THE MILLENIAL LEARNERS' PERSPECTIVES OF THE WEB 2.0 UTILIZATION TO PROMOTE PERSONAL LEARNING ENVIRONMENT : REVISITING THE VYGOTSKY'S ZONE OF PROXIMAL DEVELOPMENT

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DISSERTATION

THE MILLENNIAL LEARNERS' PERSPECTIVES

ON WEB 2.0 UTILIZATION

TO PROMOTE PERSONAL LEARNING ENVIRONMENT:

REVISITING VYGOTSKY'S ZONE OF PROXIMAL DEVELOPMENT

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ABSTRACT

SITI HAJAR LAREKENG. *The Millennial Learners' Perspectives of the Web 2.0 Utilization to Promote Personal Learning Environment : Revisiting The Vygotsky's Zone of Proximal Development* (Supervised by: Abdul Hakim Yassi, Muhammad Nadjib, and Ria Rosdiana Jubhari)

This study focuses on how Web 2.0 usage patterns of millennial learners can promote the personal learning environment. This study also explores how the Vygotsky's Zone of Proximal Development and Web 2.0 technology are integrated in transforming pedagogies in the digital age.

The respondents of this study were 100 of 143 learners of Muhammadiyah University in Parepare. This study employed survey research design that consisted of questionnaire and interview. The first stage was giving questionnaire to find out what millennial learners were doing with respect to Web 2.0 utilization in learning environments. Stage two of the study, the interview, was designed to provide deeper insights into learners' perceptions of the Web 2.0 experience.

The study concludes that Web 2.0 technologies such as Edmodo and Google Classroom can be used for promoting PLE in English Education of UM Parepare. Of greatest importance, the novelty of this study is its contribution to Vygotsky's ZPD theory, which is previously known as more knowledgeable (MKO) and scaffolding, particularly in this digital era called social networking.

Keywords : millennial learners, Web 2.0 technologies, personal learning environment, Zone of Proximal Development

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ABSTRAK

SITI HAJAR LAREKENG. *Perspektif Pembelajar Milenial tentang Pemanfaatan Web 2.0 dalam Mendukung Lingkungan Belajar Individu: Menguji Efektifitas Teori Zone of Proximal Development oleh Vygotsky* (dibimbing oleh Abdul Hakim Yassi,Muhammad Nadjib dan Ria Rosdiana Jubhari).

Penelitian ini bertujuan (1) mengetahui pola penggunaan web 2.0 oleh pembelajar milenial dapat mendukung lingkungan belajar individu dan (2 mengeksplorasi teori *Zone of Proximal Development* (ZPD) dari *Vygotsky* dan teknologi web 2.0 terintegrasi dengan transformasi pengajaran di era digital.

Penelitian ini memilih sampel 100 orang dari 143 mahasiswa Program Studi Pendidikan Bahasa Inggris Universitas Muhammadiyah Parepare. Desain penelitian yang digunakan adalah survey yang terdiri atas angket dan wawancara. Tahap pertama adalah memberikan angket untuk mengetahui aktivitas yang dilakukan oleh para pembelajar milenial terkait pemanfaatan web 2.0 di lingkungan belajar. Tahap kedua adalah melakukan wawancara, yang dirancang untuk memberikan wawasan yang lebih mendalam terkait persepsi peserta didik tentang pengalaman mereka menggunakan web 2,0.

Hasil penelitian menunjukkan bahwa metode web 2.0 yakni *Edmodo* dan *Google Classroom* dapat digunakan untuk mendukung lingkungan belajar individu pada Program Studi Pendidikan Bahasa Inggris Universitas Muhammadiyah Parepare. Penelitian ini berkontribusi terhadap teori ZPD yang sebelumnya terdiri atas dua elemen yaitu, MKO dan *scaffolding*, khususnya pada era digital ditambahkan satu elemen, yakni jaringan social.

Kata kunci : pembelajar milenial, teknologi Web 2.0, lingkungan belajar individu, teori ZPD.

18/12 2018

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List of Content

Title Page

Halaman Pengesahan i

Acknowledgement ii

Abstract iii

Abstrak iv

List of Content v

List of Tables vi

List of Figures ix

List of Charts x

List of Appendices xi

List of Abbreviation xii

Chapter I Introduction 1

1.1. Background 1

1.2. Problem Statement 5

1.3. Research Questions 9

1.4. Research Objectives 10

1.5. Establishment of Novelty 10

1.6. Significance of Research 12

1.6.1. Theoretical Significance 12

1.6.2. Practical Significance 13

1.7. Definition of Terms 13

Chapter II Literature Review 15

2.1. Previous research findings 17

2.2. Theoretical Background 20

2.2.1. Theory of Generation and Millennial Learners' Needs and Attributes 21

2.2.2. The Concept of BSNP on 21st Century Learning Paradigm..... 27

gotsky's Zone of Proximal Development (ZPD) Theory..... 30

b 2.0 in Educational Environment..... 34

eory of Diffusion of Innovation (DoI) 39

rsonal Learning Environment (PLE)..... 43

Optimization Software:
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2.3. Theoretical Framework……. 47
2.4. Conceptual Framework …… 50
Chapter III Research Methodology …… 51
3.1. Research Design …… 51
3.2. Research Variables and Operational Definition…… 53
3.2.1. Research Variables…… 53
3.2.2. Operational Definition of Research Variables ……. 53
3.3. Research Setting and Population …… 55
3.4. Instruments of the Research …… 57
3.5. Data Collection Procedure …… 59
3.6. Data Analysis Procedure …… 60
Chapter IV Findings and Discussion …… 61
4.1. Findings …… 61
4.1.1. Demographic characteristic……. 61
4.1.2. Awareness level of computer and Web 2.0 technologies…….. 63
4.1.3. Access on ICT tools ……. 65
4.1.4. Learners' internet involvement in formal and informal learning activities ……. 66
4.1.5. Frequency of using Web 2.0 technologies for learning……. 68
4.1.6. Learners' attitude to technology…… 70
4.1.7. Learners' preference to technology …….. 70
4.1.8. Learners' expectation on Web 2.0 …….. 71
4.1.9. Millennial Learners' Adaptability toward the Use of Web 2.0 Tools …….. 72
4.1.10. Personal Learning Environment (PLE) of millennial learners… 79
4.2. Discussion …….. 82
4.2.1. Millennial learners' perspectives in adopting Web 2.0 technologies …….. 82
4.2.2. Discussion of interview results ……. 89
4.2.3. Millennial learners' Web 2.0 usage patterns in their PLE …… 94
Web 2.0 utilization to Promote PLE by revisiting
s ZPD …… 106
w the features of Web 2.0 promote the PLE…….. 107
e urgency of social networking in ZPD ……. 111

Optimization Software:
www.balesio.com

4.3.3. The interrelatedness between PLE and ZPD …… 117
Chapter V Conclusion and Suggestion ……. 121
5.1. Conclusion ……. 121
5.2. Implications ……. 123
5.3. Contribution to Knowledge ……. 124
5.4. Limitations ……. 124
5.5. Suggestions …….. 125
Bibliography …… 126

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List of Tables

Table 1 : Isaac and Michael Nomogram …….. 40

Table 2 : Types of Web 2.0 in PLE activities …….. 71

Optimization Software:
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List of Figures

Figure 1 : Schematic Rainbow of 21st century skills…… 29

Figure 2 : The Circle of ZPD …… 32

Figure 3 : Conceptual Framework……. 50

Figure 4 : Usage Pattern of Web 2.0 technologies in the learners' PLE …… 98

Figure 5 : Learners' PLE activity pattern …….. 104

Figure 6 : Web 2.0 Utilization to Promote PLE and to Support Vygotsky's Social Constructivism…….. 109

List of Charts

Chart 1	: Learners' year of birth……..……	62
Chart 2	: Learners' home communities……	63
Chart 3	: Time span of using computer……	64
Chart 4	: Time span of using Web 2.0 technologies……	64
Chart 5	: Frequency of Online Activities ……	65
Chart 6	: Access on ICT tools ……	66
Chart 7	: Internet activities ……	67
Chart 8	: Frequency of using Web 2.0 technologies for learning……	69
Chart 9	: Learners' attitude to technology……..	70
Chart 10	: Learners' preference to technology…….	71
Chart 11	: Learners' expectation on Web 2.0 …….	72
Chart 12.1	: Relative advantage of DOI ……	73
Chart 12.2	: Compatibility of DOI ……..	75
Chart 12.3	: Complexity of DOI ……..	76
Chart 12.4	: Trialability of DOI …….	78
Chart 12.5	: Observability of DOI …….	79
Chart 13.1	: Frequency of preferences of Web 2.0 technologies for reading….	80
Chart 13.2	: Frequency of preferences of Web 2.0 technologies for reflecting…	80
Chart 13.3	: Frequency of preferences of Web 2.0 technologies for socializing..	81

LIST OF APPENDICES

Appendix 1.	Questionnaire part A: Demographic questions ……	141
Appendix 2	Questionnaire part B: Technology awareness ……..	141
Appendix 3	Questionnaire part C: Learners' access level on ICT tools ……..	142
Appendix 4	Questionnaire part D: Learners' Internet activities …….	143
Appendix 5	Questionnaire part E: Frequency of using Web 2.0 technologies for learning……..	144
Appendix 6	Questionnaire part F: Learners' attitude to the use of Web 2.0…….	145
Appendix 7	Questionnaire part G: Learners' preference in finding information ……..	145
Appendix 8	Questionnaire part H: Learners' expectation about Web 2.0 in classroom ……	146
Appendix 9	Questionnaire part I: Learners' rate of DoI ……	146
Appendix 10	Questionnaire part J: Learners' aspects of PLE ……	149
Appendix 11	List of Interview ……	151
Appendix 12	Result of questionnaire part A: Demographic questions……	152
Appendix 13	Result of questionnaire part B: Technology awareness…….	152
Appendix 14	Result of questionnaire part C: Learners' access level on ICT tools…….....	152
Appendix 15	Result of questionnaire part D: Learners' internet activities……..	153
Appendix 16	Result of questionnaire part E: Frequency of using Web 2.0 technologies for learning…….	154
Appendix 17	Result of questionnaire part F: Learners' attitude to the use of Web 2.0 ……	154
Appendix 18	Result of questionnaire part G: Learners' preference in finding information ……..	154
Appendix 19	Result of questionnaire part H: Learners' expectation about Web 2.0 in classroom …….....	154
Appendix 20	Result of questionnaire part I: Learners' rate of DoI ……	155
Appendix 21	Result of questionnaire part J: Learners' aspects of PLE…….	157
Appendix 22	Result of Interview script ……..	159
Appendix 23	Result of Preliminary Data ……...	179

LIST OF ABBREVIATIONS

BSNP	: Badan Standar Nasional Pendidikan
DoI	: Diffusion of Innovation
PLE	: Personal Learning Environment
ICT	: Information and Communication Technology
IT	: Information Technology
MKO	: More Knowledgeable Others
ZPD	: Zone of Proximal Development
OER	: Open Educational Resources
FB	: Facebook
WA	: WhatsApp
BBM	: Blackberry Messenger

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CHAPTER I

INTRODUCTION

1.1. Background

This current 21st century has brought many changes into societies in the world, including the education reform movement, which is becoming more open, and people are living in no boundary world. The quality of human resources which were gained through education and training is a necessity of the human being in this century. Prosperity for all the people are the aspiration of the whole nation in the world. Similarly, the Indonesian people aspire to live in prosperity and respectable among the other nations in a globalized world of the 21st century. All of this can be fostered and promoted through education .

In the same way, there are various major specifications of the 21st century. Firstly, the opening of the broader mobility flows from one country to another. Secondly, this century is dominated by the development of sophisticated science and technology. Therefore, to be able to compete in the global society, every nation must literate on the development of science and technology (BSNP, 2010)

An example of such a change in the last decade is the advancement of information and communication technologies (ICTs), which is supported by the use of computers or smart mobile gadgets (smartphone, tablet , phablet, or pad). Then this era explores the social aspects of culture, politics, economy, including education. This means that the influx of ICT has changed the communication patterns and distribution of information without boundaries.

In relation to the learning process, ICT, especially the internet has been used by teachers and learners in searching information or learning bridging the gap and space between teacher-learner interaction,

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maintaining the learning efficiency and storage a variety of data and information required. This happens because the internet is capable as a multimedia message (text, audio, or images) as well as moving image (videos). In addition, ICT enables the synchronous delivery of message like TV or radio broadcasts. Alternatively, the messages can be delivered asynchronously as DVDs, CDs, and books. With the flexibility owned by ICT, not surprisingly, development in the use of technology in learning leads to the use of internet.

Concurrently, the ICT development was then followed by the coming of Web 2.0 application. The term Web 2.0 is ordinarily used to allude to gatherings of online applications that are more open in nature than previous web. These thoughts were later taken up by Sir Tim Berners Lee, the designer of the World Wide Web, when he expressed that, "I have dependably envisioned the data space as something to which everybody has prompt and instinctive get to, and not simply to peruse, but rather to make" (Berners-Lee, 2000;). Then he described that while Web 1.0 was overwhelmed by search and read web, Web 2.0 is ruled by push/pull applications like Facebook, blogs and other web-based social networking. Web 2.0 is then similarly known as read-write web.

The emergent question is why this study introduce the Web 2.0 utilization (Jubhari, personal communication, October 2017) while the next sophisticated web generation has been created , namely Web 3.0 (3D web/artificial intelligent), Web 4.0 (nano technology), Web 5.0 (emotional sensory agent). For some important reason, Web 2.0 with their possibilities to communicate, reflect, and collaborate, and [illegible] of supporting e-learning and technology-enhanced learning. Web 2.0 [illegible] of online application for public, ranging from simple application like [illegible]ial application (social media) which provide high interactivity and

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connectivity like Facebook and Edmodo. Even, Web 2.0 technologies encourage learners to not only view and experience information on the Internet, but to also create and share their knowledge and opinions. Similarly, Yun-Jo An, et.al (2009) indicates that the major benefits of using Web 2.0 technologies in teaching include (1) interaction, communication and collaboration, (2) knowledge creation, (3) ease of use and flexibility, and (4) writing and technology skills. Simply, Web 2.0 creates collaborative and personalized learning.

Sudradjat (2012) defined three shifts of education driven by the development and use of Web 2.0. The first shift is a change from exclusive into inclusive relationship. The development of the Web 2.0 revolution can break down the social gap. An example of such that people connect to others without boundary and without considering social level of society.

Then, the second shift, being a vertical into horizontal environment, can be seen in the pattern of power relationship between learner and teacher . Teachers are no longer the only source of knowledge and stands in parallel with learners in the classroom. Thus, teachers can no longer make the learners as the object of their teaching.

Moreover, the third shift, is from individual work to team work where teachers and learners live together in a community, thus no more reason for them being illiterately technological. Teachers and learners may interact in one education forum, like Facebook, Edmodo, Secondlife, and Moodle. Thus, the teachers will be powerless in this digital age when they are still being exclusive, being vertical, and

is occasion, Prensky (2001), an American writer on education and he terms “digital native and digital immigrant”, has established his

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theory which seems to be "moral panic" in higher education circles guaranteeing that we should promptly change our instructing and learning practices to meet the demand of the so-called net-generation or digital native . The term of moral panic was issued by Cohen (1972) , a British sociologist, who illustrates that moral panic happens when a condition, an episode, a person or a group of persons , which emerge to become defined as a threat to societal values and interests.

As a result, Web 2.0 technologies are also associated with significant shifts in the nature of contemporary learners. A popular characterization of upcoming generations of learners is that they are “digital natives” who have grown up in a world of computers, mobile telephone and the internet, and now lead lives that are reliant upon digital media. These digital natives are seen to stand in contrast to older generations of ‘digital immigrants’ who adopted digital media later on in their lives, having grown up without them. These digital natives are thought to expect technology-assisted fluidity in all aspects of their lives, including the ways in which they learn and are educated. They are thought to have distinct expectations of education that involve learning which is personalized, accessible on-demand, and available at any time, any place, or any pace. As Prensky (2001) warned at the turn of the 21st century, “our learners have changed radically. Today’s learners are no longer the people our educational system was designed to teach”.

The learning environment and culture fosters the way people think and live. For instance, most learning in school and university perform one way learning interaction and this creates passive learning which is mostly one-way conversation. While [illegible]cation technologies are coming on stream, enabling connectivity [illegible], facilitators and learners. Learning no longer ends after lecture in [illegible] Internet-based technologies serve various purposes such as

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information exchange, file sharing, and homework submission. To this end, this study proposes the concept of how the millennial learners' perceives to the Web 2.0 utilization to promote the Personal Learning Environment (PLE).

1.2. Problem Statement

One of the most significant current discussions on educational technology-enhanced learning and educational philosophy is learning awareness, interaction and collaboration. It is becoming increasingly difficult to ignore the social context of new technologies towards the 21st century education and new learning paradigm.

Web 2.0 tools provide enormous opportunities for teaching and learning, yet their application in education is still underdeveloped. What is more, it is no longer possible for teachers to ignore such a technological advance, while they are expected to provide learners with opportunities to take control of their learning. However, teachers are still reluctant with technology integration.

What is missing from this body of literature is evidence about whether teacher should use these technologies in the classroom in the first place. What is also often missing is the learners' perspective. While it might be possible to show that teachers can incorporate learning technologies in the classroom, this does not mean they should. Moreover, while it may be possible to show that learning outcomes are somehow better by incorporating online learning and technologies in the classroom, this does not mean learners will embrace the new techniques or benefit from the new technologies. Teachers don't yet know in any systematic way how to review using technologies in the classroom.

Although Web 2.0 applications are becoming more popular among the learners and teachers, there is still little evidence of learners' perceptions

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of adopting the innovation of Web 2.0 technologies in some countries. These studies addressed that the current status of Web 2.0 technologies usage by learners has remained educationally unknown in Indonesia. Annal (2015) investigated the Web 2.0 usage to promote the library in higher education in Indonesia. Likewise Cassandra, et.al (2015) proposed the Wikimedia as one of Web 2.0 tools as knowledge management tools to support the e-learning implementation. Correspondingly, Riady (2014) conducted a case study on assisted learning through Facebook . He investigated how the learners of *Universitas Terbuka* utilize Facebook as media in their long distance education system.

For this reason, preliminary study was done by conducting a survey on millennial learners' experiences on Web 2.0 tools for a range of learning purposes. The subjects used in this preliminary study were 48 learners. For further result**,** see specific data in appendix 23 page 145.

The main objective of this preliminary survey is to measure the learners' Web 2.0 adoption, partly to address the first research question which is how the millennial learners experienced the implementation of Web 2.0. In specific, the survey is designed to capture information related to the way Web 2.0 is being used, their familiarity with this new technology and to what extent has the technology been exercised to support their learning. The survey also designed to obtain responses on areas including demographics, ownership and use of ICT technology, and ICT skills and experience.

In the beginning, the survey confirmed that almost all learners have high [illegible]mputers and other ICT devices. The result of this preliminary study [illegible] the undergraduate learners own portable devices particularly [illegible]mputer, mobile phones and portable media players. High access to

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these tools indicated high mobility and a quick access to internet facilities. Learners also used a wide range of technology tools for communication, and were not only restricted to Web 2.0 tools itself. E-mail is a popular method by these learners to communicate and send digital files.

Moreover, the preliminary survey has shown that learners are reasonably comfortable in utilizing various types of Web 2.0 tools. The use of ICT and other Web 2.0 tools by the learners have reached to any significant level that can merit an increase to any person's knowledge. The use of existing tools such as e-mail or messaging are still dominating most options although some learners are beginning to consider social tools for information sharing. The study has also found several activities that may lead towards the use of web for informal learning activities. Learners turned to web to obtain information which is not related to academic or formal education.

As expected, an inclination towards the extensive and exclusive use of IT in courses is inevitable. The preference of using IT for courses as reflected from the responses can be justified based on the previous understanding that has indicated: 1) learners had high access to ICT devices; 2) learners were comfortable with most ICT, online and Web 2.0 tools ; 3) learners were mostly rated to have high literacy to use most ICT tools and devices.

By making a comparison between the results with other studies, it is convincingly clear that UM Parepare learners especially who are majoring in English Education are already exposed to various types of Web 2.0 application. The[illegible]dicated a comfortable level with the use of Web 2.0 applications in [illegible]expect the application to be embedded in the current application of

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learning. They noted better engagement with peers than teachers, and prefer to try to web for obtaining information.

Some indications can be extracted from the study. First, the results have shown that learners seem to feel more comfortable to learn with friends or using search engines to obtain information rather than asking their teachers. Therefore, unique strategies are needed for teachers expecting positive engagement from their learners. Second, common interaction activities are not entirely being replaced by Web 2.0 tools. Learners' responses have indicated that traditional face-to-face meeting and the use of email for information exchange activities are still widely preferred. Third, the learning institution may have overlooked the importance of having Web 2.0 phenomenon to be taken into classrooms.

On the contrary, before the internet came into existence , learning activities in UM Parepare were still being largely directed by face to face methods. Web 2.0 technologies were predominantly used for entertainment . Due to the global development, UM Parepare, in response to the need for academics to learn new skills to teach students how to search for and use information from the web are adopting the necessary technologies to transform PLE activities. Web 2.0 technologies such as Edmodo and Google Classroom were used by students especially for English department, disseminate academic related information. Other Web 2.0 technologies particularly Facebook or WhatsApp are used by academics in UM Parepare to communicate with and engage students in conversation, share educational resources and also collaborate with their

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erefore, there is a need to investigate the extent to which millennial M Parepare are aware of the Web 2.0 technologies and how they

use Web 2.0, as well as the obstacles that affect the use of these technologies particularly in promoting their PLE. Then, this study focuses on how Web 2.0 usage patterns of millennial learners can promote the personal learning environment. More specifically, this study explores how the Web 2.0 utilization challenges the theory of ZPD of Vygotsky in transforming pedagogies in the digital age.

1.3. Research Questions

Subsequent to the research problem explained above, the following research questions are posed to guide the study:

1. What is the millennial learners' perspective in adopting Web 2.0?
    a) What are the demographic characteristics of the millennial learners?
    b) How is their awareness level to Web 2.0?
    c) What are their attitudes in using Web 2.0?
    d) What are their preferences in using Web 2.0?
    e) What are their obstacles in using Web 2.0?
    f) What are the millennial learners' adaptability toward the use of Web 2.0 tools?
2. What are millennial learners' Web 2.0 usage patterns in their PLE?
    a) What Web 2.0 technology tools do learners use in their PLE
    b) How do the learners use Web 2.0 tools in their PLE?
    c) How do the Web 2.0 tools promote the PLE?
3. To what extent does the finding of Web 2.0 utilization challenge the theory of

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1.4. Research Objectives

The major aim of this study is outlined and mapped based on the research questions. The fulfillment of these following objectives hopefully presents recommendations on future Web 2.0 learning path that can contribute to the development PLE context and challenge the theory of ZPD.

1. To investigate the millennial learners' perspective in adopting Web 2.0
   a) To illustrate the demographic characteristics of the millennial learners
   b) To pinpoint their awareness level to Web 2.0
   c) To explore their attitudes in using Web 2.0
   d) To describe their preferences in using Web 2.0
   e) To find out the obstacles in using Web 2.0
   f) To present their adaptability toward the use of Web 2.0 tools
2. To uncover the millennial learners' Web 2.0 usage patterns in their PLE
   a) To identify what Web 2.0 tools the learners use in their PLE
   b) To explore how the learners use web 2.0 tools in their PLE
   c) To describe how Web 2.0 tools can promote the PLE
3. To scrutinize how the finding of Web 2.0 utilization challenge the theory of ZPD

1.5. Establishment of Novelty

In establishing novelty, this study uses four rhetorical moves (Swales, 1990) to show how this current study is important, relevant and new, as follows :

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xplain the significance of research

opular characterization of upcoming generation of learner is then so

d millennial learner or digital native, who have grown up in a world of

sophisticated technology, now lead lives that are reliant upon digital media. Millennial generation has characteristics of behavior and personality that are different from previous generations. The attributes of millennial learners may influence the way teachers teach. Further information about millennial learners' needs and attributes can be seen in chapter 2 sub chapter 2.2.1 pages 15-18.

2) To describe "status quo"

Previous studies describe how the success of Web 2.0 technology adoption is able to influence the education. Those studies show that Web 2.0 is able to stimulate active learning, increasing learners' motivation, support collaborative work, performs information sharing, and many other activities that can promote teaching and learning process. Most of the previous researchers refer to connectivism (Siemens,2005) theory to support their theoretical framework. They found that behaviorism, cognitivist, and constructivism are the three broad learning theories were developed in a time when learning was not impacted through technology. As a matter of fact, over the last twenty five years technology has reorganized how we communicate, and how we learn. These three theories (behaviorism, cognitivist, and constructivism) do not address learning that occurs outside of people i.e. learning that is stored and manipulated by technology (Carreno, 2014)

3) To identify a gap

However, there is still lack of research that explore how Vygotsky's ZPD extend knowledge to the urgency of Web 2.0 adoption in education. Vygotsky (1978) covers two major themes, more knowledgeable other

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(MKO), and scaffolding. Further information about Vygotsky's ZPD major themes can be seen in chapter 2 sub chapter 2.2.3 pages 22-24.

4) To fill the gap with the current research

This study proposes the millennial learners' perspective on Web 2.0 utilization to promote Personal Learning Environment (PLE) based on Vygotsky's ZPD learning theory. While Vygotsky (1978) pioneered the field of ZPD, which covers two major themes namely MKO and scaffolding, this recent study contributes to his theory, namely social networking. While social networking is essentially required by the millennial learners, as their attributes as social human-being (Sudrajat,2012), nomadic communication style (Sweeney,2006), desire for customization in which they perceive their environments as boundless and want personal control over "when, where, how and how fast they learn" (Barone, 2003; Sweeney,2006), and collaborative learner (Beard, et.al, 2007).

1.6. Significance of Research

1.6.1. Theoretical Significance

Within the higher education context, this study proposes a viewpoint of Web 2.0 utilization from millennial learners' perspective. The focus is more on learning process, partly on teaching process. Instead of building a new learning environment, this study focuses on the discussions of the use of Web 2.0 tools in promoting personal learning environment. Thus, the innovative attempt is to bring

s well as the 21st century education learning paradigm in higher

e idea of ZPD deserves some merits (MKO and scaffolding) ,

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nevertheless the social networking aspect is becoming extremely essential aspect in this digital era.

1.6.2. Practical Significance

As a follow up activity, it is hoped that the study provide base line data to formulate recommendations for my own practice and for practitioners in the field. Due to practical constraints, this study is expected to provide an appropriate tool for 21st century learning paradigm. Future studies on the current topic are therefore recommended. This study result provides teacher and learners choices and let them select Web 2.0 software tools. This study may therefore recommend the upgrading of university learning environment and software infrastructure.

1.7. Definition of terms

Millennial learners refer to learners who have grown up since the emergence of the World Wide Web and the assortment of related digital technologies e.g., cell phones, text messaging, video games, and instant messaging (Prensky, 2001). Further information about millennial learners' needs and attributes can be seen in chapter 2 sub chapter 2.2.1 pages 21-26

ZPD theory (Vygotsky, 1978) encompasses how learners acquire knowledge. He states that people learn through interactions and communications with others. ZPD refers to the zone between actual development level and potential development level. The theory states that cognitive development depends on how one interact with other people around them. People can learn by themselves. However, they learn better through interactions with others. There are two major [illegible]pport Vygotsky's ZPD, namely MKO and scaffolding. Further [illegible]t ZPD can be seen in chapter 2 sub chapter 2.2.3 pages 30-33.

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Web 2.0 is a term used to describe the evolution of the use of the Internet. While previous web as familiarly known as Web 1.0 was typically limited to presenting and viewing information, Web 2.0 adds the ability for the typical user to create and share content online. The phrase Web 2.0 is the second generation of Web based services emphasizing online collaboration and sharing . Web 2.0 technologies provide user control to create, publish, and co-create web content unlike Web 1.0 technologies that allowed for only passive viewing of the content (O'Reilly, 2006). Further information about Web 2.0 can be seen in chapter 2 sub chapter 2.2.4 pages 34-39.

Diffusion of Innovation (DoI) is a process whereby new ideas are communicated to society. Rogers (1983) defined DoI "as the process by which an innovation is communicated through certain channels over time among the members of a social system." Further he explains that the diffusion is a form of communication that is specific with the spread of messages in the form of new ideas, or diffusion concerning the source of the invention or creation of ultimate users or adopters. Further information about DoI can be seen in chapter 2 sub chapter 2.2.5 pages 39-43.

Personal Learning Environment (PLE) is not an application but rather a new approach to the use of new technologies for learning (Atwell,2007). It has the following attributes : personalized, social, open, ubiquitous , and easy to use. Further information about PLE can be seen in chapter 2 sub chapter 2.2.6 pages 43-47.

CHAPTER II

LITERATURE REVIEW

Today's millennial learners are the first generation who come to the digital society. Computers, smartphones, and global communications have shaped and educated this generation. They are active and often enthusiastic participants in the creation of online communities since early childhood. The knowledge practices of millennial learners are different from previous generations. They have just extended their minds differently with new kinds of tools. It is important to develop innovative pedagogies that simultaneously support the acquisition of a deep knowledge of 21st century skills.

The guidance of how to implement the 21st century skills is covered in document of Badan Standarisasi Nasional Pendidikan (BSNP,2010). It contains the roles of teachers and learners in the 21st century education. In the 21st century, education is becoming increasingly important to ensure learners have the skills to learn and innovate, skills in using information technology and media, as well as be able to work, and survive by using skills for life (life skills). Teachers should realize that there is a paradigm shift that is believed to be done by all stakeholders in order to improve the quality and relevance of education to enter the millennial world. Another key point, new learning approach that fits the needs of the 21st century learners should be implemented simultaneously.

21st century skills are integral parts of learning. Learning takes place [illegible] and their cultural surroundings. It is therefore important to develop [illegible]l practices, physical learning environments, and institutional routines

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(e.g. assessment) to support engagement, innovation, and knowledge creation at school. Paradoxically, this can be done by supporting local agency and participation.

Today's students are "do-it-yourself" learners (Nussbaum-Beach & Hall, 2012, p.11). They need to discover meaningful ways of using technology for learning purposes and collaborative knowledge creation. It is important to investigate how digital technologies affect our everyday life inside and outside the educational environment.

William, et.al, (2011) illustrates that Web 2.0 offers for interaction and communication and for emergent learning, as well as some of the substantial challenges in realizing this potential in education. The interactive potential of Web 2.0 provides unprecedented opportunities and affordances for emergent learning. However, enabling, resourcing, and managing a learning ecology which integrates prescriptive and emergent learning requires people who can work across these two very different systems that are based on quite different epistemologies.

Because of the learning potential of Web 2.0, some related previous studies have examined the adoption of specific Web 2.0 technologies and employed popular and widely acknowledged models such as Diffusion of Innovation (DoI) . Firstly, Rogers (1983)'perspective on DoI shows the spread technology exists at a broader level and examines the factors that contribute to and the manner in which technologies diffuse across a population of potential adopters similar to the spread of a virus. Rogers (1983) named adopter categories that characterize the nature of the adopters and placed them in four categories; innovators, early majority, late majority

over, Fraser (2007) has looked at how Web2 tools and applications ng used in the concept of the PLE. Fraser says the PLE has become

a tool for empowerment as it embodies the principles of self-directed learning. It recognizes that learners exist in an ecosystem and that the PLE is a tool for learning within that ecosystem. The PLE is the system (or multiple systems) that enable and support the growth and behavior of self-directed or self-motivated learners.

A PLE may be minimally described, as the name suggests, as a personal environment where someone learns. That environment must be customizable, designable by the learner according to his learning style, needs, context etc. The discourse on the PLE nature has evolved with opposing conceptions of the PLE as a technology (a tool collection) or a concept or approach (an ecology of tools, people, resources, with an organic, mutable and adaptive nature) (Fiedler & Väljataga, 2010), eventually with a more philosophical/pedagogical nature dealing with how people and resources are connected through technology (Pata, Väljataga, & Tammets, 2011).

2.1. Previous Research Findings

During the last years, many Web 2.0 technologies are adopted in various aspects of education. Learners ' learning has been transformed by the advent of Web 2.0 which is defined as more personalized and a communicative form of the World Wide Web. The use Web 2.0 technologies and specifically blogs have become increasingly prevalent within the higher education. Recent years as educators begin to maximize the opportunities such tools can provide for teaching and learning and to experiment with their usage in a wide range of context.

It is reported that a significant number of students (85.5 %) at a large [illegible]sity has Facebook accounts while over 68% of college students [illegible]e similar account and reported to log into Facebook twice per day [illegible]odicasa, 2007). Other research (Pempek, Yermolayeva, and Calvert,

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2009) also claimed that Facebook is accessed at least for 30 minutes per day as part of their daily routines in which they were the creators disseminating content to their friends. Over the years, the number of students embracing the social media technology is on the increase (Ramanau, Hosein, & Jones, 2010).

Currently, the increasingly popular "Web 2.0" technology is offering innovative ways for collaboration to occur within the learning settings. It was then argued that Web 2.0 tools when used in learning is able to induce change by escalating the current learning practice onto a new level that promotes interactive (Aucoin, 2014; Pursel and Hui, 2014) , and informal learning (Yoo and Kim, 2013). Web 2.0 tools when integrated into learning strategy is able, to some extent, leverage various conventional methods of grouping students together (Majid,2014; Liu, 2016) and performs information sharing (Hack, 2013; Usman and Oyefolahan, 2014; Orehovacki,et.al, 2013) or knowledge exchange (AlJeraisy,et.al, 2015; Usman and Oyefolahan, 2014). Garofalakis (2013) states that many of the Web 2.0 tools "support collaborative work, thereby allowing users to develop the skills of working in teams". The idea is also supported by Hack (2013), Tucker (2014), Cassandra (2015), and Perikos, et.al (2015). They also notes that the shared working space and group communication have become the factors that excites young people and therefore should impart to their motivation to learn. This new learning opportunity echoes what O'Reilly (2005) has mentioned that the architecture of Web 2.0 participation offers students ways of learning in an environment that is in line with their existing ways of learning and better enables them to integrate the explicit and implicit dimensions of knowledge. Attwell (2008), in similar vein, asserts that the challenge to the present education system and the major driver of the changing ways students are using computers for learning.

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The Web 2.0 tools is argued to enable Internet generation to socialize (Yusof,et.al, 2015) , and stimulate active participation in learning (Echeng,et.al, 2013; Fleischman, 2014). Some studies conducted to measure this generation's interest and motivation with activities involving the use of Web 2.0 tools (Jimoyiannis,et.al, 2013; Hye and Hwan, 2015; Schoenborn,et.al, 2013, Batsila,et.al , 2014; Weller, 2013). Looking at a pattern by similar studies , Web 2.0 can promote teaching and learning process (Garcia,et.al, 2013; Ishtaiwa and Dumak, 2013) even for some with students diagnosed with ADHD or students with ADHD tendencies (Hill, 2013) .

A review of the literature on this topic revealed that there is a disagreement if Web 2.0 technology has promised more than it has delivered in terms of its effectiveness in improving either teaching or learning. On one hand, some researchers (Gulbahar,2014; Livingstone, 2015; Eren,2015; Al Saleem, 2014) contend that this generation of students will have better learning potential if Web 2.0 technologies are integrated into their learning activities because of the student's familiarity with Web 2.0 technologies and high level of involvement with social networking activities.

One suggested explanation for the integration of Web 2.0 tools to learning is to meet the current students' needs. In a similar fashion, social network site (Facebook) has the potential to create new resource in information and technology to assist learning in groups for finding information needs and also in distance learning system of Universitas Terbuka's students who live in Jakarta, Taiwan and Hong K[illegible]14).

2.0 applications globally are increasingly being adopted in higher [illegible] on an individual course module level and at an institutional level.

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The introduction of Web 2.0 tools into higher education is not without barriers. Discussing the barriers of accepting and adopting Web 2.0 includes risks, problems, and skills by which learners and educators hesitate or refuse to use Web 2.0 applications. These barriers also could take place at different dimensions, including lack of time and lack of knowledge of learners and lecturers (Pritchet,et.al,2013) , lecturers and institutions still reluctant with technology adoption (Konstantinidis, et.al, 2013). Further Estable (2014) reported that extrinsic factors (time, training, support), instead of intrinsic factors (beliefs, motivation, confidence) are the main barriers to faculty in this study using more Web 2.0 in education. and their infrastructures.

Mayberry (2014) highlight an issue arising in relation to Web 2.0 adoption and adaptation in higher education, such as lack of internet access among the economically disadvantaged students, and people of color and people of poverty in the United States have significantly less access to technology at home than their white and middle class counterparts (Lundy,2014).

2.2. Theoretical Background

The use of computers and technology has grown tremendously in all aspects of life especially in education. For the past decades, the people attention to integrate computer and technology has increased, especially in the education system. Although, finding appropriate pedagogical methods are required to cope with these new challenges in educational institutions.

The Web 2.0 term was coined by O'Reilly (2006) which allows everyone to publish resources on the web using open, simple, personal and collaborative , often known as online social software such as wikis, blogs, cial bookmarking systems. What makes Web 2.0 tools popular is the s Web content to be read and rewritten as active user participation .

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2.2.1. Theory of Generation and Millennial Learners' Attributes and Needs

Strauss and Howe (2000) are two historians who trace the history of the United States (US) in depth. In their book, Generations: The History of America's Future 1584-2069, they told US history as a series of biographies of generations from 1584. This book underlies the theory of generation. These two historians further develop their theory in the next book The Fourth Turning which focuses on the cycle of four type of generation and the US history. Although the theory is based on US history, LifeCourse Associates - a consultancy institute founded by Strauss and Howe - continues to develop this theory by studying the trend of generations in other countries and finding similar cycles in most developed countries other than the US.

Strauss and Howe (2000) define the generation as a group of people whose age is within the same life cycle range and characterized by the nature of the age group. An average life cycle of humans is 80 to 90 years, divided into four phases, each of 20 years: childhood and adolescence (age 0-20 years), early adulthood (21-40), adulthood (41-60), and old age (60-80/more). According to Strauss and Howe, each generation has a collective characteristic formed by major events and episodes and determines in history that fundamentally alter the direction of the development of the society in which it was brought up. The pattern of events or episodes of history is always repeated (called turning) and is divided into four episodes: high episode, awakening, unravelling, and crisis.

Strauss-Howe explored 4 (four) generations, namely: (1) baby boomer generation (1946-1964) : Generations born after World War II have many brothers, [illegible]the many couples who dared to have many descendants. This [illegible]daptable and considered as an old person with fully life experience; [illegible]n (1965-1980), : It was the beginning of the use of PCs (personal

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computers), video games, cable tv, and the internet. Data storage also uses a floppy disk or disk. MTV and video games are very popular; (3) Y generation (1981-1994): The Y generation phrase began to be used in large US newspaper editorials in August 1993. This generation uses many instant communication technologies such as email, SMS, instant messaging and social media such as Facebook and Twitter. They also love playing games online; (4) Z generation (1995-2010) also called i generation, net generation, or internet generation was born from generation X and Generation Y. They have something in common with the Y generation, but they are able to apply all the activities at one time like tweets using the phone, browsing with a PC, and listening to music using a headset. Whatever is done mostly related to the virtual world. Since childhood they are familiar with technology and familiar with advanced gadgets that indirectly affect their personality.

For the purpose of this dissertation writing, this study focused on the generation Z known as millennial generation. Generation Z was born and raised in the digital era, with a variety of technology complete and sophisticated, such as: computer / laptop, HandPhone, iPads, PDA, MP3 player, BBM, internet, and various other electronic devices. From childhood, they are familiar (or perhaps introduced) and familiar with the sophisticated gadgets that directly or indirectly influence the behavioral development and personality.

The increase rate of so called “Internet generation" coming into higher education has been considered to pose new challenge to current higher education. This generation, popularly called as Digital Natives or millennials (Prensky, 2001); Generation Y (McCrindle, 2003); Net Generation (Oblinger & Oblinger, 2005; is assumed to familiar with most types of ICT tools including Web while at the same time possess high level of involvement with social

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networking activities. Some of the familiar titles associated with this generation include “GenMe,” “The Entitled Generation,” “Generation-Y,” “Gen Next,” “Digital Generation,” and “Echo Boom Generation.” Higher education policy makers need to consider the terms of the new generation of learners.

According to Tapscott (1997), this generation has specific characteristics which mean they think differently and they are natural collaborators who enjoy interactive learning. Furthermore, Prensky (2001) argues that within the era of digital technologies, and considering the skills that digital natives have, instructors have to adopt new methods to facilitate the learning process. Moreover, he claims that technology has changed the brains of Digital Natives. Leisure activities with digital technology equip learners with well-developed skills that have been ignored in the learning process.

Millennial learners was born and raised in the digital era, with a variety of technology complete and sophisticated, such as: computer / laptop/ notebook/netbook, Hand Phone, iPads, PDA, MP3 player, BBM, internet, and various other electronic devices. From childhood, they are familiar (or perhaps introduced) and familiar with the sophisticated gadgets that directly or indirectly influence the behavioral development and personality.

As a group, millennials are unlike any other youth generation . Think for a moment about the technological developments that have been introduced over that twenty-five year period—developments that have become an integral part of our vocabulary, our lives, and our culture. For example CDs, DVDs, MP3s, iPods, Podcasts, mobile smartphone , video games , Internet sites, email, instant messaging, chat rooms ; even new language terms comes up, including net

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surfing, information superhighway, web site, chat room, cyber, browser, online, homepage, HTML, and @. (Garner,2007)

Rather than being told things they would rather construct their own learning , assembling information tools and frameworks from a variety of sources (Oblinger and Oblinger 2005). Traditional chalk and talk won't work. Establishing a relationship is important for this generation .The more relaxed the environment , the more socially conducive to discussions, the better will be the quality of their learning (McCrindle 2003).

Millennial generation has characteristics of behavior and personality that are different from previous generations . The attributes of millennial learners who have grown up with technology that may influence the way we teach. Previous studies identified various attributes of millennial learners. First, they are the "digital generation" who are proficient and passionate about information technology and various computer applications. They can access the various information they need easily and quickly, both for the benefit of education and the interests of daily life (Starlink,2004). Millennials clearly adapt faster to computer and internet services because they have always had them (Sweeney,2006).

Second, the millennial learners are called as social human being, that they are very intense communication and interact with all circles, especially with peers through various networking sites, such as: Facebook, Instagram, WhatsApp, Line, or Path. Through this medium, they can express what they perceive and think spontaneously. They also tend to be tolerant of cultural differences and are very [illegible] the environment. (Sudrajat,2012; Regina and Mc.Grath,2015) . [illegible]ften reported to be, and report that they are, collaborative , yet much [illegible]ation is done in the online social media worlds. They are always

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connected to their peers and share their experiences (Regina and Grath,2015; Sweeney,2006; Beard, Schwieger, and Surendran .2007)

Third attribute is nomadic communication style. In this case, millennials have more friends and communicate with them more frequently using IM (instant messaging), text messaging, cell phones as well as more traditional communication channels. They are prolific communicators. They love and expect communication mobility; to remain in constant touch wherever and whenever, un-tethered (Sweeney,2006)

Technology-savvy multitasker is the fourth attribute of millennial learners. They are accustomed to various activities at one time at a time. They can read, talk, watch, or listen to music at the same time. They want things to be done and run fast (Sudrajat,2012; Beard, Schwieger, and Surendran,2007; Paul,2001). Multitasking can enable them to accelerate their learning by permitting them to accomplish more than one task at the same time (Sweeney,2006; Starlink,2004).

Millennials strongly prefer learning by doing is the next attribute. They almost never read the directions; love to learn by doing, by interacting ; and they require almost constant feedback to know how they are progressing (Sweeney,2006; Starlink,2004). . This generation of students prefers a hands-on approach to working on projects as sets of teams rather than through lectures or individual assignments (Gardner and Eng, 2005).

Moreover, millennial learners desire for customization. This attitude has carried over into their educational expectations as they perceive their environments nd want personal control over “when, where, how and how fast they 2003; Sweeney,2006). As a whole, millennials get along well with d peers (a somewhat gregarious relationship), however, with their

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skepticism toward those in authority, they have a tendency to have less collegial relationships with their teachers (Oblinger, 2003). This, in turn, leads toward a tendency to look more toward their peers rather than their instructors in determining what information provided in the classroom is relevant and valuable (Manuel,2002).

Using the analysis of the millennials' attributes and their expectations for education, Beard,et.al (2007) describes enhancements that can be made to current teaching environments based upon the characteristics of the millennial learner . Firstly, technology-enhanced learning in which students prefer hands-on learning rather than lectured material. With their interest in and adaptness to technology, increased integration of technology into he classroom is essential. Secondly, group projects and interaction which indicate that students prefer to work in groups and solve problems in teams rather than individually. Students also prefer experiential learning projects that contribute to society rather than constructed exercises to fulfill a requirement. Last, flexible learning environments means with the incorporation of group projects and technology-oriented learning, accommodations may need to be made on campuses to enable students to work in groups and access technical resources. To address the needs of a more active learning environment, institutions will need to be willing to modify their learning areas to enable this style of learning.

In supporting the urgency of understanding the millennial learners' attributes and needs, this study showed how Badan Standar Nasional Pendidikan (BSNP) explore the concept of 21st century learning paradigm.

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2.2.2. The Concept of Badan Standar Nasional Pendidikan (BSNP) on 21st Century Learning Paradigm

Today we are in the digital wave where sciences change into the invisible dimension (then what so called internet). The sciences are interdependent with each other that can lead the internet as a vital tool for various needs of life such as health, agriculture, defense, business, communication, transportation, sport, education, household, or entertainment. Especially in the communication world, people can make real time interaction as they are in a real space, even it's actually in virtual space.

BSNP (2010) illustrates that the advancement of internet triggers the change in education. Internet as a giant network , which connect billions data centers/information around the world, has change the development of science. An example of such a change is scientists can easily search their reference via search engines, then they can collaborate effectively via electronic mail in a “real time” . All that is possible because the searching and collaborating process has been successfully digitized by technology. This matter is intended to ease the process of knowledge exchange among people around the world to improve the quality of human life.

The easy access of ICT to educational institutions also transforms the role of teachers and students. The quote "the world is my class" reflects how the whole world and its contents become the place where human learners can learn, in the sense that there is no more boundary of the class spaces. The teacher's role is me an “infomediary" (BSNP,2010) because the learner is able to the knowledge resources that have to be disseminated in the

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In the 21st century, education is becoming increasingly important to ensure learners have the skills to learn and innovate, skills in using information technology and media. The new millennium emerged with an extravagant technological revolution. It is an era of increasingly diversified, globalized and complex media infused society. In many countries the students of today are called “digital natives” and teachers are referred to as “digital immigrants”. Our students live in the world of information technology IT; having around mobile phones; video games; Ipads; laptops; Ipods all the time. Furthermore, there should be proper guidance for these children to make the use of these devices positively.

Another example of such a change is text book reading and lecture based teaching is becoming obsolete and is being replaced by practical problem solving and critical thinking involved activities. Computer and internet are the main sources of knowledge dissemination. New subjects are being added to the curriculum. 3rs once used to be reading, writing and arithmetic is now replaced by new 3Rs i.e. Resilience, responsible and rigor (Ansari, 2013). Teaching is done for active learning; for collaborative work and for construction of meaning. Improvement of effective oral and written communication skills is given extra attention.

The question that is raised by the current focus on 21st century education is what should people learn and what do they need to know to be a participant in 21st century society. According to Trilling and Fadel (2009), each of the three core skills addresses particular areas people need to acquire and develop. First core skill is life and career, for instance, describe the ability to be flexible, [illegible]directed, socially aware, accountable and responsible. Second core [illegible] and innovation include the ability to be creative and innovative, [illegible]-solving, communicative and collaborative. Finally, the third core skill

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is information, media and technology consist in the ability to access and use information, to create and analyze media products, and to apply technology effectively.

Those three core skills then developed by the Partnership for 21st Century Learning (2002) by the US Department of Education. The schematic rainbow of 21st century skills-knowledge framework can be seen in Figure 1.

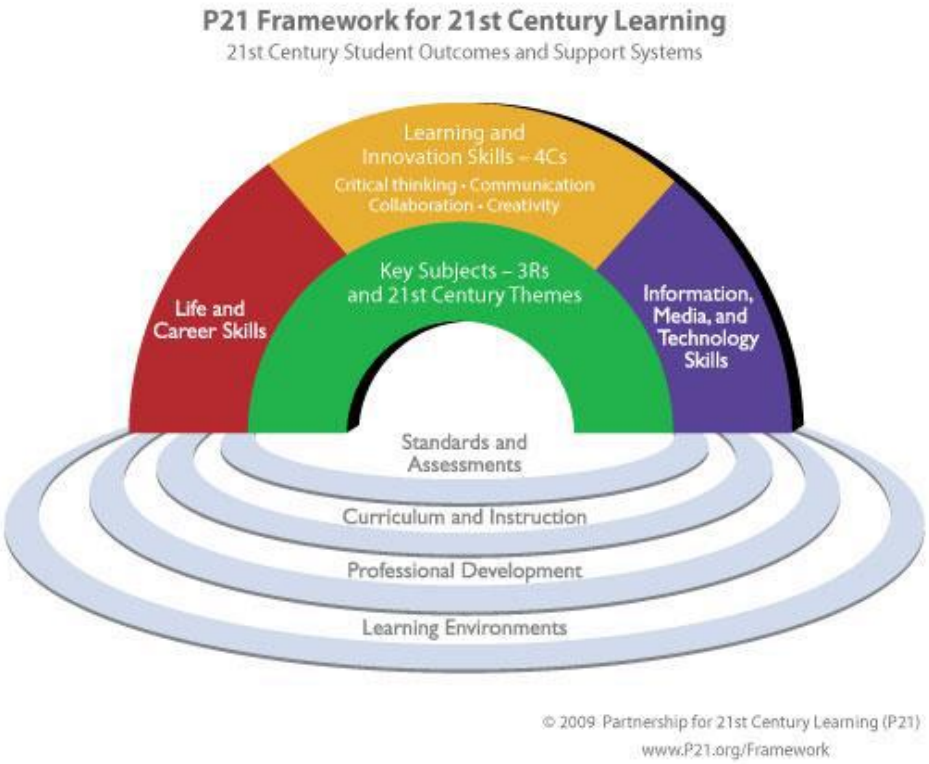

Figure 1. Schematic rainbow 21st century skills-knowledge (P21 in BSNP,2010)

Teachers should realize that there are shifts that are believed to be done by all stakeholders in order to improve the quality and relevance of education ennial world. Another key point, new learning approach that fits the st century learners should be implemented simultaneously. The shifts om teacher-centered into student-centered, from isolating into the

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networking environment, changing from personal into team based learning, changing from a single media into the multimedia, and changing from knowledge transfer into knowledge exchange. The exchange of knowledge lies between teachers and students and between students and peers. (Trilling and Fadel, 2009)

Finally, the change can only occur and provide a meaningful impact if implemented fully. For that reason, it is essential to revisit the national education system owned today, reviewing the existing gap with the needs of the characteristics of the education system of the 21st century, and determine the programs that should be implemented to close the gap and pursue the progress made in the national education.

Obviously, after understanding the millennial learners' attributes and needs, and how Badan Standar Nasional Pendidikan (BSNP) explore the concept of 21st century learning paradigm, we should be uncovered how the learning process is constructed. The following sub chapter argues how Vygotsky's ZPD theory contributes to the previous discussion.

2.2.3. Vygotsky' Zone of Proximal Development (ZPD) Theory

ZPD was developed by Vygotsky. He rejected the assumption made by Piaget that it was possible to separate learning from its social context. According to Vygotsky (1978):

"Every function in the child's cultural development appears twice: first, on the social level and, later on, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological)."

Vygotsky (1978) creates a model of human development now called l model. He believed that all cultural development in children is ages. First, the child observes the interaction between other people

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and then the behavior develops inside the child. This means that the child first observes the adults around him communicating amongst themselves and then later develops the ability himself to communicate. Second, Vygotsky also theorizes that a child learns best when interacting with those around him to solve a problem. At first, the adult interacting with the child is responsible for leading the child, and eventually, the child becomes more capable of problem solving on his own. This is true with language, as the adult first talks at the child and eventually the child learns to respond in turn. The child moves from gurgling to baby talk to more complete and correct sentences.

Vygotsky focuses on the connections between people and the sociocultural context in which they act and interact in shared experiences. According to Vygotsky, humans use tools that develop from a culture, such as speech and writing, to mediate their social environments. Initially children develop these tools to serve solely as social functions, ways to communicate needs. Vygotsky believed that the internalization of these tools led to higher thinking skills.

ZPD theories help us to understand how people learn in social contexts (learn from each other) and informs us on how we, as teachers, construct active learning communities. Vygotsky (1978) also examines how our social environments influence the learning process. He suggested that learning takes place through the interactions students have with their peers, teachers, and other experts. Consequently, teachers can create a learning environment that maximizes the learner's ability to interact with each other through discussion, collaboration, and [illegible]over, Vygotsky (1978) argues that culture is the primary determining [illegible]edge construction. We learn through this cultural lens by interacting [illegible]following the rules, skills, and abilities shaped by our culture.

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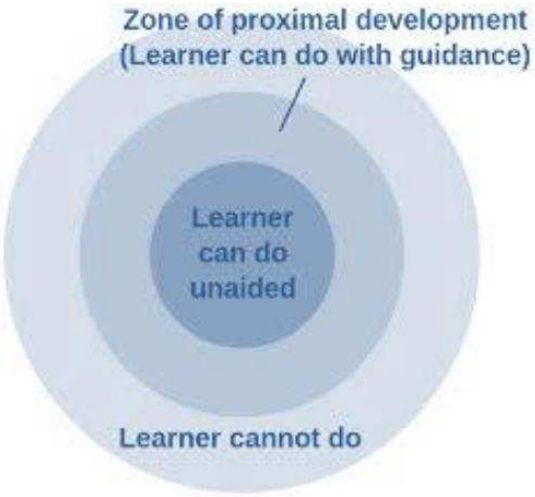
The teacher, or local topic expert, plays the important role of facilitator, creating the environment where directed and guided interactions can occur. Many other educational theorists adopted Vygotsky's social process ideas and proposed strategies that foster deeper knowledge construction, facilitate the student discussions, and build active learning communities through small group based instruction.

Vygotsky's notion of ZPD, as can be seen in figure 2, is a major idea to the social constructivist learning theory. The ZPD describes the difference between what a person can learn on his or her own and what that person can learn when learning is supported by a more knowledgeable other. Vygotsky considers that social interaction is a fundamental aspect of successful cognitive and intellectual growth. Vygotsky places great emphasis on dialogue and other interaction between the learner and another. The ZPD is the level at which learning takes place. It comprises cognitive structures that are still in the process of maturing, but which can only mature under the guidance of or in collaboration with others.



he circle of Zone of Proximal Development (Dhot, unknown year)

essence, Vygotsky recognizes that learning always occurs and rated from a social context. Consequently, instructional strategies

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that promote the distribution of expert knowledge where students collaboratively work together to conduct research, share their results, and perform or produce a final project, help to create a collaborative community of learners.

On the whole, there are two major themes of Vygotsky's ZPD. First theme is MKO. Learners learn from a more knowledgeable, informed and experienced person. Usually, learners learn from their teachers or peers/friends. Additionally, in digital era MKO does not have to be a human, it could be a computer. In fact, the learners used search engine to find more information about their subjects. Well, a MKO demonstrates ideas, so that the learner can understand and learn from it. The second theme is scaffolding. It is very important in terms of ZPD. It refers to appropriate assistance to learners dealing with learning and helping them focus on the learning purposes This is the activity where the teacher assists the learners in learning. Instead, getting help from someone would allow learners to learn and understand better.

Obviously the Vygotsky's ZPD believes that people only build knowledge of their surroundings through discourse with others, that is, through social interaction. ZPD really emphasizes the role of culture and context in developing personal and shared interpretations and understanding of reality. However the Vygotsky ZPD do not emphasize how learning is interfered with the upcoming sophisticated technology (Yassi, personal communication, August 2017).

As noted above, the ZPD idea deserves a merit that the MKO, as the one of Vygotsky major theme, would be a parent or teacher. Nevertheless , with the digital age coming up, a MKO could most possibly be technology . As the core of study , it is essentially to discuss Web 2.0 as a part of technology in environment.

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2.2.4 . Web 2.0 in Educational Environment

In the beginning, before illustrate the role of Web 2.0 thoroughly, it is necessary to explore the term “new media” as the descend of Web 2.0. Lister, et.al (2009) introduced the meaning of new media are derived from something that delivered by technology. So, while a person using the term ‘new media’ may have one thing in mind (the internet), others may mean something else (digital TV, a virtual environment, a computer game, or a blog). All use the same term to refer to a range of phenomena as a powerful technological change. The rise of new media has increased communication between people all over the world and the internet. It has allowed people to express themselves through blogs, websites, pictures, and other virtual media.

Leads to the term of new media, Lister, et.al (2009) describe the characteristics of new media, such as : digital, interactive, hypertextual, virtual, and network. Firstly, in a digital media process all input data are converted into binary numbers. In other words, in terms of communication and representational media, this data have already been coded into written text, graphs and diagrams, photographs, and recorded moving images. These are then processed and stored and can be output in the form of online sources, digital disks, or memory drives .

Secondly, interactivity is the communication process that takes place between human and computer software. New media offers a two-way form of communication where people are no longer just as receiver, but allow get more involved as user. This can be seen as simple acts like commenting on news pieces [illegible]ew for a tourism destination.

[illegible]irdly, hypertextual is text that links to other information. By clicking [illegible]pertext document, a user can quickly jump into different content. For

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instance, as we read an article in the normal text form, then we found new words that cannot understand, the writer uses the hypertext that can direct reader to another context (then what so called hyperlink). The reader can touch or point the words, as soon as possible the electronic dictionary can explain to us, even animation graphics can be inserted in the text.

Next characteristic is network. It refers to the availability of sharing content through internet. Network also address the fluidity of the boundaries of information transfer, and the channels through which the information are connected. Technologists conceptualize the network is when all media is available on a variety of wireless platforms and devices. Many different users can access many different kinds of media at many different times around the globe using network-based distribution. Moreover , the virtual characteristic that embodies a virtual world that is created by immersion in environment with computer graphics and digital video. The users can control over their own interaction. For instance, video games give people a virtual stage where they can interact and somewhat control their virtual lives to an extent.

In any case, the following five types of new media illustrate the evolution of new media (Lister, et.al, 2009). At first, blog, it is a popular form of new media. Although blogs are an early form of new media, they are still relevant and share several characteristics of the most recent new media types. Information in blogs is easily accessed and searched for, and everything is typically organized naturally. And like other forms of new media where content is posted — such as [illegible]ers and some social media platforms — entries often contain mixed [illegible]hotos and video to go along with the text.

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Next, virtual reality technologies that simulate an environment along with the user's physical presence and sensory experience. Commonly, the user experiences virtual reality through a special headset or on a computer screen. Seemingly limitless applications for virtual reality exist. In virtual reality, users can cycle through the Himalayas, consider purchasing real estate that hasn't been built yet, see a 360-degree film or train as a sniper. All virtual reality delivers a highly interactive, immersive experience that places the user in a lifelike or fictional environment. Virtual reality may be poised to become the future of new media.

Moreover, social media (then what so-called as Web 2.0) centers on creating, sharing and exchanging information, ideas and content in online networks and communities. Highly interactive, social media is a form of new media that relies heavily on the participation of users to provide value. Afterward, online newspapers are considered new media for many of the same reasons as blogs. Online newspapers blend multiple types of media and are easily accessed and searched. Users can also interact with some online newspapers via a comment feature. Online newspapers — along with social media and other forms of new media — are a major part of why traditional newspapers are shifting to digital form. Lastly, digital games are a part of everyday media culture and a unique type of new media. Digital games are also noteworthy for how they build interaction and community.

In this case, this study focused on Web 2.0. It is the term that encompasses the growing collection of new and emerging Web-based tools. Many are free and available to everyone. The shift to Web 2.0 tools can have a profound ls and learning, causing a transformation in thinking. These tools ty, collaboration, and communication involving learning methods in s play a part.

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Web 2.0 tools can be used in a variety of innovative ways with students to support their learning, but also provide a communication mechanism for them to share and discuss practice with their teachers. However, on reviewing actual use of Web 2.0 tools it is found that teachers, on the whole, were not using Web 2.0 tools extensively to support their practice .

Formal education is also being impacted by the movement of knowledge creation and dissemination towards the web. Learning is no longer happening solely in the classroom and the divisions between learning, work and recreation are becoming increasingly blurred. Individuals use participatory media to connect with friends, stay informed professionally, and engage with others in learning communities. Learning is open, networked and always happening.

There are some Web 2.0 tools which are usually use in education, for instance: Facebook, Instagram, YouTube, Google Plus, LinkedIn, SlideShare, Pinterest, Skype, blog, vlog, Edmodo, and Google Classroom, WhatsApp, Telegram, FB Messenger. Some positive views of the benefit of Web 2.0 has been explored by researchers. Web 2.0 tools were often used to promote learning in the affective learning domain through enhancing student motivation and providing stimulus to change their attitudes and perceptions towards technology-enhanced learning (Siemens,2008) .The social nature of Web 2.0 tools makes the collaborative learning not only possible on wiki, but even commonplace, especially in language learning environments (Cassandra et.al,2015)

The formation of a learning community is a dominant theme across studies. A Web 2.0 tool, whether it is wiki, blog, Twitter, social networking sites, all ntials to bring students into a learning community where they can ess to each other and further foster a sense of community and

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belonging through social interaction via the Web 2.0 medium. (Lundi,2014). In most of the wiki-supported classes, students were able to form learning communities within which they interacted, assisted and peer-assessed one another through collaborative writing (Sendag , et.al. . 2015)

Generally, all of the Web 2.0 tools can be implemented in an educational process or in fact, they continuously are being implemented. By usage of Web 2.0 tools training process can be supplemented by multimedia projects, online assessments, online discussions, collaborative work, making interactive class, creation of cartoons and animations, and many more.

The idea of Web 2.0 technologies deserves some merits, nevertheless there is some disadvantages in using them. As a counterweight to these positive views of a world defined by ever-increasing access to information, some writers discuss some of the dangers associated with information. First of all, technical issues have persistently kept some students and teachers away from using them in language learning and teaching. For example, wikis' slow loading time, podcasts' large file size and low connection speed, and participants' temporary breakdown of internet access have all posed great challenges to learners that hindered their use (Tucker,2014).

Tucker (2014) also revealed another major challenge is how to ensure an equal contribution among all the members and increase students' editing efforts in a collaborative writing effort. The unmotivated learners may claim to have vicarious experience by observing other learners' participation, but they are virtually not [illegible] true collaborative activity. How to motivate those learners and ensure [illegible]nt of participation across learners of different language proficiency [illegible] challenge to language teachers.

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From a pedagogical point of view, an instructors should have various degrees of integration of the technology in alignment with students' degree of interests and levels of electronic literacy. It is not wise to assume that all students in the classroom are digital natives who can automatically fit themselves into the technology-supported learning environment and remain highly engaged in such environments (Agir, 2014). Just as teachers have different opinions on to which extent Web 2.0 tools ought to be adopted in language teaching classrooms due to their different understanding and levels of familiarity with technology, students' internet literacy varies significantly as well. Therefore, there is no one single way that meets all students' needs as far as the integration of Web 2.0 is concerned.

Because of the learning potential of Web 2.0, it is essential to understand how the people adopted the technology (Najib, personal communication, September 2017) , as stated in the popular and widely acknowledged theory such as Diffusion of Innovation that has been developed by Everett Rogers (1983) .

2.2.5. Theory of Diffusion of Innovation

The Diffusion of Innovation (DoI) theory began to emerge in the early 20th century, precisely in 1903, when a French sociologist, Gabriel Tarde, introduced the S-shaped Diffusion Curve. This curve basically describes how an innovation adopted a person or group of people viewed from the time dimension. On this curve there are two axes in which one axis represents the rate of adoption and the other axis represents the time dimension. (Byant dan Thompson, 2002: 113).

This DoI theory then became popular and developed since Everett Rogers wrote his book entitled Diffusion of Innovation (1983). Rogers also studied on of innovations from other fields, for example in the field of eting, and drugs. He found many similarities in some of these areas.

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The result refers to the S-shaped Diffusion Curve, introduced by a French sociologist named Gabriel Tarde in the early 20th century. Rogers (1983) said, "Tarde's S-shaped diffusion curve is of the current importance because" most innovations have an S-shaped rate of adoption ". And since then the rate of adoption or the level of diffusion has become the focus of important studies in sociological studies, especially communications.

Tarde's S-shaped diffusion curve is in line with the definition of diffusion from Rogers (1983), namely "as the process by which an innovation is communicated through certain channels over time among the members of a social system." Further he explains that the diffusion is a form of communication that is specific with the spread of messages in the form of new ideas, or diffusion concerning the source of the invention or creation of ultimate users or adopters.

Rogers (1983) describes diffusion of innovation is a process whereby new ideas are communicated to society. It becomes the uniqueness of the diffusion of innovation is there is a novelty in a message that is delivered, thus causing uncertainty in the minds of communicants. This uncertainty causes the message is not easily accepted by the communicant, because the idea is still worth a try and the benefits are still unimaginable. Innovation can be interpreted as an idea, practice, and object that is still new for individuals and society. In this case, the novelty of innovation is measured subjectively according to the view of the individual who accepts it. If an idea is considered new by someone then it is an innovation for that person. The 'new' concept in an innovative idea does not have to be new at all.

Rogers (1983) suggests the following five characteristics of innovation

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At first, relative advantage is the degree to which an innovation is considered better / superior than ever before (Rogers, 1983). This can be measured from several aspects, such as economic terms, social prestige, comfort, satisfaction and others. The greater the relative advantage perceived by the adopter, the faster the possibility of innovation can be adopted. For instance: when purchase of mobile phones, mobile users will find a better mobile phone than he used before. So it can be concluded that the greater the relative advantage, the faster the possibility of innovation can be adopted.

Next, compatibility is the degree to which the innovation is considered consistent with prevailing values, previous experience and the needs of adopters (Rogers, 1983).. For example, if a new innovation or idea does not conform to the prevailing values and norms, then innovation cannot be easily adopted as well as compatible innovations. Example: the certain tribe has some rules for not using technology from outside, so that the they are nor adopted the innovation because it is not in accordance with the their socio-cultural norms .

Then, complexity is the degree to which innovation is perceived as difficult to understand and to use (Rogers, 1983). The more easily understood by the adopter, the sooner an innovation can be adopted. For instance, Android Operating System is easier than iOS, although iOS has more advantages over Android , so that there are still few people use iOS because its complicatedness.

Moreover, trialability is the ability to be tested is the degree to which an innovation can be tested to some extent (Rogers, 1983). An innovation that can be [illegible]ettings, so that innovation will generally be adopted more quickly. For [illegible]oducts of soaps are quickly accepted by the community because they [illegible]pare the used soap with other similar products.

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Last of all , observability is the ability to be observed is the degree to which the results of an innovation can be remarked by others (Rogers, 1983). The easier one testifies the results of an innovation, the more likely it is that the person or group of people adopt it.

Equally important with characteristics of innovation , Rogers (1983) also classified adopters groups (innovation recipients) regarding to their innovation level (pace of accepting innovation) as follows : firstly, group of innovators; the characteristics are risk-taking, mobile, smart, highly prosperous. For Rogers (1983), innovators were willing to experience new ideas. Thus, they should be prepared to cope with unprofitable and unsuccessful innovations, and a certain level of uncertainty about the innovation. Also, Rogers added that innovators are the gatekeepers bringing the innovation in from outside of the system.

Secondly, group of early adopters (pioneers); the characteristics are perfect role model, respected person, high access in technology. Compared to innovators, early adopters are more limited with the boundaries of the social system. Thirdly, group of early majority; the characteristics are full of consideration, high internal interaction. Rogers (1983) claimed that although the early majority have a good interaction with other members of the social system, they do not have the leadership role that early adopters have. As Rogers (1983) stated, they are deliberate in adopting an innovation and they are neither the first nor the last to adopt it. Thus, their innovation decision usually takes more time than it takes innovators and early adopters.

Fourthly, group of late majority: the characteristics are skeptical, too ...epting innovation because of economic considerations or social ...r to the early majority, the late majority includes one-third of all

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members of the social system who wait until most of their peers adopt the innovation. Although they are skeptical about the innovation and its outcomes, economic necessity and peer pressure may lead them to the adoption of the innovation. Last of all, group of laggards : the characteristics are traditional, isolated, limited insights, they are not opinion leaders, limited resources. As Rogers (1983) stated, laggards have the traditional view and they are more skeptical about innovations and change agents than the late majority.

On the whole, stand on the Rogers' five characteristics of Diffusion of Innovation namely relative advantage, compatibility, complexity, trialability, and observability, previous studies has looked at how the diffusion of technology are currently being used in the concept of the PLE. Because PLE has become a tool for empowerment as it embodies the principles of self-directed or self-motivated learning.

2.2.6. Personal Learning Environment (PLE)

PLE are not an application but rather a new approach to the use of new technologies for learning (Atwell,2007).Personal learning suggests learner autonomy and increased self regulation (Garcia,et.al,2013; Dabbagh and Kitsantas, 2011). Students engaging in networked learning research must be more self-directed (Educause,2009; Chatti, 2011). Siregar (2011) states that they are also required to take an active role as a subject in the learning process by making decisions about how to search, where to search, and why certain content meets a learning objective .

Traditional, lecture-based classrooms are designed as passive learning which the teacher conveys knowledge and the student responds eachers, on the other hand, are challenged to provide an appropriate n structure and learner autonomy in order to facilitate self-directed,

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personalized learning (Halim,et.al,2011). The role of a teacher within a student-centered approach to instruction is that of a facilitator or coach (Marquis,2012).

The teacher is necessary to help the students navigate the breadth of content, apply the tools properly, and offer support in the form of digital literacy skills and subject matter expertise. Yet the teacher may not be the only expert in the learning process. The PLE can take the place of a traditional textbook, though does not preclude the student from using a textbook or accessing one or more numerous open source texts that may be available for the research topic. The goal is to access content from many sources to effectively meet the learning objectives (Lubesky,2006)

PLE are systems that allow individual learners to manage and control their own learning using their own mix of tools (Hanover Research, 2012). Because of the level of independence that they grant to a learner they are often associated with informal learning. This includes providing support for learners to set their own learning goals, manage their learning, both content and process, and communicate with others in the process of learning.

Therefore the emergence of PLE where learners can choose and tailor to fit their own learning preferences. In a PLE the student can manage their own learning experience or preferences knowledge (Harmelen, 2006; Chen, 2012). PLE also expected organize their informal learning as well as in the formal education programmes (Labrovic,et.al, 2012).

Atwell (2007) defined 5 (five) PLE's attributes. The first attribute is [illegible] that PLE should provide the learner with the ability to determine [illegible]ols, the way that fit to create leaners' own PLE that adapt their [illegible]eds. Second attribute is social means that the building of interactive

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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. The third attribute is open means that to ensure communication with other services and interoperability, PLE should be based on open sources. The fourth attributes is ubiquitous means that PLE should provide ubiquitous access and flexible delivery PLEs from multiple channels to a wide variety of platforms and mobile devices. Last attribute is easy to use means that to personalize and manage her PLE with minimum effort, learner should be able to copy-and-paste and drag-and-drop elements.

In brief, each learner is unique and have a unique learning experience. This has instigated the research and development of a different type of learning environment, the PLE that is in the control of the learner. PLE in its ideal form, the needs of students are put first and students are able to direct “how, what, when, and where” they learn.

Afterward, defining the components of PLE, that is, the subject, object, community, and rules (Jonassen & Rohrer-Murphy, 1999). The aim is to provide an understanding of how the participants perceive their roles in relation to the goals of the system, but again, it is critical to remember that at this point this analysis provides knowledge of the system only through learners’ experiences and perceptions.

The components of a PLE are subsequently presented and discussed as follows. Firstly, subject of a PLE is the learners, who plays the center of teaching and learning processes at the university. To fully utilize the affordances of ICT tools learners’ positive attitudes towards owning laptops, smartphones, and as a part of their learning, are important (see chart 6). The more

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knowledge the learners possess with regard to how they could benefit from and implement ICT tools in their learning processes, and the more they can influence the technology choices (Elwood, Changchit, & Cutshall, 2006).

Secondly, object of PLE can be a product, a communication or any combination of elements (Engeström, 1987; Jonassen & Rohrer-Murphy, 1999). In this instance, the object of the PLE is a learning process taking place in and through PLE. The process leading to outcomes are highly individual and therefore, even though this study attempted to present a conceptualization of a PLE. Learners represent different demographic background (in this case, age and home communities. They also have varying backgrounds in terms of previous knowledge/experience in using computer and Web 2.0.

Thirdly, tools of PLE can be material devices or mental models or anything that connect a person with the world and other people (Jonassen & Rohrer-Murphy, 1999). The obvious set of tools in a PLE is the mobile devices: in this case laptops, smartphones and internet access. There has recently also been a shift from designing learning environments that support only one type of technology to 'bring your own device' learning environments, in which learners can use their own smartphones, tablet PCs, laptops, or any other type of ICT tools device for learning (Johnson, Adams, & Cummins, 2012; Lennon, 2012; Nykvist, 2012).

Fourthly, community; lecturers play a significant role in the community, by engaging in teaching and learning processes with learners on a daily activities. Lecturers are in a key position to support learners' use of ICTs in learning, enabling flexible learning practices and combining learning in formal and informal settings. use ICTs can be viewed as 'professional role models' (Harden & and are characterized by their knowledge, skills, attitudes and

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competencies, all of which are advantageous for the use of ICTs (Drent & Meelissen, 2008).

Last but not least, rules are meant to guide the actions or activities acceptable by the community (Jonassen & Rohrer-Murphy, 1999). As an institution, a university, with its traditions, sets a structure in which teaching and learning processes take place. They organize their own internal administration independently, and their operations are built on the freedom of education and research. For learners, rules are visible, for example, in the possibilities of what degrees are attainable at a university, and also in what period of time they are expected to complete their studies.

2.3. Theoretical Framework

A review of the literature on this topic revealed that there is a disagreement if Web 2.0 technology has promised more than it has delivered in terms of its effectiveness in improving either teaching or learning. On one hand, some researchers (Gulbahar,2014; Livingstone, 2015; Eren,2015; Al Saleem, 2014; William, 2011; Riady, 2014) argue that this generation of learners has better learning potential if Web 2.0 technologies are integrated into their learning activities because of the learner's familiarity with Web 2.0 technologies and high level of involvement with social networking activities. While on the other hand, this view is contested by other researches, arguing that integrating Web 2.0 for learning purposes is still a long way from being realized.

There is a rise in the literature of Web 2.0 that attest to the importance of learning provider to better comprehend the potential benefits of Web As discussed, this concept advocates learning through social which has been considered as another opportunity to assist teachers

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in engaging current learners in learning institutions. This study explored the rationales for adopting Web 2.0 in learning are linked to a number of factors. namely: new learning opportunities offered by Web 2.0 tools, putting the learners at the center of learning, offering learners a social network experience in learning, giving learners a personalized learning experience, and providing learners with the current trends for their future undertakings.

This study outlines at least four key theoretical considerations that suggest Web 2.0 tools and social software can be useful tools for teaching and learning based on several theoretical foundations. First, Web 2.0 learning enable learners to learn in their ZPD as introduced by Vygotsky (1978). ZPD is the distance between what a student could learn on their own and what they could learn with the help from more competent teachers or peers (Vygotsky, 1978). Web 2.0 technologies not only allow more direct interaction between teacher, student, and content, but it also opens up the role of more knowledgeable people to other learners including parents or even the computer.

Next, the second theoretical consideration for the use of Web 2.0 tools derives from the notion of Web 2.0 features as new media, in this case, interactivity and social networking. Interactivity allows the learners to no longer have a passive role, but to become an actor in the process of message construction. This interactivity can be done through chats, forums, comment boxes, and direct access buttons. Learners can upload videos/audios/documents in the target language. Next feature of Web 2.0 is networking. It can encourage the continuous learning, meet the specific needs and learning styles of learners, provide the collaboration among [illegible]le to easily find store, manage, and share content.

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Moreover, the third theoretical consideration comes from the rate of learners DOI which cover relative advantage, compatibility, complexity, trialability, and observability. , this study presented their adaptability toward the use of Web 2.0 tools.

The fourth theoretical consideration shows how the role of Web 2.0 promote the learners' PLE which pinpointed the following aspects, such as the adequacy of learners in adopting technology, provide private learning tools, availability of internet access, institutional support, and policy to create technology-based learning.

Of greatest importance, this study modified the Vygotsky' ZPD theory. Earlier, ZPD has two main concepts namely MKO and scaffolding. MKO refers to teachers or peers which can assist learners to solve their problems in learning environment. Then, scaffolding is the process or activity in which teacher or peer assists learners in learning environment. People favours the MKO refers to teacher or peer, on the contrary, the millennial learners needs Google search engine. For this reason, after showing the interrelatedness between features of Web 2.0, rate of DOI and the aspects of PLE, this study contributes a new term in ZPD namely social networking. The urgency of social networking in ZPD is explained more detail in chapter 4.

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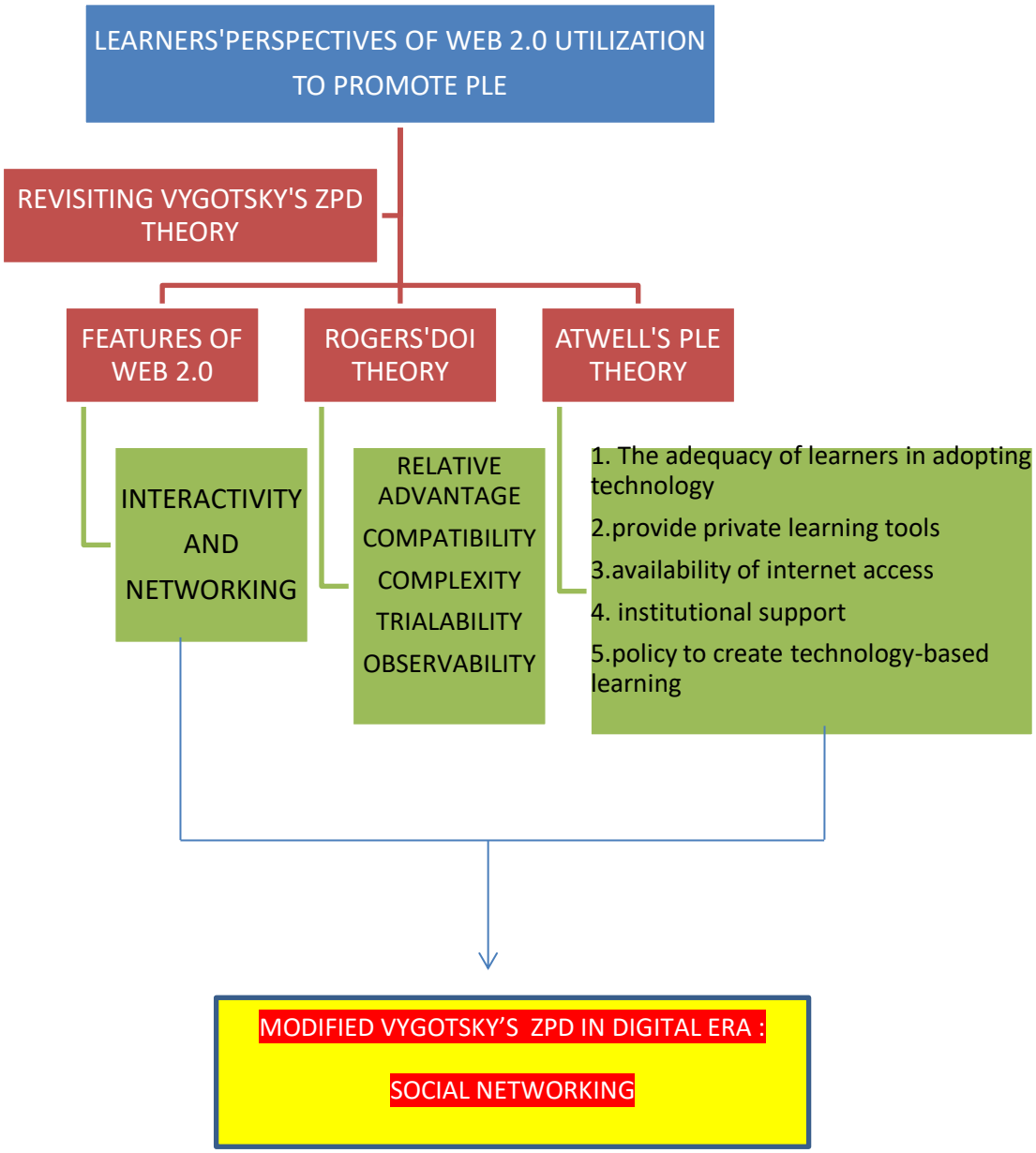
2.4. Conceptual Framework

Figure 3. Conceptual Framework



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