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Connecting Educators and AI: Innovation Management Beyond the Paralysis

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Abstract: Medical schools represent one of the most regulated and scrutinised educational environments, yet institutional responses to artificial intelligence have been predominantly reactive. Drawing on the history of AI and on innovation management principles, this paper argues that a proactive, strategically guided approach yields better outcomes for educators and learners alike. We present a decision-support matrix that maps educational tasks against AI capabilities, enabling institutions to identify where AI augments learning

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most effectively. We further draw on Alan Turing's distinction between the educator who teaches and the engineer who builds, arguing that educators need not master machine learning to use AI well. Together, these instruments address both the paralysis of unfamiliarity and the risk of uncritical adoption.

Keywords: artificial intelligence; medical education; innovation management; AI literacy; curriculum design; proactive strategy; GenAI; pedagogical transformation; educator roles; decision-support tools

1 Introduction

Modern educational institutions operate within a trade-off of constraint and opportunity. The central innovation management challenge of our times is how educational leaders can manage the implementation of AI into highly regulated, often resource constricted, educational environments in the most effective and beneficial manner, hence balancing compliance with genuine pedagogical advancement. Medical schools provide an insightful context in which to explore this challenge, being one of the most highly regulated forms of tertiary education. As a result, when changes to a medical curriculum are enacted, there is a tendency for them to be viewed via a reactive lens of 'how can I adapt the curriculum to remain compliant with regulatory needs' rather than a more pro-active 'how best can I integrate this new educational idea/technology in a way that will best leverage its strengths'. This has been compounded by the fact that many of these educational leaders do not come from backgrounds familiar with machine-learning science and therefore are unaware of the historical, philosophical and technological background events that have shaped this discipline over the past half-century. This has led to an inconsistent, *ad hoc* response from educational leaders on the topic, many of which could be classified as reactive or, at worst, paralytic while waiting for regulators and policy makers higher up the chain of command to provide decisions on how to proceed. So far, many universities have put work into an AI policy, trying to capture everything that might go wrong inside one document. With considerable nervousness to handle formal duties like examination, this has meant that most of these policies now look very similar; not because they have converged to something sensible, but more because of fear of missing out or getting it "wrong".

Drawing on these contextual case studies, we illustrate a number of key innovation management learnings. Firstly, we demonstrate how efficient, forward planning of AI use in educational and innovation activities will facilitate synergy between human and machine intelligence in educational experiences and provide an example of how this can be achieved. We then explore how our personal experience and knowledge of a topic can influence our disposition towards it. Finally, we re-frame the discussion of AI, constructing a clear vision for how AI offers fantastic possibilities for enhancing education, in ways that human intelligence alone would not have been able to achieve, without compromising that which we believe to be non-negotiable.

2 A contextual case study - How medical education has attempted to integrate AI

The medical universities are the most regulated parts of academia. In particular, data-driven perspectives on medical education often employ sensitive data, and much of the research driving good education is considering downstream patient value. This requires an impact analysis that is relatively difficult and under constant scrutiny from many stakeholders, not least patient organisations, governments and medical ethicists. Adding AI to that mix makes for very difficult innovation management, but with tremendous possibilities for measurable results.

Recognising these significant, paradigm changing possibilities, medical institutional leaders have certainly begun to implement changes to their curricula to incorporate AI. However, almost universally, those in leadership positions have not been from machine-learning backgrounds and hence it is clear from the literature that the advent of AI has come as something of a surprise, leading to a reactive positioning to the technology. It is common to hear commentary about how we are taking steps to 'respond' and 'adapt' to the disruptive risks that AI poses to the 'traditional' medical educational structures. Some of the most cited publications on AI in medical education focus primarily on mapping the current landscape of use (Zhang et al., 2024; Duan et al., 2025), looking at what we are already doing, and then using this to help inform the community on ways forward. The risk of this approach lies in the assumption that the AI use-cases of early adopters were thoughtful or intentionally planned. In fact, it is clear that many of the initial decisions around this technology adoption were actually driven by expedience, necessity and academic integrity incidents; and hence using these as the basis of formulating future approaches is potentially flawed.

3. Innovation management learnings I - A proactive, strategic approach is critical in educational transformation

A more considered, strategic approach to AI implementation would be forward-looking, pro-active positioning which prospectively asks which aspects of learning would be best augmented by AI, and which would not, with priority given to the primary goal of education, namely optimisation of learning for students, with logistical and practical planning aspects still important, but secondary to this primary goal.

The International Advisory Committee on Artificial Intelligence (IACAI) guidance document, currently available in draft, presents useful initial guidance on ways this might be done - listing the domains of medical education and AI instruction and assigning the stakeholders who would be responsible for implementation of AI at each of these levels (Saroha, 2025). While this helps shape a model through which intentional decision making can be structured, the next logical requirement of educators would be the provision of practical decision-making aids to assist stakeholders in making the complex choices of what, where and how much to include AI into their curricula.

To this end, one approach is the creation of a matrix that itemises the different educational tasks involved in the delivery of medical education, scores these relative to educationalists and learners, and compares to the capabilities of AI in performing these tasks. When mapped out, experiences clearly enhanced by AI become apparent, as do areas where outsourcing of educational activity to AI would make a significant impact by freeing the capacity of educators to focus on other more high-yield activities such as developing

critical thinking skills and achieving adaptive expertise and ultimately competence. This will give institutions a transparent, data-informed source which they can use to base decisions upon regarding the benefit (or lack thereof) of integrating AI into different aspects of the educational experience, see Figure 1.

		Curriculum design		Assessment		Teaching/Instruction				Administrative tasks	Selection of trainees	Program evaluation
		content generation	Syllabus generation	Assessment generation	Assessment scoring	Direct theory instruction	procedural instruction	feedback	mentoring	Scheduling/Logistics		
Educationalists	Cognitive effort to perform											
	Time required											
	Specialized expertise required											
	How 'rewarding' is this task											
	Desire to retain this role											
Learners	Belief that humans perform this role better than AI											
	Desire for this role to be retained by humans											
AI experts	Current capability of AI to perform this task											
	Projected ability of AI to perform this task											
	Risk of error in AI output											

Figure 1 – Example rating matrix to facilitate decision-making on AI integration in medical education.

Another benefit of a decision-making tool is that it can be applied at different scales, from anything as small as individual subjects up to institutional or even international level depending on the desire of the relevant educational body. Bringing an intentional lens to the way AI is implemented thus gives us the best ability as educators to optimise medical education and draw the greatest benefits from the synergistic use of AI alongside human-driven teaching methods.

4 Further contextual background - The true history of AI

AI is not a new phenomenon and many of the conceptual, ethical and practical challenges it currently poses have existed for decades. Familiarising ourselves with the history of what has gone before can provide important context to help in guiding the forward thinking debates/discussions currently occurring in the educational community on AI.

One of the earliest treatises on AI was a report written by Alan Turing in 1948, 'Intelligent Machinery' (Turing, 1948), which outlined the principles of learning and machines and described the basis for the neural-network concept. This report was reportedly dismissed by Sir Charles Galton Darwin, Director of the UK's National Physical Laboratory (and Turing's supervisor) as 'a schoolboy essay' (Hodges, 1983). Similarly, at a now famous address given by Turing at Manchester University in 1951, his colleagues were reportedly also glib about his 'robots roaming the countryside'. In hindsight, this appears a clear example of how institutional discomfort and cynicism of machine intelligence have existed since AIs origins, irrespective of the technical feasibility or potential of such an invention.

AI has struggled to shake off this historically negative framing, with many of its past achievements (e.g. playing chess, solving informal problems) often being immediately re-labelled by commentators in more mundane terms, as in 'that's not thinking,' that's 'just computation' (Dreyfus, 1972; Searle, 1980). This recurring pattern of scepticism and moving definitional goalposts has obscured the continuity of AI's development and been a significant contributor to the impression that contemporary advances have seemingly appeared out of nowhere, or even somehow propelled themselves onto centre stage.

5 Innovation management learnings II - Unfamiliarity breeds scepticism, knowledge begets vision

As an umbrella term for all kinds of smart guesswork, including efficient self-correction of imperfect guesses, and long-term learning, AI holds promise to enhance human learning. One means to this is GenAI smart assistance, where curriculum development, student assessments, individualised training exercises, the list is long, can accelerate learning and deepen student insights. These are still early days, in that multi-year student trajectories augmented by GenAI tools have not yet formed large databases ripe for data-driven studies into impact and disruptive power.

The key innovation management insight here is that scepticism towards AI correlates strongly with unfamiliarity, while knowledge of its history and mechanisms begets a more calibrated, strategic vision. Several patterns are diagnostic. Educators who have engaged directly with AI tools, even at a surface level, report markedly different dispositions than those who have not (Alarcón et al., 2025). The same asymmetry appears at institutional level: institutions with designated AI leads or working groups move from reactive to proactive postures measurably faster than those waiting for external mandates. This suggests that the innovation management priority is not universal AI literacy, an unrealistic goal given time and cost constraints, but rather the strategic cultivation of a critical mass of informed advocates at each level of the institution. These individuals translate between the technical and the pedagogical, embodying in practice Turing's teacher–engineer distinction (Turing, 1948).

One concrete manifestation of this dynamic is technological evangelism: early adopters of AI in medical education have sometimes been driven more by enthusiasm for the novelty of the tools than by rigorous pedagogical intent. This matters because the empirical record of those early deployments is now being used to inform future strategy and it is shaped as much by advocacy as by evidence. A more mature innovation management approach acknowledges this provenance, treats early adoption data with appropriate caution, and invests in prospective study designs that can isolate genuine pedagogical effects from novelty effects. Unfamiliarity with AI breeds both paralysis and its mirror image: uncritical adoption. Knowledge, historical and technical alike, is the antidote to both.

6 Conclusion

Institutional responses to AI in medical education have been predominantly reactive, shaped more by regulatory anxiety than by pedagogical vision. This paper has argued that a proactive, strategically guided approach grounded in historical and philosophical literacy about AI offers a more productive path forward. Alan Turing's original perspective presented here is not merely of historical interest: it actively supports a practical role differentiation in which educators engage as teachers of AI systems without needing to become their engineers, and in which institutions can assign training responsibilities with clarity and accountability. The matrix approach proposed in Section 3 provides a decision-support tool that makes this vision actionable at multiple scales, from individual courses to institutional policy. Together, these instruments address both the paralysis of unfamiliarity and the risks of uncritical adoption. Future work should pursue longitudinal data on learning outcomes in GenAI-augmented curricula, attend closely to equity implications across different regulatory and resource contexts, and develop the matrix instrument further with input from diverse stakeholder groups. Only through this kind of careful,

interdisciplinary, and historically informed analysis will AI's disruptive potential be channelled in service of human learning.

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Areas for Feedback & Development

This paper is presented as research in progress. We welcome feedback and discussion on the following open questions, which will shape the next stage of our work.

1. The matrix instrument

The rating matrix for educational task (Figure 1) is currently illustrative. We seek feedback on: (a) which task categories are missing or under-specified; (b) how weightings should differ across institutional contexts (e.g. undergraduate vs postgraduate, high-resource vs low-resource settings); and (c) whether the matrix is most valuable as a planning tool, an audit instrument, or both.

2. Institutional role differentiation

We propose a Turing-inspired distinction between the educator-as-teacher and the AI engineer as a practical organising principle for institutions. How readily does this map onto existing professional boundaries in medical education? What governance or contractual arrangements would be needed to make the engineer's responsibility for training data and model behaviour legally meaningful? We welcome comparative perspectives from different national regulatory innovation environments.

3. Top-down strategy and bottom-up advocacy

What is the interplay between top-down innovation strategies in medical education and bottom-up activities driven by individuals with AI literacy? Our four-country author team has observed different dynamics in Sweden, Australia, the United States, and the United Kingdom. We seek input on whether the advocate-cultivation model we propose is transferable across these contexts, or whether national regulatory and cultural factors require fundamentally different approaches.

4. Measuring paralysis and its antidotes

The construct of institutional 'paralysis' in the face of AI is central to our argument but remains operationally underspecified. What indicators would allow us to measure the degree of paralysis in an institution, and track progress as proactive strategies take hold? We invite methodological suggestions and examples of institutions that have successfully moved from reactive to proactive postures, and what interventions drove that shift.