

Reimagining Professional Development in the Age of Artificial Intelligence

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Abstract: As Artificial Intelligence (AI) reshapes education, professional development (PD) must go beyond tool training to foster critical, meaningful integration. Initial PD should introduce AI's uses and challenges but also address the impact on teaching and learning. This paper explores and reflects upon Phase II of the FAITH project, a transatlantic design-based initiative developing an AI and Education (AI&ED) model for higher education. Effective AI pedagogy is grounded in socially constructed, hands-on experiences where educators design lessons, generate content, and critically assess AI outputs. Such approaches build confidence, competence, and prevent mechanical adoption. Leadership and policy must further support a dual PD strategy: immediate classroom applications alongside preparation for broader societal shifts. Early FAITH findings show introductory courses spark essential dialogue, but PD must remain dynamic, ethical, and intentional. Phase II combines theoretical exploration (e.g., sustainability, ethics) with context-relevant practice. Ultimately, AI&ED should be understood as a lifelong professional learning journey.

Keywords: AI, AI&ED, Artificial intelligence, Faculty development, Higher education, Lifelong learning, Organisational development, Professional development

1. The Organisational Need for Professional Development in the age of AI

Professional development (PD) is a strategic issue for educational organisations. This strategic position is due to the potential impact PD decisions may have on the future of organisations. In other words, PD is a strategic tool for organisational development (Jaldemark, Lindqvist, & Mozelius, 2019). As such, organisational development initiatives may have different motives. However, from an organisational perspective, these initiatives have consequences for the organisation and its employees, for example, for administrative employees, researchers and teachers. Therefore, if decisions on initiating PD in an educational organisation are made, well thought-out ideas on the didactic questions of why, what, when and how should be formulated by the organisation and the level or function the PD focuses on to change. The Why-question concerns the purpose and deals with aligning employees with the organisational development strategy. Answers to the What-question relate to content in terms of organisational prioritising and development of desired changes in attitudes, competencies and skills. When and How concern resources linked to timing, e.g., continuous, periodic or appointed to strategic moments, and methods of conducting PD, e.g., collaboration, flexibility, structure, support.

PD in educational organisations may take on various shapes. PD can, for example, be informal and as such be nurtured while employees – alone or together – perform work tasks. This may consist of planning courses, preparing for and performing teaching, or assessing and grading students' work. It can also be more formal, including participating in courses built on cases such as bring-your-own-data (sharing of evidence) or problem-based approaches (where solutions become the evidence). PD can also be integrated as a change project into the organisation in a deeper sense. One example is that PD, through project work, aims to change the organisation through shifting in a particular direction. Motives for organisational development can serve both organisational goals and the PD need of employees. Motives might be to increase the organisation's adaptive and innovative capabilities and competitiveness on a strategic level. Other motives might be more concerned with operational issues, such as improving quality or being more efficient. Some motives are linked to cultural and social issues, such as building a learning culture or strengthening the organisation regarding equity and inclusion in order to reduce gaps in capabilities and opportunities. Human resources is another category of motives that may nurture and attract talent, motivate employees and prepare future leaders.

In recent years, society has seen a surge in organisational digitalisation, particularly due to the emergence of innovative Artificial Intelligence (AI) technologies. In such times, PD used to be a strategic answer to prepare the organisation and its employees for change. Educational organisations are no exception to this trend. As AI

contributes to reshape education, PD for educators must evolve beyond basic tool training to foster deeper, more critical engagement with both generative and traditional AI. While initial PD could introduce how to use AI and explore its benefits and challenges, it is equally important to understand how AI may have the capacity to transform the very nature of teaching and learning. Therefore, it is vital to develop more knowledge on the impact AI technologies have on educational organisations and their employees. The paper is a theoretical paper focussing on a reflective discussion of AI-related issues in the PD of educators. It aims to illustrate and reflect upon the situation presented above by discussing reflections on an organisational development initiative called *Frontline Application of Artificial Intelligence and Technology-enhanced Learning in Higher Education* (FAITH). This initiative develops and tests an AI and Education (AI&ED) model that supports meaningful integration of AI in higher education.

This paper explores reflections regarding the implementation phase of the FAITH project. The following research questions were explored:

RQ1: What reflections emerge in credit-based AI seminars that also provided PD?

RQ2: What reflections on AI in education are expressed by educators in introductory and advanced professional development courses?

The next section presents the case study of the FAITH project. Following this, the relationship between Artificial Intelligence in Education and PD is examined. A subsequent section delves into various pedagogical positions and explores how these are shaped by disciplinary differences. Before concluding, the paper offers a reflective analysis of PD in the context of AI&ED.

2. The FAITH-Project as an Illustrative Case

The case of FAITH is examined in Mozelius et al. (2024). Conceived as both an organisational and PD initiative, FAITH was designed and delivered in the Department of Education, Mid Sweden University with transatlantic participation by Athabasca University in Canada. The project is grounded in design-based research methodology, which emphasises iterative, evidence-informed, and cumulative development processes (Jaldemark, Lindqvist, & Mozelius, 2019). FAITH is structured around three interrelated phases: preparation, implementation, and evaluation.

In the preparation phase, activities include detailed planning, the establishment of a steering group, and the recruitment of relevant expertise. The project team combines specialists in AI and technology-enhanced learning (TEL) with program managers to ensure that both educational practices and institutional structures are addressed. The implementation phase centres on teacher involvement in a series of development activities. These include participation in a PD course offered by AI&ED experts, the creation of development plans incorporating AI&ED, and the subsequent application of these plans in teaching. Courses are revised or newly developed based on the integration of AI tools, while iterative cycles of try-outs enable continuous refinement. Insights from these cycles are disseminated and critically discussed in institutional development seminars, thus reinforcing both individual and collective learning. Finally, the evaluation phase focuses on assessing outcomes and reflecting on how AI and TEL have been integrated into educational operations. The project not only aims to increase competence and understanding of AI among academic employees (Jaldemark et al, 2025), but also aspires to create sustainable models for institutional change. In this respect, FAITH exemplifies how PD initiatives can be embedded in long-term organisational strategies for teaching and curriculum renewal.

3. AI for, and with AI in, Education

AI has had an ongoing impact on all aspects of school and education. This includes teaching, learning, and the organisation of education (Karakose & Tülübas, 2024). As of late, the debate and discussions regarding AI&ED have focussed on whether or not to use AI (e. g. ChatGPT) in education. This has now shifted more towards the need for more research on how AI tools can reflectively, critically and effectively be adopted, used and advanced for teaching, learning, and leadership (Strzelecki, 2023). Research has shown that although AI can serve as a teaching and learning tool to stimulate reflection, create ideas, assist in assessments, and correct language, there are also challenges. There are risks such as a lack of control, cheating, decreased creativity, and the advance of academic dishonesty (Neumann et al, 2023).

Early research on AI appears to provide a picture of opportunities and challenges for teachers and students (Neumann et al, 2023; Rudolph et al, 2023). Further research on the impacts of AI on school leadership has been limited, presenting only early findings regarding leadership in schools (Duran & Ermiş, 2024; Fullan et al., 2024;

Wang, 2021). Simultaneously, Fullan et al (2024, p 342) concluded that the limited research that exists “suggests that such technology can help educational leaders perform routine, mechanical tasks, thus allowing them to focus on other more productive and creative issues that demand their human skills and their social intelligence”.

In recent years, advancements in AI have had a direct influence on all levels of education (Tyson & Sauers, 2021). Fullan et al (2024) described AI in terms of its “potential to improve learning, teaching, pedagogical innovations, assessment, and educational administration through intelligent tutoring systems, chatbots, robots, learning analytics dashboards, adaptive learning systems and automated assessment” (p 340). Neumann et al (2023) reported this in terms of challenges and opportunities in education. Challenges involve the limited knowledge regarding how students utilise AI, uncertainties in evaluating and assessing AI&ED, varying perceptions among educators of acceptable use, increased time demands for assessments, and the yet unknown potential of AI. Conversely, opportunities lie in possibilities to support students, foster creativity, as well as a potential for driving educational innovation. This means that the use of AI in education introduces a wide range of ethical, moral, and practical challenges for all actors in school (Strzelecki, 2023).

Fullan et al (2024) argued that AI may fundamentally reshape both the perception and execution of leadership in educational contexts. Current research shows that AI has the potential to reshape educational leadership by automating and streamlining administrative processes, providing advanced data analysis, supporting student learning strategies, and optimising communication with parents, teachers, students, and the broader educational community as a whole (Dogan & Arslan, 2025). Thus, these possibilities can enhance efficiency, facilitate informed decision-making, and allow educational leaders to focus on strategic and pedagogical priorities. AI has been associated with both increased and decreased workload, alterations in the teaching profession, and powerful processing abilities. This work involves several perspectives. Policies and easy-to-understand guidelines are needed for the use of language models in learning and teaching, proper use of these tools, and the consequences for cheating (Rudolph et al, 2023).

To meet these opportunities and constraints, PD is needed for educators. For example, educators may need training to instruct students on academic integrity. Educators may also need PD on how to critically evaluate any resources, as well as to adapt the use of AI in education to their specific context (Rudolph et al, 2023). Other studies have pointed to the importance of expertise, experience, and understanding of students’ use and the opportunities and constraints that the use of AI encompasses (Cooper, 2023). To support all these aspects, it will be necessary to improve administration and PD for educators (Hutami, 2024). Thus, according to Van Quaquebeke and Gerpott (2023) AI will play a role, and this role should be discussed.

4. Pedagogical Positions and Disciplinary Differences Using AI

FAITH applies to all levels of education. On the graduate study level of education, a critical reflection approach to education change and leadership is employed. AI continues to reshape many human activities. The questions facing educators are still in the helix of why and how. The integration of AI into personal and professional life demands a radical reimagining of pedagogy, or how we teach and learn, to allow beneficial use of AI without losing what is currently significant. Discussions of outdated industrial education models focused on content delivery resulted in moves toward new techno-pedagogical models that embrace the diversity, complexity, ambiguity, and interdisciplinarity of current complex education institutions. This new pedagogical space may offer support for an AI-mediated world. Recent scholarship offers a compelling argument: AI is not education, but education must evolve in ways that allow teachers and students to review, evaluate, reshape, and make beneficial use of AI in education with acute awareness of what the costs, if any, may be.

For Bearman and Ajjawi (2023), a philosophical foundation for this transformation is required. They argue that AI, by its very nature, operates as a “black box”. Current AI structures provide a system whose judgments are opaque and context-bound. For these educators, ceasing attempts to decode these systems should give way to a pedagogy where students are allowed to work within ambiguity and apply AI only where outcomes are socially situated and relational. This approach emphasises the importance of understanding the tacit underlying structures, where they work and where they fail, and thus engaging critically and meaningfully with AI systems. These systems may generate information, but must not be seen as neutral tools, but rather as potential syntheses of complex information opportunities that are only embedded in human contexts when accurate.

Similarly, George (2023) calls for a sweeping curricular overhaul. Where AI may offer support for increasingly complex cognitive tasks, the value of human skills like creativity, critical thinking, and adaptability can be supported and grown. This pedagogy rests on active, interdisciplinary learning that prioritises problem-solving, collaboration, and ethical inquiry. The classroom can become a community of inquiry, where students learn

some content from AI and its appropriate use of AI. With support from well-created AI systems with accurate information outputs, societal implications surrounding the use of knowledge for the greater good in life and work become part of the curriculum. For decades, teacher PD has encouraged active learning, beyond passive lecturing. If it is also applied to facilitate active assessment of AI outputs, it may contribute to fostering collaborative, dynamic, learner-centred experiences.

The large language models of AI bring disciplinary conversation into the realm of writing pedagogy. Jamieson (2022) is urging educators to trust students and integrate AI into the writing process. Like George (2023), this author suggests setting aside abstract critique to improve AI&ED generally. Instead, using AI-generated or supported texts provides teachers the opportunity to teach revision, synthesis, and rhetoric. This method adds to traditional writing pedagogy by reaffirming writing as a non-linear, generative process. For students engaged in writing, AI systems may act as a peer or collaborator. Students can deepen their understanding of composition and develop a more nuanced relationship with technology in engagement, assessment, evaluation, and critical use of AI suggestions.

Qu, Tan, and Wang (2024) provide empirical insight into how students across disciplines engage with generative AI. Their research reveals significant disparities: Students in applied fields demonstrate higher levels of AI knowledge and usage, particularly for cognitive tasks. This suggests that disciplinary traditions shape not only how students use AI in education but also how they perceive its relevance. The authors advocate for tailored integration strategies that respect these epistemological differences by ensuring that AI enhances rather than erodes core disciplinary values.

Together, these perspectives form the suggestion that education will continue to transform in the age of AI. With attention to the what, why, when and how of AI integration, the already present pedagogy that is flexible, context-aware, and deeply human will continue. We must prepare students not just to use AI, but to understand it, critique it, and collaborate with it. This means embracing ambiguity, fostering creativity, and rethinking both what we teach and how we teach it. The future of education lies in reviewing, assessing, and shaping AI while continuing our pedagogical transformations to meet the challenges and opportunities of a changing world.

5. Leading AI in Education - Exploring a Graduate-Level Education Leadership Course

The FAITH process is discussed in graduate-level education leadership courses and AI seminars. Here, too, a critically reflective approach yields topics like those discussed below.

A major challenge for leaders seeking to transform higher education through AI is the lack of a widely accepted definition of the term. As Wang (2019, p 2) notes, “there is no widely accepted definition of Artificial Intelligence (AI),” and suggests that such a definition may not be necessary at this early stage of AI’s development and application. Others, however, argue that this ambiguity presents real obstacles. Bhatnagar et al (2017, p 2) observe that “it is difficult for policy makers to assess what AI systems will be able to do in the near future, and how the field may get there. There is no common framework to determine which kinds of AI systems are even desirable”.

The term *Artificial Intelligence* was coined by John McCarthy in 1956 (Slimi & Carballido, 2023), and more recently defined by the same authors as systems in which machines mimic human behaviour and intelligence. Yet none of these definitions clarify what “artificial” truly means. After all, machines and their programming are created by humans. Artificial compared to what? Would we call a farm plough an “artificial digger”? Synonyms for “artificial” include *false*, *contrived*, and *unnatural*, suggesting a disconnect between the term and the reality of human-designed systems. When paired with “intelligence,” the phrase allows AI to engage in intellectual processes regardless of the truth value of its output. In this light, AI is not “artificial” in the sense of being non-human—it is a human creation. Meanwhile, the concept of “intelligence” itself remains contested in the social sciences and has yet to be unequivocally defined. Perhaps a more fitting label for AI would be *Accessible Information*.

Leadership approaches that aim to guide individuals through this transformation must account for the current ambiguities and complexities surrounding AI. They must also consider its educational applications and provide meaningful PD opportunities for both students and faculty. While transformational leadership theory offers a robust foundation of research, practical applications, and widespread acceptance, the ambiguity surrounding early-stage AI demands deeper deliberation, integration of insights, and intentional shaping of AI’s role within institutional mission and vision. In line with Chughtai et al (2024), the ongoing evolution of education and the blurred definitions of AI are best supported by *Adaptive Leadership*, which emphasises flexibility and responsiveness to context rather than adherence to a fixed style.

Despite definitional uncertainties, current forms of AI have the potential to transform personal, social, and professional domains—including higher education. Spanish scholars such as Slimi stress the importance of ethics and humanity in AI education, warning that without these values, AI may pose risks to humankind. Higher education must therefore play a critical role in evaluating, applying, governing, and researching AI technologies. Engaging AI requires a thoughtful and deliberate approach, one that includes deep understanding, ethical implementation, and ongoing assessment. It also demands a steadfast commitment to PD, ensuring that educators and institutions remain informed and equipped to evaluate the rapid evolution of AI and its related technologies (Mah & Groß, 2024).

6. Exploring Educators' Reflections on the Introductory and Advanced FAITH Course

According to the overall FAITH objective, AI for educators must evolve beyond basic tool training to foster deeper and more critical engagement with both generative and traditional AI. However, the introductory course has to start out by building AI literacy and a foundation for further critical engagement and deeper understanding. In the first introduction activity, there is a presentation of the history of AI, starting out in the 14th century with Ramon Llull and his *Ars generalis ultima*, which was completed in 1308. As discussed in Mozelius (2025a), the development of AI did not start with the release of ChatGPT in November 2022. It is also important to explain the difference between symbolic and sub-symbolic AI, and why the GenAI tools work as they do.

A tool testing workshop to explore the strengths and weaknesses of GenAI is also introduced. The sometimes poor results by GenAI in arithmetics and logic may be a surprise to most course participants, while other generated artefacts are very impressive. The fact that GenAI tools are useful in some aspects, aspects that look very difficult for humans and poor for some things that seem very easy for humans is what Mollick (2024) calls 'The Jagged Frontier'. As a next step, course participants should compare the results from provocative prompting to ChatGPT, DeepSeek and Le Chat to better understand what differs if a chatbot is developed and hosted in the USA, China or France. In PD for educators, it is also important to evaluate and discuss the remarkable outcomes from the application of GenAI detection tools. As reported in several research studies, the outcomes show strange variations and clearly unreliable results (Ardito, 2025; Malik & Amjad, 2025).

The analyses of GenAI detection software also involve ethical aspects (Ardito, 2025; Deep et al, 2025) and bridge over to the more critical discussions on GenAI that dominate the final part of the introductory course. This is also based on analyses of AI-generated images, and ethical aspects such as gender and socio-cultural biases. The introductory course also involves webinars given as knowledge cafés with discussion topics such as 'Detection tools and the need for redesign of assessment'. Finally, the discovered strengths, weaknesses, opportunities and threats for AI&ED should be summarised and discussed in a SWOT analysis of a freely chosen educational context. With the idea of PD with realistic and valuable takeaways, the SWOT analysis should also, for a higher grade level, be complemented with an action plan for the implementation of GenAI. This is followed up in the final knowledge café with discussions on the SWOT differences between educational contexts such as pre-school, primary school, secondary school, higher education and lifelong work-integrated learning (Mozelius, 2025b).

As discussed in Mozelius et al (2025), there are more things to be involved in PD on AI&ED, and if the rapid development in the area continues, this would be better classified as lifelong learning. The next steps in the continuation course that is under development have a focus on curriculum development, content creation and the long-term sustainability aspects of GenAI and AI&ED. The first course section is designed with the idea of active learning and creativity. With and without GenAI support, course participants should create their tailored syllabi and lesson plans with multimodal learning activities and AI-adapted assignments. This should, in the second half of the course, be followed up with a continuation of the ethical discussion in the introduction course. In a final reflection essay, course participants should analyse the long-term sustainability of AI&ED divided into the three main aspects of social, environmental and economic sustainability.

7. Concluding Remarks

From the reflections explored and shared in this paper in line with the research questions, the following reflections may be important to emphasise in this concluding remark about AI&ED PD of educators. First, as a consequence of integrating AI&ED, there is a need for PD to focus on pedagogical reorientation. This line of thought embraces moving beyond industrial content-delivery models towards interdisciplinary inquiry-driven models that emphasise AI as a partner to human judgment, not a replacement. Second, there are also critical issues concerning equity, governance, and integrity which need to be covered within PD for educators. This includes the redesign of the assessment of learning to adapt to critical issues. Third, inclusion is also a key here

to support educators as learners and counteract the benefits and risks that are unevenly distributed across disciplines and groups of learners. Finally, educators value a PD structure that begins with AI literacy issues before moving on to critical reflections and discussion on AI&ED, a so-called “jagged frontier” approach to reflect on the capabilities and limits of integrating AI technologies in educational settings. In the next step of the FAITH-project, these issues will be further explored in order to enable a suitable and sustainable PD for educators adapted to the conditions for learning that an AI-mediated world advances.

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