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Navigating Strategic Challenges in Education in the Post-pandemic AI Era

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Abstract. Navigating strategic challenges in education in the post-pandemic AI era has the characteristics of a *complex* decision-making context. The current challenges and possible approaches, supporting decisions about future-oriented education, are discussed.

Keywords: strategic decision-making · education · pandemic · artificial intelligence

1 Introduction

Strategic planning in education needs to consider the contemporary challenges and the type of a decision-making context. Today's education has been significantly impacted by two major unprecedented events which have had a strong transformative effect: the COVID-19 pandemic and the rapid spreading of AI.

To better understand the decision-making in such contexts, it is useful to look at them through the lens of the Cynefin framework. As explained by Snowden [1], "Cynefin creates four open spaces or domains of knowledge all of which have validity within different contexts". In Cynefin, contexts are "defined by the nature of the relationship between cause and effect" [2]. In the four contexts, simple, complicated, complex, and chaotic, leaders need to recognize the situation and act appropriately.

The COVID-19 context was a chaotic one, in which it was not possible to identify the relationships between cause and effect and there were no patterns, so leaders had to act immediately and work to shift from *chaos* to *complexity*. While in chaos *trust* in leaders is necessary, it also presents a danger for democratic processes if it is blind.

Once the world shifted to a *complex* context, another challenge emerged: the mainstreaming of AI. Both challenges have a significant impact on education today, on the global, national, institutional, and on the level of individual learners and educators.

Strategic decision-making today is therefore double-burdened. On the one hand, it has to consider the possibility of new major global threats, like a pandemic or a war, and their possible tremendous effect on education. On the other hand, careful thought should be given to AI, which can be a powerful assistant to deal with threats like this, but also a hidden enemy to ethical and meaningful teaching and learning.

2 Decision Making in the *Chaotic* Domain

Research on educational decision-making in the chaotic domain, characterized by the imperative to master unfamiliar threats, has been scarce, at least until the unprecedented global challenge posed by the pandemic. The pandemic presented us with a rich research environment, enabling us to investigate and draw conclusions which can be generalized and applied to other chaotic contexts.

Educational decision-making during the pandemic was done at different levels: global, (multi)national, institution, individual (teacher, student). So, when analysing the decisions and decision-making processes, it makes sense to consider the said levels.

At the onset of the pandemic, I was the chair of the Council of the European Union (EU), gathering ministers in charge of education of the 27 EU Member States. So, looking at the multinational perspective, I personally witnessed an increase in the inclination of educational ministers to work together closely in making decisions in this *chaotic* context. Without delay, new formal and informal instruments for fast data collection, mutual support, learning and exchange of important decisions and processes were developed, as well as the sharing of good and bad practices. We collected primarily qualitative data, based on the responses of the Member States' educational authorities, that were aimed to support the understanding of the situation and finding/recognizing common denominators (patterns). There was no time to collect structured quantitative data, as decision-making had to be instant, making sure that lives and health were safeguarded, and educational processes continued in alternative formats. The public was often not aware of the efforts done at decision-making levels, as in this *chaotic* context [2], it was essential to trust the leaders and their dedication to ensuring the wellbeing of those related to educational institutions. Similar processes striving for fast and open collaboration were also recognized on institutional [3] and global levels (e.g., [4]).

Regardless of the global and regional efforts and collaboration, there were still differences in the success of educational systems' responses to the pandemic. Importantly, previous research has shown that the agility and fitness-for-change of educational systems and their main actors is essential in responding to and coping with major challenges [5].

3 Decision Making in the *Complex* and *Complicated* Domain

One of the most important goals in the *chaotic* domain is to lower the level of chaos and push towards the *complex* context, where we have a clearer picture of what we do and do not know, and have a toolbox of decision-making theories and instruments that can be used to identify at least some patterns for decision-making. In this context, we still need to be agile in decision-making, exploiting the benefits of concepts and tools already at hand, as well as the emerging technologies and approaches.

Currently, we are working in a *complex* context, significantly challenged by the rapid development and increasing accessibility of AI, intertwined with the consequences of the pandemic. To respond to the contemporary requirements, educators should be continuously strengthened and motivated to harness the potential of learning design [6],

as a possible universal language, and innovative pedagogies. Meaningful learning design and implementation of future- and learner-oriented teaching and learning practices can be enhanced by the ethical and creative use of AI. Sensible use of AI and minimising the black-box effect require changes in curricula, as well as initial education and continuous professional development of educators [7].

Besides being used as a teaching and learning tool, AI can provide important assistance in decision-making, particularly as an indispensable source of technology, methods and tools for learning analytics. We strive for evidence-based decision-making supported by explainable AI, but this opens up a range of questions. How can we make and implement decisions about learners? How do regulatory frameworks streamline the process of decision-making supported by AI? For example, on the EU level, the new overarching AI regulation places AI systems supporting some kinds of decisions about learners among high-risk AI systems. Such frameworks require adjustments at both national and institutional level, to enable lawful, ethical and meaningful use of AI and learning analytics.

An important area of learning analytics, strongly supported by AI, refers to predictive learning analytics, relying on the development of predictive models. Although predictive modelling has been increasingly used and gaining significance, there are concerns regarding its adequacy in decision-making without human supervision [8]. A need for stronger governance has been identified, as algorithms no longer serve only for informing, but also provide and steer decision-making. As such, it is essential that algorithms are explainable [9], and learning analytics trustworthy. To achieve this trustworthiness, we should take a look through the human-centred lens and consider the perspectives of potential beneficiaries, primarily learners [10]. But above all, we should not trust machines to autonomously make decisions about humans: human-related decisions should be human-made.

Besides being evidence-based and oriented towards hard goals, decision-making should be balanced and fair. This calls for participatory decision-making, which is easily achievable in *complex* and *complicated* domains, because of well-established group decision-making approaches. However, we should consider different perspectives, especially at the higher decision-making (managerial) levels. How can we answer the common situation in education in which men are more involved in managerial decision-making, while a majority of the teaching workforce are women [11]?

Finally, it is crucial that decision-makers are ready to adequately respond to the given *complex* context, being agile, collaborative and relying on relevant expertise and evidence provided by learning analytics [2]. Both educators and decision-makers need future-literacy to be able to imagine possible futures, as well as practical skills to streamline education towards the desired future.

4 Conclusion

The recent developments in AI, with the lessons learnt from the pandemic, and the EdTech legacy, leave us at a new beginning. Besides challenges, we have a valuable opportunity to rethink and streamline education to be more future-looking. It is crucial to innovate decision-making processes as well. We should be aware of the level

of complexity of the context and mindful that opening up and widening participation contributes to the relevance of our decisions and the quality of education. Finally, we should make sure that human-related decisions are made by humans, and not machines.

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