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Alternative pathways for addressing generative AI, and what might be blocking those pathways?

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Abstract

In less than a year, the academic community globally has moved unusually fast to address the issues arising from generative AI (GenAI), which has many potential benefits for both faculty and students. But authoritative advice balances those benefits against the problems caused, not least the breadth of ethical issues arising. In the second year of GenAI in academia, more divergence may be seen between innovatory and incremental pathway institutions. Workforces can and do support or resist change, so any change pathway needs to understand and address how to overcome resistance. The paper concludes that the most significant innovative pathways for GenAI cannot be achieved through managerial fiat alone, and need to overcome a cocktail of ad hoc plus deliberate efforts to constrain innovation. One essential component identified is an urgent need for a new form of online global community of practice around the AI dimensions of teaching and learning.

Keywords

Pedagogic strategy, transformation, resistance, GenAI

Introduction

Context

ChatGPT was launched on 30th November 2022, too late to shape the whole of that academic year, but with just enough time for a structured response in 2023-4. The aim of this paper is to explore alternative trajectories for responding to generative AI in the light of that nearly one year of experiences.

The primary perspective in this paper is pedagogy strategy in higher education, relating to high-level choices facing institutions, departments and individuals. The secondary perspectives are business school related, reflecting the author's academic interests in:

- strategic IT adoption, as well as
- the leadership problems faced in implementing radical change.

The overall stance taken here favours radical change, in pursuit both of discipline-based goals as well as global goals, exemplified by the UN SDG framework. There are very few academic or consultancy frameworks for organisations generally which emerge from a radical perspective, encompassing all three of learning, IT adoption and change management. Perhaps the most coherent at present is Scharmer's (2016) Theory U; another from an earlier era would be Stafford Beer's (1975) viable system model.

What has become clear from the first year of generative AI is that there is unlikely to be one continuous pathway of innovation. We envisage two specific pathways being:

- Anxious to innovate technologically, but only within conventional pedagogy
- Anxious to challenge conventional pedagogy, with technological innovation as a central vehicle to accelerate that challenge.

Author standpoint

Everett Rogers (2005) proposed five dispositions towards innovation:

- Innovators

- Early adopters

- Early majority

- Late majority.

- Laggards:

The author has self-identified over many years as an early adopter and sometimes innovator in the field of e-learning. But in relation to a small number of topics they have been laggards, consciously resistant to change. A decade ago, this lagging related to scepticism about MOOCs. From 30th November 2022, lagging again was applied in relation to generative AI. The author has attended almost all faculty workshops on GenAI, did contribute (sceptically) to the faculty online forum, and carefully read all school and university advice. But actual contact with GenAI was explicitly avoided until 4th October 2023. A high-intensity one hour faculty workshop on AI turned out to be an epiphany, and finally convinced the sceptic that being actively laggard was no longer an option, indeed was now exceedingly risky, and in particular would be especially unhelpful to students.

So this paper is in part based on the experiences and transition of an academic extremely sceptical of Gen-AI, via a one hour intensive learning experience, to enable progression to become a less sceptical novice AI user. Though this began as a purely personal initiative, the problem of supporting the journey of resistant sceptics is generic to organisational change management, and is likely to be of particular importance in coping with the academic consequences of GenAI.

Key Texts

A number of high quality resources proved to play a core role for the author's specific needs as laggard; some might not be appropriate for those with very limited time resources.

UNESCO has produced three quality documents on AI ethics (UNESCO, 2022), Quick Start Guide to GenAI (Sabzalieva and Valentini. 2023) and GenAI primer handbook (Liu, B. L. et al, 2023) The Quick Start Guide is probably the most helpful single document for new users of GenAI, sceptics or not.

JISC (2023) UK focus wider than GenAI; this third edition builds on a cumulative body of expertise. US Department of Education (Cardona et al, 2023), although geared at the national and local policy level, strongly connects AI with pedagogy and educational values. Also with a UK focus, Francis and Smith (2023) provide an excellent summary of alternative assessment methods.

Cantwell Smith (2019) is the single text that was most valuable for the author, as it directly addressed what humans are likely uniquely to continue to do even in the face of continued innovation in AI. He argues that the computational power of AI is not intelligence; he names its power as "reckoning". Only humans have "judgement": dispassionate, deliberative thought grounded in ethical commitment and responsible action. His distinction between judgement and reckoning was something that I had been struggling to clarify and. his work has been a strong influence on the Harvard School of Education. (Dede, 2021)

Although Abedi (2023) is engineering specific this is a very comprehensive and useful practical introduction. Lingard (2023) provides a particularly valuable explication of the art of writing prompts including some of the ethical challenges faced. Nerantzi et al (2023) A crowd-sourced international collaboration which provides 101 rich if provisional examples of GenAI.

Dannemiller and Jacobs (1992) evolved a useful formula (symbolic not mathematical in intent) to emphasise how key features of change are interwoven: C =D x V x F > R

- C = The change sought.

- D = Dissatisfaction with the current state

- V = A vision and clear understanding of the future state

- F = First concrete steps to get started

- R = Resistance from leaders and people in the organization.

In relation to the epiphany above, the workshop significantly increased the author's dissatisfaction D with the status quo. It also repeated an existing high state of vision V, but now augmented with positive first steps of early adopter colleagues F. These increases also helped lower the personal resistance R to change, and led for the first time to D x V x F now exceeding R.

Holistic framework at institutional level

To pursue our approach, a framework is needed which includes pedagogy, learning, technology and change, and we have for nearly two decades drawn on such a framework, namely that of Goodyear (1999, Holtham and Courtney, 2003) to arrive at Figure 1.
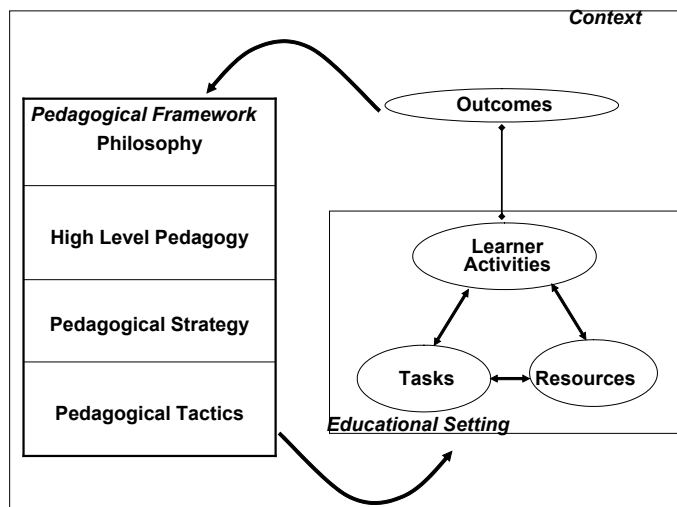

Figure 1 Pedagogical Framework (Goodyear, 1999) adapted by Holtham and Courtney (2003)

One major worry about much of the writing on generative AI over the last year is that it has taken a perspective too low down in the pedagogical framework, for example, only being concerned with pedagogical tactics, and not taking the opportunity to discuss the three higher levels.

Courseworks which are centred on replaying or organising well-established concepts are inevitably going to be very vulnerable to AI. But this paper argues that instead of low-level innovation in the framing of questions, the arrival of GenAI offers great potential, if not necessity, to make a strategic shift in philosophy and in high level pedagogy from a transmissive pedagogy to, for example, a critical or liberatory pedagogy.

A very positive set of roles for GenAI in teaching and learning is provided in Table 1 by Sabzalieva and Valentini (2023)

Role	Description
Possibility engine	AI generates alternative ways of expressing an idea
Socratic opponent	AI acts as an opponent to develop and argument
Collaboration coach	AI helps groups to research and solve problems together
Guide on the side	AI acts as a guide to navigate physical and conceptual spaces
Personal tutor	AI tutors each student and gives immediate feedback on progress
Co-designer	AI assists throughout the design process
Exploratorium	AI provides tools to play with, explore and interpret data
Study buddy	AI helps the student reflect on learning material
Motivator	AI offers games and challenges to extend learning
Dynamic assessor	AI provides educators with a profile of each student's current knowledge

Table 1: Roles for GenAI in teaching and learning Sabzalieva and Valentini,2023)

Recommendation

One clear cut issue is, regardless of institutional policies and practices, there needs to a physical or virtual international observatory to share any newly emerging concerns, and also disseminate good practices on an international basis. Given its positive track record, UNESCO would be an obvious umbrella location for such a hub. However, in the meantime there need to be networking initiatives within institutions, through existing professional networks and professional bodies. This might be an opportunity to build from the bottom up,

perhaps drawing on the still largely unfulfilled promise of the learning webs advocated by Illich (1973).

Conclusions

Schneckenberg (2009, p421) make a point implicit in the above discussions:

> New learning technologies only unleash their potential to enhance teaching portfolios if universities accomplish a turn in their eLearning endeavours towards institutional change management strategies. They need to face the complex mix of pedagogical, technological, economic and cultural challenges in the adoption of eLearning innovations with a holistic approach, which takes into account more than just one-dimensional change processes.

GenAI on the one hand opens up possibilities of almost unprecedented enhancement to academic and administrative support to both faculty and students, while simultaneously challenging the traditional teaching and assessment processes which have evolved over 150 years. It seems hard to envisage any gentle incremental way to evolve all these traditional processes. Some may need to be abandoned.

The idea of abandonment is not in itself new; this was being actively advocated since the 1960s, as delineated by Elton and Johnston (2002)

Bibliography

Abedi, M. et y Nigal. (2023) 'Beyond Traditional Teaching: The Potential of Large Language Models and Chatbots in Graduate Engineering Education', Qeios [Preprint]. Available at:

https://doi.org/10.32388/MD04B0.

Beer, Stafford. (1975). Platform for Change. Wiley.

Cardona, Miguel A.., Rodríguez, R.J. and Ishmael, K. (2023) Artificial Intelligence and the Future of Teaching and Learning: Insights and Recommendations. Washington DC: U.S. Department of Education, Office of Educational Technology. https://policycommons.net/artifacts/3854312/ai-report/4660267/

Dannemiller, K. D., & Jacobs, R. W. (1992). Changing the Way Organizations Change: A Revolution of Common Sense. The Journal of Applied Behavioral Science, 28(4), 480–498. https://doi.org/10.1177/0021886392284003

Dede, Chris. 2021. Intelligence Augmentation: Upskilling Humans to Complement AI - Applying Learning Sciences Research To. United States of America: Project Zero. Available at: https://pz.harvard.edu/resources/intelligence-augmentation-upskilling-humans-to-complement-ai

Elton, L., & Johnston, B. (2002). Assessment in Universities: A critical review of research. LTSN Generic Centre, London https://eprints.soton.ac.uk/59244/1/59244.pdf

Francis, Nigel and Smith, David (2023) Generative AI in assessment: Guidance for staff, Cardiff University, National Teaching Repository https://doi.org/10.25416/NTR.24121182.v2

Goodyear, P (1999) Pedagogical frameworks and action research in open and distance learning, European J.

Nerantzi, Chrissi, Sandra Abegglen, Marianna Karatsiori, & Antonio Martínez-Arboleda (Eds.). (2023). 101 creative ideas to use AI in education, A crowdsourced collection. Zenodo. https://doi.org/10.5281/zenodo.8072950

Scharmer, C. O. (2016). Theory U: Leading from the Future as It Emerges (2nd edition). Berrett-Koehler Publishers.

Schneckenberg, D. (2009). Understanding the real barriers to technology-enhanced innovation in higher education. Educational Research, 51(4), 411–424. https://doi.org/10.1080/00131880903354741

Smith, B.C. (2019) The promise of artificial intelligence: reckoning and judgment. 1st edn. Cambridge: MIT Press

UNESCO. (2022). Recommendation on the Ethics of Artificial Intelligence. UNESCO. https://www.unesco.org/en/articles/recommendation-ethics-artificial-intelligence