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THE PROMISES AND PITFALLS OF PERSONALISED ELEARNING

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Abstract: *Personalised learning has been around for decades, and never really seems to diminish in its appeal. To educators, its attraction is obvious and logical: we all know that our students learn differently – at different times, different speeds, and respond differently to teaching materials and course resources. To learners, especially where they are part of a larger cohort of students and may become ‘lost’ in the crowd, having a personalised learning experience that is tailored to their individual needs and should help them to reach their specific goals, is very desirable.*

However, the field of personalised learning is not without its challenges. In this talk, we examine what is meant by personalised eLearning, how it is enacted but also the problems inherent to this work. We consider pedagogical, technical and economic issues as well as considering the wider impact, not just on teachers and students but also at an institutional and even governmental level.

Keywords: *Personalised eLearning, pedagogical issues, impact.*

1. INTRODUCTION

Personalised learning is not new. Educators can clearly recognise that students learn in different ways to each other: some prefer a summary of the work, then the detail, and others vice versa. Some claim to prefer visualisations or auditory media over written text (although most people are mostly visual [1]). The concept of learning styles as a personalisation mechanism is still an enduring and appealing notion although they have now been widely discredited by a number of educationalists and learning scientists [2, 3]. Leaving aside any issues relating to special educational needs, or issues such as dyslexia, what we know is that most of us learn best through a variety of different formats [4] and that effective teaching will incorporate a range of strategies to help each individual learner on a case-by-case basis.

However, with a growing number of online learners, it is useful to consider how personalised learning can be translated effectively into an online environment. Now more than ever, schools, colleges and universities across the world are engaging in online learning. There are also large cohorts of students learning on Massive Open Online Courses (MOOCs), Badged Open Courses (BOCs) and through Open Educational Resources (OERs). eLearning is thus likely to be experienced by millions of people over their lifetimes, across a range of formal and informal/non-formal educational settings. In the midst of all these other learners, it is easy to feel lost in the crowd. So how can we provide tailored, personalised learning for every one of

those learners, to help them feel looked after and help them feel motivated to achieve their goals?

2. PERSONALISED ELEARNING: WHAT, WHEN, HOW?

Few frameworks exist that suggest how personalisation can occur in solely eLearning environments, as much published work into personalised learning examines face-to-face settings, particularly in the classroom and with a focus on learners under the age of 18 [5, 6]. However, Martinez [7] gives an example through five different dimensions of how personalisation can occur in online environments. She proposes:

- name recognition;
- self-described personalisation (allowing learners to describe their own preferences and attributes, including through quizzes or questionnaires);
- segmented personalisation (putting learners into groups based on common characteristics such as job title or level of learning);
- cognitive-based personalisation (using information about cognitive processes, strategies and abilities to deliver content aimed at specific learner types); and
- whole-person personalisation (this takes into account many factors including learning orientation and psychological aspects of the learner that feed into a dynamically-updated

learner model, which in turn interacts constantly with the system).

Whilst a welcome first step into describing how learning can be personalised through online experiences, these dimensions are somewhat limited as they mostly just consider the individual rather than the complex and rich environment in which learning takes place. Factors such as peers, teachers, modes of learning, who controls the personalisation and how/when it is done – these are all crucial aspects to consider when designing personalised eLearning.

To overcome these limitations of the work by Martinez, my colleagues and I put together a framework for modelling dimensions of personalisation in eLearning [5]. This was done through careful scrutiny and conceptual analysis of the published literature of personalisation in eLearning throughout in the last decade. Our grounded approach expanded Martinez's model into six dimensions:

- What is being personalised
- The type of learning where personalisation occurs
- What personal characteristics of the learner may be addressed
- Who/what is doing the personalisation
- How is personalisation carried out
- The impact/beneficiaries of the personalisation

These dimensions were formed from the case studies in the literature, and can be used as both an evaluation framework and also a design framework for considering future eLearning experiences. These dimensions are considered next.

What is being personalised

What teaching and learning resources/taught content can be personalised? This can be done by the learner or made more prescriptive by an external body e.g. examination board syllabus etc.

Type of learning

We referred to formal, non-formal and informal education, where there are differences in who is control of the learning and where/how it occurs.

Personal characteristics of the learner

Here we consider what aspects of the learner can be used to provide personalisation towards. Examples include demographic information, existing knowledge/skill level and learner interests/relevance to learner practice.

Who/what is doing the personalisation

For this aspect, it may be automated – the software carrying out the personalisation based on an algorithm – but otherwise this would be teachers, peers or possibly the learner themselves.

How is personalisation carried out

Under this aspect, we refer back to the aspects identified by Martinez [7], in an increasing level of sophistication, including name recognition, cognitive-based and whole-person recognition.

Impact/beneficiaries

A number of beneficiaries need to be considered, from the learners themselves (micro level), through organisations/institutions (meso level) right up to government and policymaker level (macro level). Other key stakeholders may include commercial entities such as software developers, and particularly those companies who provide educational software and platforms. The concept of micro, meso and macro level beneficiaries is further explored in [8].

Examples of how these dimensions have been used to evaluate existing case studies of eLearning, including adaptive assessment, personalised books and learning analytics can be found in [5].

3. THE BENEFITS

'All learning is social' is a well-used phrase within education, and certainly personalised learning is underpinned by important cognitive and socio-constructivist principles [9, 10]. It might also be said that "all learning is personal", as it is critical to consider how personalisation relates to the individual learner, and how it can affect their learning experience.

Studies have shown that personalisation can provide greater learner agency and increased motivation [11], as learners feel that they are being given special treatment to help them learn more effectively, instead of being just part of a large crowd where 'one size fits all'. It can also produce increased ownership in terms of an individual's learning and greater relevance to their everyday activities and goals [12]. In one study, it was found that personalised assessments were regarded as more effective [13]. These benefits can, in turn, lead to improved rates in student satisfaction and retention, both of which are prevailing issues across many universities today [8]. The offer of personalised learning might also help justify any increases in tuition fees, which have been seen across many Higher Education Institutions in the UK in recent years.

However, the notion of personalised eLearning is not without its problems.

4. THE CHALLENGES

There are a number of issues in terms of how personalised eLearning is provided and even why it should be provided in the first place.

Personalised eLearning enables content and resources to be provided in a supposedly 'optimal' way to learners. Whilst this may be a really good way for learners to gain new understanding, particularly for difficult and/or new concepts, the 'real world' isn't like this and will not

necessarily be as accommodating to them throughout life. It is better for learners to be able to develop compensatory skills when provided with material that is not delivered in a particular preferred mode, and indeed a lack of this ability to compensate, may well cause problems for learners further in their educational journey [14].

In addition to this, learning preferences – however they are measured – are not fixed [1] and often change according to the learner’s environment (including physical, technical and socio-cultural aspects). Learners need human-directed input rather than be at the mercy of a software algorithm or an automated process – otherwise we risk de-personalising the learning and losing the valuable social contact (from both peers and teachers) that is key to essential learning [14].

With a growing investment of venture capitalists such as Google and Facebook into personalised learning, there is also the concern that profit will be of greater importance than pedagogy in terms of how these products are designed and offered [14]. However, in order to engage with these products, schools must have supportive staff (at all levels), the necessary budget and an IT infrastructure/network that is capable of supporting such solutions [15]. Personalised eLearning may suggest that individual devices need to be used (e.g. tablet computers) which can drive costs even higher. Even if sufficient devices are available, the software or algorithm used in the platform may ‘lock’ learners in to particular profiles or groupings, rather than dynamically update their profile [2], thus providing taught material that is less suited to the learner as their needs will have changed and they thus require different materials.

Additional costs can also creep in as a result of having to prepare course materials in different ways to accommodate different learner profiles [8]. Cheaper/free Open Educational Resources could be used instead, but these rarely offer personalised learning [15].

Lastly, there is the potential misuse of student data that is used to generate whatever personalisation occurs – who has this data, who has access to it, how is it used? This is becoming an increasing worry, particularly around ownership, ethics, privacy and commercial value of student data [15, 16]. Student dashboards and learning analytics are fast becoming tools not only for positive, but also negative learner engagement [17].

5. THE WIDER IMPACT OF THIS WORK

In the current climate of the global COVID-19 pandemic, many more educational institutions are turning to eLearning as a short – or even long – term solution to enabling the provision of education to its students. The skills and knowledge to be able to teach online effectively are more important than ever, and it is not just first-world countries who are interested in this. A recent Rapid Evidence Review by Major and Francis [18] provides an

overview of existing research on the use of technology to support personalised learning in low- and middle-income countries (LMICs). This report was produced in response to mass school shutdown as a result of COVID-19 and is intended to inform educational decision makers, including donors and those in government and NGOs, about the potential for personalised eLearning in LMICs and to yield meaningful policy implications. Twenty-four studies (across twelve countries) published since 2006 were analysed and the report is structured into four themes, with key findings and recommendations as follows:

- Technology-supported personalised learning appears to offer significant promise to improve learning outcomes, including potentially ‘out-of-class’ and ‘out-of-school’ learning.
- The adaptive nature of technology-supported personalised learning to ‘teach at the right level’ is key as it enables students to learn at their own pace and according to their current proficiency.
- Technology-supported personalised learning may be most beneficial in closing educational gaps for lower attaining students, potentially including those returning to school after an absence.
- Any introduction of personalised learning technology should not be interpreted as decreasing the importance of the teacher, but rather enhancing it.
- Implications for cost and infrastructure are unclear, but using existing hardware solutions is likely to help to reduce costs and increase access.

It is clear from this report that there is great potential for personalised eLearning in LMICs although the authors of that review admit that this work is in its infancy. However, this critical and timely analysis adds to the weight of evidence to support personalised eLearning for school-age learners in LMICs.

6. CONCLUSION

With an ever-growing number of online learners, it is critical to find ways in which learning can be made individual and personalised. This paper has examined the ways in which personalised eLearning can be designed or evaluated, via a framework of six different dimensions. It is clear that personalised eLearning is a contentious field, full of false promises and challenges, many of which have yet to be resolved. However, the potential advantages of personalised learning, when done appropriately, are attractive to a wide variety of stakeholders at different levels, not least of all the learners themselves.

With an ever-growing number of online learners, personalisation looks to be an ongoing concern for many

educationalists in the years to come. Over time, I would hope that the pitfalls relating to this work can be reduced or eliminated, and there will be promises of more effective learning, more satisfied students who are achieving or even exceeding their goals, overseen by knowledgeable and innovative educators who have maybe taken an evidence-based leap into personalised eLearning.

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