Consequently, scholars have identified investment in professional development as a fundamental requirement for bridging the gap between technological possibility and pedagogical implementation (Baidoo-Anu & Ansah, 2023; Chan et al., 2025). However, not all professional development is equally effective. Although AI-focused courses and workshops are increasingly available, generic training rarely produces meaningful change in practice. Professional development tailored to the actual challenges faculty experience, as well as to their disciplinary contexts, significantly increases the likelihood of successful technology integration (Chan et al., 2025). Such tailored support should include AI literacy training to help educators leverage AI's capabilities while managing its risks, the integration of AI ethics and critical evaluation into disciplinary curricula, and assessment redesign that emphasizes process-based learning rather than AI-generated outputs (Zhao et al., 2025).

Instructors' professional development interests span three key areas. First, pedagogical strategies for student engagement and frameworks for determining when, why, and under what conditions AI should be integrated into specific learning contexts. Second, ethical considerations including academic integrity, misinformation, and responsible AI use, with a preference for embedding ethical reasoning and critical thinking throughout curricula rather than treating ethics as a separate topic (Chan et al., 2025; Zhao et al., 2025). Third, a deeper understanding of AI capabilities and fundamentals—an area that currently receives comparatively little attention relative to pedagogical and ethical dimensions (Chan et al., 2025; Zhao et al., 2025). Instructors also express strong interest in discipline-specific AI applications relevant to their fields (Chan et al., 2025), and scholars have called for the development of interdisciplinary and domain-specific AI literacy models to guide professional development (Mah & Groß, 2024).

Regarding delivery, instructors prefer hands-on, interactive, online, and ongoing professional development opportunities (Chan et al., 2025). Self-paced online formats are preferred over face-to-face or

blended options, consistent with broader trends toward increased use of and high satisfaction with online professional development (Mah & Groß, 2024). Given that professional development in higher education is traditionally offered in face-to-face formats (Mah & Groß, 2024), there is a clear need for more intentionally designed and evaluated asynchronous online options.

Ongoing community support is equally important. Zhao et al. (2025) found that instructors embedded in AI-focused academic communities reported finding it easier to integrate AI into their teaching, as these spaces “foster collective experimentation, shared problem-solving, and ongoing discourse on best practices.” They also reduce stress and barriers and serve as “critical sites for interrogating AI's implications in higher education” (Zhao et al., 2025). Scholars have called on institutions to move beyond isolated workshops toward “robust professional development ecosystems” that enable instructors to keep pace with technological and pedagogical changes (Mah & Groß, 2024).

Taken together, these findings point to a critical need for accessible, self-paced, interactive, and asynchronous online resources structured through an AI literacy framework—one that addresses AI fundamentals, pedagogical applications, and ethical implications. In addition, these resources should include discipline-specific content to support instructors from diverse fields and provide opportunities for ongoing community support and engagement.

2.3 | Open Educational Resources for Faculty Development

Educational opportunities and resources should be universally available, regardless of learners' socioeconomic status or personal circumstances (Koçdar et al., 2023). Yet, the current landscape of instructor-facing online AI resources remains fragmented, inconsistent in quality, and limited in accessibility. This problem is further compounded by the fact that many high-quality institutional resources remain behind paywalls or are institution-specific, limiting their broader utility. In addition, because AI is evolving rapidly, resources that are not designed for adaptability risk becoming outdated almost immediately after publication, rendering faculty development efforts ineffective before they can take root. What is clearly needed are openly accessible, modular, and rapidly deployable resources that instructors and faculty developers can not only customize for their own local contexts but also actively revise, remix, and redistribute as the technology and their teaching needs evolve.

Within this landscape, OERs are teaching, learning, and research materials that reside in the public

domain or are released under open licenses, allowing users to freely access, adapt, and share content without financial or legal barriers (UNESCO, n.d.). The pedagogical value of OERs stems from the freedoms their open licenses provide—namely, the ability to retain, reuse, revise, remix, and redistribute materials. Yet, these freedoms translate into pedagogical value only when they are put into practice. This is the domain of open educational practices (OEPs), which build upon OERs by emphasizing the collaborative processes of teaching and learning that openness makes possible, such as co-creation, participatory learning, and engagement within connected communities (Ehlers, 2011; Hegarty, 2015; Nascimbeni & Burgos, 2016). Framed this way, OERs and OEPs empower instructors and learners not only to consume knowledge but also to actively shape, adapt, and disseminate it in ways that respond to different contexts and evolving needs. Such collaborative authorship supports professional learning by encouraging experimentation with pedagogy while reducing the risks typically associated with curricular innovation. In turn, the same resources instructors learn from become platforms for sharing expertise, fostering a recursive cycle in which teaching, learning, and knowledge production are deeply intertwined.

Research underscores the growing role of OERs and OEPs together in supporting professional development within higher education, particularly as institutions respond to rapid technological change (Cronin, 2017). Because OERs can be continuously revised without the constraints of traditional publishing cycles, they enable instructors to keep instructional materials current, relevant, and aligned with emerging developments in AI (Tili et al., 2023). However, while OERs provide a legal and material foundation for openness, simply having access to openly licensed content does not capture the full potential of open education. OEPs move beyond access by fostering more dynamic and interactive educational experiences: co-creation, participatory learning, and engagement within connected communities that turn static content into living practice. This broader understanding moves beyond definitions centered primarily on the use of OERs and instead emphasizes participation, collaboration, knowledge creation, and critical engagement with openness (Koseoglu & Bozkurt, 2018). From a learning-design perspective, OEPs can be incorporated across the curriculum by aligning openly enabled resources, activities, assessments, and learning outcomes rather than treating openness as an isolated feature of instructional materials (Paskevicius, 2017). This distinction is particularly important for faculty development: An openly licensed AI literacy resource realizes its full potential only when it is designed from the outset as a site for OEPs rather than merely as an OER to be distributed.

Consequently, an openly licensed AI literacy

resource can support educators not only as users of information but also as contributors who adapt examples, share disciplinary applications, critically evaluate emerging tools, and participate in the continuing development of professional knowledge. Built on OEP principles from the start, such a resource becomes a collaborative space for experimentation, reflection, and context-sensitive pedagogical innovation rather than a static product that merely happens to be openly licensed.

2.4 | Research Gaps, Purpose, and Questions

While OERs represent a promising format for AI-related faculty development, existing OERs addressing AI in higher education vary widely in scope and pedagogical application. A review of available materials revealed several persistent limitations: Many resources were overly technical, lacking pedagogical grounding; others were too generic to address the diverse disciplinary and institutional contexts in which instructors teach; and most were static, offering neither interactivity nor mechanisms for community exchange. Critically, no systematic study has examined the effectiveness of OERs in supporting faculty development specifically around teaching and learning with AI. A related gap concerns the faculty development needs-assessment literature that might otherwise inform such resources. Prior studies have examined instructors' professional development needs and preferences regarding AI (e.g., Chan et al., 2025; Mah & Groß, 2024; Zhao et al., 2025), but these studies have largely addressed broad training needs rather than the specific content, format, and feature preferences instructors hold for an open, AI-focused resource. These studies were also conducted in different regions and at different points in a fast-moving field. Because instructor needs may shift with both time and place, it remains unclear whether the priorities identified elsewhere generalize to other regional contexts or whether they still hold as AI tools evolve and instructors become more familiar with them. Moreover, little attention has been paid to how these training needs can be systematically translated into the design and evaluation of an openly licensed faculty development resource.

This study addresses these gaps directly through an educator-informed, multiphase process that connects needs assessment findings to OER design decisions and prototype evaluation. First, it investigates instructors' goals, challenges, and expectations for an AI-focused open resource within a specific regional context, allowing us to assess how these needs align with—or diverge from—the broader trends reported in other, differently situated studies. Second, it evaluates *Fostering AI literacy: A guide for educators in higher*

education (Yi et al., 2025), a prototype OER developed in direct response to these needs, demonstrating and testing a process for translating needs-assessment findings into resource design and evaluation. The contribution is therefore both empirical and design-based, and offers a practical development process that faculty developers, librarians, instructional designers, and institutional leaders can adapt to their own contexts.

The study is guided by the following research questions:

RQ1: What are instructors' primary goals and challenges regarding AI integration in higher education?

RQ2: What content, formats, and features do instructors prioritize in resources designed to support teaching and learning with AI?

RQ3: How effectively does the prototype OER design meet the instructors' needs identified in RQ1 and RQ2?

3 Methods

3.1 | Research Design Overview

This study used a multiphase mixed-methods design embedded within a broader statewide research initiative examining instructor perspectives on GenAI in higher education. The study comprised three connected phases between March 2024 and September 2025: needs assessment, resource development, and prototype evaluation (see Figure 1). In Phase I, quantitative survey data and qualitative open-ended responses were combined to identify instructors' goals and challenges regarding AI integration, as well as their preferences for AI faculty development resources. These findings directly informed the content, structure, and design features of the OER prototype developed in Phase II. Phase III then drew on quantitative and qualitative evaluation data to examine how effectively the prototype addressed the needs identified in Phase I. Throughout

the study, quantitative and qualitative findings were triangulated across phases to guide resource design and evaluation. Data were collected through anonymous Qualtrics surveys during the needs-assessment and evaluation phases. The corresponding survey instruments and questions are described in the data-collection sections below.

3.2 | Data Collection

3.2.1 Phase I: Needs Assessment

Between March and May 2024, an anonymous needs assessment survey was distributed via Qualtrics to instructors across the state of Virginia through centers for teaching and learning and university/college listservs. This voluntary, nonprobability recruitment strategy did not provide a defined sampling frame because invitations were redistributed through institutional networks. Consequently, the number of recipients and the survey response rate could not be determined, and the sample may have disproportionately represented instructors with an existing interest in or concerns about GenAI. Because demographic questions were optional, totals varied across the reported categories. The survey combined Likert-scale, multiple-choice, ranking, and open-ended questions to explore participants' current AI use and their interest in integrating AI into their teaching; their goals and motivations for AI integration, as well as their perceived challenges and concerns; and their preferred resource content and features. A total of 149 instructors completed the survey; based on participants who provided demographic information, they represented a diverse range of institution types, teaching contexts, and experience levels (see Table 1).

3.2.2 Phase II: Resource Development

Resource development followed an iterative model in which the content development team drafted and

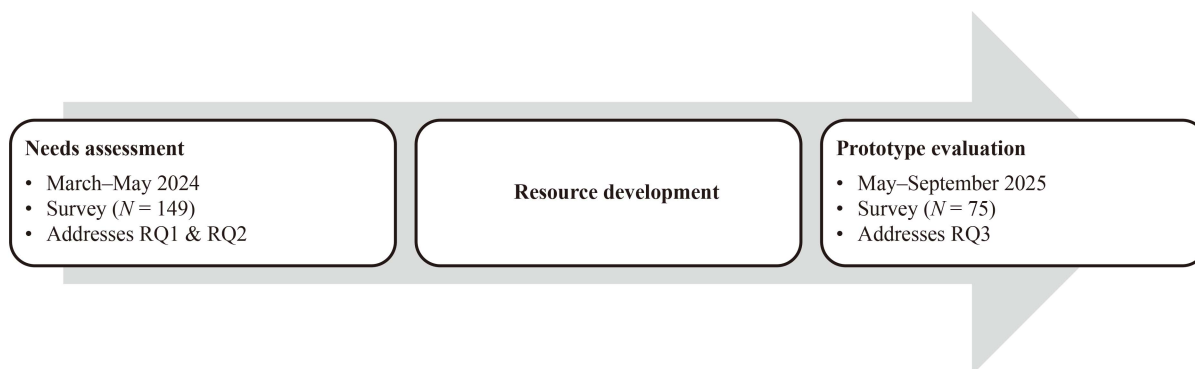


Figure 1 Research design overview.

Table 1 Needs assessment participant demographics ($N = 149$)

Demographic category	Group/Background	n (%)
Institution type	Public four-year institution	77 (51.7)
	Community college	44 (29.5)
	Private four-year institution	12 (8.1)
	Unanswered	16 (10.7)
Role	Tenured/tenure-track professor	52 (34.9)
	Non-tenure-track instructor, full-time	38 (25.5)
	Non-tenure-track/adjunct instructor, part-time	28 (18.8)
	Other academic/administrative faculty/staff	13 (8.7)
Years of teaching	Unanswered	18 (12.1)
	0–5 years	13 (8.7)
	6–10 years	19 (12.7)
	11–15 years	38 (25.5)
	16–20 years	24 (16.1)
	21–30 years	25 (16.8)
	31+ years	8 (5.4)
Discipline	Unanswered	22 (14.8)
	Humanities, languages, and the arts	48 (32.2)
	STEM and information technology	45 (30.2)
	Social sciences and communication	20 (13.4)
	Professional, applied, and education fields	18 (12.1)
	Unanswered	18 (12.1)

Notes. n : number of participants in each subgroup; STEM: Science, Technology, Engineering, and Mathematics.

refined materials through collaborative feedback and pilot testing. GenAI tools were used for OER development tasks such as brainstorming, summarization, and format adaptation, alongside rigorous human oversight through multiple rounds of editing and approval by the content development team. Emphasis was placed on developing modular, adaptable, and interactive content with multiple entry points, enabling users to engage with resources based on their existing knowledge and instructional needs. The resource was developed in Pressbooks, an online open resource publishing platform, with interactive content integration through tools such as Genially, Padlet, and H5P. The development team worked to ensure content was relevant and actionable: Core concepts and competencies were clearly articulated, pedagogical strategy sections highlighted assignment exemplars and teaching techniques, and ethical considerations were embedded across all topics to reinforce responsible and ethical AI use. Open licensing under a Creative Commons CC BY-NC-SA license was adopted from the outset to support future adaptation, remixing, and dissemination. A detailed overview of our design decisions is discussed in Section 4. This

research-driven, collaborative approach resulted in *Fostering AI literacy: A guide for educators in higher education* (Yi et al., 2025), an OER that is not only pedagogically sound and user-responsive but also sustainable and scalable in rapidly evolving fields and diverse higher education contexts.

3.2.3 Phase III: Prototype Evaluation

Between May and September 2025, an anonymous evaluation survey was distributed via Qualtrics to instructors across the state through centers for teaching and learning and university/college listservs. The survey combined Likert-scale, multiple-choice, ranking, and open-ended questions to gather participants' impressions of and feedback on the OER. A total of 75 instructors completed the survey (see Table 2). Participants were first asked to review the overall table of contents (see Table 3) and rate their initial impressions across 4 dimensions:

- (1) Interest in reading the OER;
- (2) Expectation of finding useful information;
- (3) Relevance to their own AI literacy development;
- (4) Expected support for fostering students' AI literacy.

Participants were then asked 3 open-ended questions:

- (1) Which sections they expected to find particularly useful and why?
- (2) Which sections they expected to find less useful and why?
- (3) What gaps or missing elements they identified.

Response rates varied across questions, with 54 participants responding to Question 1 and 47 to Questions 2 and 3.

Following their review of the table of contents, participants were asked to review at least one completed chapter from Level 1 and respond to 5 items assessing the following:

- (1) Which chapter(s) they had reviewed;
- (2) Ease of navigation and information location;
- (3) The effect of structure and organization on their learning experience;
- (4) Overall satisfaction with the chapter;
- (5) Interest in reading more of the OER upon full release.

Two open-ended questions then asked to the participants to identify:

- (1) Specific types of content they found particularly useful or effective and why;
- (2) Specific types of content they found less useful or effective and why.

Several items in the evaluation survey, such as

Table 2 Evaluation participant demographics ($N = 75$)

Demographic category	Group/Background	n (%)
Institution type	Four-year institution	26 (34.7)
	Community college	23 (30.7)
	Private four-year institution	5 (6.7)
	Unanswered	21 (28.0)
Role	Tenured/tenure-track professor	39 (52.0)
	Non-tenure-track instructor, full-time	10 (13.3)
	Non-tenure-track/adjunct instructor, part-time	2 (2.7)
	Other academic/administrative faculty/staff	6 (8.0)
	Unanswered	18 (24.0)
Years of teaching	0–5 years	8 (10.7)
	6–10 years	7 (9.3)
	11–15 years	12 (16.0)
	16+ years	30 (40.0)
	Unanswered	18 (24.0)
Discipline	Humanities, languages, and the arts	16 (21.3)
	STEM and information technology	13 (17.3)
	Professional, applied, and education fields	14 (18.7)
	Social sciences and communication	11 (14.7)
	Unanswered	21 (28.0)
AI experience	Have not tried any AI	6 (8.0)
	Have played around a little	20 (26.7)
	Have used AI tools occasionally	20 (26.7)
	AI tools are part of my regular workflow	11 (14.7)
	Unanswered	18 (24.0)

demographic questions and rating-scale items, were optional. Consequently, item- or module-level valid sample sizes are smaller than the total of 75 submitted surveys. Missing responses are presented within the respective tables. A total of 56 participants reviewed at least one chapter and completed the 5-item assessment; 43 participants responded to the first open-ended question and 39 to the second. Participants did not receive any incentives for their participation.

3.3 | Data Analysis

Quantitative survey data were examined using descriptive statistics. Qualitative responses were analyzed using codebook thematic analysis within an interpretive orientation (Braun et al., 2019; Braun & Clarke, 2021). First, 4 researchers independently reviewed the open-ended responses to become familiar with the data and identify recurring ideas relevant to the research questions. The research team then collaboratively developed an initial codebook containing code names, definitions,

Table 3 Table of contents of the prototype OER reviewed by participants

Part 0: Overview
Chapter 1: A framework for AI literacy
Part 1: Level 1—Know and understand AI
Chapter 2: AI key concepts
Chapter 3: History of AI developments and future trends
Chapter 4: Strengths, limitations, and ethical considerations of AI tools
Chapter 5: AI's impact on society, the workforce, and higher education
Chapter 6: Classroom applications, case studies, and additional resources
Chapter 7: Adapting course design in action
Part 2: Level 2—Use and apply AI
Chapter 8: AI tool evaluation and selection
Chapter 9: Application of AI tools
Chapter 10: Prompting techniques
Chapter 11: Academic integrity and citations
Chapter 12: Classroom applications, case studies, and additional resources
Chapter 13: Adapting course design in action
Part 3: Level 3—Evaluate and create AI
Chapter 14: Critical evaluation of AI outputs
Chapter 15: Assessment of AI impact
Chapter 16: Novel/creative uses of AI
Chapter 17: Evaluation of broader AI ethical considerations
Chapter 18: Classroom applications, case studies, and additional resources
Chapter 19: Adapting course design in action
Part 4: Closing
Chapter 20: Fostering AI literacy for students and ourselves
Chapter 21: Additional resources

and illustrative examples. All 4 researchers independently coded a shared subset of responses and subsequently compared their interpretations. Differences were discussed to identify alternative readings of the data, refine code boundaries and definitions, and develop a shared analytic understanding. Consensus was not intended to identify a single objectively correct interpretation; rather, discussion served as a collaborative process for strengthening the depth, coherence, and transparency of the analysis. No statistical measure of intercoder agreement was calculated. This decision reflected the study's interpretive orientation, in which coding was understood as an active process of meaning-making rather than the objective detection of meanings fixed within the data. Thus, independent coding was used to broaden and refine the researchers' interpretations through discussion rather than to quantify coding reproducibility (Braun et al., 2019; Braun & Clarke, 2021). The remaining responses were coded using the

revised codebook, with regular team meetings held to examine ambiguous responses, consider alternative interpretations, and refine developing themes. For example, initial codes such as “insufficient training,” “limited understanding of AI,” and “lack of practical guidance” were organized into a broader theme of limited knowledge, resources, and institutional support.

4 Results

This section presents a descriptive analysis of the data, organized according to the research questions, while the interpretation and broader implications of the findings are addressed in Section 5.

4.1 | RQ1: What are Instructors’ Primary Goals and Challenges Regarding AI Integration in Higher Education?

The needs assessment survey first asked participants to indicate their interest in AI integration. According to their responses, participants who were interested in AI integration were asked, “What do you hope to achieve by integrating AI into your teaching?” Those who were not interested in integrating AI into their teaching were instead asked, “Why are you not interested in integrating AI into your teaching?” Finally, all participants were asked, “What challenges or concerns do you foresee, or have you encountered, in incorporating AI into your teaching?”

4.1.1 Goals

94% of participants reported at least some interest in incorporating AI into their teaching, including 54% who selected “very interested” or “extremely interested.” Participants described AI integration as serving two closely related goals: enhancing teaching efficiency and enhancing student learning. Regarding teaching efficiency, participants wanted to integrate AI into their teaching to support course design and lesson planning, as reflected in one participant’s hope to “create prompts, tasks, and quizzes to diversify my teaching materials.” They also wanted to integrate AI into their assessment and evaluation of student learning, including the “automation of analysis and grading of students’ work, opening up time for me to provide meaningful feedback and address individual and class needs.”

Regarding student learning, participants wanted to integrate AI into their teaching to enhance student engagement and support critical thinking and creativity, with one participant explaining, “I hope to support students’ learning with it while still preserving

and encouraging independent thinking and creativity.” They also wanted to support the ethical and responsible use of AI, including efforts to “help students identify and practice responsible uses,” and career preparation, with one participant noting the need for students to “ethically and intelligently use AI in their careers to work smarter.”

4.1.2 Challenges

Participants’ concerns and challenges regarding AI integration clustered around two closely related areas: academic integrity and limited knowledge, resources, and institutional support. Responses highlighted concerns about plagiarism, academic dishonesty, student overreliance on AI, and the possibility that AI-generated content may weaken critical thinking or introduce inaccurate information into the learning process. As one participant noted, “A challenge of AI integration is that students might misuse AI as a shortcut rather than engage deeply with the learning process.” Many participants felt they lacked sufficient preparation, guidance, and institutional backing to integrate AI responsibly into their teaching. As one participant explained, “I have no training in its usefulness and have not used any AI geared toward education.” One participant noted having limited resources and only a basic understanding of how to use AI in education, adding that a lack of evidence about the accuracy of AI-generated content made them less confident about incorporating it into their teaching. For those not interested in AI integration, barriers centered on a need for clearer guidance, practical training, and access to resources that would support responsible and effective use in their teaching. Many participants indicated a need to better understand AI’s possibilities and limitations, with one participant noting, “I don’t know what it can achieve,” while another emphasized the importance of “learning more about AI” to support AI literacy among students. Participants also described a need for support in helping students use AI ethically and productively, including “finding ways to teach students how to use it ethically and effectively, but not to replace critical thinking or silence their own voices.” Together, these responses suggest that participants are seeking not simply access to AI tools but also structured opportunities, such as “structured courses to learn,” to build confidence, strengthen AI literacy, and integrate AI in ways that preserve educational quality and student learning.

4.2 | RQ2: What Content, Formats, and Features do Instructors Prioritize in Resources Designed to Support Teaching and Learning with AI?

4.2.1 Contents

Participants were provided with a predetermined list of

possible topics and asked to rate how important each topic would be for the OER on a 5-point scale ranging from 1 (not important at all) to 5 (extremely important) (see Table 4). Participants felt that AI literacy, AI ethics, and AI pedagogy were most important.

When asked “What additional AI-related topics should be included?” participants consistently prioritized practical, classroom-ready materials over abstract or theoretical content and sought resources that could be implemented immediately, such as discipline-specific examples, adaptable templates, authentic classroom scenarios, and step-by-step guides.

4.2.2 Formats and Features

From a predetermined list, participants were then asked to select their preferred formats for engaging with an educational resource. Participants most strongly preferred digital and interactive formats for AI-related educational resources. Their top choice was interactive online modules (76% selected this option), followed by videos (56%), and structured online courses (50%). Text-based resources (46%) remained important. While digital formats dominated, in-person courses (42%) and podcasts (27%) were also desirable. In addition, when asked, “Would you be interested in a discussion thread (also known as a community or network feature) within the resource for sharing experiences and resources related to teaching with AI?”, 77% indicated that they would be interested. Moreover, when asked how important it was that the resource be adaptable (openly licensed, modifiable, and reusable), 79% rated adaptability as moderately, very, or extremely important. Only 3% rated it as not at all important.

4.3 | Translating Needs Assessment Results into OER Design Decisions

Building on the needs assessment findings presented in Subsections 4.1 and 4.2, we translated participants’ reported goals, concerns, and preferences into concrete design decisions for the OER prototype. Table 5 summarizes the primary needs assessment results

alongside their corresponding implications for content, structure, and design. This mapping illustrates how the empirical findings from Phase I directly shaped decisions made during prototype development in Phase II, ensuring that the resource addressed instructors’ expressed needs rather than assumptions about what faculty development on AI should include.

4.4 | RQ3: How Effectively Does the Prototype OER Design Meet the Instructors’ Needs Identified in RQ1 and RQ2?

4.4.1 Table of Contents

Overall, initial impressions of the OER table of contents were positive (see Table 6): 81% of participants expected to find useful information, 80% were interested in reading it, 77% believed it would support their own AI literacy development, and 75% felt it would help them foster students’ AI literacy. These findings indicate broad satisfaction with the OER’s proposed content and perceived usefulness and relevance for supporting both educator and student AI literacy development.

Open-ended responses revealed that the chapters on academic integrity and citation, novel and creative uses of AI, classroom examples, and course design adaptation were perceived as especially useful. Regarding academic integrity and citation, participants expressed a desire to better understand how to communicate ethical AI use and navigate citation practices, with one noting, “I would like some insight into how to communicate on the ethical use of AI and how to cite it. This is a bit beyond my APA documentation knowledge.” The chapter on novel and creative uses of AI was valued for its potential to enhance participants’ own practice and deepen their understanding of how to “extract learning utility from AI tools.” Similarly, participants highlighted the value of practical classroom examples, particularly programmatic case studies, because “case studies provide concrete scenarios for application.” The desire for practical guidance was

Table 4 Descriptive statistics for the importance of AI topics in an OER

Topic	Mean	SD	<i>n</i>
AI literacy (knowledge and skills needed to navigate, interact with, and critically evaluate AI)	4.46	0.79	114
AI fundamental concepts (foundational theories, principles, and technologies that form the basis of AI systems)	3.30	1.16	114
AI pedagogy/assignments (methods and strategies of teaching and learning using AI)	4.37	0.85	114
AI policy (guidelines or regulations governing the use of AI at the institutional or class level)	4.14	0.99	114
AI ethics (moral and societal implications of AI)	4.43	0.82	114
AI tools (AI software and applications used to support educational activities)	4.17	0.88	113

Notes. Mean: the average of all participants’ ratings for a topic; SD: standard deviation.

Table 5 Alignment of Phase I findings with OER design decisions

Preferences	Priorities from Phase I findings	Resulting design decisions	Prototype features
Content	AI literacy	Developed an AI literacy framework with clearly defined competencies for students and educators; structured OER content around these competencies	A dedicated section introduced the AI literacy framework; each chapter opened with a competence outline stating learning objectives
	Ethics and academic integrity	Embedded ethics and academic integrity across every framework level rather than treated as a standalone topic	Each level included ethics-related competencies with corresponding guidance and resources
	Pedagogical guidance and discipline-specific examples	Highlighted pedagogical strategies for each competence and curated discipline-specific classroom examples	Adopted a “Reflect and Apply: Educator’s Toolkit” with strategies and reflection questions in each chapter; each level included a “Classroom Examples and Pedagogical Strategies” chapter
Format	Interactive and multimedia formats	Incorporated opportunities for active learning, experimentation, and reflection, as well as multimedia content	Built interactive activities (e.g., H5P, Genially) and included a variety of multimedia content (video, infographics, podcasts)
	Adaptable materials	Adopted an openly licensed modular design	Built on easily adaptable platforms (Pressbooks, H5P) under a CC BY-NC-SA license
	Community support	Enabled instructors to exchange experiences, examples, and resources	Added community-sharing features, including Padlet discussion boards and a form for submitting reader-contributed examples
Sustainability	Regular maintenance	Designed for sustainable, ongoing revision and developed a maintenance plan	Modular structure allows individual sections to be updated without revising the whole resource; time-sensitive sections link to external resources rather than being developed in-house for easier updates

Table 6 Participants’ expectations and interest after evaluating the table of contents ($N = 75$)

Item	Strongly disagree <i>n</i> (%)	Disagree <i>n</i> (%)	Neither agree nor disagree <i>n</i> (%)	Agree <i>n</i> (%)	Strongly agree <i>n</i> (%)	Unanswered <i>n</i> (%)
Expect useful information from this OER	3 (4.0)	3 (4.0)	7 (9.3)	28 (37.3)	28 (37.3)	6 (8.0)
Interested in reading this OER	4 (5.3)	4 (5.3)	6 (8.0)	31 (41.3)	24 (32.0)	6 (8.0)
Expect relevance to their own AI literacy development	5 (6.7)	3 (4.0)	8 (10.7)	30 (40.0)	23 (30.7)	6 (8.0)
Expect support for fostering students’ AI literacy	4 (5.3)	6 (8.0)	7 (9.3)	28 (37.3)	24 (32.0)	6 (8.0)

further reflected in one participant’s comment: “Just like my students, I will be interested in the practical ‘how to’ material in your online book.” Course design adaptation was also highly valued, with participants noting that such content “encourages immediate use of new knowledge.” Several expressed a desire for deeper pedagogical guidance on AI integration, as illustrated by one participant: “I have been revising my courses to further rely on authentic assessments in ways that can’t easily be replicated by AI, but I can always use more pedagogical knowledge and consideration.” Finally, a few participants indicated that Level 2 content would be more useful than other levels, reflecting a particular interest in students’ AI use.

When asked which sections they expected to find less useful, 30% of participants indicated that they expected all sections to be useful and relevant. Among those who identified specific sections as potentially less helpful, 5 participants indicated the *History of AI developments and future trends* chapter would be less useful due to the difficulty of predicting AI’s trajectory; one noted, “AI is so new, it’s difficult to predict future

trends or long-term impact” and another stated, “I know it’s where we need to always begin, but I gravitate toward the present.” 3 participants selected the *Novel/creative uses of AI* chapter as less useful, largely due to the perceived ambiguity of the chapter title. Responses suggested that participants may have misinterpreted the chapter as focusing on coding or highly technical content, with one noting that their courses would be unlikely to “push students to that frontier” and another recommending “more clarity here would be useful.” 4 participants indicated that none of the sections in the table of contents was relevant to them, largely because they did not plan to integrate AI into their teaching, as reflected in one comment: “I don’t plan to use GenAI, so this doesn’t apply to my teaching.” This suggests that the OER is most relevant to educators who are already interested in or open to AI integration.

Two additional concerns focused on resource length and maintenance rather than on content. Several participants found, based on the table of contents alone, the OER to be too long and broad for practical use, with

one observing that “most teachers (K-12 and higher education) are not likely to read a 20-chapter textbook on AI.” Another called for a concise version, noting, “For use with my students, I would need something far more concise and directly tailored to their situation... It would be helpful to have a version of the OER that extracted absolutely essential arguments, conclusions, and controversies.” Finally, several participants raised concerns about keeping the resource current given the rapid pace of AI development, with one asking, “How to keep the content updated and timely?”

4.4.2 Completed Chapters

Overall, 80% of participants reported being somewhat or very satisfied with the OER content they reviewed. The 11% who were neutral, the 2% who were somewhat dissatisfied, and the 7% who were very dissatisfied likely felt this way because of the dense sections and the lack of practical examples tailored to specific fields. Regarding future engagement, 91% indicated at least slight interest in reading the full OER upon release, with 62.5% reporting that they were very or extremely interested.

Open-ended responses identified ethics, classroom examples, and course design as the most useful content areas they reviewed. The ethics section was highlighted as especially robust, with one observing that it “does a good job identifying a lot of the concerns and ethical questions,” adding that it might help persuade students that “at their level in the subject area, the benefits do not outweigh the drawbacks.” Participants also appreciated the inclusion of environmental impacts and noted that “concrete real-world examples of ethically problematic AI products were especially effective.” Classroom examples were similarly well received, with one noting that this is precisely “what a teacher will target trying to find in a resource like this”—content they can “quickly find, evaluate for usefulness, then implement.” Regarding course design, participants found content on backward design particularly valuable, with one noting that guidance on “making sustainable changes was helpful for faculty feeling overwhelmed about what to do.”

Several participants called for more examples and greater elaboration, with one noting, “A few were provided, but a few more (or perhaps an extended example) would help readers see how to do this in their own classes”; another suggested that the example of using AI for a Socratic approach “could use more specifics in the example to illustrate points of how it is used pedagogically.” In addition, several participants indicated that they found all the content useful but noted that the sheer volume made it difficult to engage with fully, with one observing, “I didn’t find any of the

content ‘less useful,’ but there was a lot of content, and I didn’t have time to explore everything. The problem with exploring anything online is the over-abundance of information.”

Participants also expressed minor disagreements with certain claims and analyses, with one noting that while “the chapter acknowledges the negative impacts of AI on students’ cognitive development,” they were “unconvinced that the suggestions for mitigating these problems would be effective.” Another misunderstood the text as advocating AI adoption, stating, “I am having trouble with the core assumption and the naturalization in the text of the idea that AI-made things are going to be the future. That is a choice. The text assumes that the choice is made already, and that we should get on board.” Finally, a participant cautioned about the credibility of cited resources, questioning the use of potentially promotional videos from AI companies such as IBM and suggesting, “I would rather see videos made by academics or critical technology experts, even if they are not as shiny,” or adding disclaimers that “information provided by business sources could have bias.”

4.4.3 Usability and Format

Results on usability revealed general satisfaction with navigation and structure: 64% of participants found it somewhat or very easy to navigate, while 21% were neutral, 11% found it somewhat difficult, and only 4% found it very difficult. In addition, 59% of participants indicated that the structure and organization of the content had at least a somewhat positive effect on their learning experience, with 30% neutral, and 10% reporting somewhat or strongly negative effects.

In terms of content format, participants highlighted several features they found particularly effective. Many approved of the inclusion of references and links to additional information, with one noting, “I appreciated the links to information, such as how AI is being used in workplaces. This points to evidence for claims being made, which is really important.” Participants also responded positively to the H5P interactive modules, with one commenting that “the H5P slide deck was instructive,” and particularly appreciated “the interactive quiz questions at the end of the first part of the slide show.” Multimedia elements such as infographics and videos were similarly well received. A participant highlighted the “A Brief History of AI” infographic, noting it was effective because they “enjoyed the images and traveling along the path/timeline to learn the sequence of what and when progress happened.” The inclusion of a “Key Takeaways” slide with each video was also described as “a very good inclusion.” Another explained, “Video can often convey

information in a more engaging and multisensory way, allowing me to see and hear explanations. The summaries likely helped me quickly grasp the main points of the video without having to watch the entire thing again.” Finally, one participant appreciated the community feature, noting they “liked how there is the community option for people to add their own case study examples,” highlighting the value of peer-contributed content.

While the above content features were appreciated by many participants, others found them less useful or in need of improvement. Several participants felt that too many external links were included, preferring that additional resources be integrated directly into the OER text rather than directing readers elsewhere. Others found the infographics less effective, describing them as “boring” or “hard to distill a takeaway.” One of the participants suggested repositioning videos as optional supplementary resources and providing written summaries instead, noting, “I also do appreciate that there are video resources, but I think those should be under a ‘learn more’ or ‘multimedia’ type of section because people can’t always just watch videos... More written summaries of the videos with less clicking involved would make it easier for people who cannot watch.” Similarly, while some participants valued the H5P interactive modules, others found them difficult to navigate: “There was a lot of clicking and scrolling and expanding. I would have liked to see it all laid out with less clicking.”

5 Discussion

This section summarizes the findings for each research question and extends them through our interpretation and further analysis.

Regarding RQ1, participants recognized AI’s potential to support planning, grading, course design, student engagement, and personalized instruction. However, their interest was accompanied by concerns about academic integrity, misinformation, student overreliance, diminished critical thinking, and insufficient institutional support. Although technostress was not directly examined in this study, participants’ reports of limited confidence, insufficient preparation, and inadequate institutional support can be considered alongside emerging research on factors influencing educators’ technostress when using GenAI (Khlaif et al., 2026). These responses reveal a tension between instructors’ interest in the potential educational benefits of AI and their concerns about its effects on academic integrity and student learning. Participants’ concerns about student overreliance, misinformation, and diminished critical thinking further suggest that they viewed responsible AI integration as a pedagogical

challenge rather than simply a matter of technical adoption. This tension underscores the need for faculty development that supports critical and context-sensitive decisions about whether, when, and how AI should be used.

Regarding RQ2, AI literacy, pedagogical relevance, and embedded ethical considerations emerged as essential content priorities, consistent with recent findings that ethics should be woven throughout AI and teaching discussions rather than treated in isolation (Zhao et al., 2025). To support their learning, these instructors wanted online materials that could be tailored for different disciplines, instructional contexts, and student populations, and favored open licensing to enable ongoing revision, remixing, and community-driven enhancement. They encouraged the inclusion of a community feature, and recent literature highlights the importance of ongoing community support (Mah & Groß, 2024; Zhao et al., 2025). Overall, the needs assessment findings align with recent studies in confirming a critical need for accessible, self-paced, interactive, and asynchronous online resources that prioritize AI literacy, pedagogical applications, and ethical implications—and provide a strong foundation for developing the OER prototype (Yi et al., 2025).

Regarding RQ3, the Phase III evaluation indicated that the OER prototype was perceived by instructors as a useful resource. The needs assessment identified AI literacy, AI pedagogy, and AI ethics as the highest priorities, and during the evaluation, most participants believed the OER would support their own and their students’ AI literacy development, valued the integration of ethics throughout the OER, and appreciated the inclusion of classroom examples—although they still wanted more examples across disciplinary contexts. They found the interactive features, such as H5P modules, multimedia resources (e.g., videos and infographics), and community features effective, but some struggled with navigation burden, excessive clicking, dense formatting, and difficulty locating relevant information quickly. Participants also raised practical concerns about balancing depth with conciseness, and their suggestions about keeping the resource current point to the importance of a clear and sustainable maintenance strategy going forward. The evaluation findings suggest that the prototype’s usefulness depended on balancing comprehensiveness with accessibility and ease of navigation. Participants valued practical examples, interactive activities, and adaptable content, but extensive links, dense formatting, and repeated clicking sometimes created barriers to engagement. Concerns that the resource might appear to encourage AI adoption also indicate that usability involves more than organization and presentation; it includes providing space for instructors to critically evaluate, limit, or reject AI use when it is not pedagogically appropriate.

These findings position critical agency, navigability, and sustainable maintenance as central design requirements for AI-related faculty development resources.

5.1 | Implications

This study contributes an educator-informed and empirically evaluated process for translating instructors' AI training needs into an effective design for an adaptable, openly licensed faculty development resource. It offers several implications for those seeking to advance AI-related faculty development, as well as for others developing faculty resources in higher education.

First, and particularly for faculty developers, OER practitioners, librarians, and similar professionals, we document a process for developing an AI-related OER that is context-sensitive, adaptable, accessible, and valued by instructors because it is meaningfully connected to faculty teaching and learning needs. Others can adopt this process in their own contexts, not only to develop AI-related resources but also to address any other pedagogical challenges that may arise.

Next, this study demonstrates valuable features of faculty development resources related to AI. Resources should prioritize practical applications and authentic classroom examples, including assignment design, classroom activities, syllabus language, assessment strategies, and student guidance. Ethics should also be woven throughout discussions of AI. Nearly every aspect of AI use—tool selection, assignment design, student disclosure, data privacy, accessibility, and evaluation of AI-generated work—carries ethical implications. Those providing professional development opportunities should consider consistently integrating ethical reflection into practical activities, prompting instructors to consider not only what AI can do but what it should do in their specific teaching contexts.

Importantly, AI-related faculty development should not presume that AI adoption is inherently desirable. Participants' concerns that the prototype might appear to encourage AI use highlight the need for resources that support instructors' critical agency. Critical AI literacy includes not only understanding how to use AI but also evaluating its limitations and determining whether its use aligns with learning outcomes, disciplinary expectations, privacy considerations, equity, accessibility, and academic integrity. Faculty development resources should therefore present adoption, selective use, limitation, and non-use as legitimate pedagogical decisions. This approach allows instructors to engage with AI critically and to limit or reject its integration when it does not serve their students or educational goals.

Sustainability is another major theme. Because AI-related content can quickly become outdated,

instructors stressed the need for ongoing maintenance, regular updates, and mechanisms for community feedback. Practices such as version histories, update schedules, modular structures, and contributor guidelines can help keep resources current and relevant. Treating OERs as living resources ensures they remain aligned with evolving technologies, policies, and teaching practices (Tlili et al., 2023). Instructors in this study valued resources built around transferable concepts, flexible frameworks, and adaptable examples rather than those that depend on a single tool or platform. Reflective questions and modular design were also highlighted as important, allowing resources to remain useful as technologies and teaching contexts change. This reflects the 5R principles of OERs—retain, reuse, revise, remix, and redistribute—which empower educators to adapt and update content to fit new contexts (Miao & Cukurova, 2024).

There is a clear need for AI-related resources that are accessible asynchronously, revisitable, and adaptable to different experience levels, teaching styles, and schedules. Many high-quality materials are locked behind paywalls or restricted to certain institutions, while the rapid evolution of AI means that resources without adaptability quickly become outdated (Koçdar et al., 2023). To overcome these challenges, institutions should prioritize the development and open dissemination of adaptable, modular, and rapidly updatable resources tailored to local educational contexts—OERs are particularly promising in this regard.

Participants responded most positively to features of the OER that engaged them actively—through prompts, scenarios, hands-on activities, and opportunities to experiment or reflect in their own teaching contexts. This finding suggests that OERs should be structured as dynamic learning experiences, supporting not only knowledge acquisition but also practical application and experimentation. These design approaches help faculty move from awareness to practice and enhance usability, echoing findings that OERs should support active, practice-oriented learning (Cronin, 2017).

These findings also extend beyond the design of OERs to the broader domain of OEPs. Participants' interest in adaptability, interactive learning, community features, and the sharing of classroom applications suggests that they value opportunities to participate in the continuing development of the resource rather than merely consuming its content. Through an OEP lens, the OER prototype we designed can therefore be understood as an infrastructure for collaborative professional learning. Instructors can revise examples for their disciplines, contribute alternative perspectives, share locally developed materials, and critically reflect with colleagues on when AI should—or should not—be integrated into teaching. Such practices connect openness

with educator agency and help ensure that AI-related pedagogical innovation remains participatory, context-sensitive, and open to critique.

Furthermore, sustained community support is essential for effective faculty development. Given the complexity of AI literacy and the pace of change in AI, participants recognized that no single author or unit could address all needs. Collaborative OER development—bringing together faculty, instructional designers, librarians, technologists, students, and other experts—was seen as vital for enhancing quality, relevance, and inclusivity, as well as for sustaining resources over time. This collaborative model transforms OERs into platforms for ongoing experimentation, shared knowledge production, and professional learning (Wiley & Hilton III, 2018). Faculty members in AI-focused academic communities report greater ease in integrating AI into their teaching, benefiting from environments that foster collective experimentation, problem-solving, and ongoing dialogue (Zhao et al., 2025). These communities help lower barriers, reduce stress, and provide critical spaces for examining AI's implications in higher education. The OER prototype we developed integrates community features to enable this support. That said, its impact could be far greater when integrated into other faculty development programming, such as learning communities or communities of practice.

The findings validate the idea that instructors' concerns and uncertainties about AI are widely shared. Rather than being personal shortcomings, these challenges reflect the broader transition higher education is undergoing. Recognizing this can help reduce anxiety and encourage instructors to seek support, experiment with new practices, and engage in campus conversations about AI literacy. In addition, instructors are encouraged to contribute to the ongoing improvement of AI literacy resources. By sharing feedback, adapting resources, and participating in collaborative development, faculty play a vital role in shaping effective, responsive, and relevant materials for themselves and their peers.

5.2 | Limitations and Future Research Directions

A primary limitation of this study concerns the sample composition. The study relied on voluntary participation, which may have introduced self-selection bias by attracting instructors who were already more interested in, concerned about, or engaged with AI in teaching and learning. In addition, although the initial needs assessment drew on a broader statewide sample, the evaluation involved a comparatively small number of participants, limiting the strength and transferability of

conclusions. The sample also skewed toward experienced instructors and included substantial representation from community colleges. While this is valuable given the often underexamined role of these institutions and educators in higher education innovation, it may underrepresent the perspectives of early-career educators and those at research-intensive institutions. In addition, because the research was conducted primarily within one state and within the U.S. higher education context, the findings should not be assumed to transfer seamlessly across institutions or regions. Even when educators across settings share similar pedagogical interests or concerns, their capacity to adopt and adapt resources may differ considerably based on available infrastructure and support. These contexts matter because prior scholarship has suggested that educators' needs, confidence, and approaches to AI integration vary across contexts, disciplines, and professional roles, underscoring the importance of more intentionally diverse sampling in future studies (Chan et al., 2025; Mah & Groß, 2024; Wang & Chuang, 2024). Future research should investigate how instructors' needs, resource preferences, and integration challenges differ across career stages, institution types, and disciplines.

Another limitation is that the study evaluated an early-stage prototype rather than a fully developed resource. Although the findings provide evidence of initial instructor engagement with and perceived usefulness of several completed chapters, they do not show whether sustained use of the OER would lead to longer-term changes in teaching practice, course design, or student learning outcomes. This is a significant limitation given that the literature increasingly argues for ongoing, ecosystem-based approaches to educator development rather than one-time interventions, particularly in a rapidly evolving area such as GenAI (Mah & Groß, 2024; Zhao et al., 2025). As scholars have noted, educator support for AI integration is most effective when it includes ongoing opportunities for experimentation, reflection, and adaptation (Chan et al., 2025; Zhao et al., 2025). Future research should use longitudinal and multi-institutional designs to examine not only immediate perceptions of usefulness but also sustained adoption, remixing practices, changes in instructors' knowledge and teaching practices, instructional impact, and student-facing outcomes. Future studies should also examine the governance and maintenance of AI-related OERs, including who is responsible for updates, how frequently revisions should occur, and how contributors and users can participate in keeping the resource current.

Research is also important on the dynamics of community-driven OER development, including the conditions that foster educators' meaningful contributions, the processes by which collective adaptation

enhances resource quality, and the role of peer learning communities in supporting educators' sustained engagement with AI integration. Further research in this area would strengthen the evidence base for community-driven OERs and illuminate the broader professional and social dimensions of educators' AI literacy development.

6 Conclusions

This study contributes an educator-informed and empirically evaluated process for translating instructors' needs into the design of an adaptable, openly licensed faculty development resource on AI. The findings show that instructors seek practical and discipline-relevant guidance that integrates AI literacy, pedagogy, and ethics. The prototype evaluation further indicates that effective AI-related OERs must balance faculty-prioritized content with navigability, adaptability, neutrality about AI adoption, and sustainable maintenance. By connecting needs assessment, resource design, and formative evaluation, the study offers a process that faculty developers, librarians, instructional designers, and institutional leaders can adapt to create faculty development resources in other contexts. Future research should examine whether sustained use of such resources influences instructors' AI literacy development, teaching and assessment practices, and student learning.

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