Personal Learning Environments: looking back and looking forward

Entornos personales de aprendizaje: mirando hacia atrás y mirando hacia adelante

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Abstract

In this paper I look back at the emergence of the idea of Personal Learning Environments (PLEs) and consider why they have failed to be widely adapted. I say there was a failure to understand the role of technology in the growing commodification and managerialism in education. I point to the links between MOOCs, Open Educational Resources and Open Education and PLEs and to a contradiction between commodification and managerialism, with increasingly standardized curricula and credentials and the flourishing of opportunities for learning especially for adults. I say progress in researching, developing, and implementing PLEs has to be viewed within the context of the wider development of educational technology and of the education and training system as a whole. Indeed, even this may be too narrow a perspective: one ambition for PLEs has been to support learning outside the formal education system and outside the classroom. I look at the growing use of Learning Analytics and Artificial Intelligence in education and consider how this might support PLEs. Finally, I refer to Neil Selwyn's idea of 'Ed-Tech Within Limits' which would foreground the need to plan future education technology use with a primary aim of "coping with finiteness" and "seek to re-establish technology use in education as a shared and communal activity" as a response to the climate crisis. I suggest this could provide a point of reference for us to rethink Personal Learning Environments encompassing the ideas of equity and encompassing both radical pedagogies and the perspectives of previously marginalized interests and non-powerful groups.

Keywords: Personal Learning Environments, PLEs, Open Education, MOOCs, agency in education, equity in education.

Resumen

En este artículo, miro hacia atrás en la aparición de la idea de los entornos de aprendizaje personal (PLE) y considero por qué no han podido ser ampliamente adaptados. Digo que no hubo un fracaso para comprender el papel de la tecnología en la creciente mercantilización y gestión en la educación. Señalo los vínculos entre MOOC, recursos educativos abiertos y educación abierta y ples y una contradicción entre la mercantilización y el gerencialismo, con planes de estudio y credenciales cada vez más estandarizados y el florecimiento de oportunidades de aprendizaje, especialmente para los adultos. Digo que el progreso en la investigación, el desarrollo e implementación de PLEs debe verse en el contexto del desarrollo más amplio de la tecnología educativa y del sistema de educación y capacitación en su conjunto. De hecho, incluso esto puede

ser una perspectiva demasiado estrecha: una ambición para PLEs ha sido apoyar el aprendizaje fuera del sistema educativo formal y fuera del aula. Observo el uso creciente del análisis de aprendizaje y la inteligencia artificial en la educación y considero cómo esto podría apoyar a PLEs. Finalmente, me refiero a la idea de Neil Selwyn de 'ED-Tech dentro de los límites' que en primer plano la necesidad de planificar el uso de tecnología educativa futura con un objetivo principal de "hacer frente a la finura" y "buscar restablecer el uso de la tecnología en la educación como una actividad compartida y comunitaria" como respuesta a la crisis climática. Sugiero que esto podría proporcionar un punto de referencia para repensar entornos de aprendizaje personal que abarca las ideas de equidad y que abarca tanto las pedagogías radicales como las perspectivas de los intereses previamente marginados y los grupos no potentes.

Palabras clave: Entornos de aprendizaje personal, PLE, educación abierta, MOOC, agencia en educación, equidad en educación.

1 Introduction

In the first edition of the European Commission supported online journal, eLearning Papers, I wrote of how the Association of Learning Technology's 2006 conference had been dominated by discussions on how blogs and wikis could be used for learning (Attwell, 2007). And I said there was a buzz around the idea of Personal Learning Environments (PLEs). It had even been suggested that in a few years' time we would no longer need the Virtual Learning Environment. Although there was little clarity on what a Personal Learning Environment was, there was much discussion about what role teachers and institutions would play if learners themselves developed and controlled their own online learning environment.

The promise of Personal Learning Environments was to extend access to educational technology to anyone who wished to organise their own learning (ibid). PLEs could bring together all learning, including informal learning, workplace learning, learning from the home, learning driven by problem solving and learning motivated by personal interest as well as learning through engagement in formal educational programmes.

I defined PLEs as an idea that integrates "pressures and movements" like lifelong learning, informal learning, new approaches to assessment, cognitive tools. Furthermore, I said PLEs were inspired by the success of "sticky" new technologies including ubiquitous computing and social software. "The most compelling argument for the PLE is to develop educational technology which can respond to the way people are using technology for learning and which allows them to themselves shape their own learning spaces, to form and join communities and to create, consume, remix, and share material." (ibid).

As happens all too frequently in the educational technology community, PLEs became the next big thing driven along on a wave of enthusiasm and hype. And as usual with such trends, the hype died down, while the adoption of Virtual Learning Environments continued apace. Yet there continues to be interest in PLEs, perhaps driven by the rise of MOOCs and the

development of open education and by the explosion in the use of online learning in the Covid 19 pandemic.

In this short paper I look back at the debates over PLEs and look forward to how the idea of the PLE may be even more relevant today in supporting ownership, reflection and agency in learners.

2 Looking back – what went wrong?

If there was so much interest in PLEs what went wrong? Firstly, there was a tendency to drift into techno centrism. Whether it was hacking Google personal pages, or attempting to develop complete new PLE learning infrastructures, too much time was spent talking about shiny new tech rather than looking at the pedagogy of how PLEs might be used.

And secondly there was a blind belief in the flowering of Web 2.0 applications. PLEs were essentially seen as decentralized systems, bringing together tools and data from different sources, rather than the institutionally controlled Virtual Learning Environments. The PLE could be built around blogs, RSS readers, book marking software and social networking applications. However, it became rapidly apparent how ephemeral many of these services were: by 2012 many of the Web 2.0 applications adapted so enthusiastically for PLEs had disappeared.

At the same time there were some signs that VLE providers had listened to criticism of their products and at least made minor changes to provide greater autonomy and control for learners.

Above all, there was a failure to understand the direction that education was heading in, and the role that technology would play in this changing scenario. Although with differences in different countries, education was and still is becoming increasingly dominated by commodification and managerialism, and in many cases by moves towards privatization. Students are seen as customers and consumers, rather than learners. Edtech plays an essential role in this development both in promoting the efficient management of institutions and in distributing ‘the product’ to the ‘customer’. With these developments there is little or no interest from institutional management in supporting the autonomy of learners through PLEs. Sadly too, there is little interest from students, who having paid their fees expect to be supplied with ready-made answers. Such a trend is magnified by increasing credentialism in mass higher education systems and by individualization, shifting onto students the responsibility to ensure they are (and stay) employable.

Yet, in 2006, the association between managerialism and control and educational technology had not yet been made. Indeed, it could be argued that educational technology tended to be viewed as a modernizing, liberal and liberating development within an increasingly ossified education system.

One further issue has become evident. Early PLE advocates tended to assume that students would be confident and competent in using technology to develop their own PLEs. Repeated evidence from studies and from PLE workshops and projects have shown this not to be the

case. The UK Jisc say student experiences with technology are very diverse on entry and continue to be diverse even within the same course of study, due to the fact that so much digital practice (especially information seeking and collaboration) is informal and students are used to using apps not applications (JISC, 2009). An effective PLE is a complex application, and many students would appear to need structured support in using a PLE let alone in developing it.

Educational technology is now a multi-billion-dollar industry – involving global technology corporations in local educational provision and practice. There are competing visions for the future of education. Venture capitalists bemoan the 'failure of education' and advocate the use of technology to deliver learning as a (paid for) commodity. This is in stark opposition to the dream of open education – of using technology to remove barriers to learning and open learning to all, whether enrolled on a formal education course or not.

But advocates of PLEs have always been in the open education camp – seeing the PLE as supporting agency for learners and supporting learning in different contexts. While some of the understandings about technology and the affordances of technology may have become more refined this vision has not gone away as we will explore in the next sections of this paper

3 MOOCs and PLEs

In their early days, MOOCs were clearly associated with PLEs. As Wikipedia explains[1], the term MOOC was coined in 2008 by Dave Cormier in response to a course called Connectivism and Connective Knowledge (also known as CCK08). CCK08, which was led by George Siemens and Stephen Downes, consisted of 25 tuition-paying students in Extended Education at the University of Manitoba, as well as over 2200 online students from the general public who paid nothing. Rather than delivering the course through a traditional VLE, learners were encouraged to develop their own PLE. Course content was available through RSS feeds and online students could participate through different collaborative tools, including blog posts, threaded discussions in Moodle and meetings in Second Life.

Approaches such as this became known as cMOOCs, based on principles from connectivist pedagogy indicating that material should be aggregated, remixable, re-purposable, and targeted at future learning. cMOOC instructional design approaches attempt to connect learners to each other to answer questions and collaborate on joint projects. Initiatives such as the well-known DS106 course[2], run by Jim Groom, emphasised the importance of digital story telling.

MOOCs rapidly took off with many universities forming consortia for the design and delivery of courses, as well as private companies such as Udacity providing courses for

[1] https://en.wikipedia.org/wiki/Massive_open_online_course, accessed July 1, 2021

[2] https://ds106.us/, accessed July 1, 2021

thousands of learners. However, many of these took a different pedagogic approach, emphasising standardised, structured courses often based on expert video content and delivered though online platforms little different from traditional VLEs.

What does the development of MOOCs mean for the idea of the PLE? Critically, even with weekly small chunks of learning and instructor-based learning materials, MOOCs are largely dependent on self-motivated and self-directed learning. Furthermore, despite attempts to monetarise MOOCs through charging for certification, most MOOCS remain free. Even while acknowledging the high dropout rates, MOOCS have shown a desire for learning way beyond that which the traditional course-based university system has been able to deliver. Research we have undertaken through the EU funded EmployID project, providing professional development opportunities for workers in Public Employment Services and aiming to support identity transformation, points to the effectiveness of social learning and of learners supporting and facilitating their own learning through social interaction and exchange. Many participants in MOOCs already have a higher education qualification, suggesting that motivation is based either on professional development or simply interest and desire for learning. Significant numbers of participants appear to take part in multiple MOOCs. In so doing they are developing their own learning programme and taking control of their own personal knowledge development, a move I would place as central to the idea of the PLE.

4 Open Education and Open Educational Resources

MOOCs are closely associated with the development of open education and open educational resources. Open education, says Wikipedia, is a collective term to describe institutional practices and programmatic initiatives that broaden access to the learning and training traditionally offered through formal education systems. Much of the initial efforts around open education focused on the removal of barriers to accessing courses, for instance through providing alternative routes to university or recognising prior learning.

Open Educational Resources are resources and learning materials which are open for reuse, usually under a Creative Commons license. Information and Communication Technology offers a means of easily sharing and repurposing materials and resources, as well as of producing multimedia materials.

Since the earlier idea of extended access to education and the development of OERS, the idea of open education has broadened to include open textbooks and open access journals, more recently questioning the meaning of academic practice in terms of openness. These developments reflect a broader debate over both the purpose of education and how knowledge should be developed and shared in the wider society. Education as a public good is in stark contrast to pressures for the commodification of learning. The EU open education web portal stresses the idea of open education as supporting innovation in education and training, particularly in the context of developing the use of technology for learning.

As Wikipedia[3] explains "Open education is motivated by a belief that learners want to exercise agency in their studies. Specifically, people engaged in the learning process want to conduct inquiries about potential topics of study, to have a hands-on educational experience instead of a strictly textbook-focused education, to take responsibility for their educational decisions, to experience the emotional and physical side of education, to understand how education and community are related, and to have personal choice in the focus of their classroom studies."

The use of personal technologies is key in enabling agency and to experiencing learning in different contexts and in different communities. This includes learning from educational institutions but also reflection on practice, sometimes in online Communities of Practice, and accessing a broad range of resources including, for instance, YouTube videos or TED talks. Once more, the emphasis is not on a Personal Learning Environment as embodied in a single application, but in using technologies to achieve personal learning goals. This is linked to a wider idea of digital literacy, described by JISC as "those capabilities which fit an individual for living, learning and working in a digital society." (Jisc, 2014).

Paquette and Miara (2014) outline three sets of foundational values of Open Pedagogy, namely: autonomy and interdependence; freedom and responsibility; democracy and participation. OERs offer a free alternative to high-priced commercial textbooks, but also the open license allows students (and teachers) to contribute to the knowledge commons, not just consume from it, in meaningful and lasting ways.

5 Contradictions

Thus, we see a contradiction. On the one hand education has fallen prey to commodification and managerialism, with increasingly standardized curricula and credentials. Yet at the same time there has been a flourishing of opportunities for learning especially for adults.

This apparent contradiction is reflected in what employers are saying. While, especially in Higher Education driven by the individualistic employability agenda, curricula are constrained to set outcomes, employers, notably in the technology industries, say they want people who are creative, and can work on their own and in a team and with broad digital competence. Digital literacy is defined by Jisc (2014) as "the use of digital tools to undertake academic research, writing and critical thinking; digital professionalism; the use of specialist digital tools and data sets; communicating ideas effectively in a range of media; producing, sharing and critically evaluating information; collaborating in virtual networks; using digital technologies to support reflection and Professional Development Planning; managing digital reputation and showcasing achievements." Being able to manage one's own learning is increasingly seen as a key competence.

Interesting also is the new turn to apprenticeship. Apprenticeship was once seen as an outdated training route for craft workers. Now it is actively being promoted by the European

[3] https://en.wikipedia.org/wiki/Open_education, accessed July 1, 2021

Commission and many Member State governments, leading to the creation of new apprenticeship programmes in countries like Spain which previously did not have one. Particularly popular are apprenticeships in technology-based occupations and higher-level apprenticeships, with programmes often offered through universities.

Apprenticeships are seen as a way of providing training leading to contextualized and situated competence: the ability to apply knowledge to practice. Learning takes place through different organisations and learning venues. Usually there is the requirement for apprentices to provide evidence of their learning and competence, often in the form of a portfolio.

The development of apprenticeship and the requirements for evidencing competence, if not requiring a Personal Learning Environment, are leading in that direction, as are the new demands for creativity, digital competence and the ability to manage learning.

Progress in researching, developing and implementing PLEs has to be viewed within the context of the wider development of educational technology and of the education and training system as a whole. Indeed, even this may be too narrow a perspective: one ambition for PLEs has been to support learning outside the formal education system and outside the classroom.

6 Covid 19 and the move to digital

There are two more things we need to look at in drawing a balance on where we are in 2021 with PLEs. The first is the impact of Covid 19 on teaching and learning and the second (somewhat interlinked) is changes in the use of technology

Covid 19 resulted in an almost overnight move to online teaching, advancing the move to digital education by perhaps five years. It was accompanied by many crash programmes to support teachers, organized internally by institutions, and by associations and organisations such as ALT and JISC in the UK. The jury is still out on how effective and engaging online provision has been, and on what the new normal will look like in education, although it appears likely that some form of blended learning may become the norm, at least in Higher Education. It is important to note though, that the great majority of online provision was not online learning but rather online teaching. Essentially, when faced with a whole new way of engaging with students, teachers did what they knew best, replacing face to face contact with video content for their classes. In this they were facilitated by the vast improvements in video conferencing software in the last three years, notably through ZOOM as well as by Google and Microsoft.

And of course, the prolonged absence from face-to-face attendance at institutions has led to questioning and experimentation (plus often, controversy) regarding assessment. In some countries like the UK, assessment in schools has been through predicted grades for students, based on their previous work, whilst others have turned towards e-assessment of various forms (with AI based proctoring systems also causing some considerable controversy).

Prior to the Covid 19 pandemic, two of the major trends in technology enhanced education were the increasing use of data for Learning Analytics and the emergence and use of Artificial Intelligence in education.

Learning Analytics (LA) has been defined as "the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs." (Siemens, 2013). It can assist in informing decisions in education systems, promote personalized learning and enable adaptive pedagogies and practices (Johnson et al., 2014). Learning Analytics offers considerable potential for the future development of Personal Learning Environments through using learner data to provide feedback, opportunities for reflection and recommendations. However, its value for PLE development has been limited by the way in which it is being used.

Most of the research and practice in LA has been based in Higher Education. Universities and schools have tended to harvest existing data drawn from Virtual Learning Environments and to analyse that data to both predict individual performance and undertake interventions which can, for instance, reduce drop-out rates. The use of VLEs in the community and in the workplace is limited and "collecting traces that learners leave behind" (Duval, 2012) may fail to take cognizance of the multiple modes of formal and informal learning and the importance of key indicators such as collaboration. Key areas such as practice tend to be omitted and in focusing on VLEs, results in a failure to include all the different modes of learning.

Pardo and Siemens (2014) point out that "LA is a moral practice and needs to focus on understanding instead of measuring." In this understanding "learners are central agents and collaborators, learner identity and performance are dynamic variables, learning success and performance is complex and multidimensional, data collection and processing needs to be done with total transparency."

Despite these difficulties, PLEs could be enriched through learners being exposed to their own and other's learning processes and outcomes, potentially allowing for better awareness and tracing of learning, sharing experiences, and scaling informal learning practices (Ley et al., 2015). This can assist learners in monitoring and understanding their own activities and interactions and participation in individual and collaborative learning processes and help them in reflecting on their learning.

More recently the use of AI in education has come under the spotlight. Although according to Jisc "most education institutions in the UK are at the early stages in the maturity model, looking to understand how AI can be used and what its potential is," there are increasingly institutions with embedded AI-driven services.

Nigel Shadbolt has said "AI tools are all around us, and many tools that we use in education and take for granted are built on AI, including search engines, grammar checkers, voice transcription services and so on." (Maghribi, 2021).

Most public attention has been to adaptive learning or intelligent tutor systems, where AI is determining the learning activities for the student, including delivery, and providing feedback – activities that are more often associated with the teacher. The popular and free DuoLingo language learning software is based on adaptive learning (and heavy

gamification); adaptive learning systems work best when the domain knowledge can be very clearly defined and can be learned in a step-by-step way. Other AI based applications include chatbots, AI-assisted marking software, including automated feedback systems, recommender systems and systems for content creation.

There has been some confusion between AI driven personalisation of learning and Personal Learning Environments. They are not the same thing. As David Kernohan (2017) has pointed out the personalisation agenda relies on applications which "can 'adapt' within bounded states to suit individual learner needs – much of what is described as 'Artificial Intelligence' in learning, and indeed many of the models of learning that define Artificial Intelligence research – are cognitivist".

Notwithstanding such concerns and issues over the ethics of AI (which also applies to Learning Analytics) the development of applications like DuoLingo is leading many thousands of people throughout the world to participate in independent learning.

The past ten years have also seen the steady growth of productivity tools (many of them web based) and the increasing use of such tools for teaching and learning. Furthermore, such tools are increasingly integrated. Slack and Zoom are open sourcing their APIs allowing them to be embedded within other online web applications and services. Google and Microsoft have both targeted the educational technology market, with Microsoft Teams now in widespread use. The interesting point about many of these new applications but especially Teams, apart from who own them, is that they bring together different tools in very similar ways to what was advocated for mashup Personal Learning Environments.

7 Looking forward

Despite sometimes being sucked into debates over the merits or otherwise of various technologies, I always maintained that Personal Learning Environments were essentially a social pedagogic approach to using technology for learning. The debate over the future of VLEs was a red herring. VLEs were never a learning environment or even a learning tool: they were designed and adopted for managing learners within an institution. And although we must be concerned at the multinationals taking over technology for learning (in fact they will probably finish off the carcass of the VLEs) neither is this a major barrier to the development of Personal Learning Environments.

PLEs are about teaching and learning, although I think we paid too little attention to teaching in our initial discussions. As Jordi Adell recently tweeted". "...teaching has become increasingly redefined as a technical operation aimed at the effective production of measurable learning outcomes. Such a notion of teaching is not just problematic in terms of the very practice of teaching but has also undermined...teacher agency, teacher identity and teacher professionalism, individually and collectively." (Biesta et al., 2020). Yet it is that agency, identity and professionalism which can support learners in creating, and maintaining their PLEs. We probably underrated how important this was.

We were aware of the need for some form of digital literacy, particularly the ability to use digital tools in developing a PLE, but as Jisc have shown digital literacy is not just an acquired experience due to being young nor is it a mere technical competence. However, we ignored the importance (and difficulty) of managing one's own learning. I increasingly think that the key to this is metacognition.

Metacognition is, put simply, thinking about one's thinking. More precisely, it refers to the processes used to plan, monitor, and assess one's understanding and performance. Metacognition includes a critical awareness of a) one's thinking and learning and b) oneself as a thinker and learner.

Ultimately, metacognition requires students to "externalize mental events" (Bransford et al., 2000), such as what it means to learn, awareness of one's strengths and weaknesses with specific skills or in a given learning context, plan what's required to accomplish a specific learning goal or activity, identifying and correcting errors, and preparing ahead for learning processes.

Today we have a plethora of tools for developing Personal Learning Networks and PLEs, many of them free. Equally we have an abundance of learning resources, including increasing numbers of Open Educational Resources. As long ago as 2011, Martin Weller (Weller, 2011) talked about the role of scarcity in developing higher education practice and pedagogy. The shift to abundant content has as profound implications for education as it has for content industries, he says leading to a pedagogy of abundance. However, Weller goes on to say (ibid) "Abundance does not apply to all aspects of learning, indeed the opposite may be true, for example an individual's attention is not abundant, and is time-limited. The abundance of content puts increasing pressure on this scarce resource, and so finding effective ways of dealing with this may be the key element in any pedagogy.

I had intended to conclude here saying PLEs could be the answer to a problem of abundance. But then I read Neil Selwyn's (2021) provocative paper on edtech in times of environmental crisis. Selwyn argues cogently that "it makes little sense to presume that current assumptions about the continued abundance of digital education resources and technology-driven practices are in any way sustainable. At the same time, it also cannot be presumed that face-to-face schooling and higher education will continue on a wholly uninterrupted basis."

Citing Beck's (2009) notion of non-knowledge and the idea of unknowable futures, he suggests we need to consider "challenging questions for educational technology in the 2020s including "how might alternate approaches to edtech be established that do not presume the continuation of dominant 'Big Tech' industry, global capitalist modes of production, the 'global middle class', or other facets of neoliberal hegemony?" His idea of 'Ed-Tech Within Limits' would foreground the need to plan future education technology use with a primary aim of 'coping with finiteness'" and "seek to re-establish technology use in education as a shared and communal activity."

I suggest this could provide a point of reference for us to rethink Personal Learning Environment encompassing the ideas of equity and encompassing both radical pedagogies and the perspectives of previously marginalized interests and non-powerful groups (Facer, 2019).

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