Personalized Learning Environment (PLE) Integration in the 21st Century Classroom

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Abstract: **In the fast changing world of the early 21st century education is also changing. The use of ICT in education lends itself to more student-centred learning settings. Given this changing landscape of teacher education, the purpose of this paper is to explore new educational approaches to enhance teachers' ICT capabilities in the 21st century learning environment. The literature indicates that a brief explanation of 21st century education about roles of (i) Student, (ii) Teacher, (iii) Curriculum, (iv) Classroom and (v) Information and Communication of Technology (ICT). The new approach in education nowadays introduced, which is Personalized Learning Environment (PLE). PLE enables learners to organize their learning, provides the freedom to choose content, and allows communication and collaboration with others easily. In conclusion, the paper concludes with recommendations for continued improvements in 21st century education in order to ensure the opportunities of higher education remain open to as many students as possible.**

Keywords: Education, Information Literacy, 21st century, Technology, ICT**.**

I. Introduction

New technologies have significantly entered our lives and online services offer the opportunity for sustainable regional development. Electronic services offered by the new Information and Communication Technologies (ICT's), have proved an important tool in efforts to disseminate e-learning in modern education [18]. Given advancements in web technology, global agencies, organizations, and publishers began proposing and promoting the use of standards for representing E-Learning content associated with E-Learning systems or educational content [27]. E-learners can metaphorically be considered as 'organisms' in a virtual learning environment. Their navigational behavior can be construed as movement directed by some factors to enable them to achieve the learning goals [44]. The internet had great

impact on E-learning due to the fact that it is an effective and economical medium for making information available to dispread individuals [31]. The general aim of E-learning platforms is to provide information and practical opportunities for students in order to help them to increase their knowledge and skills on a particular topic [21]. The world is changing rapidly in a lot of ways, but the dominant change is in ICT. Knowledge of ICT is very important, especially for teachers and students because without a good knowledge, it will be a constraint in implementing information literacy in teaching and learning [35].

ICT can help deepen students' content knowledge, engage them in constructing their own knowledge, and support the development of complex thinking skills [24]; [25];[40]. The various kinds of ICT products available and having relevance to education, such as teleconferencing, email, audio conferencing, television lessons, radio broadcasts, interactive radio counselling, interactive voice response system, audio cassettes and CD ROMs, etc. have been used in education for different purposes [38]; [37]; [3]. The ability to manage and deliver online courses has become an important aspect of the learning models, and this importance has created a tremendous dependency upon E-learning systems as educators strive to deliver quality education to their learners [31].

According to McLoughlin and Lee [20], digital-age students want an active learning experience that is social, participatory and supported by rich media. Despite attempts by institutions of higher education to harness technology to facilitate learning through online courses, college students more frequently drop out of online courses than they do traditional, face-to-face courses [13]. The concept and application of E-learning has become progressively more prevalent in educational settings ranging from modern postsecondary institutions to the smallest and most remote

rural schools; as well, E-learning systems now have an integral role in many educational organizations [31].

The emergence of ICT has made it possible for teachers and students to collaborate with each other in diverse ways [29]. Today, the dimension emphasized in the definition of the concept of education is the process of assisting students in acquiring the skills to access and use information more than conveying the knowledge from teacher to student. This traditional method not only fails to meet the needs of modern society, but also excludes, or at least neglects adult education which is emphasized in the informal training process, but excluded at the definition level should be expanded to include lifelong and unlimited education [2]. Today, it is vital to design different materials in different teaching environments and to use them for different purposes.

II. Personalized Learning Environment (PLE)

Many techniques have been applied in e-learning application in order to predict the learning route based on the learning knowledge behavior [30]. This technology-based learning technique means, among several things, accessing through the Internet short training modules that cover specific topics available as self-study [11]. PLEs appeared as a new construct in the e-learning literature which finds its support of social media and steadily gains ground in the e-learning field as an effective platform for student learning [8]. PLE is not only a social landscape, but it is a personal space which belongs and controlled by the learner [5]. According to the concept of a "social hub", the social learning management system of the study program focuses on connecting students' PLEs [16]. As instructors and instructional designers move towards personalized learning with the hopes of increasing learner motivation and ultimately learner achieving, research on best practices for using technology to successfully accomplish this must be explored because in its current state, the research in these areas is limited [9].

They are not only to seek information but also to share information by taking advantage of digital and networked technologies [6]. In opposition to obsolete learning theories and concepts, modern and learner centered concepts and approaches such as Personalized Learning Environments (PLE) and Connectivism have emerged [28]. The increase of personal computing technologies, primarily, Web 2.0 technologies have made it easier for learners to create their own learning systems [19]. However, if students are not clear with their learning goals and are uncertain how to appropriate, relevant technologies to achieve these goals, an effective PLE would not occur at all [6]. PLE uses many content sources, applications and tools for qualified learning. In fact, PLE is often used in our online lives unintentionally. People may use PLEs for formal and informal learning, sharing, communicating and collaborating with others. Social networks, bookmarks, start pages, blogs and etc. All can be considered components of PLE. Furthermore, PLE is useful for:
 • Socializing with other learners
• Customizable content
• Different, easy and interactive way for learning

The personalized E-learning system helps teacher to save a lot of time for learning and helps the teacher to examine the learning progress of students [30]. PLEs need on the one hand to focus on technical issues, regarding information exchange between services and user interface problems [41]. The online environment is one application that has been important for the development of connectivism. PLE is based on a connectivism and design with connectivist principles. PLEs and Connectivism share to some common traits. Common principles of connectivist learning and PLEs are:
• Diversity
• Autonomy,
• Interaction/Connectedness
• Openness

A. SymbalooEDU the Personal Learning Environment Platform

SymbalooEDU is created in 2010. It is an educational version of the original Symbaloo application founded in Holland in March 2007. It is a software application that enables learners to organize, integrate and share online content in one setting or Personal Learning Environment (PLE). The platform also allows educators to create mixes of tailored resources and share these mixes with students. Once the websites are shared, students can integrate them into their own SymbalooEDU PLE, where they are free to use, add and share content with their peers and tutors. SymbalooEDU works by enabling users to simply construct customizable tiles which are linked to URLs of online resources. Once the user has created a grid of tiles or web mix, it can be shared with others via email. Figure 1 shows the SymbalooEDU environment.
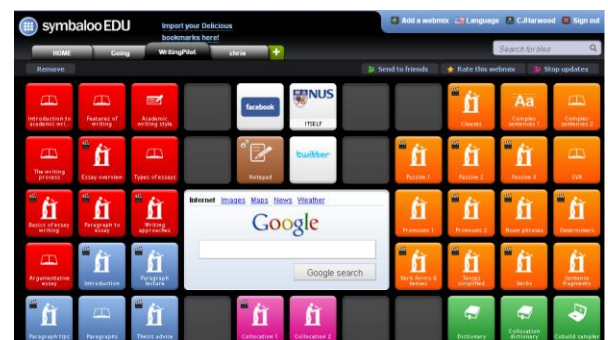

Figure 1. SymbalooEDU Environment

B. Liferay Portal Community Edition, (www.liferay.com)

Liferay Portal was created in 2000 and boasts a rich open source heritage that offers organizations a level of innovation and flexibility unrivalled in the industry. The main objective of the portal is to enable live discussions with native speakers and personal practice at transition between jobs, thanks to the integration in the PLE of tools that can exchange data, such as online dictionaries, pronunciation, microblogging, video conferencing, multimedia and discussion tools. In a political context where social sites are often blocked, a PLE in which services can easily be replaced by equivalent non-blocked ones is essential. The integration with mobile phones is also important as part of the activities is carried out at a distance.

Figure 2 shows the Screenshot of the PLE used in a French as a second language class at the Shanghai Jiao Tong University.
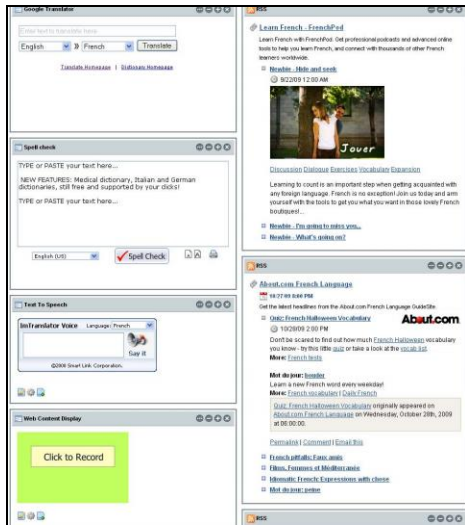

Figure 2. Screenshot of the PLE used in a French as a second language class at the Shanghai Jiao Tong University

C. The Hybrid Institutional-Personal Learning Environment (HIPLE)

HIPLE context is an online course on e-Government. It is introduced by Peña-López, I. [32]. There are three characters in HIPLE. There is a character (ONcampus) which is a student that, for unspecified reasons, just wants to access the virtual campus to study and that everything that happens on the campus remains unknown for the outer world. There is a second character (ictlogist) that is also a student and uses several Web 2.0 tools for learning (call it a Personal Learning Environment or PLE), amongst them Twitter, and just does not want to use *two* nanoblogging tools, one on-campus and another one off-campus. A third character (OFFcampus) is a professional working on eGovernment such as use Twitter to interact with other people on the field. Figure 3 shows the screenshot of The Hybrid Institutional-Personal Learning Environment (HIPLE). Basically, there are two conversations:

- Inside the campus, a closed conversation that neither benefits from "outside" conversations nor contributes to them. Including the student remaining unknown to other people on the field.
- Outside campus, an open, but not-permeating-the-campus conversation and that forces some people attend *two* conversations on the same field, mostly with different people but similar purposes.
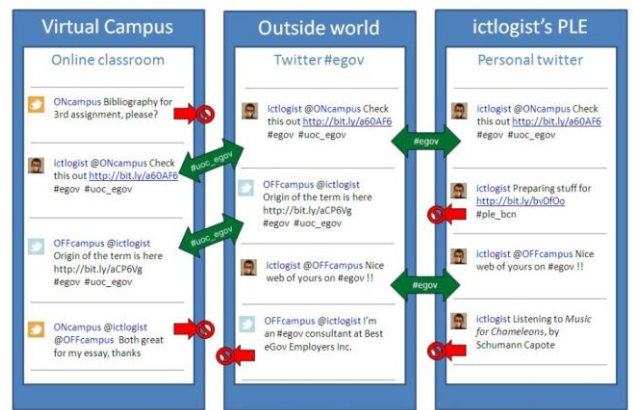

Figure 3. Screenshot The Hybrid Institutional-Personal Learning Environment (HIPLE)

D. The PLExus Prototype

PLExus prototype is created by Kolås and Staupe [45]. PLExus provides a student interface allowing customized views of learning objects and learning activities based on pedagogical method, media type, learning objective type, proficiency stage etc. In a pedagogical-based PLE like PLExus the student is able to customize the learning environment. This requires that Learning objects (LO) and Learning activities (LA) are saved and retrieved in such a manner that one student could reach the learning objective through a presentation, while other students reach the same learning objective through example discovery, demonstration or collaboration [15]. Figure 4 shows the conceptual model of PLExus. The conceptual model is built around the use of topic maps, since the topic maps are suitable as the core of a powerful PLE with information administration, search and navigation as important components.
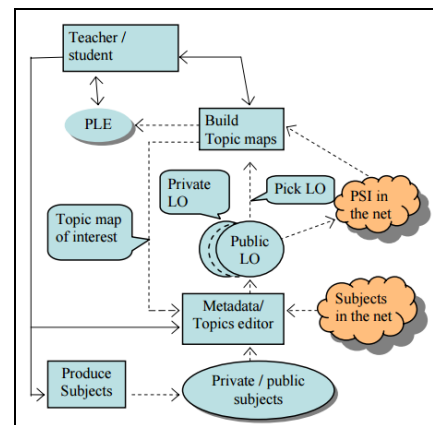

Figure 4. The conceptual model of PLExus

III. 21st Century of Education in Malaysia Context

The term "21st century" has become an integral part of educational thinking and planning for the future. However, despite learning about the skills that students will need to

develop to become successful in the 21st century, as well as what beliefs about education may be worth hanging onto or throwing away, schools and teachers are left trying to figure out what their role needs to be in the education of their 21st century students. In the 21st century, teachers have to develop their systematic thinking by coordinating the various components for creating new learning environments which are included curriculum, content, students, teaching and assessment methods, and technology [17]. In this context, education systems, besides constantly developing to meet the needs of the current era, have been obliged to focus on the future and to go beyond the needs of the current era.

Malaysian students are below par when compared with their contemporaries in other countries, acknowledged Education Minister II Datuk Seri Idris Jusoh. Although literacy rates were rising in Malaysia, it was vital to assess and compare the Malaysian education system against international standards. During the 18th Malaysian Education Summit, literacy rates are raised in Malaysia, it is vital to assess and compare our education system against the international standards. Out of 74 countries, Malaysia ranked in the bottom third in the Programme for International Student Assessment (PISA) 2009+. This is below the international and OECD (Organisation for Economic Co-operation and Development), [22].

Idris stated that the need for the Education Blueprint is justified in the context of raising international standards, the government aspiration of better preparing Malaysian children for the needs of the 21st century, increased public and parental expectations of education policy. The Higher Education Blueprint will also be introduced in order to ensure consistency with the primary and secondary education system, and allow for seamless progression in terms of educational offerings, opportunities and advancement. The Higher Education Blueprint will address challenges such as empowering university governance, democratizing to higher education and improving graduate employability. Malaysia Education Blueprint (MEB) has offered a vision of the education system and students' aspirations that Malaysia both needed and deserved and outlined eleven strategic and operation shifts that would be required to achieve that vision.

Education is a key area that is crucial towards achieving the country's aspirations of becoming a high-income, knowledge-based nation by 2020. There is no doubt that new educational technologies are always charged with exciting pedagogical properties and there is an understanding of the type of knowledge learners ideally need to develop in the 21st century. Realizing the future that we want for our national education, the Ministry has introduced 11 shifts to transform our education system. These shifts include introducing new initiatives and strengthening existing ones. Each shift complements and supports the 5 aspirations of the Education Blueprint, which are access, quality, equity, unity and efficiency.

A. Student

The focus of student learning in this classroom is different. The focus is no longer on learning by memorizing and recalling information, but on learning how to learn. Now, students use the information they have learned and demonstrate their mastery of the content in the projects they work on. Students learn how to ask the right questions, how to conduct an appropriate investigation, how to find answers, and how to use information. The emphasis in this classroom is on creating lifelong learners. With this goal in mind, students move beyond the student role to learn through real world experiences.

Teachers will use a variety of performance-based assessments to evaluate student learning. Tests that measure a student's ability to memorize and to recall facts are no longer the sole means of assessing student learning. Instead, teachers use student projects, presentations, and other performance-based assessments to determine students' achievement and their individual needs. The goal of the 21st Century is to prepare students to become productive. As lifelong learners, they are active participants in their own learning. They seek out professional development that helps them to improve both student learning and their own performance.

B. Teacher

Teaching in the 21st century has to require an emphasis on understanding how to use information technologies. Teachers need to instruct students on computer usage, legitimate methods of Internet research, and how identify useful information. Additionally, this focus on technology can open up a world of new resources to support traditional teaching methods, such as the incorporation of software programs in the classroom. The new approaches, such as focusing on thinking skills rather than technical skills, and providing various contexts different from ordinary classroom lessons, help teachers to develop adaptive expertise [17].

Teachers are no longer teaching in isolation. The teacher, the school, and textbook companies can individualize instruction for the different types of learners [6]. The teachers also have been equipped to face the challenges and complexities of the teaching and learning in the 21st century; and what directions should be taken to better prepare the new generation of teachers [17]. They now co-teach, team teach, and collaborate with other department members. Teachers know that they must engage their students in learning and provide effective instruction using a variety of instructional methods as well as technologies. To do this, teachers keep abreast of what is happening in the field. As lifelong learners, they are active participants in their own learning. The new direction of ICT education for teachers lies primarily in the development of a set of adaptive and transferable knowledge and skills, so that teachers are better able to adapt to the challenging and complex nature of future learning environments [17]. However, effective school reform begins by taking existing practice as a way of tapping into what motivates teachers as a starting point for change [12].

C. Curriculum

The curriculum must become more relevant to what students will experience in the 21st Century workplace. To develop intentional learners, the curriculum must go beyond helping students gain knowledge for knowledge's sake to engaging students in the construction of knowledge for the sake of addressing the challenges faced by a complex and global society. Teachers today are stressed by the current state of affairs in education, and many feel that they do not have the time to design and deliver a 21st century curriculum. They feel pressured to teach to the test, putting their students and themselves through a regimen of memorizing huge amounts of facts so that they can pass their standardized tests.

According to the Ulriksen's concept, 'implied student' to be a useful one because it allows us to acknowledge that we make many assumptions about students, what they will be like, what they will know, how they will learn and how they will interact [42]. Different programme structures and modes of study are associated with different understandings of the implied student and we base important decisions about curriculum upon those assumptions. Students are expected to draw on various knowledge bases, integrate them, conduct increasingly more sophisticated analyses as they progress through college, and use their integrated knowledge to solve complex problems.

D. Classroom

In the 21st century classroom, teachers are facilitators of student learning and creators of productive classroom environments, in which students can develop the skills they might need at present or in future. An interactive teacher is by definition one that is fully aware of the group dynamics of a classroom. As Dörnyei and Murphey [10], explained, the success of classroom learning is very much dependent on:
- How students relate to each other and their teacher
- What the classroom environment is
- How effectively students cooperate and communicate with each other
- The roles not only the teacher plays, but the learners engage in

According to Harmer, J. [14], the term 'facilitator' is used by many authors to describe a particular kind of teacher, one who is democratic (where the teacher shares some of the leadership with the students) rather than autocratic (where the teacher is in control of everything that goes on in the classroom), and one who fosters learner autonomy (where students not only learn on their own, but also take responsibility for that learning) through the use of group and pair work and by acting as more of a resource than a transmitter of knowledge.

E. Information, Media & Information Communication & Technology (ICT) Literacy

E-learning may therefore be a tool for direct transmission of knowledge, without spatial limitations, knowledge that is needed to formulate the philosophy towards all crises which follow one another in the early 21st century [18]. Information technology is undergoing a technological revolution that is very fast. This is because the technology has become a media medium to deliver information and communication, especially in teaching and learning in this cyber era. Programs that are largely ICT skill-based are unlikely to prepare pre-service teachers to learn how to deal with the problem of complexity-making intimate connections amongst content, pedagogy, and technology [36]. If the student refuses and did not follow any course on information technology, they are not likely to know how to use the latest information technology tools [35]. The nature of technologies for teaching and learning has become increasingly social, collective, and multi-modal since the emergence and rapid adoption of Web 2.0 and cloud technologies [17]. At the same time, technology transfers some responsibility for learning for students [5]. Al-Khasawneh et al. [1], reported that the use of the internet has contributed to education, such as providing the opportunity to improve quality and provide the opportunity to study in a broader context. According to Peters [33], noted that the progress of the internet has brought positive changes to the way teachers teach, students learn and communicate. Internet revolution does not only find information globally, it even forges closer ties between human to communicate.

However, any expectation that teachers would or could change to constructivist practices is problematic because it was based much less on evidence than on wishful thinking and speculation [39]; [43]. Many factors simultaneously influence teaching practice, which means that predicting change in this practice can never be a completely certain affair. ICTs have been in schools for a number of years, and teachers' lack of constructivist practices with ICT can now also be interpreted as a disconnection between the theoretical conceptualizations of how ICT should be used in schools, and the day-to-day reality of teaching with ICT [7]. Livingstone [26], states in the application of ICT in teaching and learning, knowledge and skills are of key importance. This is because without the knowledge and techniques in the search of information resources, information literacy cannot be applied in teaching and learning. Educators and students have to turn to ICT, particularly the internet to enable them to become independent thinkers and effective decision makers [46].

IV. Impact on Education in Malaysia

Primary and secondary school education standards in Malaysia need to improve, particularly so in bridging the gap between urban and rural areas. This is to ensure that access comes together with quality education of international standards. The challenge was producing knowledgeable, competent and globally competitive human capital. The solution to this is the Malaysia Education Blueprint (MEB) 2012-2025, which was launched as well as the soon to be released National Education Blueprint for Higher Education 2015-2025 (Higher Education Blueprint).

Malaysia has consistently demonstrates high levels of expenditure on education. This has resulted in almost universal access to primary education, and significant improvements in access to secondary education. However, the current review has shown that we need to invest on factors that have the highest impact on student outcomes. The rapid

penetration of increasingly sophisticated technologies into every facet of society is causing significant shifts in how, when, and where we work, how individuals, companies, and even nations understand and organize themselves, and how educational systems should be structured to prepare students effectively for life in the 21st century [23].

V. Conclusion

The new role of the teacher in the 21st Century classroom requires changes in teachers' knowledge and classroom behaviors. If students are to be productive members of the 21st Century workplace, they must move beyond the skills of the 20th Century and master those of the 21st Century. Teachers are entrusted with mastering these skills as well and with modeling these skills in the classroom. The characteristics of the 21st Century classroom will be very different from those in the classrooms of the past because the focus is on producing students who are highly productive, effective communicators, inventive thinkers, and masters of technology.

It would most likely require a shift in emphasis within the syllabus, from specific content knowledge towards non-cognitive outcomes, values and citizenship education, as well as a strong emphasis on informal learning [47]. Professional development in support of these constructivist practices would also need to allow for the depth and complexity of teachers' commitment to their current approaches to teaching.

Acknowledgments

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