

## Editorial for the Special Issue on Personal Learning Environments

Guest editor:

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### **Introduction**

Personal Learning Environment (PLE) is an approach in Technology-Enhanced Learning (TEL) based on the principles of learner autonomy, ownership and empowerment. PLEs are integrated, individual environments for learning which include specific technologies, methods, tools, contents, communities and services constituting complex learning infrastructures enhancing new educational practices and at the same time emerging from these new practices. This represents a shift away from the traditional model of technology-enhanced learning based on *knowledge transfer* towards a model based on *knowledge construction*. In PLEs learning happens by drawing connections from a growing and diverse pool of online and offline resources to plan, organise, create, network, engage and reflect in permeable spaces.

The articles presented in this Special Issue are selected best research papers submitted for The Personal Learning Environment Conference 2013, which took place at Beuth University of Applied Sciences in Berlin, Germany together with a parallel event at Monash University in Melbourne, Australia. The PLE Conference - <http://pleconf.org> - is an international, scientific event which intends to create a space for researchers and practitioners in which exchange ideas, case studies and research related to the design, development and implementation of Personal Learning Environments (PLEs). The PLE Conference takes place annually, each time in a different city. The first event was held in Barcelona, Spain in 2010,

the second one in Southampton, UK in 2011, the third one in Aveiro, Portugal in 2012 together with a parallel event and Melbourne, Australia, the fourth one in Berlin and Melbourne and the fifth in 2014 in Tallinn, Estonia, and Kuala Lumpur, Malaysia.

### **Articles in this Special Issue**

The Special Issue includes ten selected articles presenting current research on Personal Learning Environments. All ten articles provide unique perspectives and insights into Personal Learning Environments. The different focal points of the ten articles represent the diversity of gateways used to approach the concept of Personal Learning Environments in specific contexts, including education, work and leisure.

**“Learner Control in Personal Learning Environments: A Cross-Cultural Study”** (pp. 14 - 53), by **Iлона Buchem, Gemma Tur Ferrer** and **Tobias Hölterhof**, describes the results of an international, cross-cultural study exploring the role of ownership and control in Personal Learning Environments and possible differences in perception of control and ownership by higher education students from different national and academic cultures. The study, rooted in the theory of psychological ownership, was conducted in 2013 at three different universities in Germany and Spain. The study is based on the assumption that a *learning environment becomes a Personal Learning Environment when the learner feels the owner and in control of this environment*. The article explores ownership and control in context of ePortfolio practice and provides a contribution to the investigation of the impact of PLE practice on learning. The results of the study indicate that differences in perception of ownership and control may be attributed both to cultural factors and instructional designs. An interesting result of the study is a disjunction between instructional designs aimed at activating students by means of compulsory assignments and students' perception of their learning environments as Personal Learning Environments. The results

of the study indicate that freedom of choice (e.g. objectives, tools), flexibility (e.g. planning) and transparency (e.g. personal data) may positively contribute to the perception of a learning environment as a Personal Learning Environments and may be beneficial to the overall learning effect, including interest-orientation, engagement and creativity. The authors argue that promoting ownership and learner control of the entire learning environment, including its components and processes, should be considered the key element of PLE design and PLE practice.

**“A pedagogy-driven framework for integrating Web 2.0 tools into educational practices and building personal learning environments”** (pp. 54 - 79), by **Ebrahim Rahimi, Jan van den Berg** and **Wim Veen**, proposes a conceptual framework for designing Web 2.0 based PLE activities. The authors adopt a constructivist approach to developing and deploying PLEs and pledge for enhancing *student control to support personal development and learning by building Personal Learning Environments*. The emphasis is on facilitating student control through student-centric instructional approaches. The framework consists of four main elements, i.e. student control model, learning potential of Web 2.0 tools and services, project-based teaching approach, and technology-enhanced learning activities. The framework defines how to design PLE activities by considering the interaction of the three elements - Web 2.0 technologies, student control and teaching practices. The framework aims at providing teachers with opportunities to acquire a deeper understanding and knowledge about students' learning processes as means to improving and enriching own educational practices. The article argues that student control may be best promoted by defining and granting active roles to students in technology-enhanced learning environments as these roles are necessary for developing competencies needed to deal with the challenges of the knowledge society.

**“The problem of Learner Control in Networked Personal Learning**

**Environments”** (pp. 80-111), by **Paul Bouchard**, investigates the notions of *learner agency and learner control in view of networked learning*. The article argues for a need for further research that takes into account the key features of Personal Learning Environments, namely learner control, self-directed learning and the distribution of power in networked-based communication systems. The article emphasises that the very option to initiate and pursue learning is the first area of learner control and it precedes other stages of knowledge building. The author points out that this *conative dimension of learner control* is contingent on psychological and contextual variables such as readiness and incentive. The learning process is considered to be a result of many decisions and choices. Hence, the second area of learner-control is defined as the ability to influence the procedures of the learning process itself. The article argues that in complex networked learning environments, learners must be able to devise ways to reduce own vulnerability as learners and to build the capacity for creative interactions that are necessary for structuring a new understanding of the world. The article provides interesting points of reference for the conceptualisation of a research framework on networked Personal Learning Environments.

**“A concept to bridge Personal Learning Environments: Including a generic bookmarking tool into a social Learning Management Systems”** (pp. 111 - 135), by **Tobias Hoeltherhof** and **Richard Heinen**, investigates the ability to connect learners' Personal Learning Environments by a central, permeable Social Learning Management System (SLMS). The relevance of this conceptual idea is explored within the context of higher education based on the example of social bookmarking tools as elements of PLEs. The concept of *bridging PLEs* is based upon the metaphoric idea of bridges in social network analyses. It refers to interface bridging between bookmarking tools as an element

of the learners' PLE and the institutional SLMS realised as a “social hub”. The article reports on use cases and survey results on the uses of the bookmarking tool “Edutags” as a component of the Social Learning Management System “Online Campus Next Generation” based on Drupal. Connecting multiple tools from different environments is discussed in view of a non-dominant and inconsistent design of an LMS. The article argues for the *design of Learning Management Systems as permeable, social systems including the need of rich metadata enabling personalisation*. The article further discusses theoretical questions concerning the relation between personal and social, institutional and private, as well as consistent and heterogeneous elements of Personal Learning Environments.

**“Interaction and Reflection with Quantified Self and Gamification: an Experimental Study”** (pp. 136– 157) by **Benedikt S. Morschheuser, Verónica Rivera-Pelayo, Athanasios Mazarakis and Valentin Zacharias**, reports on the research conducted to explore the impact of gamification on enhancing motivation of students to use Personal Learning Environments in context of higher education. The research presented was an experiment with the Live-Interest-Meter (LIM), a Quantified Self (QS) application which allows capturing, sharing and visualizing several types of feedback with the aim of improving the learning experience during and after lectures. The results of the experiment indicate that perceived fun induced by gamification design may have positive effects on the motivation to use services such as LIM which may be used by students as elements of their Personal Learning Environments. Based on these results the authors argue that gamification may be an appropriate enabler to engaging learners in using quantified self-approaches as parts of their PLEs for improving their learning experiences.

**“The mobile as an ad hoc PLE: Learning serendipitously in urban contexts”** by **Ruthi Aladjem and Rafi Nachmias** (pp. 157 - 170) reflects on *the potential of mobile*

*devices used in urban contexts for constructing ad hoc PLEs through consolidating discrete learning events into coherent learning experiences.* The starting point is the consideration of the city or urban space as an exploration ground with endless learning opportunities, related to such aspects as local language, history, architecture, art and culture. The authors define PLEs as an approach to the use of technologies including all the different tools used in everyday life for learning. The article reports on the results from a pilot study of informal serendipitous learning events in urban settings mediated by mobile technologies, including location-based applications such as Google Maps, TripAdvisor, Foursquare and Facebook. The research questions focus on the ways in which mobile tools and applications are being used in order to construct knowledge in urban settings. Based on the analysis of learning interactions three specific issues are addressed in the paper. These are *availability* (e.g. information, connectivity), *social interaction* (e.g. social support, sharing opportunities) and *awareness* (e.g. affecting others). The authors argue that these three aspects, i.e. availability, social interaction and awareness, support the construction of ad hoc PLEs by selecting and utilizing dynamic components based upon contextual needs and preferences. The article concludes that mobile devices may encourage learners to explore and utilize opportunities for learning in the city, by fostering serendipitous learning in ad hoc PLEs.

**“An exploratory study of the personal learning environments of security and investigation professionals”** by **Antony E. Ratcliffe** (pp. 171 - 199) describes and discusses how security management and investigation professionals use Personal Learning Environments for work-related learning and continuing professional development. The article is based on an exploratory study with 67 security management and investigation professionals in 17 countries. The results of the study indicate that although these professionals participate in online discussions, access networks and resources, their

collaborative activities in online spaces remain limited for reasons of security, privacy, authenticity of information and employer restriction concerns. The author points out that collaboration in work-based contexts tends to take place in private settings with the more traditional technologies of telephone and e-mail. An interesting result from the study is that security professionals express reluctance and caution when sharing in online spaces, taking on a rather *consumer-oriented approach, acting as consumers rather than creators of information*. It seems that Personal Learning Environments constructed by these professionals (any maybe others as well) lack some of the key characteristics of *participatory environments*. The author argues that the observed consumer-orientation might be to a certain extent attributed to many security professionals being in the early stage of legitimate peripheral participation, which may lead to greater participation as knowledge and comfort in the use of new tools and practices increase. The article concludes with a recommendation for enhanced digital literacy practices and case studies of successful collaborative efforts as a means to encourage other professionals to participate in knowledge sharing as part of their PLEs, connecting PLEs with careers and professional activities.

**“Connected Older Adults: Conceptualising their Digital Participation”** by **Linda De George-Walker** and **Mark A. Tyler** titled (pp. 200 - 214) explores the *experience of the digital divide among older adults*, including such issues as digital anxiety, and proposes a model for conceptualising older adults’ digital participation. The proposed model integrates self-efficacy theory, digital competence and the Personal Learning Environments approach. The aim of the model is to signpost paths towards enhanced digital participation of older adults based on developing *digital self-efficacy*. The authors emphasise the potential of digital technologies for improving opportunities for older adults to socialise, access services and learning, thus improving the quality of life, especially in

relation to health and wellbeing. The authors define PLEs as “*fluid and relational learning contexts in which individuals are both autonomous and interconnected*”, and argue that PLEs offer an opportunity to a more comprehensive conceptualisation of individual and social aspects of digital self-efficacy and digital participation of older adults. The article concludes with some relevant points on current and future research in this area, focusing on examining how digital self-efficacy of older adults (both users and non-users) may be improved by engaging in PLE practice. This includes, among others, an investigation of mastery experiences related to previous success with digital technologies.

**“Innovation, Knowledge and Sustainability with PLEs: An empirical analysis from SAPO Campus school pilots”** by **Carlos Santos, Luis Pedro** and **Fatima Pais** (pp. 215 - 264) reports on the SAPO Campus Schools project developed by the University of Aveiro and SAPO. The project aims at *promoting disruptive innovation in schools* by encouraging openness, collaboration, content production and sharing. The focus is on an empirical study of use cases of SAPO Campus Schools (SCS) platform, a Web 2.0 platform designed for schools (K1 through K12). The design of this platform combines the principle of personalisation, aimed at enabling users to construct their own PLEs, and the principle of institutionalization, aimed at enhancing the commitment of schools to promote the formal and institutional adoption of SCS. The authors argue that combination of these two principles - *institutionalization and personalization* – may help provide learner with the possibility of building and customizing their own PLEs, while at the same time extending the range of learning activities in schools. The article analyses preliminary data gathered from a group of pilot schools that have institutionally adopted SCS. The study builds on the theory of knowledge creation as a process of promoting innovation. The use cases described in the article reveal that platforms such as SCS can act as *catalysts for change by promoting*

*new practices in educational institutions*, such as engaging in open discussions, building learning networks or creating content.

**“Analysis of The Future Professionals' PLEs as Lifelong Learning Basic Skill: Presenting the CAPPLE Project”** by Paz Prendes and Linda Castañeda (pp. 216 - 248), provides an insight into the CAPPLE Project, a research project focused on the exploration and understanding of Personal Learning Environments by future Spanish professionals. This multidisciplinary project focuses on modelling PLEs and creating a tool for analyzing and diagramming PLEs as the next step in PLE research. The research question addressed in this article is related to strategies that students use to organize their PLEs, including strategies induced by formal learning. The description and analysis of the current PLEs of future professionals aims at exploring the contribution of transversal learning to PLE practice with the view of improving the processes of creation, management and enrichment of PLEs. The authors emphasise the need for further discussion on institutional contributions to PLEs both in context of vocational training and formal education.

### **Conclusion and Outlook**

The ten articles included in this Special Issue provide rich and valuable theoretical and empirical insights into Personal Learning Environments. The meta-analysis of the selected ten articles reveals three main issues related to Personal Learning Environments. These issues can be described with the following three keywords: PLE control, PLE diversity and PLE contexts. All three issues are explained in more detail below.

- **PLE control:** The first key issue arising from the papers in this Special Issue is the importance of learner control and a need for a new conceptual framing of learner control and ownership in relation to Personal Learning Environments. The first three articles explicitly address both issues. Both learner control and ownership in

PLEs gain a new dimension when compared to earlier approaches to technology-enhanced learning. Learner control is no longer only about manipulation and customization of pre-defined options but encompasses a range of autonomous decisions starting with the intention and decision to use technologies to learn, through a free choice of services and tools, to the ultimate decision of abandoning or even destroying an own PLE. Also the issue of ownership, especially psychological ownership as described in “Learner Control in Personal Learning Environments: A Cross-Cultural Study,” become crucial when it comes to taking responsibility for learning as well as for a genuine and sustainable engagement in PLE practice. Framing both aspects - control and ownership – seems necessary to guide further PLE design and practice targeted towards the enhancement of autonomy and freedom of choice, especially in formal settings, including schools (e.g. “Innovation, Knowledge and Sustainability with PLEs: An empirical analysis from SAPO Campus school pilots”), higher education (e.g. “Learner Control in Personal Learning Environments: A Cross-Cultural Study”) and vocational training (e.g. “Analysis of The Future Professionals' PLEs as Lifelong Learning Basic Skill: Presenting The CAPPLE Project”). Furthermore, contributions to this special issue indicate that both control and ownership of the learning environment are the key defining characteristics of Personal Learning Environments, revealing what “personal” in PLE may really mean.

- **PLE diversity:** The second issue emerging from the meta-analysis is the diversity of PLE users and the diversity of PLE forms. “Learner Control in Personal Learning Environments: A Cross-Cultural Study” points towards cultural differences when it comes to PLE practice. These differences may be related both

to national and discipline cultures. “An exploratory study of the personal learning environments of security and investigation professionals” and “Connected Older Adults: Conceptualising their Digital Participation” address further dimensions of diversity of PLE users, i.e. age and occupation. While “Connected Older Adults: Conceptualising their Digital Participation” reveals some possible barriers of PLE adoption by older adult learners, such as digital anxiety and lack of digital self-efficacy, “An exploratory study of the personal learning environments of security and investigation professionals” points to some important concerns of professionals engaging in PLE practice in work-based settings, including security, privacy, authenticity of information and employer restrictions, possibly preventing more open and participatory forms of PLE practice. In the current stage of PLE research the diversity of PLE users has not yet been systematically explored and may become an important area of further research, design and development of Personal Learning Environments. Another dimension of PLE diversity are the diverse PLE forms, including ePortfolio-oriented PLEs (“Learner Control in Personal Learning Environments: A Cross-Cultural Study”), bridging PLEs with institutional platforms such as Social Learning Management Systems (“A concept to bridge Personal Learning Environments: Including a generic bookmarking tool into a social Learning Management Systems”), gamified PLEs (“Interaction and Reflection with Quantified Self and Gamification: an Experimental Study”), ad-hoc PLEs mediated by mobile technologies (“The mobile as an ad hoc PLE: Learning serendipitously in urban contexts”) or Web 2.0 based PLEs such as SAPO Campus Schools (“Innovation, Knowledge and Sustainability with PLEs: An empirical analysis from SAPO Campus school pilots”). This diversity shows

yet again that there no single PLE design and that new designs are emerging together with the rise of new media (e.g. mobile media) and new approaches (e.g. gamification).

- **PLE context:** The papers in this issue describe PLE research and practice in various contexts. While higher education context is still dominating, new contexts for PLEs are emerging, for example professional and work-based learning (“An exploratory study of the personal learning environments of security and investigation professionals”), vocational training (“Analysis of The Future Professionals' PLEs as Lifelong Learning Basic Skill: Presenting The CAPPLE Project”), schools (“Innovation, Knowledge and Sustainability with PLEs: An empirical analysis from SAPO Campus school pilots”), informal learning (“Connected Older Adults: Conceptualising their Digital Participation”) or even city as an urban learning context (“The mobile as an ad hoc PLE: Learning serendipitously in urban contexts”). The descriptions of PLE research and practice in these different contexts show that different PLE approaches may be emerging naturally and/or are necessary in terms of design and development depending on the characteristics of the context. Context-sensitive R&D may be another important direction for PLE research. In the future it will become crucial to develop a better understanding of the contextual requirements and facets of PLEs.