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COMPETENCE NEEDS ANALYSIS – FOCUS GROUPS

A Qualitative Content Analysis of Focus Group Perspectives on AI in Higher Education

Work Package 2: Use case Inventory for AI and Data Analysis in Higher Education and Competence Framework

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Table of Contents

Executive summary **3**

Introduction **4**

Methodology **6**

Thematic Findings **8**

Familiarity with AI 8

Interest in AI and Desired Integration 9

Perceived Impact on Learning and Creativity 11

Preparedness and Skills for AI Integration 14

Improvements to Academic Practice and Associated Challenges 17

Concerns and Ethical Considerations 22

Discussion **26**

Conclusion **31**

A Qualitative Content Analysis of Focus Group Perspectives on AI in Higher Education

Executive summary

This report presents a qualitative content analysis of focus group discussions from the IDEAL project examining artificial intelligence (AI) in higher education. Using predefined thematic categories (e.g., familiarity with AI, desired integration, impact on learning, preparedness, practice improvements, and ethical concerns), we coded and synthesized perspectives from faculty, researchers, and students across disciplines (STEM, humanities, and vocational education). Key themes include widespread awareness of AI tools (especially generative AI like chatbots), strong interest in leveraging AI for personalized and adaptive learning, and perceived benefits in efficiency, accessibility, and creative enhancement. However, important differences emerged: STEM educators and students tend to be early adopters, whereas humanities and vocational educators voice more skepticism. Faculty generally emphasize the need to preserve critical thinking and human-centric pedagogy, while students are more open to AI's assistive capabilities. Attitudes toward specific AI technologies (e.g., chatbots for 24/7 support, adaptive learning systems, large language models) are cautiously optimistic—participants recognize their potential to enrich learning but also raise pedagogical, ethical, and institutional challenges. Common concerns include academic integrity, over-reliance on AI undermining skill development, data privacy, and algorithmic bias. All groups stress that AI should augment, not replace, human educators. The findings align with recent scholarship on AI ethics, pedagogy, and digital literacy, underscoring the need for enhanced AI literacy training, clear ethical guidelines, and balanced integration strategies. We conclude with a discussion of how AI's benefits can be harnessed without compromising higher education's core goals of critical thinking, creativity, and equity.

Introduction

Artificial intelligence (AI) is rapidly transforming higher education, prompting both excitement and apprehension among stakeholders. The advent of powerful generative AI tools like OpenAI's ChatGPT has intensified debates about AI's potential to enhance teaching and learning versus its risks to academic integrity and critical skills. On one hand, AI promises to redefine educational paradigms by offering personalized learning experiences, intelligent tutoring systems, and automated support that can meet diverse student needs. Early evidence suggests that students appreciate AI for instant feedback, creativity support, and efficiency gains, viewing it as a valuable learning aide (Haroud & Saqri, 2025). Faculty and educators, on the other hand, often approach AI with cautious optimism, recognizing its potential to improve student engagement and access, yet are concerned about ethical implications and pedagogical trade-offs (Williams, 2024). Recent studies highlight faculty reservations that AI could undermine the development of "soft" skills like critical thinking, problem-solving, and collaboration if overused (Haroud & Saqri, 2025). They emphasize that while AI may serve as a powerful complement in the classroom, it "cannot replace the essential human role of educators" in guiding, mentoring, and providing the socio-emotional support that students require (Haroud & Saqri, 2025, p. 2).

Amid this landscape, there is a growing consensus on the need for responsible and informed integration of AI in higher education. Scholars and international bodies alike have called for enhancing digital and AI literacy among both educators and students to ensure ethical and effective use of these technologies (Miao & Holmes, 2023; Haroud & Saqri, 2025). Issues such as algorithmic bias, data privacy, and academic honesty have moved to the forefront of educational discourse as universities grapple with setting policies for AI use in coursework and assessment (Hasanein & Sobaih, 2023). At the same time, higher education institutions are exploring ways to harness AI for positive outcomes, ranging from intelligent tutoring systems and adaptive learning platforms to AI-assisted research and administration, while maintaining academic standards and equity (Luckin and Holmes, 2016; Butson and Spronken-Smith,2024). This complex interplay of opportunities and challenges makes it critical to understand how various stakeholders perceive AI's role in academia.

The present report addresses this need by analyzing qualitative data from focus groups conducted as part of the IDEAL project (2025), which brought together higher education stakeholders to discuss AI in teaching and learning. By examining these in-depth discussions, we aim to: (1) identify key themes and shared perspectives on AI in higher education; (2) illuminate differences in attitudes across academic disciplines (e.g., STEM vs. humanities vs. vocational fields) and stakeholder roles (faculty, researchers, students); (3) analyze views on specific AI technologies (chatbots, adaptive learning systems, large language models, generative AI tools); and (4) explore the ethical, institutional, and pedagogical implications as perceived by practitioners. We further contextualize these findings within recent scholarly literature on AI ethics, pedagogy, and digital literacy (2022–2025) to draw connections between the focus group insights and broader research trends. In doing so, this paper

contributes a timely, nuanced understanding of how those at the forefront of higher education experience and envision the growing presence of AI in academia.

Methodology

Research Design: We conducted a qualitative content analysis of 7 focus group reports collected under the IDEAL project's Work Package 2 from Italy, Germany, Spain and Greece, which investigates digital data learning methodologies (with an emphasis on AI) across Europe. Each focus group was semi-structured around a common protocol of open-ended questions, ensuring that all sessions explored the same predefined categories: (1) familiarity with AI; (2) interest in learning more about AI and desired integration in the institution; (3) perceived impact of AI on student learning (including creativity and inclusion of disadvantaged students); (4) preparedness and skills needed to use AI in academic practice; (5) ways AI could improve current teaching/research practice and anticipated challenges; and (6) concerns or fears regarding AI, especially ethical considerations (e.g., AI in grading, potential replacement of teachers). These categories served as an initial coding framework for analysis. The focus group discussions were conducted in early 2025, and each resulted in a summary report (~5–7 pages) compiled by the facilitators, capturing the main points of participants' dialogue in each category.

Participants: Each focus group consisted of approximately 8–12 participants drawn from higher education contexts, including university faculty members, academic support staff, researchers, and (in some cases) postgraduate students. The groups were organized by partner institutions in different countries, providing a diverse sample of disciplines and perspectives. For example, one focus group at a technical university included computer science professors and data ethics researchers alongside humanities lecturers; another group convened at a comprehensive university included language and education faculty, and a few graduate students. In total, the dataset reflects input from dozens of stakeholders across STEM fields, social sciences, humanities, and applied/vocational disciplines. This diversity allowed for comparative insights into how AI perceptions might differ by academic domain and role. Participants' identities were anonymized in the reports, and informed consent was obtained as per the project's ethical guidelines.

Data Analysis: We analyzed the focus group report texts using a thematic content analysis approach. First, two researchers independently read all reports and performed open coding within the six predefined categories, noting recurring ideas and illustrative quotes. Next, through discussion, we refined these codes into a set of key themes for each category (e.g., under "familiarity," subthemes like high vs. low AI exposure emerged; under "concerns," subthemes like academic integrity, bias, etc. were identified). We paid special attention to variations in responses linked to participants' disciplinary background or stakeholder group. For instance, we coded any explicit comparisons between STEM and non-STEM perspectives, or between instructors and students. We then compared themes across the focus groups to identify commonalities and differences. The analysis was primarily qualitative and interpretive; frequency of mentions was noted to gauge prominence of certain views, but the emphasis was on the richness of content rather than quantification. Throughout the process, we triangulated our interpretations by cross-referencing between focus group summaries and

referring back to raw excerpts in context, improving reliability. We also integrated insights from recent literature during analysis to enrich understanding of the themes (for example, noting where participant views echoed or diverged from published studies). The results are presented in the next section organized by thematic category, with stakeholder and discipline-based differences interwoven into each thematic narrative.

Thematic Findings

Familiarity with AI

General Awareness and Usage: Across all focus groups, participants demonstrated a generally high awareness of AI concepts and tools, though direct experience varied. Virtually everyone was familiar with the concept of artificial intelligence, often associating it with current popular applications such as chatbots, large language models (LLMs), and machine learning more broadly. Many could readily name specific AI tools they had used. The most commonly used was ChatGPT (for text generation and assistance) and related generative AI platforms (e.g., Gemini). Participants also mentioned using AI-driven services like Grammarly (writing enhancement), adaptive translation tools, and domain-specific software (e.g., AI features in data analysis packages or educational platforms). In a focus group at Universitat Pompeu Fabra, Spain, all twelve participants described having actively integrated AI into their academic work, reporting usage "on a daily basis" for tasks ranging from brainstorming and content summarization to coding and research analysis. Indeed, many rated their engagement with AI as extremely high (on a 0–10 scale, most indicated 9 or 10), highlighting the rapid rise of AI as a routine aid in academia. This pervasive use paints AI as an increasingly standard part of students' and educators' toolkits in higher education.

Differences by Expertise and Discipline: Despite universal awareness, the depth of AI familiarity diverged notably by disciplinary background and individual expertise. Focus group narratives revealed a spectrum: at one end, expert users (often from computer science, engineering, or data science fields) had in-depth knowledge and daily hands-on experience with advanced AI systems. For example, participants with computer science or data analytics roles described building neural network models, using frameworks like TensorFlow or PyTorch, and engaging in AI ethics research (such as bias detection in algorithms). These experts not only used off-the-shelf AI tools but sometimes developed or fine-tuned AI models for research purposes. They saw AI as integral to their work, though they also exhibited a sophisticated understanding of its limitations (e.g., one expert mentioned using AI for climate modeling but cautioned about algorithmic transparency and accountability). In contrast, moderate users (often educators in humanities and social sciences) had more limited, pragmatic interactions with AI. They tended to use AI tools occasionally for convenience, for instance, a history lecturer might use speech-to-text AI for transcribing interviews or consult ChatGPT to generate a draft course outline, but they did not heavily rely on or deeply trust these tools. Some in this group expressed wariness about accuracy, citing instances where AI produced errors (such as historical dates misidentified by a text AI) or concerns about ethical grey areas (e.g., AI emotion detection being potentially intrusive or misused). Finally, a smaller subset of participants represented minimal AI users, often from practice-based or vocational disciplines (such as arts, music, or hands-on technical training). These individuals reported little use of AI in their teaching or professional practice,

sometimes viewing it as not very relevant to the skills they teach (for example, a culinary arts instructor noted that AI "cannot taste food" and thus felt it had limited applicability in developing chefs). This group tended to stick to traditional, analog methods and occasionally voiced skepticism of AI as a "black box" that could undermine fundamental human expertise or craftsmanship. One such participant quipped that relying on AI for creative tasks felt like "cheating the process," reflecting a fear that AI shortcuts might erode students' discipline-specific skills.

Generational and Cultural Factors: Alongside disciplinary trends, some generational differences in familiarity emerged anecdotally. Younger academics and students often appeared more fluent and experimental with AI tools, having grown up with rapidly evolving technology. In one focus group, junior researchers were described as "demanding AI resources" and keen to attend AI workshops, whereas some senior faculty in the same session were dismissive, calling AI tools distractions from "core scholarship."Additionally, participants highlighted that familiarity should encompass not just technical know-how but also ethical literacy. A few experts noted that being "familiar" with AI ought to include understanding its societal impacts, for example, recognizing biases in AI training data or the environmental footprint of large AI models. However, they observed that such critical AI literacy was not widespread: those with minimal exposure to AI rarely had frameworks to evaluate these aspects, pointing to institutional gaps in training on AI ethics. This insight foreshadows the importance of AI-focused professional development, which participants later advocated in discussions on preparedness.

Interest in AI and Desired Integration

Interest in Learning More: Participants across stakeholder groups expressed substantial interest in expanding their knowledge of AI. There was a general enthusiasm for learning more about AI technologies and their applications in education. Many faculty members noted a personal curiosity in understanding AI beyond the basics, especially as these tools begin to permeate their classrooms and research. For instance, one humanities professor shared that exposure to ChatGPT sparked her interest in attending seminars on AI and pedagogy. Similarly, students in the focus groups voiced that they would welcome more opportunities (courses, workshops, or informal sessions) to learn how AI could aid their studies and future careers. This eagerness was, however, often coupled with a recognition that structured support is needed – participants admitted feeling "overwhelmed by the vastness of the field" or unsure where to start, given the rapid proliferation of AI tools.

Desired Institutional Integration: When asked whether they would like to see more AI integration in their educational institutions, most participants responded positively, envisioning a range of applications that could benefit teaching and learning. Several common ideas emerged:

Intelligent Tutoring and Support: There was strong support for AI-powered chatbots or virtual assistants to provide 24/7 student support outside of class. Participants imagined chatbot tutors that

could answer routine questions, provide explanations of course content, or guide students through administrative procedures, thereby supplementing human advisors. Importantly, they stressed such bots should operate under clear university guidelines to ensure quality and ethical use. For example, a proposal was made for a campus-wide AI helpdesk chatbot, managed with proper oversight, to enhance student experience by giving timely answers and resources on demand.

Adaptive Learning Systems: Many educators were intrigued by adaptive learning platforms that personalize instruction. They desired AI systems capable of tailoring content difficulty and pacing to individual student needs and performance. In one focus group, participants noted interest in "context-specific, curriculum-aligned" AI responses rather than generic outputs. This reflects a wish for AI tutors that know the course material intimately and can adjust feedback or practice exercises in real-time as a student progresses. Such personalized learning, participants felt, could especially help diverse learners – for example, providing enrichment for advanced students and remediation for those struggling, thereby optimizing learning outcomes for each student.

AI in Instructional Design and Content Creation: Faculty participants saw promise in AI tools to streamline course design and materials development. They mentioned applications that could help generate lecture slides, quizzes, case studies, or illustrative examples on various topics, saving educators time on preparation. One participant imagined an AI system that could automatically create multiple versions of a case report scenario for class discussion, or suggest multimedia resources to complement a lesson. Similarly, there was interest in AI to assist with grading and feedback, not to fully replace teacher grading, but to handle initial draft feedback or auto-grade objective portions of assessments, thus freeing instructors to focus on deeper evaluation. (This point segues into later discussions on AI in assessment with necessary caveats.)

Research and Data Analysis Tools: Beyond teaching, academics in the focus groups highlighted how AI could be integrated into the research dimension of higher education. They expressed interest in AI-driven platforms capable of analyzing large volumes of data (e.g., literature, experimental data, student feedback) to accelerate discovery and insight. For instance, researchers described a wish list for tools that could intelligently summarize research papers, find relevant literature, or even detect patterns in qualitative data, essentially acting as smart research assistants. Such integration could enhance scholarly productivity and interdisciplinarity. However, participants noted that accessing advanced AI (like certain data-analysis algorithms or premium LLM services) often requires institutional support (licenses, computational resources), which is currently lacking in some cases. Thus, they urged their institutions to invest in AI infrastructure that could be shared by faculty and students.

It is worth noting that while enthusiasm was high, participants did not advocate for uncritical or blanket adoption of AI. Their interest in integration was coupled with calls for thoughtful implementation. For example, educators in the humanities emphasized that any AI use should preserve "human-centric pedagogy", AI should not displace rich discussion or critical inquiry, but rather handle lower-order tasks to allow more time for human engagement. Vocational instructors,

while open to basic AI (like using an AI to simulate certain processes), insisted that hands-on practice must remain paramount. Across the board, participants wanted their institutions to approach AI integration strategically: providing training, ensuring tools are pedagogically appropriate, and establishing clear policies. This indicates a desire for guided, supported integration rather than individual ad-hoc experimentation. Indeed, several participants explicitly requested more institutional support: workshops, funding, and technical help to explore AI's potential. In one session, a teacher remarked that experimenting with AI alone "adds an extra burden" on top of regular duties, so without administrative backing and time allocated, deeper integration would be difficult. The consensus was that universities should actively facilitate AI adoption through infrastructure and professional development, a theme echoed in broader calls for upskilling educators (Lin & Chen, 2024; Ali et al., 2024).

Perceived Impact on Learning and Creativity

Improving the Learning Experience: The focus groups overwhelmingly agreed that, if used judiciously, AI can improve the learning experience for students. Participants cited personalized learning as one of AI's most significant contributions. AI tutors and adaptive systems can adjust to individual learners' pace and style, potentially increasing engagement and comprehension (e.g., an AI might offer remedial exercises on foundational concepts to a student who is struggling, or more challenging problems to an advanced learner). Such customization was linked to better student motivation and confidence. For example, a participant noted that AI tools enabled some of her students with learning difficulties to "transform materials to simplify readings" – converting dense text into more accessible language, which helped them grasp content they would otherwise find daunting. This illustrates how AI can scaffold learning, meeting students at their level. Another educator observed that when AI handles routine tasks or provides quick answers, it can free class time for deeper exploration of topics, thus potentially fostering more critical inquiry and discussion in class.

Participants also discussed AI's role in supporting creativity and innovation among students. Initially, there were mixed opinions on whether AI enhances or hampers creativity. Some argued that AI can stimulate creativity by acting as a brainstorming partner, for instance, generating ideas or alternative solutions that students can then refine and build upon. One analogy raised was that of calculators in math: initially feared, but ultimately, they allowed students to focus on problem-solving by handling the tedious calculations. Similarly, a participant likened structured use of AI to "how calculators eventually improved math problem-solving despite initial resistance", suggesting that once educators integrate AI properly, it could lead to new forms of creative thinking. Indeed, a few students in the groups had used generative AI (such as image generation tools or coding assistants) as part of projects (e.g., creating art or prototyping software), and they felt this expanded their creative capacity. On the

other hand, many warned that over-reliance on AI can stifle creativity if students use AI to do all the thinking for them. The nuance, as participants agreed, is that AI should complement the creative process, not replace it. For example, using an AI to generate an initial draft of an essay or a design can provide material to critique and improve, but students must still apply their own insights to produce original work. The focus groups emphasized teaching students to treat AI outputs critically, as starting points to be vetted and iterated upon, rather than final products.

Equity and Inclusion: A significant theme was how AI might affect socially disadvantaged or vulnerable students. Many participants saw promise in AI for enhancing accessibility and inclusion in higher education. For instance, AI-driven tools can assist students with disabilities: text-to-speech and speech-to-text can aid those with visual or hearing impairments, and writing aids can support students with dyslexia or non-native language speakers by reducing errors and improving clarity. In one group, it was mentioned that AI had helped dyslexic students by autocorrecting spelling and grammar, thereby lowering barriers to written expression. Additionally, language translation AIs (like DeepL) were noted as beneficial in increasingly international classrooms, enabling students to translate resources or sometimes have AI explain complex terms in their native language. Such capabilities suggest AI could make higher education more accessible to students who might struggle with traditional formats.

However, participants also cautioned that AI could inadvertently exacerbate inequalities if not carefully managed. Several concerns were raised: (a) Access to AI: advanced AI tools (especially the most capable LLMs or adaptive platforms) often require paid subscriptions or high-end hardware/internet, which not all students possess. There is a risk that well-resourced students benefit from AI while others are left behind, widening the digital divide. One focus group noted that high subscription costs for certain AI services limit access for some learners. (b) Language and cultural bias: a participant pointed out that AI "favors mainstream languages, disadvantaging minority language speakers". Indeed, current AI systems tend to perform best in widely represented languages (English being dominant). Students who are non-native English speakers or who need AI support in minority languages may find tools less effective or even unavailable in their language, which raises equity issues. (c) Algorithmic bias and fairness: if AI tools are used in evaluation or support, they might carry biases that affect vulnerable groups disproportionately. For example, an AI tutoring system might not have been trained on data that includes diverse student backgrounds, making it less responsive to the needs of first-generation or underrepresented students. In conclusion, participants were concerned that without careful oversight, AI could reinforce existing inequities (e.g., by disproportionately flagging second-language speakers' writing as "low quality" or misinterpreting communication styles from different cultures).

To navigate these issues, focus group members stressed the importance of ethical guidelines and institutional oversight when deploying AI for student support. They advocated for universities to proactively consider the inclusivity of any AI tools (for instance, choosing platforms that support multiple languages and are designed with accessibility in mind). Moreover, several participants argued for keeping the human element in the loop to ensure empathy and fairness, for example, if an AI

analytics system flags a student as at-risk, a human advisor should intervene to understand the context rather than the student being automatically penalized by an algorithm. Overall, while the potential of AI to "democratize learning" was acknowledged (such as using AI-driven learning analytics to offer timely help to struggling students), participants felt this potential would only be realized if deliberate steps are taken to mitigate the risks of bias and unequal access.

Critical Thinking and Intellectual Development: Perhaps the most recurrent theme regarding impact on learning was the effect of AI on students' critical thinking and intellectual autonomy. All focus groups *focused on* this issue. Educators voiced a concern that easy access to AI-generated answers might lead students to become passive recipients of information. They gave examples: students might use a chatbot to solve homework problems or write essays and accept the output uncritically, thereby skipping the cognitive processes that lead to learning. Over time, this could erode students' ability or willingness to tackle challenges on their own – Indeed, students will not spend time struggling with formulating an argument or debugging a program if an AI tool can do it instantly. This phenomenon, often referred to as cognitive offloading, was a top worry. Participants in multiple groups echoed that "over-reliance on AI" could weaken students' analytical skills. One participant phrased it succinctly: if students always turn to AI for quick answers, "what you earn in time, you lose in quality" of learning, because the depth of understanding might suffer. This aligns with emerging research suggesting that heavy dependence on AI tools may indeed impair critical thinking development (Gerlich, 2025). In Gerlich's report, frequent AI tool users showed lower critical thinking performance, mediated by increased cognitive offloading, highlighting the validity of the educators' concern (Gerlich, 2025).

To counteract this, focus group members – both faculty and students – agreed that educational interventions are needed to cultivate critical engagement with AI. Students must be taught and encouraged to question AI outputs, verify information from other sources, and use AI as a starting point rather than an endpoint. Some participants shared positive practices: for example, an instructor required students who used AI in an assignment to append a reflection on how they vetted and edited the AI's input and output. Others suggested incorporating discussions about AI's limitations into coursework (such as showing how ChatGPT can sometimes produce incorrect or biased answers, and having students identify those issues). The general sentiment was that AI literacy should include understanding when to trust, when to doubt, and how to improve upon AI-provided content. By doing so, AI can be positioned as a tool that augments human thinking, helping structure ideas or find information, while students still perform the essential critical analysis. Encouragingly, some students in the focus groups appeared aware of this balance: one student noted that "the quality [of AI assistance] is based on the quality of the questions" they ask, implying that students see value in developing good inquiry skills to get meaningful results from AI.

In summary, participants envision AI improving learning through personalization, accessibility, and creative support, but they insist these benefits hinge on active, critical usage guided by educators. There was near-unanimous agreement that AI's impact on learning will be positive only if both teachers and students adapt their behaviors: teachers by designing AI-inclusive activities that still demand critical thought, and students by using AI thoughtfully and not as a crutch. Without these

adaptations, the risk is that AI could make learning experiences superficially easier yet educationally hollow, a scenario the focus groups were determined to avoid.

Preparedness and Skills for AI Integration

Self-Assessed Preparedness: When asked if they felt prepared to interact with AI in their academic practice, participants gave mixed responses. A minority – mostly those already using AI extensively – felt confident and well-prepared, citing their technical background or experience as the reason. For example, computer science faculty and AI researchers in the groups typically reported that they were comfortable experimenting with new AI tools, understanding how they work, and even troubleshooting issues. These individuals often had formal training or self-taught knowledge in AI, equipping them to navigate the technology effectively. However, the majority of participants admitted only moderate or low preparedness, especially regarding advanced or pedagogical uses of AI. Many educators report a lack of skills to do much more than basic use of this technology.(e.g., asking ChatGPT to summarize a text). Given that, they were uncertain how to integrate AI meaningfully into curriculum design or how to evaluate AI outputs rigorously. Some faculty noted a feeling of "not knowing what you don't know" – in other words, recognizing that AI is a fast-moving field and that they might be unaware of tools or methods that could be beneficial, leading to a sense of disorientation. Notably, participants emphasized that being "prepared" is not just about technical know-how, but also about having the pedagogical vision to apply AI usefully. As one lecturer put it, preparedness requires an "intuition for recognizing AI's potential applications" in one's specific teaching/research context, not simply the ability to push the right buttons.

Skills and Competencies Needed: The focus groups converged on several key skills and competencies that higher education staff (and students) should develop to use AI effectively:

- AI Literacy: Foremost is a foundational understanding of how AI systems work and what their outputs mean. Participants argued that educators should grasp at least basic concepts like how an AI model is trained, what a probabilistic output is, and common failure modes (e.g., hallucinations or biased responses in generative AI). This literacy also includes knowing the differences between, for example, a rule-based system and a neural network, or between a large language model and a domain-specific expert system. Such knowledge would help educators set realistic expectations and critically evaluate AI tools. In one focus group, it was noted that many faculty lack understanding of terms like classification, regression, or natural language processing, which hampers their ability to integrate AI or explain it to students. Improving this baseline knowledge is seen as essential.

- Critical Evaluation and Prompting Skills: Closely related is the ability to critically assess AI outputs. Participants highlighted that educators (and students) need skills in verifying information produced by AI, cross-checking facts, and detecting possible errors or biases. This

might involve traditional information literacy (finding sources to confirm AI statements) as well as new skills in interacting with AI (e.g., knowing how to "prompt" an AI with the right questions to get useful answers, often referred to as prompt engineering). A few tech-savvy members mentioned that understanding how to phrase queries or give iterative instructions to AI can greatly affect the quality of results, a skill that can be taught. Thus, "AI-critical thinking" is a competence of its own. Some participants suggested developing guidelines or checklists that educators could use when reviewing AI-generated content (for instance, looking for logical consistency, checking references, etc.).

- Pedagogical Integration Skills: Beyond technical interaction, teachers need to understand how to integrate AI into instructional design in a pedagogically sound manner. This includes designing assignments that appropriately incorporate AI (e.g., an assignment where students must use an AI tool and then reflect on their experiences), creating assessment rubrics that consider AI usage, and rethinking learning outcomes in light of AI capabilities. Participants believed that training in instructional design for AI would be highly beneficial. For example, a teacher trained in this might transform a traditional essay assignment into one where students use AI to generate a draft, then critique and improve it. This process fosters both an understanding of the subject matter and the development of AI literacy skills. To do this effectively, faculty must be creative and aware of the best practices from early adopters. In discussions, some noted the advantage of sharing use cases and examples across departments; those who had used AI in class shared their experiences so others could learn what works and what doesn't. This highlights a competency in continuous learning and adaptation, being willing to pilot new approaches and learn from peers.

- Ethical and Legal Awareness: Given the many concerns around AI, educators should also have knowledge of the ethical and legal issues surrounding its use. Participants mentioned data privacy (understanding terms of service of AI tools, ensuring student data isn't improperly shared), academic integrity policies (knowing how to handle AI-assisted student work, plagiarism issues), and broader ethics like fairness and transparency of algorithms. Some institutions have already implemented regulations or restrictions on specific AI tools, so it's important for faculty to stay informed about these policies. One group brought up alignment with existing frameworks like the EU's General Data Protection Regulation (GDPR) when using AI platforms, implying that teachers should know, for instance, whether uploading student work to a third-party AI service is allowed. In short, ethical competence is required so that AI is used responsibly and in compliance with institutional values and laws.

- Adaptability and Continuous Learning: Finally, participants underscored a more general skill: the ability to continuously adapt to rapidly evolving technology. AI tools and platforms are emerging and updating at a blistering pace (as one participant noted humorously, "there's a new tool every week"). Thus, educators (and students) need the mindset and capacity to keep up-to-date. This might involve regularly attending training sessions, following AI in education

communities, or at least maintaining a curiosity to try new tools. A few participants referenced the European DigComp framework (Digital Competence Framework) and suggested that AI-related skills should be embedded in such frameworks, reflecting a commitment to ongoing digital development. Embracing a growth mindset toward AI – seeing it not as a one-time learning task but an evolving journey – was considered important for preparedness.

Table 1 below suggests the overall appreciation of the competences needed with example teaching tasks and related AI applications as they were described by focus group members.

Table 1. *Required competences with example teaching tasks and related AI applications as they were described by focus group participants.*

Competence Area	Specific Competence	Example Teaching Tasks	Related AI Applications
Technical Literacy	Understanding LLMs and AI mechanics	Explaining AI use to students during classes; Troubleshooting AI tool errors in assignments	ChatGPT, Claude, DeepSeek, Google NotebookLM
Technical Literacy	Prompt engineering and query design	Designing effective questions for student use of AI tools; Training students on crafting prompts	ChatGPT, Gemini, Perplexity
Technical Literacy	Evaluating AI-generated content	Assessing student submissions partially drafted with AI; Verifying source reliability in research papers	Copilot, Elicit, Consensus
Pedagogical Integration	AI-enhanced instructional design	Redesigning courses to include adaptive learning elements; Co-developing AI-driven formative assessments	STORM, adaptive LMS, H5P AI plugins
Pedagogical Integration	Designing personalized learning experiences	Supporting students with SLD or neurodivergence; Customizing feedback and scaffolding for large cohorts	AI-based dashboards, Learning Analytics
Pedagogical Integration	AI-supported assessment practices	Developing auto-feedback rubrics; Using AI to simulate exam questions and case studies	GPT-based question banks, quiz generators
Ethical and Critical Competence	Recognizing algorithmic bias and data limitations	Teaching students to cross-check AI outputs; Excluding biased tools in academic guidance	Hugging Face audits, Data Sheets for Datasets
Ethical and Critical Competence	Managing privacy and data protection	Choosing compliant AI platforms for class use; Advising students on ethical use of AI outside university tools	In-house AI tools, GDPR-compliant platforms
Ethical and Critical Competence	Fostering academic integrity	Designing anti-plagiarism policies adapted to AI; Educating on proper AI citation and disclosure	Turnitin AI detection, classroom policy development

Adaptive Competence	Monitoring and evaluating new AI tools	Piloting new apps in curriculum; Evaluating discontinuation of ineffective AI services	Beta platforms, tool reviews, edtech observatories
Adaptive Competence	Collaborating across disciplines	Building interdisciplinary AI teaching teams; Co-authoring AI-integrated curricula	Joint workshops, research-based courses
Adaptive Competence	Supporting institutional AI strategy	Participating in AI ethics boards; Leading AI readiness audits in departments	Internal policy consultations, strategy whitepapers

Institutional Support and Gaps: The discussions on skills often segued into talk of what institutions are (or aren't) doing to help build these competencies. A common critique was the lack of formal training or support so far. Many faculty noted that their universities had provided minimal guidance; workshops that did occur were basic tool demonstrations focusing on mechanics, without addressing pedagogical integration or ethics in depth. Adjunct or part-time instructors, in particular, felt they had even less access to training, raising equity concerns among faculty (some called this out as a "marginalization" of certain staff in capacity-building opportunities). Participants advocated for a more structured approach: universities should offer certified training programs on AI in education, perhaps create communities of practice or task forces where educators can share and learn together. They also suggested involving students in these educational efforts, as students themselves need preparation and often show keen interest in understanding AI. The notion of "learning together" came up – that faculty and students could jointly engage in developing AI literacy, embodying a learning community model.

In summary, while there is a readiness to learn, current preparedness levels are uneven. The focus groups clearly signaled that without targeted skill development, the promise of AI could be missed or misused in higher education. The wish list includes technical understanding, critical appraisal, pedagogical strategy, ethical savvy, and an agile mindset – a comprehensive skill set that will require deliberate investment to cultivate. Encouragingly, both literature and practice point in the same direction. Indeed, a report by Chee et al. (2024) emphasizes aligning AI use with digital competence frameworks, such as UNESCO's Digital Literacy Global Framework, and, on the other hand, our participants echoed that alignment with frameworks like DigComp could guide systematic skill development. Building these competencies is thus a shared responsibility of educators, institutions, and professional development bodies.

Improvements to Academic Practice and Associated Challenges

Perceived Improvements to Teaching and Research: Participants generated a variety of ways in which AI technology could enhance their current academic practices. Many of these reflect themes noted earlier, but with more concrete examples pertaining to day-to-day work of faculty and researchers:

Efficiency in Routine Tasks: A frequently mentioned advantage is using AI to automate or accelerate routine and administrative tasks. For teaching staff, this includes grading standardized assessments, taking attendance, generating course materials (syllabi, quizzes), and answering common student queries. Several educators were enthusiastic about AI-assisted grading tools that could quickly grade objective tests or check assignments against answer keys, thereby saving hours of manual work. They stressed, however, that such automation should come with oversight (more on this in concerns). In academic research, AI can help scan literature (conducting rapid literature reviews), extract insights from datasets, or format and proofread manuscripts. A science professor noted that AI systems can now even draft portions of research proposals or summarize experiment results, which could "free researchers for high-level synthesis" work (as one focus group report phrased it). Overall, by offloading drudgery, AI allows academics to allocate time to more creative and critical aspects of their roles, mentoring students, engaging in complex problem-solving, or developing innovative curricula.

Enhanced Feedback and Student Support: Many participants looked forward to improving feedback loops with AI. Large class sizes often constrain how quickly and richly instructors can give feedback on assignments. AI tools, they suggested, could provide instantaneous feedback on student drafts, problem sets, or coding exercises, pointing out errors or areas for improvement. One lecturer mentioned the possibility of an AI that gives each student personalized comments on a writing assignment, which she currently cannot do for 300+ students in a lecture course. Although the quality of AI feedback might not equal expert human feedback, timely pointers could significantly help students iterate and learn faster. Another angle was formative assessment – AI quizzes or tutoring sessions that adapt to student responses, giving hints or scaffolding in real time. This could keep students engaged and allow them to "test themselves" more frequently (one student in the focus group shared that they used an AI chatbot to practice answering potential exam questions, finding it a useful self-test mechanism). Such uses can make learning more active and continuous.

Personalized and Adaptive Learning Experiences: Educators expected AI to help them implement more personalized learning strategies. For example, AI could track each student's progress and customize content delivery – a theme we saw earlier. In practice, this might mean AI systems analyzing which topics a student has mastered or is struggling with, and recommending specific readings, videos, or exercises accordingly. For instructors, this level of personalization is hard to achieve manually, especially with many students, but AI could make it feasible to have essentially a custom learning path for each student. Some participants also mentioned using AI for creating simulations or case studies on the fly, tailored to class interests. For instance, an AI could generate a case report incorporating current real-world data relevant to a course, which the instructor can then use in teaching without spending weeks preparing it. This flexibility could enrich the curriculum and make learning more relevant.

Research and Academic Writing: On the research side, participants believed AI can significantly improve practices such as data analysis and writing. AI's ability to sift through large datasets quickly was seen as a boon for fields with heavy data (e.g., economics, biology). A researcher recounted how

an AI tool helped analyze hundreds of student feedback comments to identify common themes, something that would have been prohibitively time-consuming to do manually. In writing, tools like GPT-based assistants can help draft or refine sections of papers, suggest better phrasing, or translate text between languages. While careful oversight is needed, these applications were considered helpful for researchers for whom English is a second language, or for anyone looking to polish their writing. Moreover, AI translation and collaboration tools enable more global collaboration, as noted by one participant who had used an AI translator to collaborate with a non-English-speaking colleague.

In aggregate, participants felt these improvements could lead to a scenario where educators focus on what humans do best, mentorship, critical analysis, and creative curriculum design, while AI handles repetitive or highly data-driven tasks. This vision echoes what educational technology researchers have posited: that AI can take on the role of an assistant, enhancing the capacity of teachers rather than diminishing it (Luckin and Holmes, 2016). Some even framed AI as a potential solution to burnout and administrative overload in academia, helping restore the balance so educators can devote energy to teaching and research quality.

Challenges and Future Hurdles: Alongside the optimistic views, focus group participants were realistic about the challenges they face (or anticipate) in implementing AI in their practice. Key challenges include:

Time and Learning Curve: A paradox emerged; while AI is meant to save time in the long run, adopting AI tools currently requires a significant time investment that busy faculty and staff struggle to afford. Learning how to use a new platform, experimenting with it, and integrating it into existing workflows can be daunting. Participants pointed out that meaningful integration (like redesigning a course to use an AI tutor) could take dozens of hours of planning and trial – time that is not accounted for in their usual duties. Without allocated time or incentives, this remains a barrier. Some mentioned that their colleagues stick to familiar methods simply because experimenting with AI during a semester feels risky and burdensome. Moreover, the rapid turnover of tools (some become obsolete quickly, others update interfaces often) means the learning curve isn't a one-time event but an ongoing demand, which can lead to innovation fatigue.

Lack of Institutional Infrastructure: Many challenges were tied to insufficient infrastructure or support. For example, if a faculty member wants to use a particular AI system that requires powerful computing resources or a paid license, they may not have access to it. A participant gave the example of wanting to use an AI-based data visualization tool for a class, but the university did not have a subscription or hardware to support it, resulting in dropping the idea. There is also the aspect of technical support: not every educator is tech-savvy, and having someone (like an instructional technologist or IT support) to assist with setting up AI tools in class is crucial. The focus groups indicated that such support is patchy – some institutions have centers for teaching and learning that are beginning to address AI, but many instructors felt on their own. As a result, integration into existing workflows remains ad hoc and uneven. This challenge was summarized well by one comment:

"Implementing AI meaningfully takes substantial time and effort to learn, adapt, and integrate, which currently is a major barrier".

Quality, Accuracy, and Reliability of AI Outputs: Participants were cautious about the accuracy and reliability of AI in academic tasks. One clear challenge is that AI-generated content can be flawed – large language models, for instance, might produce incorrect information or reasoning that sounds plausible (often called "hallucinations"). In the context of teaching, if an AI tutor gives a student an incorrect explanation or a biased answer, it could mislead the student. Teachers feel responsible for any content delivered under their watch, so they hesitate to fully trust AI systems without verifying their output. This means any time saved by AI could be negated if the instructor must double-check all AI-generated materials or feedback. In the focus groups, there were anecdotes of AI missteps (like a chatbot incorrectly solving a math problem) which reinforced the need for human-in-the-loop oversight. Thus, a challenge is figuring out how to reliably validate AI outputs in real time. Until AI becomes more transparent or accurate, educators see this as a hurdle to letting it handle critical tasks independently.

Bias and Ethical Concerns: Another challenge frequently mentioned is the potential for AI to generate biased or inappropriate content, which relates to ethical considerations. If an AI system is used in student evaluation or advising, any biases in its algorithm or training data could lead to unfair outcomes (e.g., systematically underrating essays that use certain dialects, or giving career advice that is gender-biased). Participants were wary of integrating AI in high-stakes decisions for this reason. They cited the need for thorough vetting of AI tools, understanding their limitations, and ideally using AI that can provide explanations for its decisions (the principle of algorithmic transparency). The current opacity of many AI models ("black box" nature) makes some faculty reluctant to adopt them in sensitive areas like grading or admissions. Also, concerns about plagiarism detection were raised: while AI can help identify copied text or AI-generated text, participants noted current tools are imperfect and can both miss cheats or falsely accuse legitimate work. This uncertainty around AI's reliability in maintaining academic integrity is itself a challenge to using AI more broadly.

Data Privacy and Security: Though less elaborated than other issues, some participants did mention data privacy as a challenge. Using third-party AI services often entails uploading student data or institutional content to external servers. This raises legal and ethical questions: is it permissible under privacy laws? Will the data be stored or used to further train the AI without consent? Participants were not always sure, indicating a lack of clear guidelines from institutions on these matters. There is a hesitance to adopt tools if it's unclear how student information might be handled. A participant suggested that, in the future, universities might need to develop their own AI tools in-house or on secure servers to maintain control over data (an idea of having "institutional AI" was floated, albeit recognizing the large amount of resources needed for that). Until privacy concerns are resolved, some faculty will avoid certain AI applications, especially those involving student records or sensitive research data.

In confronting these challenges, participants again pointed to the role of institutional leadership. They recommended that universities issue clear policies and provide resources to address these hurdles: allocate time in workloads for innovation, invest in reliable AI infrastructure, offer training on bias and accuracy issues, and develop guidelines for ethical use. Interestingly, Hasanein and Sobaih's (2023) research with educational stakeholders mirrors these suggestions – their report concluded that higher education institutions should establish clear guidelines and training on responsible ChatGPT use to mitigate negative consequences (Hasanein & Sobaih, 2023). Our focus group members similarly called for proactive measures to overcome the current teething problems with AI integration.

Concerns and Ethical Considerations

The discussions about AI inevitably led to a range of concerns and fears that participants hold regarding its growing use in higher education. These concerns span ethical, pedagogical, and even philosophical domains about the future of teaching and learning. Here we summarize the major concerns and the consensus (or diversity) of opinions around them:

Over-reliance and Student Learning Integrity: A primary concern is that students may misuse AI in ways that undermine learning and academic integrity. Participants feared scenarios where students become overly dependent on AI to complete assignments or answer exam questions without genuinely engaging with the material. Indeed, some had already observed students submitting AI-generated essays or homework solutions, essentially committing a new form of plagiarism. This not only breaches academic honesty but, more fundamentally, means the student bypasses the learning process. Faculty worried that if such behavior becomes rampant, it could erode the value of educational assessment – making it hard to tell what a student actually knows or can do. The focus groups were unanimous in identifying academic misconduct facilitated by AI as a significant issue. They discussed the need for updated honor codes and plagiarism policies that explicitly cover AI-generated content. Some institutions represented in the groups had started implementing rules (e.g., requiring disclosure of AI assistance or banning AI use in certain exams), but others had not, leading to uncertainty among educators on how to handle cases. Importantly, even when no cheating is involved, there was concern that students might lean on AI so much for reporting (e.g. always getting AI explanations rather than thinking through problems) that their cognitive skills and knowledge base suffer. This again ties to the earlier theme of critical thinking atrophy (Gerlich, 2025). Both faculty and ethically-minded students in the groups feared a scenario of "AI-induced intellectual laziness," which could leave students ill-prepared for situations where AI isn't available or for higher-order tasks that require original thought.

Quality of Learning and Skill Development:Extending the above, participants raised concerns about the implications for skill development. For example, there is uncertainty about whether students will develop effective writing skills or learn programming logic if AI does these tasks for them.
Some argued that certain baseline skills (writing, basic coding, simple problem-solving) might diminish, and perhaps the educational focus would need to shift to higher-level skills (like editing AI outputs, giving good instructions to AI, etc.). However, there was a palpable unease that something important could be lost in that transition. Educators hold critical thinking, creativity, and subject mastery as core goals of higher education; they worry that easy AI solutions might tempt students (and even instructors) to shortcut the process of developing those competencies. The phrase "hindering the development of crucial cognitive skills" was used in one report, reflecting this widespread anxiety. Essentially, if not managed, AI could create a generation of learners who know what to answer (since AI tells them) but not why, a hollowing out of true understanding.

Bias, Fairness, and Equity: Ethical considerations were top of mind, particularly the risk of AI perpetuating biases present in training data. Participants noted that AI models trained on internet data or historical datasets might carry forward stereotypes or skewed representations (for instance, an AI might consistently give examples in engineering that assume a male engineer, reflecting historical bias). If such biased outputs are used in teaching or advising, they could reinforce inequities or micro-aggressions. One educator gave a hypothetical: an AI career counselor might, based on biased data, subtly discourage a female student from pursuing computer science, an obviously unacceptable outcome. While this example is hypothetical, it illustrates the kind of harm that unchecked AI bias could cause. There were also concerns about algorithmic decision-making in areas like admissions or grading: if AI algorithms (even simple ones) are used to sort or evaluate students, there must be vigilance to ensure they do not favor or disfavor certain groups systematically. All focus groups agreed on the need for fairness and bias mitigation strategies if AI is employed. This includes diverse training data, bias testing of AI systems, and transparency in how AI decisions are made. However, participants admitted these solutions are largely beyond their individual control – they rely on AI developers and institutions to take action. Thus, they voiced these as conditions: "We would only be comfortable with AI if we know steps are taken to address bias," capturing a conditional trust.

Transparency and Accountability: Relatedly, the "black box" nature of many AI systems was worrisome. In education, trust and accountability are key – teachers and institutions are accountable for the grades awarded, the advice given, etc. If an AI is involved in these processes, lack of transparency (not knowing how the AI arrived at a recommendation or grade) undermines trust. Participants highlighted that if an AI grading system made an error or an inexplicable decision, it's unclear who is accountable. Is it the instructor who deployed it? The company that made it? The university that approved it? Such ambiguity is problematic. Many felt that AI should never be given full autonomous authority in evaluative tasks; human oversight is needed both to catch errors and to take responsibility for outcomes. The notion of requiring explainable AI in education came up – that any AI used should ideally be able to provide a rationale or breakdown of its output (e.g., highlighting which parts of an essay led to a certain grade). Without explainability, it would be hard to justify decisions to students, which could erode students' trust in the education system. Transparency was also tied to privacy: if an AI tool is used, participants wanted transparency about what data it collects and how it uses them. Overall, there was a consensus that "AI decision-making must be transparent and explainable" if it's to be incorporated in core academic processes.

Job Displacement and the Role of Educators: A more existential concern was whether AI might eventually replace human teachers or other educational roles. This question was explicitly posed in the focus groups (e.g., "Do you think AI technology can replace human teachers in the future?"). The resounding answer from participants was no – AI cannot and should not replace teachers. They stressed the myriad human qualities and responsibilities that AI cannot replicate: empathy, mentorship, the ability to inspire and motivate, to navigate nuanced classroom dynamics, to adapt teaching in the moment, and to provide moral and emotional support. Participants described human educators as irreplaceable for fostering critical thinking and personal growth in students. One report noted that all experts "maintain that AI cannot replace the relational, empathetic, and context-specific

guidance that human educators provide. AI is seen as a complement rather than a replacement.". This quote encapsulates the collective stance. Nonetheless, there was some acknowledgement that AI might change the educator's role significantly. Routine information delivery could be handled by AI, so teachers might shift more into facilitators or mentors. This prospect was both exciting (freeing teachers to do more high-value interpersonal work) and slightly concerning (requiring teachers to redefine their professional identity). But virtually no one feared literal unemployment due to AI in academia; rather, they were concerned about a devaluation of human elements if administrators or the public started expecting AI to take on teaching tasks to cut costs. Participants urged that any AI adoption plan explicitly reinforce the central role of teachers to avoid any narrative of replacement.

Ethical Use in Assessment: A specific ethical question discussed was whether participants were comfortable with AI assisting in grading and assessment. Many saw some potential benefits in using AI for preliminary grading, for instance, checking assignments against rubrics, flagging where an answer hits or misses key points, or ensuring consistency in scoring. However, comfort levels dropped if AI were to fully grade and return marks to students without human review. The prevailing opinion was that AI might be a useful assistant for grading, but final decisions should rest with instructors (echoing the need for human oversight to maintain fairness and contextual understanding). There were also practical concerns: if a student disputes a grade, a human instructor can reconsider and discuss with the student, but an AI cannot engage in that dialogue or easily adjust for context (e.g., a student's personal circumstances affecting an assignment). So, while AI could speed up grading, participants were not "comfortable" giving full grading authority to AI.

Privacy and Data Protection: Though touched on in challenges, it is worth reiterating under concerns: participants are worried about privacy implications of AI, especially generative AI tools that require data input. They questioned whether using student-generated data to feed an AI (for plagiarism checking or tutoring) could violate student privacy rights or copyright of their work. Similarly, using AI might inadvertently send sensitive research data to external servers. Some participants were uneasy because the terms of service of AI tools are often lengthy and not fully clear about data usage. The ideal scenario mentioned was that universities either ensure contracts that protect data with AI vendors or develop internal solutions. Without that, privacy remains a nagging fear, and a reason a few participants refrained from certain AI uses.

To address these concerns, participants converged on a clear message: ethical guidelines, policies, and educational initiatives are urgently needed in higher education. There was a call for institutions to develop comprehensive AI policies that cover usage, academic integrity, bias, transparency, and data security. This would give both educators and students a framework within which they can innovate with AI responsibly. Additionally, many felt that embedding ethics into AI education is crucial – i.e., when teaching about or with AI, always include discussions on its ethical and societal implications. This way, students become part of the solution in using AI conscientiously. The focus groups' concerns mirror those found in the broader discourse on AI in education: recent literature emphasizes issues of equity, academic integrity, and the imperative of keeping human values at the center of AI integration (Tzirides, et al, 2024;Miao & Holmes, 2023; Wargo & Anderson, 2024). For instance, Wargo and

Anderson (2024) highlight social inequity and dehumanization as key ethical dilemmas of AI in higher ed, urging critical AI literacy and human-centered design to address them. Our participants similarly call fora human-centered approach, leveraging AI's strengths while safeguarding the human elements and ethical principles that define quality education.

In conclusion of the findings, it's evident that higher education stakeholders see great promise in AI to enhance teaching, learning, and research. Yet, they approach that promise with eyes wide open to the pitfalls. They advocate a balanced path: enthusiastically explore AI's benefits (from personalized learning to administrative efficiency) but implement it with robust support, critical oversight, and ethical guardrails. These nuanced perspectives set the stage for broader discussions on how academia can adapt to and shape the AI revolution, which we turn to next.

Discussion

The themes emerging from these focus groups offer a microcosm of the broader conversation on AI in higher education, and they largely resonate with recent scholarly findings from 2022–2025. In this section, we situate the focus group insights within the literature on AI's pedagogical implications, ethical challenges, and the evolving roles of educators and learners. We also highlight differences where the on-the-ground perspectives add new nuance or emphasis to academic debates.

Alignment with Educator and Student Attitudes in Literature: One striking convergence is the difference in enthusiasm between students and faculty regarding AI, and the underlying reasons for each. Our focus group participants noted that students are generally more open to adopting AI, valuing its immediate benefits for feedback, creativity, and academic performance, whereas faculty are more reserved, concerned about undermining critical skills. This aligns closely with the findings of Haroud and Saqri (2025) in their study on the student and faculty perception of AI in Moroccan higher education. In fact, they point out that students appreciate AI's instant feedback and performance boosts, while teachers worry about erosion of collaboration and critical thinking.
The scholars further emphasize that AI is viewed by students as a complementary tool to enhance learning, not a replacement for learning, and by teachers as something to be carefully managed to avoid dependency.Ultimately, another key point of agreement between our focus group and Haroud& Saqri'sis the shared conviction that "AI cannot replace educators". Thehuman mentorship is irreplaceable, regardless of how advanced AI becomes, the human element in teaching: empathy, adaptability, and inspiration, remains paramount (Chan & Tsi, 2024). This is an important message to convey to policymakers or administrators tempted by cost-saving automation: both practitioners and researchers stand firm that AI should augment, not automate away, the educator's role.

Critical Thinking and Over-Reliance: A significant area of concern in both the focus groups and scholarly work is the potential impact of AI on student cognition and critical thinking. Our participants' fear that over-reliance on AI,which could damage the development of independent problem-solving skills, is well-founded in light of emerging research. For instance, Gerlich (2025) provides empirical support for this concern.He affirms that there is a negative correlation between a high AI tool use and a decline in critical thinking skills, a relationship mediated by increased cognitive offloading. In fact, younger participants (who used AI more) had lower critical thinking scores, suggesting that relying on AI for answers can indeed hinder the engagement of mental efforts(Gerlich, 2025). This reflects what educators in our report observed anecdotally and preemptively worried about. It highlights a key point of discussion in higher education: how to harness AI's benefits without "atrophying" students' minds, as one Forbes article dramatically put it (Daniel, 2025). The proactive approach voiced by focus group members – teaching AI literacy and critical evaluation skills – is echoed by thought leaders. For example, promoting critical AI literacy has been advocated as essential by Wargo and Anderson (2024), who argue that institutions must expand support beyond technical training to include critical thinking about AI and its outputs. By incorporating activities that require students to critique AI-

generated content or by setting assignments where AI is used as a tool rather than an oracle, educators can strike a balance. Our findings suggest that effective pedagogical strategies are evolving in response to AI's growing presence in education. Instead of banning it outright, participants in our study generally supported integrating AI into the learning process, provided it is accompanied by structured opportunities for critical reflection. This approach was viewed as a way to prevent over-reliance while still leveraging AI's benefits. Notably, both educators and students emphasized the importance of maintaining human cognitive engagement, indicating broad agreement on the value of thoughtful, guided use of AI as a practical and sustainable path forward.

Ethical and Equity Challenges – A Shared Agenda: The focus group discussions on ethical concerns parallel many issues raised in contemporary literature on AI ethics in education. Bias, equity, transparency, and academic integrity form a quartet of challenges frequently cited (Williams, 2024; Holmes et al., 2023). Our participants' worry about AI perpetuating biases and disadvantaging certain groups aligns with a broad understanding that AI can mirror and magnify existing social inequities if unchecked (Bender et al., 2021). Wargo and Anderson (2024) explicitly note that AI often reflects societal biases and can deepen inequities, calling attention to the risk of marginalizing underrepresented students. The focus groups also noted language bias (AI favoring English), which connects to digital divide concerns, UNESCO's 2023 guidance likewise cautions that generative AI might benefit those in tech-rich environments more than others, urging policies to ensure inclusivity (Miao & Holmes, 2023). Both our data and recent reports highlight the need for fairness-aware AI development and for educators to be vigilant about how AI is used with diverse student populations. In practice, this could mean testing AI tools for bias before institutional adoption and incorporating diverse perspectives in AI training data. It also means keeping humans in the loop: as both our participants and scholars assert, human oversight is crucial to interpret AI outputs in context and ensure fair outcomes (Yang, 2022).

Privacy and data security, while not the top concern in every focus group, are nonetheless prominent in the literature. The idea raised in one group of institutions developing their own AI to maintain control mirrors suggestions in policy circles that universities might seek open-source or on-premise AI solutions for sensitive tasks (Miao & Holmes, 2023). At minimum, negotiating strict data agreements with vendors is advised (Holmes et al., 2021). The discussion here is part of a larger conversation about digital sovereignty in education: who owns and controls the algorithms that shape learning? Our participants implicitly argue that educational values and privacy must not be compromised for convenience, a stance fully supported by ethicists.

On academic integrity, the focus groups' experiences with AI-facilitated cheating are already catalyzing changes in assessment methods. Recent studies (e.g., Cotton et al., 2023) have surveyed faculty about how ChatGPT influences cheating and found a mix of alarm and adaptation – some shift to oral exams or in-class writing to thwart unaided AI use. Our findings add qualitative depth: educators are not simply alarmist; they understand this is a catalyst to redesign assessments to value process and understanding over easily generated products. There is also a growing interest in forms

of assessment that are more resistant to automation, such as personalized projects and oral examinations, as well as in guiding students toward responsible AI use.The unanimous rejection by our participants of fully AI-graded or AI-only assignments underscores the continuing importance of human judgment in assessment, as AI can analyze patterns but cannot yet fully evaluate the creativity or moral reasoning in human work (Tamkin et al., 2021). Hence, a blending of AI efficiency with human judgment may increasingly feature in assessment practices, a direction aligned with recent research suggesting that AI can both support and challenge core educational values in teachers' practices (Sporrong et al., 2024).

Disciplinary and Stakeholder Differences: One contribution of our analysis is highlighting how perceptions of AI differ across disciplines and roles. While many recent studies examine student versus teacher perspectives in aggregate (e.g., broad surveys or reviews, Haroud & Saqri, 2025; Espartinez, 2024), fewer delve into how a humanities professor's view might diverge from an engineering professor's, or how vocational educators fit in. Our findings show, for example, that vocational and arts educators are more skeptical of AI's relevance and more protective of traditional skill-based training. This suggests that AI integration strategies may need tailoring to different academic domains. STEM fields might push ahead with AI labs and tools, whereas humanities might integrate AI through critical analysis activities, and vocational programs might initially use AI in peripheral ways (like administrative efficiencies) until more appropriate applications emerge. The literature has not extensively addressed vocational education and AI, representing an area for future research. Our focus group insights hint that those domains emphasize tacit knowledge and physical skills that AI cannot replicate, thereby presenting a different cost-benefit calculus for AI use. Recognizing these disciplinary nuances is important for institutional policy: a one-size-fits-all mandate on AI could backfire; instead, offering a menu of integration options respectful of each field's pedagogy may be more effective.

Generational differences noted in our analysis (junior vs senior faculty attitudes) align with well-known patterns of tech adoption (Rogers, 2003), but interestingly, the literature on AI in education hasn't deeply examined faculty age or career stage. What came through in the discussion is that junior academics might be change agents pushing AI adoption, whereas some veteran faculty could be resistors or need more convincing of the value. This dynamic will influence how training is delivered; possibly peer mentoring or reverse mentoring (younger faculty guiding senior colleagues in AI) could be beneficial. Additionally, including student voices (who are often digital natives) in faculty development sessions could support greater understanding and responsiveness to student needs, an approach aligned with the collaborative and student-centered strategies(Huss, 2023).

Professional Development and Policy – Moving Forward: The focus group participants consistently called for more training and clear guidelines, which echoes virtually every report on AI in higher ed in the past two years. Hasanein and Sobaih (2023) concluded with recommendations for institutions to provide training sessions on responsible AI use and to establish clear policies as part of higher education strategy. Our findings reinforce that these are not just abstract recommendations but felt needs among educators. The specific skills enumerated by participants – AI literacy, prompt engineering, ethical awareness, etc. – correspond to what some scholars term "AI competencies for

educators." For instance, Ng et al. (2021) propose an AI literacy framework which includes technical knowledge, data literacy, and ethical literacy, all of which are mirrored in our analysis. By integrating such competencies into faculty development programs and perhaps into graduate training for future academics, institutions can build capacity.

One noteworthy alignment is with the DigCompEdu (Digital Competence for Educators) framework, which in its recent iterations has begun to incorporate AI elements. Focus Group 2 explicitly mentioned aligning AI integration with digital competence frameworks. The European Commission's DigCompEdu (updated 2022) indeed includes competencies like "facilitating learners' digital content creation" which could extend to AI content creation. Our participants' suggestion to use existing frameworks is practical – it means AI training doesn't start from scratch but is embedded in the ongoing digital upskilling efforts. This integrative approach is supported by academic developers to avoid "initiative fatigue." Rather than treating AI as an entirely new silo, it can be folded into the broader context of digital transformation in education.

Policy-wise, the discussions indicate that universities need a clear stance and communication on AI. The transitional period we're in has seen varied institutional responses – from outright bans on AI-assisted work to open encouragement with guidance. The focus groups lean towards a managed use model: permit and even encourage AI use, but with guidelines on how to do so ethically and transparently. This is very much in line with recommendations from bodies like UNESCO (2023) and EDUCAUSE, which advocate neither an AI-free nor an AI-saturated campus, but an AI-aware campus. For example, UNESCO's 2023 guidance emphasizes human oversight, inclusion, and faculty training – all themes our participants independently arrived at (Miao & Holmes, 2023). This concurrence gives weight to those recommendations: they are not just top-down directives but reflect grassroots needs and wisdom.

Innovative Pedagogies and Creativity: While concerns were ample, our findings also showcased optimism and creative thinking about pedagogy that literature is beginning to document. Educators in the focus groups imagined AI-driven case studies, personalized simulations, and AI-collaborative projects. In research literature, some educators have started piloting such innovations. For instance, Guo et al. (2023) describe a classroom task where students prepare for peer debates by interacting with an AI chatbot, which helps them generate supporting arguments and anticipate counterpoints, demonstrating how chatbots can facilitate in-class collaborative learning and enhance argumentation skills.Another example is Marrone et al. (2022) that had students critique an AI's feedback on their design of a robotic vehicle, using this interaction to promote creative thinking and deepen understanding of design principles. These early reports show AI's potential to create new forms of active learning. Our participants' ideas for interactive learning via AI and freeing class time for deeper engagement mirror these experiments. It suggests a future where, if concerns are managed, AI could enhance higher-order skills, by taking over rote work and by serving as a stimulating if imperfect collaborator for students. This aligns with the concept of "centaur" learning (human+AI teams), as supported by Saghafian and Idan (2024), who argue that integrating human intuition with AI through symbiotic learning can lead to more effective and adaptive educational systems.Indeed, one could

draw a parallel to how calculators changed math education: initial fears eventually gave way to curricular changes that emphasize problem-solving over manual calculation. Similarly, if AI can handle certain lower-level tasks, curricula might evolve to emphasize interpretation, ethical judgment, and novel problem solving, essentially raising the bar of what is taught. Our focus group data, which highlighted that creativity could flourish if AI is used as a springboard rather than a crutch, supports this trajectory.

In sum, the dialogue between our qualitative insights and the scholarly literature suggests a broadly consistent view of AI in higher education: it is a disruptive force that brings enormous potential and substantial challenges, and its net impact will depend on intentional strategies by educators and institutions. Both sources advocate for a balanced, critical adoption – leveraging AI where it genuinely adds value (personalization, efficiency, access) and vigilantly guarding against its risks (bias, dependency, inequity). The need for policy frameworks and capacity building is urgent and well recognized. Encouragingly, we see educators already adapting (adjusting assessments, exploring new teaching methods) and researchers providing evidence to guide these adaptations (reporting outcomes of AI use, proposing ethical guidelines). The conversation is iterative: practitioner experiences like those in our focus groups inform research, and research in turn informs practice.

One area where more research could be beneficial, as surfaced by our analysis, is systematically exploring disciplinary differences and the efficacy of AI in various subject matters. Also, longitudinal studies on student outcomes in courses that integrate AI versus those that do not would help substantiate many assumptions being made about AI's harms or benefits. Furthermore, collaborative research involving students as co-researchers could yield insights into how learners truly engage with AI (beyond faculty perceptions).

Overall, our findings combined with current literature point to a future in which AI is neither an existential threat to higher education nor a panacea, but rather a useful tool that will require new forms of digital wisdom to use effectively (Selwyn, 2022). The institutions that invest in developing that wisdom, through faculty development, revised curricula, and robust ethical policies, are likely to be the ones that harness AI to truly enhance teaching and learning.

Conclusion

Higher education stands at a pivotal moment in the integration of artificial intelligence. This report's qualitative content analysis of focus group discussions provides a grounded, human perspective on how AI is perceived and what it portends for the future of universities. Across multiple institutions and academic disciplines, stakeholders share a vision of AI as a double-edged sword: on one edge, a set of innovative tools that can enrich education through personalized learning, increased efficiency, and novel opportunities for creativity; on the other edge, a source of new challenges that could compromise fundamental educational values if left unchecked. Strikingly, despite different backgrounds, participants converged on several key conclusions.

First, there is broad agreement that AI, used wisely, can enhance teaching and learning. Participants testified to AI's ability to provide immediate feedback, tailor educational content, support students with diverse needs, and lighten the load of administrative tasks. These benefits align with higher education's goals of improving student success, accessibility, and instructor productivity. Importantly, these advantages were not viewed as abstract promises – they are already being experienced in practice, from AI chatbots answering student questions to algorithms helping identify at-risk students for early intervention. The focus groups painted a picture of AI as a catalyst for more individualized and flexible education, potentially fostering greater student engagement and allowing educators to focus more on mentorship and high-impact interactions.

Second, our analysis underscores that the human element remains irreplaceable. Participants – faculty and students alike – articulated a clear boundary: AI may assist with content and procedures, but it cannot replicate the mentorship, critical dialogue, inspiration, and emotional support provided by human educators. The consensus is that the best outcomes arise when AI serves as a partner or assistant in the educational process, while instructors retain a guiding and supervising role. This human-AI partnership model suggests that the professorial role will evolve but not diminish in importance. In fact, as routine tasks are automated, the relational and intellectual roles of teachers in cultivating critical thinking, ethical reasoning, and creativity become even more central. The often-heard fear of "robots replacing teachers" finds no support in our data; instead, we find a reaffirmation of teaching as a profoundly human profession, one that will continue to be critical in an AI-enhanced future.

Third, the report highlights urgent challenges and the need for proactive strategies. Concerns about academic integrity (e.g., AI-assisted plagiarism), the potential deskilling of students, biases in algorithmic outputs, privacy of data, and lack of transparency were prominent. These issues are not impossible to resolve but addressing them requires deliberate action. Participants called for updated academic honesty policies, student training on responsible AI use, and assessment redesigns to ensure that learning (not cheating) is taking place. They also stressed the importance of integrating ethics and critical thinking into AI usage, effectively building a culture of "critical AI literacy" in academia.

Additionally, the necessity of institutional policies and support came out clearly. Universities should develop guidelines for AI use that uphold fairness and privacy, provide infrastructure (secure tools, software licenses) and technical support, and invest in professional development so that educators are equipped with the skills and understanding to leverage AI effectively. In short, the benefits of AI will only be realized fully if institutions and educators guide its integration with thoughtful governance and capacity building.

Fourth, differences across disciplines and roles, while present, suggest a complementary set of perspectives that can benefit an institution's holistic approach to AI. Technologists and early adopters can pilot innovations and share successes, humanities and social science educators can scrutinize and ensure the preservation of critical pedagogy and ethics, and students can serve as both beneficiaries and collaborators in shaping how AI is used in their learning. This diversity of input is a strength, it ensures that AI integration is examined from multiple angles. Higher education leadership should continue to foster cross-disciplinary conversations (like the focus groups in this report) to ensure all voices are heard in the decision-making process. For example, a committee developing an AI policy might include a computer science professor, a philosophy professor, a librarian, a student representative, and an administrator, reflecting the multifaceted nature of AI's impact.

In conclusion, the introduction of artificial intelligence into higher education is a transformative development, but not one that renders human insight obsolete. Rather, it relies on human judgment, ethics, and intentional design of educational experiences. AI can and likely will become embedded in the fabric of university operations – from how courses are taught to how research is conducted and student services delivered. This report's findings reassure that those on the front lines of academia are approaching this transformation with cautious optimism and a clear set of principles: maximize AI's advantages to teaching and learning, minimize its risks, and keep human values at the core of the academic mission. As scholarly literature from 2022–2025 corroborates, these principles are widely endorsed and provide a roadmap for moving forward.

We recommend that universities take the following concrete steps: (1) Develop comprehensive AI guidelines and ethical frameworks in consultation with faculty and students; (2) Implement training programs to build AI literacy and pedagogical skills, enabling instructors and students to use AI adeptly and critically; (3) Encourage curricular and assessment innovation that integrates AI in ways that promote higher-order thinking and creativity; (4) Strengthen support systems (technical, legal, advisory) to monitor and address issues like bias, data security, and academic integrity as they arise; and (5) Foster a campus culture of open dialogue about the role of AI, so that concerns can be raised and successes shared. Through these measures, higher education can ensure that AI is harnessed to enhance its fundamental goals – advancing knowledge, fostering critical and creative thinkers, and expanding access to learning – rather than detracting from them.

As we stand at this inflection point, the narrative that emerges is one of augmented education, not automated education. The IDEAL focus group participants and the wider scholarly community both envision a future where educators and AI work in tandem to provide a richer, more personalized, and

effective learning experience – a future where machines do well what they do best, and humans do better what they alone can do. Realizing that the future will require diligent effort, ethical vigilance, and continuous learning on the part of institutions and individuals. The findings of this report contribute to that journey by articulating the hopes and concerns of those who will ultimately make AI in higher education a success: the professors, students, and academic professionals who engage with these technologies daily. Their message is clear: we are ready to innovate with AI, as long as we do so conscientiously and collaboratively. With that mandate, higher education can confidently navigate the age of AI, striking the ideal balance between innovation and integrity.

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