

PRE-SERVICE TEACHERS' PERCEPTIONS AND USE OF PERSONALIZED LEARNING ENVIRONMENTS

Larb Shwin Thu¹¹, Dr. Khin Mar Yee² and Dr. Khin Mar Ni³

Abstract

This paper concerns a research study of the pre-service teachers' perceptions and use of personalized learning environments at Teacher Education Institutions in Sagaing Region. The purpose of this study was to investigate the pre-service teachers' perceptions and use of personalized learning environments at Teacher Education Institutions in Sagaing Region. A total of 350 pre-service teachers from the Teacher Education Institutions participated in this study. Descriptive statistics, one way ANOVA, Post Hoc Multiple Comparison Tests (Tukey HSD), independent sample *t*-Test and Pearson Product Moment Correlation were used to identify differences between the various independent variables. The finding, $F(3,346) = 16.381, p < .001$ showed that there was a statistically significant difference in pre-service teachers' perceptions of personalized learning environments at Teacher Education Institutions in Sagaing Region. In addition, the finding, $F(3,346) = 23.402, p < .001$ showed that there was a statistically significant difference in the pre-service teachers' use of personalized learning environments at Teacher Education Institutions in Sagaing Region. A positively moderate relationship between perceptions and use of personalized learning environments was revealed ($r = .519, p < .001$). Information gained by interviewing the pre-service teachers and responses of the open-ended questions was complementary to the quantitative findings. Then, the suggestions taken into account the pre-service teachers' perceptions and use of personalized learning environments at Teacher Education Institutions in Sagaing Region were presented.

Keywords: Perceptions of Personalized Learning Environments (PPLE), Use of Personalized Learning Environments (UPLE), Teacher Education Institutions (TEI)

Introduction

Educational environments are evolving with the integration of technology in the learning process. Instruction with one-type of content in a learning environment is not an appropriate approach for learners with varying amounts of prior knowledge, paces and learning styles.

A personalized learning environment, or PLE, is the platform from which a learner can direct his or her own learning in a personalized learning environment, the learner is able to set learning goals, manage the content and learning process, and communicate with others in the learning process in order to achieve learning goals (Barnes, 2011).

According to Atwell (2007), personalized learning environments are activity environments whose final outcome is cooperative learning, where learners communicate and interact with other learners and experts (as cited in Sahin & Uluyol, 2016).

Most uses of PLE are focused online; however, personalized learning environments embody the entire set of resources that the learner is using in the learning process, which can be offline as well.

Significance of the Study

Personalized learning is an emerging trend which seeks to support student centered, 21st century teaching and learning. This research therefore aims to examine the current real-world usage of personalized learning environments by evaluating pre-service teachers' perceptions and use of personalized learning environments.

¹ Department of Educational Theory, Pyay Education Degree College

² (Retired) Professor and Head of Department, Department of Educational Theory, Sagaing University of Education)

³ Department of Educational Theory, Yangon University of Education)

Purpose of the Study

The main purpose of this study is to investigate the pre-service teachers' perceptions and use of personalized learning environments at Teacher Education Institutions in Sagaing Region.

Research Objectives

The main objective is to investigate the pre-service teachers' perceptions and use of personalized learning environments at Teacher Education Institutions in Sagaing Region.

The specific objectives of this study are:

1. To study the level of pre-service teachers' perceptions on their personalized learning environment at Teacher Education Institutions in Sagaing Region,
2. To explore the significant difference among the pre-service teachers' perceptions of personalized learning environment at Teacher Education Institutions in Sagaing Region,
3. To study the level of pre-service teachers' use on their personalized learning environment at Teacher Education Institutions in Sagaing Region
4. To examine the significant difference among the pre-service teachers' use of personalized learning environment at Teacher Education Institutions in Sagaing Region and
5. To find out the relationship between pre-service teachers' perceptions and use of personalized learning environments at Teacher Education Institutions in Sagaing Region.

Research Questions

1. What is the level of pre-service teachers' perceptions on their personalized learning environments at Teacher Education Institutions in Sagaing Region?
2. Is there any significant difference among the pre-service teachers' perceptions of personalized learning environment at Teacher Education Institutions in Sagaing Region?
3. What is the level of pre-service teachers' use on their personalized learning environments at Teacher Education Institutions in Sagaing Region?
4. Is there any significant difference among the pre-service teachers' use of personalized learning environment at Teacher Education Institutions in Sagaing Region?
5. Is there any relationship between pre-service teachers' perceptions and use of personalized learning environments at Teacher Education Institutions in Sagaing Region?

Definitions of Key Terms

Personalized Learning Environments (PLEs): The tools, communities and services that constitute the individual educational platforms learners use to direct their own learning and pursue educational goals (Pearson, 2009).

Theoretical Framework

George Siemens' Connectivism theory has been an integral part of e-learning and personalized learning (as cited in Barnes, 2011).

Review of Related Literature

In this day and age, a personalized learning environment (PLE) has emerged in educational field around the world. PLE allows for a learner or anyone to emerge in a distributed environment consisting of a network of people, services and resources.

Personalized learning environments are the environments in which learners are trained without let or hindrance of time, space etc. and that environment can be updated continuously

according to the needs, necessities, personal characteristics, background knowledge level, interest and abilities of the learners (Smith, 2014)).

The significant emphasis of the PLE concept on learner's engagement and activeness, power, support and independence dimensions were translated into the active roles. A learner should undertake in their own learning, namely knowledge developer, socializer, and decision maker, respectively (Rahimi, 2015).

Personal Learning Environments (PLEs) emerged around 2001 and became widespread from 2004. They were first mentioned by Olivier and Liber, who developed a learning environment for students at a University in Wales to store their learning records in 2001 (Charlier, 2010).

The advantages of PLE for students include the opportunities of flexibility according to time and place (anytime and anywhere), and the opening of individual learning activities, communication, and collaboration in virtual environments (Codrina, 2016).

Methodology

This study was both quantitative study using the descriptive survey design and qualitative study using open-ended question and interview design.

(1) Quantitative Methodology

This study was to examine the pre-service teachers' perceptions and use of personalized learning environments at TEI in Sagaing Region by using questionnaire survey.

Population and Sample

-350 pre-service teachers (100 DTED Trainees, 100 PPTT Trainees, 100 BEd Trainees and 50 PGDMA Trainees) (175 Male and 175 Female), most of DTED & BEd Trainees are the age of between 16 and 20, and most of PPTT & PGDMA Trainees are between 20 and 30 from two Education Colleges (coded as EC1 & EC2) and two Universities for Teacher Education (coded as UOE1 & UOE2) in Sagaing Region in 2018-2019 AY.

Instrumentation

The questionnaires were constructed based on "PPLE" developed by Sahin & Uluyol, (2016) and "UPLE" developed by Rahimi, (2015). In the questionnaire: (1) demographic data (Gender, Age, and Trainees), (2) questionnaire for PPLE (36 items), (3) questionnaire for UPLE (40 items) through the use of five point Likert scale.

In "PPLE" consists of three dimensions; "Perception of Usability", "Perception of Usefulness" and "Perception of Limitations". In "UPLE" consists of four dimensions; "Use for Access", "Use for Construct", "Use for Manage" and "Use for Share".

Procedure of Data Collection

-The pilot tests were employed at the two Education Colleges in Mandalay Region (100 DTED and 100 PPTT trainees), and using SPSS version 22 (Cronbach alpha ranked above 0.7 is reliable).

Table (1) Internal Consistency (Cronbach's Alpha Reliability Coefficients) for PPLE

No.	Perceptions of Personalized Learning Environments	Cronbach's Alpha
1	Perception of Usability (PUs)	0.7
2	Perception of Usefulness (PUf)	0.8
3	Perception of Limitations (PL)	0.7
	Overall (PPLE)	0.8

Table (2) Internal Consistency (Cronbach's Alpha Reliability Coefficients) for UPLE

No.	Use of Personalized Learning Environments	Cronbach's Alpha
1	Use for Access (UA)	0.8
2	Use for Construct (UC)	0.8
3	Use for Manage (UM)	0.8
4	Use for Share (US)	0.8
	Overall (UPLE)	0.8

Analysis of the Data for Quantitative Study

SPSS 22.0 was used for the descriptive statistics and *t*-test. Descriptive statistics were used to tabulate mean (M) and standard deviation (SD). One-way ANOVA was conducted to test significant differences. Post Hoc Multiple Comparison Tests (Tukey HSD) was applied to know which specific means are different from which other ones. Pearson product-moment correlation coefficient was utilized to know the relationship between PPLE & UPLE.

(2) Qualitative Methodology

The qualitative data were obtained through interviews and open-ended questions.

Population and Sample

A total of 28 pre-service teachers, eight from DTed (Science=4, Art=4), 8 from B.Ed (Science=4, Art=4), 8 from PPTT (BSc=4, BA=4), and four from PGDMA (BSc=2, BA=2)

Instrument

Three open-ended questions and five interview questions were used.

Analysis of the Data for Qualitative Study

Data obtained from open-ended questions and interview were transcribed to complete the qualitative finding.

Findings**(1) Findings of Quantitative Study****Table (3) Demographic Information about the Participants**

Categories of Pre-service Teachers		EC1	EC2	UOE1	UOE2	Total	
						N	%
Gender	Male	50	50	50	25	175	50%
	Female	50	50	50	25	175	50%

Categories of Pre-service Teachers		EC1	EC2	UOE1	UOE2	Total	
						N	%
Age	<20	50	50	50	25	175	50%
	>20	50	50	50	25	175	50%
Trainees	DTEd	50	50	-	-	100	28.6%
	BEd	-	-	50	50	100	28.6%
	PPTT	50	50	-	-	100	28.6%
	PGDMA	-	-	50	-	50	14.3%

Table (4) Independent Samples *t*-test for Each Dimensions of PPLE between EC and UOE

Dimensions	Institutions	<i>t</i>	<i>df</i>	Sig	Mean Differences
Perceptions of Usability	EC UOE	-8.070	348	0.000	-0.291
Perceptions of Usefulness	EC UOE	-3.433	-3.433	0.001	-0.121
Perceptions of Limitations	EC UOE	-3.281	348	0.001	-0.112
PPLE	EC UOE	-6.731	348	0.000	-0.175

The result of *t*-test for PPLE revealed that there were statistically significant differences ($p < 0.01$). For perceptions of usability, perceptions of usefulness and perceptions of limitations, significant differences ($p < 0.01$) were found.

Table (5) Independent Samples *t*-test for Each Dimension of UPLE between EC and UOE

Dimensions	Institutions	<i>t</i>	<i>df</i>	Sig	Mean Differences
Use for Access	EC UOE	-5.815	348	0.000	-0.339
Use for Construct	EC UOE	-7.528	348	0.000	-0.438
Use for Manage	EC UOE	-5.849	348	0.000	-0.342
Use for Share	EC UOE	-5.355	348	0.000	-0.324
UPLE	EC UOE	-7.083	348	0.000	-0.361

The result of *t*-test for UPLE revealed that there were statistically significant differences in their use of personalized learning environments ($p < 0.01$). In the dimensions of use for access,

use for construct, use for manage and use for share, there were statistically significant differences ($p<0.01$).

Table (6) Means and Standard Deviations for PPLE according to the Institutions

Institutions	N	Mean	SD
EC1	100	3.94	0.29
EC2	100	3.93	0.24
UOE1	100	4.13	0.21
UOE2	50	4.06	0.20
PPLE	350	4.01	0.26

Low (1.00-2.33)

Moderate (2.34-3.67)

High (3.68-5.00)

The highest mean value ($\bar{X}=4.13$) was found for the PPLE in UOE1. The pre-service teachers in Un1 had higher PPLE than those in EC1, EC2 and UOE2. The mean values for all the institutions indicated that their PPLE were high ($\bar{X}=4.01$).

Table (7) ANOVA Table for PPLE according to the Institutions

PPLE	Sum of Squares	df	Mean Square	F	p
Between Groups	2.823	3	.941	16.381	.000
Within Groups	19.878	346	.057		
Total	22.701	349			

$P<.001$

ANOVA Result showed that there was a statistically significant difference in perceptions of personalized learning environments according to the Institutions, $F(3, 346) = 16.381$, $p<.001$.

Table (8) Results of Multiple Comparisons for PPLE according to the Institutions

(I)Institutions	(J)Institutions	Mean Differences (I-J)	p
UOE1	EC1	0.192*	0.000
	EC2	0.208*	0.000
UOE2	EC1	0.116*	0.029
	EC2	0.132*	0.009

*The mean difference is significant at 0.05 level.

The pre-service teachers from UOE1 rated higher PPLE than those in EC1 and EC2. The pre-service teachers from UOE2 also rated higher PPLE than those in EC1 and EC2.

Table (9) Means and Standard Deviations for UPLE according to the Institutions

Institutions	N	Mean	SD
EC1	100	3.62	0.534
EC2	100	3.41	0.522
UOE1	100	3.94	0.319
UOE2	50	3.74	0.413
UPLE	350	3.67	0.504

Low (1-2.33)

Moderate (2.34-3.67)

High (3.68-5)

The highest mean value ($\bar{X}$ =3.94) was found in Un1 for UPLE. The pre-service teachers in UOE1 rated more UPLE than those in EC1, EC2 and Un2. The mean values of EC1and EC2 indicated moderate UPLE ($\bar{X}$ =3.62 & $\bar{X}$ =3.41). The mean values of UOE1 and UOE2 expressed more UPLE ($\bar{X}$ =3.94, & $\bar{X}$ =3.7).

Table (10) ANOVA Table for UPLE according to the Institutions

UPLE	Sum of Squares	df	Mean Square	F	p
Between Groups	14.926	3	4.975	23.402	.000
Within Groups	73.561	346	.213		
Total	88.487	349			

P<.001

ANOVA Result showed that there was a statistically significant difference in use of personalized learning environments according to the Institutions, $F(3, 346) = 23.402, p < .001$.

Table (11) Results of Multiple Comparisons for UPLE according to the Institutions

(I)Institutions	(J)Institutions	Mean Differences (I-J)	p
EC1	EC2	0.218*	0.005
UOE1	EC1	0.321*	0.000
	EC2	0.538*	0.000
UOE2	EC2	0.332*	0.000

*The mean difference is significant at 0.05 level.

The pre-service teachers in UOE1 rated more use of personalized learning environments than those in EC1 and EC2. The pre-service teachers in EC1 also rated more use of personalized learning environments than those in EC2, and UOE2 also rated more use of personalized learning environments than those in EC2.

Table (12) Correlation between PPLE & UPLE at Teacher Education Institutions

Variables	Perceptions of Personalized Learning Environments	Use of Personalized Learning Environments
Perceptions of Personalized Learning Environments Sig. (2-tailed)	1	.519**
N	350	350
Use of Personalized Learning Environments Sig. (2-tailed)	.519**	1
N	350	350

**Correlation is significant at the 0.01level (2-tailed).

Table (12) indicated that there is a positively moderate relationship between perceptions of personalized learning environments and use of personalized learning environments ($r=.519, p < .01$).

Table (13) Inter-correlations between PPLE & UPLE at TEI

Variables	PUS	PUF	PL	UA	UC	UM	US
PUS	1						
PUF	.547** .000	1					
PL	.202** .000	.266** .000	1				
UA	.455** .000	.364** .000	.124** .000	1			
UC	.493** .000	.369** .000	.162** .000	.753** .000	1		
UM	.484** .000	.410** .000	.190** .000	.688** .000	.772** .000	1	
US	.382** .000	.412** .000	.216** .000	.565** .000	.666** .000	.731** .000	1

**Correlation is significant at the 0.01 level.

As described in Table (13), almost all rating in components of PPLE & UPLE were found to be statistically significant to each other.

(2) Findings of Qualitative Study

(i) Responses to Three Open-ended Questions

- The Total of 350, Participants 292 (83%), Not Respond 58 (17%)

Q-(1), “What are the requirements to implement the PLE concept within the school context?”

- internet, school wi-fi, adequate computers, projector, laboratory, language lab,

Q-(2), “What types of learning content, skill, and competencies do you need?”

-not only from online learning environments but also from offline learning environments, and to explore personal interests

Q-(3), “What are your suggestions for improving the use of PLEs?”

-need to provide personalized learning opportunities, to promote creativity, and to improve technology skills

(ii) Responses to Five Interview Questions (28 Participants)

Q-(1), “Please explain your previous technology-based learning experiences”,

-they mostly used mobile phones to study the contents as they interest, and they practiced typing, and also used Microsoft word to write their lessons by using computers

Q-(2), “Based on your experiences, please explain your perception about the PLE,

- supported them to study any education, they had a deep understanding they could utilize time effectively, they had free to study, and they could share the information

Q-(3), “Have you considered using a more personalized learning environment with your trainings or other workplace learning? Do you think the outcome will be more or less just as effective?”

- using PLE in training for their peer group teaching, planning the lesson, assignments and teaching aids and have self-confidences and friendly with technology tools

Q-(4) “Do you believe that personalized learning environments could be utilized in your learning? Why or why not? ”

- could be utilized because supported them every time everywhere, and not limited knowledge and information, could learn what they wanted from Google and Browser

Q-(5) “What types of personalized learning environments do you usually use and how they impact on your learning?”

- use mobile phone and make them from dependent learners to independent learners

Conclusion And Discussion

Students’ learning should change from ‘dependent learning’ to ‘independent learning’ such as personalized learning and they should be given opportunities to make their own decisions according to their own interests.

It is the complete set of both online and offline resources that learners use to review their class room learning during their self-learning phases for answering their homework and assignment questions (Dabbagh & Kitsantas, 2011 as cited in Tanyong & Sharafuddin, 2016).

Personalized learning environments enable a learner to pool all of his or her learning experiences, whether these are workplace, academic or civic experiences. This can be employed to make more informed and self-directed decisions about learning needs (Hicks, 2015).

Personalized learning environment allows learners to become motivationally and behaviourally active participants, to regulate their own learning, and greatly enhancing their learning outcomes (Mikroyannidis, 2015).

The main benefit is that personalized learning environments prepare students for ongoing development beyond the classroom and provide a practical means to introduce the tools that will support lifelong learning (Reinders, 2014).

In this modern education age, personalized learning environment is an effective learning environment and learners need to have enthusiasm, critical thinking, right learning and understanding, and responsibility and accountability.

Therefore, using personalized learning environments reduces the dependence on the teachers and increases student control over their own learning and they have opportunities to achieve maximum personalization. PLE enables learners to organize their learning, provides the freedom to choose content, and allows communication and collaboration with others easily.

Recommendation for Further Research

The study only covered the concepts of personalized learning environments; the use of personalized learning environments; the characteristics of personalized learning environments; and the role of personalized learning environments in education. The research should also be carried out to investigate students and in-service teachers’ perceptions and use of personalized learning environments not only at Teacher Education Institutions but also in Basic Education Schools, Colleges, Degree Colleges, other Institutions, and Universities in the country.

Finally, it is recommended that today is rapidly changing education and employment conditions demand a lifelong learner who is flexible, motivated, and in control of his or her learning. The personalized learning environments have significantly advanced the lifelong learners with the tools and support they need for personalizing their learning and developing a wide range of technology skills.

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