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Building Generative AI Literacy for Engineering Faculty and Staff: A Workshop-Based Approach to Pedagogy, Assessment, and Professional Practice

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Abstract (accepted)
This evidence-based practice paper examines the rapid growth of generative artificial intelligence (GenAI) and presents both the opportunities and challenges it poses for engineering education. Faculty and staff must learn not only how to integrate these tools into their professional roles but also how to guide students toward the ethical and practical use of these tools in the classroom. To address this need, the Swanson School of Engineering launched a summer workshop series designed to build GenAI literacy among educators and staff. Across seven distinct workshops, we engaged 67 unique participants, many of whom attended multiple sessions, in topics ranging from introductory AI concepts to advanced pedagogical and assessment strategies.

The workshop series emphasized two parallel goals: (1) equipping faculty and staff with generative AI skills that enhance efficiency in their own academic and administrative work, and (2) empowering educators to design learning experiences and assessments that responsibly incorporate or safeguard against GenAI. Sessions included *GenAI for the Absolute Beginner*, *Task Automation with Generative AI (one workshop for staff and one for faculty)*, *Prevention, Not Policing: Redesigning Assessments to Minimize AI Misuse*, *Coaching Critical Thinkers: Moving Beyond AI-Proofing to AI-Guided Learning*, *GenAI Prompt Engineering*, and *Advanced Applications for Faculty*. Materials and prompt banks were shared following each session to encourage continued experimentation and adoption.

Evaluation occurred through post-workshop surveys and ongoing "boomerang" surveys that examine how participants have applied GenAI since the workshops. Preliminary findings suggest that participants are utilizing GenAI to streamline course preparation, automate repetitive tasks, and redesign assessments to enhance authenticity and integrity. Faculty also reported increased confidence in discussing responsible AI use with students.

This paper will present the rationale for the workshop series, highlight key content and assessment results from two delivery iterations, and share recommendations for other institutions seeking to develop faculty and staff capacity in GenAI. In a traditional-style conference talk, we argue that such efforts are essential for advancing both professional practice and technological literacy in engineering education, while also preparing students for a future in which GenAI will be integral to engineering practice.

1. Introduction and Background

Generative artificial intelligence (GenAI) has rapidly emerged as a transformative force in higher education, reshaping how work, learning, and assessment are approached across disciplines. Tools capable of generating text, code, images, and analyses offer significant opportunities to increase efficiency in tasks such as drafting instructional materials, supporting coding and data analysis, and automating routine workflows. At the same time, GenAI introduces substantial challenges, including risks of misuse, concerns about academic integrity, and uneven levels of preparedness among faculty and staff. These tensions are particularly salient in engineering

education, where graduates are increasingly expected to engage with AI-enabled tools in professional practice, yet educators may lack the confidence, skills, or frameworks needed to integrate GenAI responsibly into teaching and assessment.

The disruptive potential of GenAI parallels earlier technological shifts in higher education, such as the introduction of calculators, computer algebra systems, and the internet, which required educators to rethink pedagogy and assessment rather than rely primarily on prohibition. GenAI is already influencing how students complete assignments, seek information, and generate ideas, making purely restrictive or reactive approaches unsustainable and ineffective. Faculty face growing pressure to adapt instructional practices to preserve learning objectives while acknowledging the realities of AI-assisted work, while professional staff encounter new opportunities to streamline administrative processes and improve communication, often without structured guidance or shared expectations.

In response, the Swanon School of Engineering pursued a proactive, capacity-building approach focused on preparing faculty and staff to engage with GenAI responsibly rather than reactively policing its use. Motivated by a commitment to academic integrity and to preparing students for future engineering practice, the school developed a workshop series to build GenAI literacy across instructional and professional roles. The purpose of this evidence-based practice paper is to describe the design and implementation of this workshop series, present evidence of its impact on participants' confidence and practice, and offer insights and recommendations for other engineering schools seeking to support effective and responsible engagement with GenAI.

2. Workshop Design and Implementation

The design of the GenAI workshop series was informed by both external professional development experiences and established internal practices. Members of the professional development team attended an ASEE-sponsored workshop in Spring 2025, *Generative AI and Engineering Education,* led by A. Jori and A. Katz [1], which framed GenAI not as a monolithic tool, but as a set of practices requiring intentional pedagogical and ethical integration. Building on prior work, the team adopted a bite-sized, 90-minute workshop model that has proven effective for engaging faculty and staff.

To ensure relevance, workshops were intentionally designed to "come from where people are," addressing the distinct needs of faculty and staff. Katz's *AI Integration Taxonomy Framework* [1] served as an organizing lens, emphasizing pedagogical purpose, student agency, ethical considerations, assessment alignment, technical implementation, and depth of integration. The resulting structure consisted of seven workshops offered across a single summer, with the series later repeated during the fall term to extend access. Workshops were delivered in a hybrid format, with recordings and materials provided to support flexible participation. Across the offerings, 94 unique participants engaged with the series, with many attending multiple sessions, reflecting sustained interest and cross-workshop learning. Two overarching goals guided the design: (1) to equip faculty and staff with practical GenAI skills that support efficiency and effectiveness in professional work, and (2) to prepare educators to responsibly integrate GenAI into teaching, learning, and assessment, with attention to academic integrity and student development.

Workshop topics progressed from foundational to advanced applications and included: *Generative AI for the Absolute Beginner*; *Task Automation with GenAI* (offered in parallel tracks for faculty and staff); *Prevention, Not Policing: Redesigning Assessments to Minimize AI Misuse*; *Coaching Critical Thinkers: From AI-Proofing to AI-Guided Learning*; *GenAI Prompt Engineering*; and *Advanced Applications for Faculty*, which focused on discipline-specific use cases such as engineering design, coding, and simulation. To support continued experimentation beyond the workshops, participants were provided with curated prompt banks, shared best-practice documents, and ongoing access to workshop materials online. Together, this design balanced accessibility with depth, supporting both immediate application and longer-term pedagogical transformation. Table 1 summarizes the content and activities for each workshop.

Table 1. Overview of GenAI Workshop Content

Workshop	Summary of Workshop Content
Generative AI for the Absolute Beginner	Introduced foundational concepts and terminology related to GenAI, including how large language models work, common myths and limitations, and examples of GenAI tools. Participants engaged in live demonstrations and hands-on prompt practice focused on basic instructional and administrative use cases in higher education, such as drafting syllabus statements, quiz questions, and student feedback.
Task Automation with GenAI for Staff	Focused on practical workplace applications of GenAI to improve efficiency in administrative and professional tasks. Topics included email drafting and summarization, document creation using LaTeX and Overleaf, newsletter and web content automation, spreadsheet and formula generation, and meeting documentation. Hands-on activities emphasized integrating GenAI into routine staff workflows while maintaining professional judgment.
Task Automation with GenAI for Faculty	Addressed how faculty can use GenAI to automate and streamline teaching- and research-related tasks. Content included drafting syllabi and assessments, generating and translating code (e.g., MATLAB to Python), creating LaTeX-based course materials and Beamer presentations, and using Python and Google Colab for instructional automation. Activities emphasized efficiency gains while retaining disciplinary rigor.
Prevention, Not Policing: Authentic Assessment Strategies for a GenAI World	Explored assessment redesign strategies that minimize inappropriate GenAI use by emphasizing authenticity, process, and higher-order thinking. Participants examined how to shift from "AI-proofing" toward assessment designs that require explanation, reflection, and justification, and discussed aligning assessments with learning outcomes and ethical expectations.
Coaching Critical Thinkers: Moving Beyond AI-Proofing to AI-Guided Learning	Focused on positioning GenAI as a learning partner to promote critical thinking rather than a shortcut. Participants analyzed critical thinking frameworks, examined examples of AI-guided assignments, and engaged in hands-on activities to redesign assessments that scaffold interpretation, analysis, evaluation, inference, and metacognition, while explicitly addressing ethical use and source verification.
GenAI Prompt Engineering	Introduced prompt engineering as a critical skill for effective and responsible GenAI use. Participants learned structured prompt frameworks (e.g., role–task–format, action–context–target), practiced iterative prompt refinement, and evaluated GenAI outputs for clarity, relevance, and bias. Activities focused on applying prompt engineering to teaching, feedback, and learning scaffolds.
Advanced Applications for Faculty	Provided an open, collaborative forum for faculty with moderate to advanced GenAI experience. Through roundtables, idea exchanges, and a design sprint, participants shared tools, prompts, and challenges, and collaboratively developed AI-enhanced course projects. The workshop emphasized peer learning, advanced pedagogical use cases, and integration of GenAI into course design and assessment.

3. Evaluation Methods

Data collection for the workshop series included three complementary sources. Attendance records documented participation patterns across faculty and staff, while short post-workshop

surveys captured immediate reactions, perceived usefulness, and shifts in confidence following each session. In addition, follow-up "boomerang" surveys were administered weeks to months later to examine how participants were applying what they learned in practice, including tool usage, changes in pedagogy or workflow, and confidence in discussing GenAI with students [2], [3].

Data were analyzed using a sequential mixed-methods approach. Quantitative data were analyzed first, with attendance counts used to characterize participation levels and counts and percentages used to summarize responses to the post-workshop Likert surveys. These results then informed the subsequent qualitative analysis of open-ended responses from the boomerang surveys, which were analyzed using a grounded theory approach [4]. Iterative coding was used to identify recurring concepts and emergent themes related to GenAI use, challenges, and desired future training. Given the exploratory nature of the study and the size of the dataset, no inferential statistical analyses were conducted.

3.1 Participation

The complete dataset includes 94 unique participants who attended one or more GenAI workshops offered during the Summer and Fall terms (see Table 2). Participants are categorized by role (faculty or staff) and by term (summer or fall). Because individuals could attend multiple workshops, attendance figures reflect session-level participation, rather than unique headcounts per workshop.

Overall participation represented a substantial proportion of the engineering school community. Approximately 30% of staff (41 of 136) participated in at least one GenAI workshop, while 53 faculty members (out of 211 total faculty – tenured, tenured-stream, appointment stream, and permanent adjunct) participated, representing approximately 25% of the faculty population. For a voluntary professional development initiative focused on an emerging topic, these participation levels indicate strong engagement.

Faculty participation in professional development varies widely across institutions and program types. Data from the University of Pittsburgh's Center for Teaching and Learning show that annual participation in teaching development activities typically represents a modest proportion of the faculty population, even after accounting for repeat attendance [5] (University of Pittsburgh, 2023). Similarly, POD Network benchmarking suggests that while workshops may reach broad audiences, voluntary engagement seldom approaches participation by more than half of the faculty, with participation often concentrated among a motivated subset [6]. In this context, the GenAI workshop series falls within the mid-range of participation reported in the literature, reflecting strong engagement relative to comparable faculty and staff development efforts.

Participation was substantially higher during the summer term than the fall, reflecting the seasonal rhythms of academic work. Summer attendance benefited from faculty being largely free of teaching responsibilities and staff experiencing fewer student-facing administrative demands, allowing for greater flexibility. In contrast, fall participation was more limited, consistent with increased instructional and operational obligations during the academic term.

Table 2. Summer/Fall and Faculty/Staff Attendance by Workshop

Workshop	Summer	Fall	Faculty	Staff
GenAI for the Absolute Beginner	31	11	25	17
Task Automation for Staff	37	3	6	34
Prevention, Not Policing	24	3	25	2
Task Automation for Faculty	21	7	26	2
Coaching Critical Thinkers	28	2	27	3
GenAI Prompt Engineering	29	4	28	5
Advanced Applications of GenAI	16	1	15	2

3.2 Post Workshop Surveys

Across the Spring and Fall workshop offerings, 70 total responses were received to the post-workshop Likert surveys. This total reflects the number of completed survey submissions (one per participant per workshop), rather than the number of unique individuals, as some participants completed surveys across multiple sessions.

As shown in Table 3, responses to the three Likert items: a. confidence in addressing GenAI, b. perceived ability to use GenAI effectively, and c. practical strategies gained, were overwhelmingly positive across all workshops. For every session, the majority of respondents selected Agree or Strongly Agree, with *Strongly Agree* most prevalent in pedagogy- and application-focused workshops such as *Prevention, Not Policing*, *Coaching Critical Thinkers*, and *Prompt Engineering*. Introductory and automation-focused workshops also demonstrated substantial gains, though with slightly more responses in the *Agree* category, reflecting participants at earlier stages of GenAI adoption and experimentation. Disagreement was rare and limited to a small number of respondents.

Table 3. Summary of Post-Workshop Likert Survey Responses

	Confidence in Addressing GenAI			Ability to Use GenAI Effectively			Practical Strategies Gained		
Workshop	Disagree	Agree	Strongly Agree	Disagree	Agree	Strongly Agree	Disagree	Agree	Strongly Agree
Generative AI for the Absolute Beginner	0% (0)	48% (11)	52% (12)	4% (1)	48% (11)	48% (11)	0% (0)	50% (11)	50% (11)
Task Automation with GenAI for Staff	13% (3)	21% (5)	67% (16)	13% (3)	25% (6)	63% (15)	9% (2)	23% (5)	68% (15)
Prevention, Not Policing	0% (0)	20% (1)	80% (4)	20% (1)	20% (1)	60% (3)	0% (0)	13% (1)	88% (7)
Task Automation with GenAI for Faculty	0% (0)	50% (4)	50% (4)	13% (1)	50% (4)	38% (3)	0% (0)	38% (3)	63% (5)
Coaching Critical Thinkers	0% (0)	33% (1)	67% (2)	0% (0)	33% (1)	67% (2)	0% (0)	17% (1)	83% (5)
GenAI Prompt Engineering	0% (0)	43% (3)	57% (4)	0% (0)	43% (3)	57% (4)	0% (0)	43% (3)	57% (4)
Advanced Applications of GenAI	0% (0)	0% (0)	100% (1)	0% (0)	0% (0)	100% (1)	0% (0)	0% (0)	100% (1)

Taken together, these results indicate that the workshop series effectively increased participants' confidence, perceived effectiveness, and access to actionable strategies for using GenAI in their professional roles. Table 4 further illustrates role-based differentiation in planned GenAI use,

with faculty emphasizing instructional redesign and ethical integration into student learning, and staff focusing on workflow efficiency, communication, and automation. This pattern aligns with the workshops' intentional design and suggests that participants identified contextually appropriate and role-aligned applications of GenAI.

Table 4. Faculty and Staff Workshop Takeaways

Theme Area	Faculty Takeaways	Staff Takeaways
Primary Focus of Use	Pedagogical transformation and student learning	Workflow efficiency and professional productivity
Assessment & Academic Integrity	Redesigning homework and assessments to emphasize process, reasoning, and ethical GenAI use; adjusting grading weights; mitigating inappropriate GenAI use	Limited emphasis; some awareness of ethical considerations, primarily in communication contexts
Instructional Design & Learning Scaffolds	Using GenAI to generate examples and errors, support metacognition, scaffold assignments, and teach when GenAI use is appropriate	Occasional relevance (e.g., supporting course materials), but not a dominant theme
Course & Content Development	Developing or refining syllabi, assignments, lectures, weekly updates, and learning activities	Creating newsletters, announcements, memos, reports, and other professional content
Technical & Tool-Specific Skills	Using GenAI with LaTeX, Beamer, literature search tools, and prompt refinement for teaching and research	Strong interest in LaTeX/Overleaf, PPT and PDF generation, Canva AI, Google Colab, Beehiv, and automation tools
Prompting & Iteration	Refining prompts to improve instructional outputs and learning activities	Prompt iteration to improve clarity, conciseness, and efficiency in routine tasks
Adoption Orientation	Intentional, structured integration into courses with explicit guidance for students	Exploratory and task-driven experimentation in day-to-day work
Critical Perspective	Focused on aligning GenAI use with learning outcomes and ethical instruction	Selective adoption; some skepticism about value for already-effective workflows (e.g., email)
Cultural Response to Workshops	Strong reinforcement of learning, validation of approach, and desire to continue and expand offerings	High enthusiasm for practical utility; appreciation for hands-on demonstrations and tools

3.3 Boomerang Surveys

Although the response rate was modest, boomerang survey respondents provided rich insights into how faculty and staff were applying GenAI in their professional work, the challenges they continued to encounter, and the types of additional training and support they desired. These follow-up responses offer an important window into early patterns of adoption and sensemaking, complementing immediate post-workshop feedback by capturing how GenAI use evolved once participants returned to their day-to-day roles. The boomerang surveys included the following items: (1) whether participants had used GenAI since attending the workshops; (2) which GenAI platforms they were using; (3) how they had used or planned to use GenAI in their role; (4) challenges encountered or anticipated; and (5) additional training, resources, or support needed for more effective use.

Most respondents reported active use of GenAI following the workshops. Of the 19 respondents, 16 indicated occasional or regular use, with several reporting regular integration into their work. One respondent reported plans to use GenAI but had not yet done so, and only one respondent indicated no plans to use GenAI. Taken together, these findings suggest that the workshops

supported meaningful post-workshop adoption, with the majority of respondents translating exposure and skill-building into real-world practice.

3.3.1 Platforms Being Used

Across boomerang survey respondents, adoption of GenAI platforms was concentrated in a small set of mainstream tools. ChatGPT was the most widely used platform, followed by Gemini and Microsoft Copilot, with no respondents reporting use of DALL-E, Claude, Grok, DeepSeek, or other alternatives. Multi-platform use was common, with a majority of respondents (12 of 19; 63%) reporting use of two or more GenAI tools, suggesting exploratory and flexible adoption rather than reliance on a single platform.

These patterns align with recent literature on GenAI adoption in higher education and professional contexts, which consistently identifies ChatGPT as the dominant platform, followed by Copilot and Gemini, particularly in institutions where these tools integrate with existing productivity environments [7], [8], [9]. Together, the local data and prior research suggest that faculty and staff gravitate toward accessible, institutionally supported, general-purpose GenAI tools, reinforcing the importance of aligning professional development efforts with platforms already embedded in everyday academic and administrative workflows.

3.3.2 Planned or Current Use of Gen AI

Across faculty and staff responses (see Table 5), participants described plans to use GenAI primarily as a cognitive and productivity support tool, rather than as a substitute for expertise. The most common anticipated uses related to teaching and learning include lecture preparation, development of homework, quizzes, exams, rubrics, and class activities, and the generation of clearer explanations, diverse examples, and instructional visuals. Several faculty explicitly noted intentions to intentionally integrate GenAI into coursework to help students learn how to use these tools responsibly and effectively.

A second prominent theme involved information synthesis and analysis, with respondents planning to use GenAI for technical searches, literature exploration, data analysis, and coding support (e.g., MATLAB and PDE solvers), as well as for thematic analysis of qualitative data. Both faculty and staff also emphasized professional communication and workflow efficiency, including drafting and refining emails, preparing slides and agendas, brainstorming content, and supporting marketing or outreach communications. Across responses, participants consistently framed GenAI use as a means to enhance clarity, efficiency, and instructional quality while retaining human judgment and disciplinary expertise.

Table 5. Planned Uses of GenAI: Themes and Exemplar Quotes

Theme	Description of Planned Use	Illustrative Quotes
Instructional Design and Assessment Development	Faculty plan to use GenAI to support the design of homework, quizzes, exams, rubrics, and in-class activities, with an emphasis on clarity, alignment, and variety rather than answer generation.	"Create HW, quiz and exam questions for a quantitative engineering class." "I used it to help me design quiz questions… reviewing the topics discussed in each session."
Lecture Preparation and Conceptual Explanation	Respondents described using GenAI to improve lecture preparation by generating clearer	"Preparing class lectures… asking it to help me better explain

Theme	Description of Planned Use	Illustrative Quotes
	explanations, alternative examples, and visual or narrative supports to enhance student understanding.	some of the concepts." "I use prompts to help me find better examples to convey the concepts."
Intentional Integration into Student Learning	Several faculty articulated plans to deliberately embed GenAI into coursework to teach students how to use these tools responsibly and effectively, rather than prohibiting their use.	"I will now intentionally build it into homework assignments to help teach students how to use it."
Technical Problem Solving and Coding Support	GenAI is planned as support for coding, modeling, and computational tasks (e.g., MATLAB, PDEs), particularly to accelerate problem-solving and explore alternative approaches.	"I used it to develop codes for solving partial differential equations." "I have been using it to work out MATLAB codes to support lectures."
Information Search, Synthesis, and Data Analysis	Faculty and staff described using GenAI as an enhanced search and synthesis tool for technical information, survey analysis, and large-scale data exploration.	"Analyzing survey data for themes." "Rapid search/collation of data at national scale."
Professional Communication and Workflow Efficiency	Staff plan to use GenAI to draft and refine emails, marketing materials, slides, agendas, and other professional documents, emphasizing efficiency and polish.	"I usually use generative AI to draft emails… and refine them for the target audience." "Marketing emails."

These patterns align with the engineering education and faculty development literature, which emphasizes that instructional technologies are most impactful when they support authentic teaching tasks, assessment design, and faculty sensemaking, rather than functioning as standalone tools [10], [11]. The intentional use of GenAI for assessment and instructional design reflects broader calls for higher-order, practice-oriented learning, while its use as a productivity aid aligns with research on technology adoption as augmentation rather than replacement of expertise. Finally, a small number of respondents expressed limited perceived need for GenAI in routine tasks; such selective non-adoption is consistent with technology acceptance research, which shows that some users choose not to adopt tools when the perceived fit with their work is low [7], [12].

3.3.3 Challenges and Concerns

As summarized in Table 6, participants identified a range of challenges related primarily to accuracy and verification of outputs, prompting burden, and academic integrity. Concerns about oversimplification, hallucinations, and insufficient rigor underscore the importance of helping educators develop the skills to critically evaluate GenAI outputs and align their use with disciplinary standards, particularly in technical and quantitative contexts. Challenges related to prompt specificity and iterative refinement further suggest that effective professional development should include guided practice with prompting, rather than assuming intuitive mastery of tools.

Table 6. Reported Challenges in Using GenAI: Themes and Exemplar Quotes

Theme	Description of Challenge	Illustrative Quotes
Accuracy, Verification, and Hallucinations	Participants emphasized that GenAI outputs often appear confident but require careful verification, particularly in technical or quantitative contexts. Effective use depends on the user's domain expertise to detect errors or incomplete solutions.	"Verifying whether solutions provided by AI-generated questions are correct." "They come enthusiastically promising the solution, but in several instances, they require further development to get them right, appropriate, and specific."
Oversimplification and Lack of Intellectual Rigor	Faculty reported that GenAI sometimes oversimplifies complex engineering concepts or produces examples and assessment questions that lack sufficient rigor, limiting direct instructional use.	"The quiz questions weren't intellectually rigorous." "Some examples generated didn't make sense."
Prompting Burden and Limited Specificity	Several respondents noted that GenAI often requires extensive prompt refinement to produce useful, context-specific outputs, increasing the time and effort required for effective use.	"The response is not specific enough. It feels like AI can't understand what I am truly asking it to do without many prompts." "Prompt refinement to get desired results; need to verify results (to make sure no hallucination)."
Need for Expertise to Evaluate Outputs	Participants stressed that GenAI is most beneficial to expert users and may pose risks when used by non-experts who cannot easily assess correctness or appropriateness.	"These tools are really most beneficial to people who are already expert at something." "Students who cannot differentiate between fact and fiction because they are using it as non-experts."
Academic Integrity and Student Misuse	Concerns were raised about students using GenAI to circumvent learning, particularly in assessment contexts, and about the difficulty of ensuring responsible use.	"Students using it to 'cheat' on exams in Engineering Economic Analysis."
Over-Reliance and Cultural Misunderstandings	Some respondents expressed concern about colleagues or students placing excessive trust in GenAI outputs and underestimating associated risks and limitations.	"Working with colleagues who think generative AI is perfect and don't understand the risks and limitation of using it."
Practical, Technical, and Resource Constraints	A smaller number of challenges related to system limitations, access restrictions, or broader concerns about sustainability and infrastructure.	"Limited number of requests before timed out." "I anticipate and am fearful of the impacts to our environment."

Participants also raised concerns about student misuse, over-reliance on GenAI, and uneven understanding of risks, underscoring the need for faculty development that supports assessment redesign, shared norms for appropriate use, and explicit instruction in AI literacy. Taken together, these findings indicate that sustained, context-sensitive professional development is essential to ensure that GenAI functions as an *augmentative* tool, enhancing learning and professional practice, rather than undermining quality, rigor, or academic integrity.

3.3.4 Additional Training and Support

As shown in Table 7, participants expressed a strong preference for applied, example-driven GenAI training, including opportunities for hands-on practice, peer sharing, and teaching-focused integration, alongside platform-specific guidance and clarity around institutional policies. Responses indicate that future professional development should emphasize depth,

application, and contextual relevance, rather than additional introductory exposure alone. The call for sandbox time and peer-shared practices suggests that faculty and staff are seeking support in translating conceptual understanding into routine, sustainable practice, while requests for teaching-focused automation and assessment integration reflect a desire to reclaim time from repetitive tasks without compromising pedagogical quality. Interest in platform-specific guidance and policy clarity further underscores the importance of aligning GenAI training with local tools, governance, and data-protection norms, reinforcing the value of sustained, differentiated faculty development models that address both practical workflows and responsible, evidence-based use.

Table 7. Desired Additional Training and Support for GenAI Use

Theme	Description of Training Need	Illustrative Exemplar Quotes (Anonymized)
Deeper, More Advanced Skill Development	Participants expressed interest in moving beyond introductory exposure toward more detailed or advanced training, including follow-on sessions that build on foundational concepts.	"Not sure probably a more detailed training." "I would be interested in a 'Beginner 2' course that contained a combination of review items and new items."
Applied, Example-Driven Workshops	Many respondents emphasized the need for concrete examples, demonstrations, and practical workflows, particularly those drawn from peers' real teaching or administrative contexts.	"Sharing best and worst practices from other faculty who use it." "A 'here's how I use it' session from other faculty…to get more perspective on how to save time."
Time for Practice and Sandbox Exploration	Participants consistently noted that effective use requires time to experiment, practice, and iterate, suggesting that training should include protected "sandbox" time rather than only demonstrations.	"I need more time to explore, and more examples, prompts, etc." "Sandbox time following other specific samples/demos."
Teaching-Focused Integration and Automation	Faculty in particular sought guidance on integrating GenAI into teaching and learning workflows, especially to reduce time-intensive tasks such as grading, slide preparation, and activity design.	"How to best incorporate Gen AI in different aspects of teaching and learning." "Replacing text-heavy slides with more interactive ones, and also automating grading."
Tool-Specific and Platform-Specific Guidance	Several respondents requested training tailored to specific platforms (e.g., Gemini) or integrations with existing tools (e.g., LaTeX, PowerPoint, email systems).	"Getting a better handle on integrating gen AI with LaTeX/Overleaf." "Having Gemini make PowerPoint slides."
Institutional Context, Policy, and Safe Use	Some participants emphasized the importance of understanding institutional policies, data protection, and approved uses of GenAI within university systems.	"A workshop in which we can learn about Pitt's policies on generative AI." "Engage university systems where internal documents can be written without releasing sensitive information."
Ongoing Learning and Evidence-Based Insight	A smaller subset of respondents expressed interest in long-term research and evidence regarding the impacts of GenAI in higher education, rather than immediate skill acquisition.	"I am very interested in long term studies on the impact of genAI in a higher education setting."

Theme	Description of Training Need	Illustrative Exemplar Quotes (Anonymized)
Perceived Limited Need or Readiness	A minority of respondents indicated either satisfaction with current training or lack of perceived need, often tied to limited relevance in daily work.	"I think I've received sufficient training for my current needs." "Until I see a need for it in daily actions, I do not see the need."

4. Discussion and Next Steps

Across the workshop series, participants reported increased confidence and practical capability in using GenAI within their professional roles. Faculty and staff described gaining concrete strategies for instructional design, assessment development, communication, and workflow efficiency, often emphasizing immediate, actionable takeaways. Participants also developed a more critical understanding of GenAI's limitations, including the need for verification, thoughtful prompting, and domain expertise. Notably, several faculty described a shift from initial caution or avoidance to an intentional, responsible integration of GenAI into teaching and student learning, reinforcing GenAI's role as an augmentative tool rather than a replacement for professional judgment.

Despite a modest boomerang survey sample, the findings point to a clear trend toward positive and purposeful GenAI adoption among both faculty and staff. Respondents consistently described using GenAI to improve efficiency, enhance instructional materials, and support higher-quality teaching and learning. Faculty emphasized purposeful integration into course design, assessment, and student learning, while staff highlighted gains in professional communication and workflow support. Although a small number of respondents reported limited perceived relevance, this pattern aligns with early-adoption dynamics reported in the literature and does not diminish the broader evidence of reflective and responsible use emerging across the school.

Building on these outcomes, the next phase of this initiative will focus on scaling responsible GenAI use across the engineering school. As an initial step, the six existing workshops will be converted into asynchronous online modules to support onboarding, just-in-time learning, and broader participation. In parallel, structured opportunities will be created for faculty to share discipline-relevant examples of GenAI use in teaching, assessment, and professional workflows, leveraging peer exemplars to normalize effective practice. The initiative will also work toward establishing a shared faculty perspective on the knowledge, skills, and abilities (KSAs) students should demonstrate for responsible GenAI use as future engineers, aligned with ABET's emphasis on ethical responsibility, professional judgment, lifelong learning, and societal impact, as well as industry expectations for trustworthy AI use. Finally, with the institutional adoption of Claude for Education, engineering faculty will be supported in integrating this platform as a student learning scaffold that enhances reasoning and critical thinking rather than replacing student intellectual work. Together, these efforts aim to embed GenAI literacy and responsibility into engineering curricula in sustainable, accreditable, and practice-aligned ways.

5. Recommendations for Others

For engineering schools seeking to unify and advance the responsible use of GenAI, an effective starting point is to prioritize accessibility through short, entry-level workshops that establish a shared baseline of understanding for faculty and staff. From there, institutions should

differentiate professional development to address the distinct needs of instructional faculty and professional staff, while emphasizing practical, immediately usable resources such as prompt banks, case examples, and shared tools. An iterative design approach, supported by follow-up ("boomerang") surveys, enables programs to adapt as practices mature and GenAI technologies evolve. Importantly, GenAI initiatives should emphasize enhancing individual productivity while preserving pedagogical integrity and student learning and should be embedded within existing faculty development structures to ensure sustainability. In addition, industry increasingly expects engineering graduates to demonstrate AI literacy and responsible use, and it is likely that future accreditation conversations will examine how engineering programs are responding to these expectations within curricula and professional preparation. Finally, given varied comfort levels with technology and the rapid pace of AI development, institutions must balance efficiency gains with ethical, transparent, and responsible use when designing faculty and staff development initiatives.

6. Conclusion

In conclusion, the GenAI workshop series effectively built literacy and confidence among both faculty and staff, supporting meaningful engagement with GenAI in professional and instructional contexts. Participants reported tangible impacts, including increased efficiency in routine tasks, strengthened pedagogical practices, and more intentional approaches to assessment integrity and student learning. More broadly, this work demonstrates how institutions can proactively prepare educators for the evolving GenAI landscape through structured, accessible, and role-responsive professional development. As GenAI becomes increasingly embedded in engineering practice, sustained faculty and staff development is essential for advancing professional practice, enhancing teaching and learning, and preparing engineering students to use these tools responsibly and effectively in their future careers.

Limitations: This work has several limitations that should be considered when interpreting the results. While participation in the workshops was strong, response rates to both the post-workshop Likert surveys and the follow-up boomerang surveys were modest, limiting the generalizability of the findings and potentially overrepresenting the perspectives of more engaged participants. In addition, the data are self-reported and drawn from a single institution, offering an early, but necessarily preliminary, view of GenAI adoption and impact.

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