International Journal of Multidisciplinary Education and Research– IJMER
Volume 1 : Issue 2 [ISSN 2475-2649]
Publication Date : 30 September, 2014

Mapping of Personalized Learning Environment (PLE) among Malaysian's Secondary School

Che Ku Nuraini Che Ku Mohd[1], Faaizah Shahbodin[2] & Ahmad Naim Che Pee @ Che Hanapi[3]

***Abstract*— Integrating informal and formal learning by using social media in education context of the pedagogical approach is called as Personalized Learning Environment or PLE. This paper reports on the implementation of Personalized Learning Environment (PLE) among Malaysian's secondary school. The purpose of this paper is to highlight (a) Personalized Learning Environment (PLE), (b) Why use PLE, (c) Elements in PLE, (d) Framework in PLE and (e) Issues with PLE. Several surveys were developed to explore the learning needs and goals as well as to construct the vision of PLE implementation. PLE is using a variety of social media in teaching students to become effective self-regulated learners. Besides that, it may help the students acquire basic and complex personal knowledge, management skills such as for creating, managing, and sustaining.**

Keywords*—Personalized Learning Environment; E-Learning; Framework; Social Media

I. Introduction

The use of information and communications technology (ICT) is one of the ways to encourage the process of learning, to support communication in learning settings, to assess learning activities, to manage resources and to create educational materials. Nowadays, electronic learning or E-learning encompasses a wide range of technological applications. Towards Malaysia's vision by 2020, ICT becomes an important agenda of achieving transforming the country from a production- to a knowledge-based economy. During the process of learning, students communicate, negotiate and talk each other to share their achievements [13]. The rapid growth and advancement of technology-based instructional strategies, tools, and courses have facilitated this unbundling of instruction by expanding teachers' and students' access to Web- or software-based learning modes [7]; [23].

Che Ku Nuraini Che Ku Mohd[1],
Faaizah Shahbodin[2] & Ahmad Naim Che Pee @ Che Hanapi[3]
Universiti Teknikal Malaysia Melaka (UTeM)
Malaysia

II. Personalized Learning Environment (PLE)

The learner may need all possible tools and resources during learning process in a user-centered customizable way that aimed by PLE [30]. PLE is not only a social landscape, but it is a personal space which belongs and controlled by the learner. It can connect with other personal spaces for collaborative knowledge creation and effective knowledge sharing. Indeed, traditional learning based on "one size fits all" approach, tends to support only one educational model, because in a typical classroom situation, a teacher often has to deal with several students at the same time [3]. Many researchers suggested that the distinctiveness and differences of each learner must be taken into account in preparing the learning procedures which is to ensure them engage and take responsibility for their own learning [1]; [12];[15]; [18]; [26]; [36]; [39]. PLE is one of the new concepts in designing and developing an online learning which is focusing on individual learning rather than the facilities, resources, instructor and tools. To improve the effectiveness of learning, PLE has also played an active role [37]. PLE also is one of the tools that allows for a learner to engage in a distributed environment consisting of a network of people, services and resources [29].

III. Why use Personalized Learning Environment (PLE)

Students always seek information to address a problem at school, work or to justify a curiosity. They are not only to seek information but also to share information by taking advantage of digital and networked technologies. Since they are active co-producers of content, learners should not be considered as passive information consumers [9]. The integral part of the college experience becomes highly self-motivated, autonomous, and informally in the context of social media [22]; [33];[34]. However, the pedagogical evidence of social media is allowing learners to manage and maintain a learning space that facilitates their own learning activities and connections across time is a place relying on traditional platforms such as course and learning management systems (LMS) [22]; [31];[38].

IV. Elements in Personalized Learning Environment (PLE)

Society is currently immersed in what has come to be known as the social web [24];[10];[32];[4];[5], the most defining traits of which are summarized and defined below [6];

a) Software as a service: online services and applications from the browser, interoperability between services and applications, standards.
b) Making the most of collective intelligence.
c) Everyone is an author who can publish: reading and writing networks, simple and powerful tools (blogs, wikis, photos, videos, podcasts, etc.)
d) Content management: creation and sharing of knowledge, micro-contents, using metadata, syndication, as well as tagging.

All in all, this more socially connected Web allows people to contribute as much as they can consume [2]. Most of the tools and resources available (wikis, blogs, YouTube, social networks, bookmarking, etc.) focus on enabling and promoting user-generated content that can be later distributed through the participation, interaction and collaboration of everyone –hence its "social" label.Several principles can be associated with everything related to the social web [25] a) An attitude against technology such as Web 2.0 has consistently has a strong impact field of knowledge; b) The permanent Beta: the tools and resources are continuously developed, new features are often added, distributing the software as a service rather than a product; c) The right to mix a number of reserved rights: Creative Commons [17] devised a new licensing system for content distribution and use that allows users to share their knowledge without violating privacy rights; d) Emergent: free software which contains mechanisms favoring intrinsic patterns and structures in interactions between individuals; f) hackbility: or the ability to experiment with various data sources, mixing them to create a new product.

V. Framework in Personalized Learning Environment (PLE)

A framework of PLE is shown in Figure 1. The possibility to plug learning components comes from multiple sources into a learner-controlled space. The content comes from the different source example feeds, widgets and media into a single interface. To create entirely different views or uses of the original data, a more complex remixing of different APIs applications is integrated. To define approaches to developing PLEs it requires some attempts. PLE is a collection of all the different tools used in our everyday life for learning, but it is not an application. There are different ways of PLE development [20]. PLEs can be realized as WebTops, desktop applications example PLEX [40] and content management systems.

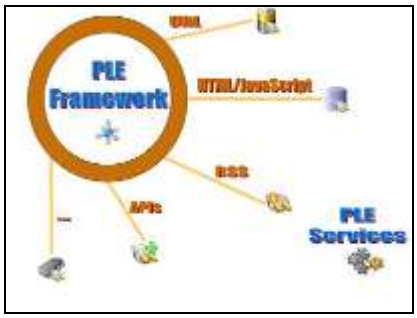

Figure 1. Framework in Personalize Learning Environments (PLE)

PLEs can also exist in an ad-hoc manner such as through blogs. PLE framework should meet the challenges and reflect the PLE characteristics outlined in the previous sections. PLE needs to meet the following attributes:

- **Personalized:** PLE should provide the learner with the ability to determine and use the tools, incorporate a myriad of tools, services and the way that fit to create leaner's own PLE that adapt their situation and needs.
- **Social:** The building of interactive environments should be supported by PLE by offering a means to connect with other personal spaces so that learners can engage in collaborative knowledge creation and knowledge sharing. Some of social features such as social tagging, commenting, and sharing have to be supported.
- **Open:** To ensure communication with other services and interoperability, PLE should be based on open. API should be provided that can be used third-party services.
- **Ubiquitous:** PLE should provide ubiquitous access and flexible delivery PLEs from multiple channels to a wide variety of platforms and mobile devices.
- **Easy to use:** to personalize and manage her PLE with minimum effort, learner should be able to copy-and-paste and drag-and-drop elements. PLE should provide rich experience.

VI. Issues with Personalized Learning Environments (PLE)

The same concepts that students with very little computer related skills can find it difficult to learn in personalized e-learning environments due to the complexity of the components required to personalize systems to their needs [8][27]. Researchers like [11] and [14] have indicated similar views to [16], and have argued that it would be difficult to design course context and structure to facilitate student' s needs with very little ICT skills. In order to deliver course content, activities and services, specific research is required in the area of instructional design; learner centeredness; a wide range of functionalities; and domain experts to support and guide the learning cycle. According to [19] and [28], the problems with these approaches are the complexity of

managing individual environments to compensate the needs of the learners.

However, according to [11] and [14], to compensate for the individual learning experience a more effective learning process must be designed and implemented. This would involve direct interaction at the design stage amongst the learners and the domain experts, which would enable a balance to be developed; however, this identifies areas of support and time, which sometimes the domain expert does not have.

[35] and [8] indicate that the components for adapting to individual needs can be everyday technology, but the problem is associated with how the learning materials are structured which is not feasible to describe all the conditions that are required for determining which part of on-line materials is appropriate for different learner' s needs. According to [8] and [21], learning environments must be flexible enough to support platform dependencies, which can lead to different institutions to use learning materials from other on-line sources.

VII. Conclusion

The model in PLE should represent a shift away, which students gather information through independent channels such as the LMS, textbook, or library instead a model where students draw connections from a growing matrix of resources that they select and organize. PLEs can promote authentic learning by incorporating expert feedback into resources and learning activities. In terms of designing, PLE is creating self-direction and responsibility for learning, organization rests with the learner. Although, it is challenging to learner to reflect on the tools, but resources that will help them learn best where PLE puts students in charge of their own learning processes.

Acknowledgments

This study was sponsored by the Ministry of Higher Education (MOHE). The author wishes to express her gratitude to her supervisor, Assoc. Prof. Dr Faaizah Shahbodin who was abundantly helpful and offered invaluable assistance, support and guidance. I would also like to convey thanks to the Universiti Teknikal Malaysia Melaka (UTeM), Melaka, Malaysia for providing the financial means and laboratory facilities. I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individuals and organizations. I would like to extend my sincere thanks to all of them.

References

[1] A. Aviram, Y. Ronen, S. Somekh, A. Winer, and A. Sarid (2008). Self-regulated personalized learning (SRPL): Developing iClass's pedagogical model. eLearning Papers. 2008, no. 9.

[2] Anderson, F. (2007). What is Web 2.0? Ideas, technologies and Implications for education. JISC Technology and Satandards Watch. Retrieved fromhttp://www.jisc.ac.uk/media/documents/techwatch/tsw0701b.pdf.

[3] Bachari E., El Hassan Abelwahed and Mohammed El Adnani (2011). E-Learning Personalization Based On Dynamic Learners' Preference. International Journal of Computer Science & Information Technology (IJCSIT), Vol 3, No 3, June 2011.

[4] Brown, S. (2010). From VLEs to learning webs: the implications of Web 2.0 for learning and teaching. Interactive Learning Environments, 18 (1), 1–10. doi:10.1080/10494820802158983.

[5] Castañeda, L. (Coord.) (2010). Aprendizaje con redes sociales. Tejidos educativos en los nuevos entornos. Sevilla: Eduforma.

[6] Castaño, C., Maíz, I., Palacio, G., & Villaroel, J. (2008). Prácticas educativas en entornos 2.0. Madrid: Síntesis.

[7] City, E. A. (2010). Will unbundling provide the best education for all? kappanmagazine.org, 92(3), 62–64. Retrieved from http://www.kappanmagazine.org/content/92/3/62.full.pdf+html

[8] Chieu V. M., (2007). 'COFALE: An Authoring System for Supporting Cognitive Flexibility', Sixth IEEE International Conference on Advanced Learning Technologies (ICALT 06), Kerkrade, The Netherlands, 5 – 7 July 2006, pp.335-339.

[9] Dabbagh, N., & Kitsantas, A. (2011). Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning, Internet and Higher Education (2011), doi:10.1016/j.iheduc.2011.06.002.

[10] Downes, S. (2007). Learning Networks in Practice. BECTA. Emerging Technologies for Learning. Retrieved from http://www.downes.ca/files/Learning_Networks_In_Practice.pdf

[11] Dixon J., (2007). MANaged Teaching and Learning Environment – ManTLE JISC Capital Programme [Accessed, July 2006] [On-line] Available:http://www.jisc.ac.uk/media/documents/aboutus/foi/bid5plymouthuniversity1.pdf

[12] Gagné RM, Wager WW, Golas KC, Keller JM (2005). Introduction to Instructional Design (5th ed.). Belmont, CA: Wadsworth, Cengage Learning.

[13] Jianhui Shi & Lihua Liu (2013). Application of a Dynamic Collaborative Learning Oriented Knowledge Model. Proceedings of the 2nd International Symposium on Computer, Communication, Control and Automation (ISCCCA-13). Published by Atlantis Press, Paris, France.

[14] Juhary J., (2005). A Step Towards e-learning: Some Pedagogical Issues International Journal of Pedagogies and Learning 1(1), pp. 48-58. September 2005.

[15] Jung, J. and Graf, S. (2008). An Approach for Personalized Web-based Vocabulary Learning through Word Association Games. SAINT, pp.325-328.

[16] Kabassi K., & Virvou M., (2004). Personalised adult e-training on computer use based on multiple attribute decision making, Interacting with Computers, Volume 16, Issue 1, February 2004, pp. 115-132.

[17] Kapitzke, C., Dezuanni, M., & Iyer, R. (2012). Copyrights and Creative Commons Licensing: Pedagogical Innovation in a Higher Education Media Literacy Classroom. E-Learning and Digital Media, 8(3), 271-282. doi:10.2304/elea.2011.8.3.271.

[18] Kim IS (2009). The Relevance of Multiple Intelligences to CALL Instruction. The Reading Matrix, 9(1): 1-21.

[19] Liber O., Olivier B., & Britian S., (2004). The TOOMOL project: supporting a personalised and conversational approach to learning Computers & Education Volume 34, Issues 3-4, 1 April 2000, Pages 327-333.

[20] Lubensky, R. (2006). The present and future of Personal Learning Environments (PLE). Retrieved April 1, 2010, from http://members.optusnet.com.au/rlubensky/2006/12/presentand-future-of-personallearning.html.

[21] Meccawy M., Stewart C., & Ashman H.,(2007). Adaptive educational hypermedia interoperability and content creation with a web service-based architecture Int. J. Learning Technology, Vol. 3, No. 3, 2007.

[22] McGloughlin, C., & Lee, M. J. W. (2010). Personalised and self regulated learning in the Web 2.0 era: International exemplars of innovative pedagogy using social software. Australasian Journal of Educational Technology, 26(1), 28–43.

[23] Mehta, J., & Spillane, J. (2010). Unbundling: Promises and problems. kappanmagazine.org, 92(3), 48–52. Retrieved from http://www.kappanmagazine.org/content/92/3/48.full. pdf+html.

[24] O'Reilly, T. (2005). What is Web 2.0. Design patterns and business models for the next generation of software. Communications & Strategies, 65, 17-37.

[25] Palomo, R., Ruiz Palmero, J., & Sánchez Rodríguez, J. (2008). Enseñanza con TIC en el siglo XXI. La escuela 2.0. Sevilla: Eduforma.

[26] Retalis S, Paraskeva F, Tzanavari A, Garzotto F (2004). Learning Styles and Instructional Design as Inputs for Adaptive Educational Hypermedia Material Design. Paper presented at the "Information and Communication Technologies in Education" - Fourth Hellenic Conference with International Participation, Athens, Greece.

[27] Rosmalen P. Van., Vogten H., Es R Van., Passier H., Poelmans P., & Koper R.,(2006). -Authoring a full life cycle model in standards-based, adaptive e-learning?, Educational Technology & Society, 9 (1), 72-83.

[28] Santos O. C, & Boticario J. G., (2006). Open and Accessible Training Current Developments in Technology-Assisted Education (2006) . [Accessed, January 2008] [On-line] Available: http://adenu.ia.uned.es/adenu/papers/micte06-faa-ocsjgb.pdf

[29] S.bDownes. (2006). Learning Networks and Connective Knowledge.Discussion Paper. Instructional Technology Forum, 2006. Available at: http://it.coe.uga.edu/itforum/paper92/paper92.html [Accessed on 7 November 2012].

[30] Schaffert, S. & Kalz, M., (2009). Persoenliche Lernumgebungen: Grundlagen, Moeglichkeiten und Herausforderungen einesneuen Konzepts. In K. Wilbers & A. Hohenstein (eds.), Handbuch E-Learning. Expertenwissen aus Wissenschaft und Praxis.

[31] Selwyn, N. (2007). Web 2.0 applications as alternative environments for informal learning - A critical review. OECD *CERIKERIS International expert meeting in ICT and educational performance*. Jeju Island, South Korea; Organization for Economic Cooperation and Development.

[32] Selwyn, N., & Gouseti, A. (2009). Schools and web 2.0: a critical perspective. Educatio Siglo XXI, 27(2), 147-165.

[33] Smith, S. D., Salaway, G., & Caruso, J. B. (2009). The ECAR study of undergraduate students and information technology, 2009. : EDUCAUSE Center for Applied Research (ECAR) Available from http://www.educause.edu/ecar

[34] Solomon, G., & Schrum, L. (2007). Web 2.0: New tools, new schools. Washington DC: International Society for Technology in Education.

[35] Thyagharajan K.K., & Nayak R., (2007).Adaptive Content Creation forPersonalized e-learning Using Web Service Journal of Applied Sciences Research,3(9):828-836,2007, INSInet Publication vices.

[36] Trinidad S (2003). Working with Technology-rich Learning Environments: Strategies for Success. In M. S. Khine and D. Fisher (Eds.), Technology-Rich Learning Environments: A future Perspective. Singapore: World Scientific Publishing, pp. 97-113.

[37] X. Gu and X. Li, (2009). A Conceptual Model of Personal Learning Environment Based On Shanghai Lifelong Learning System. Proceedings of the 17th International Conference on Computers in Education [CDROM]. Hong Kong: Asia-Pacific Society for Computers in Education, 2009, pp.885.

[38] Valjataga, T., Pata, K., & Tammets, K. (2011).Considering students' perspective on personal and distributed learning environments. In M.J.W. Lee, & C. McLoughlin (Eds.), Web 2.0-based e-learning; *Applying social informatics for tertiary teaching* (pp.85-107). Hershey,PA: IGI Global.

[39] Weber K, Martin MM, Cayanus JL (2005). Student interest: A two-study re-examination of the concept. Commun. Q., 53(1): 71-86.

[40] Wilson, S., Liber, O., Johnson, M., Beauvoir, P.,Sharples, P., & Milligan, C. (2007). Personal learning environments: Challenging the dominant design of educational systems. Journal of e-Learning and Knowledge Society, 3(2), 27-38.

About Author (s):

Author 1 is Che Ku Nuraini Che Ku Mohd, PhD student attached at Universiti Teknikal Malaysia Melaka (UTeM), Melaka, Malaysia. She received her Degree in Computer Science (Interactive Media) in 2008 and a Master of Science in Information and Communication Technology (Multimedia) in 2011. Her interests are primarily on Multimedia Applications, Problem Based Learning (PBL), User Interface Design, Human Computer Interaction and Personalized Learning Environment (PLE).

Author 2 is Faaizah Shahbodin cum main supervisor for author 1. She received her Degree in Computer Science in 1994 from Universiti Utara Malaysia (UUM), and Master in Computer Science in 1997 from Queensland University of Technology (QUT), Brisbane, Australia. She was a researcher, and a project supervisor for several interests are primarily on computers in education projects in UNIMAS, Kolej Latihan Telekom (Kolej Multimedia), and UTeM for 15 years. She completed her Ph.D in Multimedia Education Systems at University Kebangsaan Malaysia (UKM). Her research Problem Based Learning, Multimedia Applications, Creative Contents and User Interface Design.

Author 3 is Ahmad Naim Che Pee @ Che Hanapi. He is currently a Senior Lecturer and Head of the Interactive Media Department in the Faculty of Information and Communication Technology, UTeM. He earned a PhD from The University of Nottingham in 2011, United Kingdom specializing on computer games technology. He joined UTeM in 2003 where he has taught numerous subjects related to Computer Science at both undergraduates and post-graduate levels. He supervises dissertations and theses in the area of Game-based Learning; Games and Multimedia Technology; Mobile Computing; Animation Techniques as well as Web-Based Applications. While he is primarily a Computer Games researcher, his work tends to have a strong inter-disciplinary focus. His current research has two broad area: developing methods to support collaborative learning using computer games as a tool; apply theories and experimental techniques to provide a better understanding of how computer games able to assist people with disabilities. His other interest involves the use of innovative green technology and renewable energy methods to create environment friendly products.