

## The Need for Mobile Learning of Undergraduate Students

### A Case Study in Rajamangala University of Technology Thanyaburi

Sukontip Wongpun

Information Systems Department, Faculty of Business Administration  
Rajamangala University of Technology Thanyaburi  
Pathumthani, Thailand  
sukontip\_w@rmutt.ac.th

บทคัดย่อ - การเรียนรู้ผ่านโทรศัพท์เคลื่อนที่ถือเป็นการนำเอาเทคโนโลยีสารสนเทศมาใช้ในการจัดการเรียนการสอนรูปแบบหนึ่งที่ระบบการศึกษาควรให้ความสำคัญ ดังนั้นงานวิจัยนี้จึงต้องการศึกษาถึงความต้องการการเรียนรู้ผ่านโทรศัพท์เคลื่อนที่ของนักศึกษาระดับปริญญาตรีและศึกษาผลกระทบที่มีต่อความต้องการเรียนรู้ผ่านโทรศัพท์เคลื่อนที่กับชั้นปีที่ศึกษา คณะและพฤติกรรมการใช้งานโทรศัพท์เคลื่อนที่ โดยองค์ประกอบของการเรียนรู้ผ่านโทรศัพท์เคลื่อนที่ที่ใช้ในงานวิจัยนี้ ประกอบไปด้วยองค์ประกอบด้านผู้เรียน ผู้สอน เนื้อหา สภาพแวดล้อมและการประเมินผล [1] ค่าสถิติที่ใช้ในงานวิจัยได้แก่ ค่าเฉลี่ย ค่าส่วนเบี่ยงเบนมาตรฐาน การวิเคราะห์ความแปรปรวน และการเปรียบเทียบเชิงซ้อน ผลการวิจัยโดยภาพรวมพบว่า นักศึกษาต้องการการเรียนรู้ผ่านโทรศัพท์เคลื่อนที่อยู่ในระดับ ปานกลาง (68.40%) โดยมีความต้องการในองค์ประกอบด้านสภาพแวดล้อมที่เหมาะสมในการเรียนรู้ผ่านโทรศัพท์เคลื่อนที่มากที่สุด และรองลงมาคือความต้องการด้านเนื้อหาที่เหมาะสมในการเรียนรู้ผ่านโทรศัพท์เคลื่อนที่ โดยองค์ประกอบด้านสภาพแวดล้อมที่ต้องการมากที่สุดคือ ความต้องการบริการเครือข่ายอินเทอร์เน็ตไร้สายที่แรงและรวดเร็ว และความต้องการเรียนรู้ผ่านโทรศัพท์เคลื่อนที่ในองค์ประกอบด้านผู้เรียน เนื้อหา สภาพแวดล้อมและการประเมินผล มีความแตกต่างกันอย่างมีนัยสำคัญกับชั้นปีที่ศึกษาของนักศึกษา

คำหลัก-ความต้องการ; การเรียนรู้ผ่านโทรศัพท์เคลื่อนที่; นักศึกษาระดับปริญญาตรี; พฤติกรรมการใช้งานโทรศัพท์เคลื่อนที่

Abstract— mobile learning (m-learning) is an important information technology that should integrate into an

education system. Therefore, this research has an objective to study the need for mobile learning (m-learning) of the undergraduate students. Including, demonstrates the effect of the class level, faculty of students and behavior of using a mobile phone on the need for mobile learning. The component of mobile learning includes learner, teacher, content, environment, and assessment [1]. Statistical techniques such as mean (X), Standard deviation (S.D.), one way ANOVA and Least Significant Difference (LSD) were used in the analysis of the data. The results of the research found that the need for mobile learning of the undergraduate students was in the middle level (68.40%). The highest need for mobile learning was the environment component and the suitable content for mobile learning respectively. The highest need of environment was using fast and free Wi-Fi for supporting mobile learning. The need for mobile learning about learner, content, environment, and assessment differs according to the class level of students.

Keywords- Need; Mobile Learning (M-learning); Undergraduate Student; Behavior of using mobile

#### I. INTRODUCTION

In 2017, Thai government has officially announced the 12<sup>th</sup> National Economic and Social Development Plan. This plan is a plan toward to Thailand 4.0 which has an aim to be a digital Thailand [2]. Especially, a goal of transform the traditional learning to smart learning which an important achieve of Thailand 4.0. Smart Learning is an education process that apply ICT tools and internet to provide equitable information and suitable for all students education [3]. In order to toward smart learning, therefore we need to develop and improve the quality of our universities. Universities have a critical need to find strategies and approaches to teaching and administration. Using an innovation to the management of teaching and learning, it is essential to enhance cognitive learning skills and support the students to learn on their self.

A learning through a mobile phone called mobile-learning (M-Learning). M-Learning is an innovation to

enhance the students' performance and quality of a university. M-learning is a teaching and learning method through mobile devices such as smart phones and tablets which use the wireless internet [4]. This method allows students to access lesson exercises including talking and asking questions with an instructor and other at any time.

M-learning integrates with many components such as voice communication, e-mail interaction or short message service [5]. It can enhance learning performance of students by using technology accessible through mobile devices. M-learning can reduce the problem of geographic environment and creates collaborative learning [6]. Moreover, m-learning is a combination of private school and learn from the portable, which means that students can choose a topic to study depend on their want and like by using a portable device in anytime anywhere. Devices such as a tablet and mobile phone are a tool for M-Learning which most commonly used [6]. The basic elements of m-learning include learners, teacher, content, environment, and assessment [1].

M-learning is an important strategy that universities should consider to contributing this innovation in a learning and teaching. An issue of mobile learning is the preparedness of resources. For example, a mobile phone should support internet, graphic and multimedia. Many researchers confirmed in nowadays undergraduate students have a suitable mobile device for mobile learning [7]. Therefore, it is imperative to understand the overview of the need for mobile learning of the undergraduate students. Including, finding the affect among the personal data, behavior of using mobile phone and the need for mobile learning. To achieve these purposes, we have done the research by answering the following questions:

1. What are the needs for mobile learning of the undergraduate students?
2. How an effect with the personal data of the undergraduate students and the need of mobile learning?
3. How an effect with the mobile using's behaviour of the undergraduate students and the need of mobile learning?

The rest of the paper is organized as follows. Section II purposes literature review and related studies. In section III illustrates a conceptual framework. In section IV, all detail of data analysis is clearly explained. In section V the conclusion and discussion are described. Finally, section VI describes a further study.

## II. LITERATURE REVIEW AND RELATED STUDIES

Mobile learning is learning process through a mobile device that can create real-time interaction and collaboration between students and teachers. A component of a model of mobile learning includes learner, teacher, content, environment and assessment, as shown in Figure. 1.

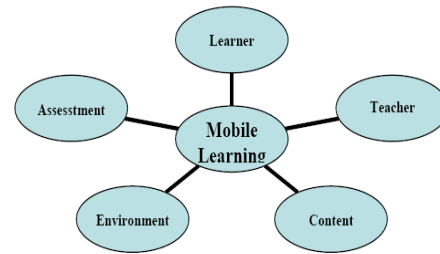


Figure 1. A component of a model of mobile learning, Source from [1]

Each element has the detail as follows: [1]

- *Learner* is anybody who needs to learn and participant via mobile device. The learner can create their schedule and responsibility about learning by themselves.
- *Teacher* is a person who has a responsibility to convey their knowledge and experience to the learners through the mobile device.
- *Content* is all information and knowledge of each subjects of a curriculum. The content should be created by using a suitable format of public on the mobile device.
- *Environment* is all services that support learner and teacher to learn together.
- *Assessment* is an evaluation student's performance. Also, this component should be recorded the student's study behaviours and advancement continuously.

Many undergraduate students have a positive attitude of mobile learning. They use a mobile phone for supporting learning and self-improvement. For example, they use a mobile device as an online dictionary and send a message and communicate about learning with their friends [5, 8]. Including, the online activities were special created for mobile learning by teachers. These activities motivate them to more like mobile learning [5].

The literature reviews confirmed that the undergraduate students have the positive attitude and preparedness of mobile learning. However, an important of implementing a mobile learning is what student needs are and how to provide suitable mobile learning to the students. Therefore, this work have investigated and demonstrated this point as a guideline to a university to implement mobile learning.

## III. CONCEPTUAL FRAME WORK

The research hypothesis stated that the different personal data includes class level and faculty of the undergraduate students affect different the need of mobile learning. Also, the different mobile using's behavior affect different the need of mobile learning. From the literature reviews show that a component of a mobile

learning includes learner, teacher, content, environment and assessment. Therefore, this work has demonstrated an effect of the undergraduate students' need with these components, as shown in Figure 2.

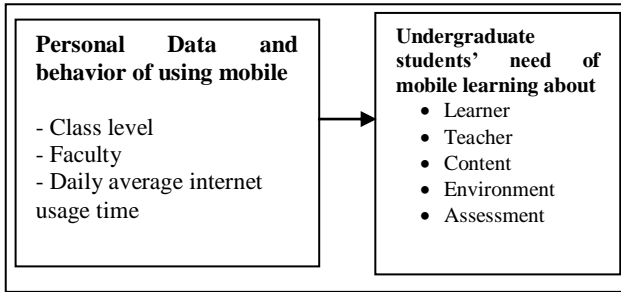


Figure 2. The Conceptual Framework

IV. DATA ANALYSIS

In this research, the researcher used a multi-stage sampling method to collect data for obtaining the following of 407 samples. The first stage was a divide the undergraduate students into 10 faculties and 1 college by using the stratified sampling method. The faculties of undergraduate students include 1) faculty of arts (AT) (52, 12.8%), 2) education (ED) (37,9.1%), 3) agricultural technology (AGT)(12,2.9%), 4) engineering (EN) (97, 23.8%), 5) business administration (BUS) (85, 20.9%), 6) home economics (HE) (24, 5.9%), 7) mass communication technology (MCT)(26, 6.4%), 8) science and technology (SCT) (26, 6.4%), 9) architecture (ACT) (16, 3.9%), 10) liberal arts (LA) (28, 6.9%) and 11) Thai traditional medicine College (TTME)(4, 1%). Then, we used the convenience sampling to distribute questionnaires to all undergraduate students. The last step was collect data sampling from each group by used a simple random sampling.

To analysis of the data, this work analyzed the data by using descriptive statistics includes mean (X), standard deviation (S.D.), one way ANOVA and the Least Significant Difference (LSD).

The results from the survey shows that most of respondents were female (253 persons, 62.60%) and male were 37.80% (154 persons). For the class level of students, most of participants are studying in the second year (139 persons, 34.20%), the third year (111 persons, 27.30%), the fourth year (104 persons, 25.60%) and the first year (53 persons, 13%) respectively. A majority of type of mobile phones that most of the students used were smartphones (87%) follow by feature phones (13%). The students used the internet per day between 1 and 3 hours (32.40%), between 3 and 6 hours (25.10%), less than 1 hour (12.80%), all the time (12.50%), more than 6 hours (10.60%) and not use (6.60%) respectively. The needs of undergraduate students for learning through a mobile device were shown in Table I.

TABLE I. SHOW THE PERCENTAGE AND STAND DEVIATION OF THE NEED OF M-LEARNING

The need of mobile learning		$\bar{X}$	S.D.	Result	Order
Learner	1. Data Security of the privacy information.	3.68	0.71	High	2
	2. Create learning responsibility by their self	3.37	0.87	Moderate	13
	3. Create an individual model of learning that specific to each person.	3.43	0.88	Moderate	7
	4. Create and sharing their information and knowledge to their peer.	3.28	0.88	Moderate	20
	5. Create an real-time interaction	3.38	0.84	Moderate	12
	6. Contact a teacher via social network.	3.33	0.92	Moderate	16
	7. Communicate with a teacher as real-time and face-time	3.38	0.98	Moderate	12
	8. Receive and use a SMS about learning	3.28	0.92	Moderate	20
	9. Receive and use an E-mail of learning	3.35	0.86	Moderate	15
	10. Receive an online help of the m-learning.	3.33	0.84	Moderate	16
Teacher	11. Teachers should consult will all relevant persons to create a suitable contents	3.31	0.85	Moderate	18
	12. Teacher should make an understand of different students and providing a suitable feedback in a private	3.37	0.84	Moderate	13
	13. Teachers should give a consult to students via social network or face-time	3.40	0.86	Moderate	10
	14. Teacher should find a method to increase motivation of using mobile learning to students	3.42	0.85	Moderate	8
Content	15. The content should present as a game or interaction.	3.45	0.79	Moderate	6
	16. The content should focus on multimedia, video, or animation.	3.53	0.87	High	4
	17. The content should upload in minimum size that can fast download	3.47	0.85	Moderate	5
Environment	18. The university should provide fast and free Wi-Fi.	3.74	0.78	High	1

TABLE I. SHOW THE PERCENTAGE AND STAND DEVIATION OF THE NEED OF M-LEARNING (CONT)

The need of mobile learning		$\bar{X}$	S.D.	Result	Order
	19. The university should provide fast and free Wi-Fi outside the university.	3.41	0.91	Moderate	9
	20. The university should sell a cheap smart phone to student.	3.57	0.91	High	3
	21. The university should give a smart-phone to the first year students by plus the price includes the tuition fee.	3.32	1.00	Moderate	17
Assessment	22. Should provide an online assessment.	3.36	0.86	Moderate	14
	23. Should provide an online behavior assessment	3.39	0.87	Moderate	11
	24. Should provide an online project assessment.	3.36	0.87	Moderate	14
	25. Should provide an online self-assessment and teacher-assessment	3.29	0.90	Moderate	19

The results of the needs of mobile learning (See in Table I) show that the top-three highest need were fast and free Wi-Fi followed by the data security of the privacy data and selling a cheap smart phone respectively.

Table II shows the summarized of the need for mobile learning of each component. The results show that the highest requirement was the need of supporting about environment of mobile learning.

TABLE II. DEMONSTRATE THE OVERVIEW NEED OF MOBILE LEARNING

The need of mobile learning	$\bar{X}$	S.D.	Result	Order
Learner	3.38	0.57	Moderate	3
Teaching	3.38	0.63	Moderate	3
Content	3.48	0.70	Moderate	2
Environment	3.51	0.61	High	1*
Assessment	3.35	0.66	Moderate	4
<b>Mean</b>	<b>3.42</b> <b>(68.40%)</b>		<b>Moderate</b>	

Next section, the research hypothesis will be tested.

**Hypothesis 1:** The different class level of students affects differ with the need of mobile learning. The statistic use in this hypothesis is One-Way ANOVA with 95% confident, as shown in Table III.

TABLE III. DEMONSTRATE AN EFFECT WITH CLASS LEVEL OF STUDENTS AND THE NEED OF MOBILE LEARNING

m-learning		Sum of square	Mean square	F	P
Learner	Between Groups	4.295	1.432	4.415	<b>0.005*</b>
	Within Groups	130.686	0.324		
	Total	134.981			
Teacher	Between Groups	1.169	1.620	3.352	0.409
	Within Groups	162.798	0.483		
	Total	163.967			
Content	Between Groups	4.861	1.278	3.400	<b>0.019*</b>
	Within Groups	194.823	0.376		
	Total	199.684			
Environment	Between Groups	3.835	1.335	3.045	<b>0.018*</b>
	Within Groups	151.507	0.438		
	Total	155.342			
Assessment	Between Groups	4.005	1.432	4.415	<b>0.029*</b>
	Within Groups	176.702	0.324		
	Total	180.707			

As shown in Table III, the class level of students has effect with the need of mobile learning in an aspect of learner, content, environment, and assessment at a significance level less than 0.05. Therefore, the LSD was used to calculate pairwise comparisons between the different of year level of students, as shown in Table IV-VII.

TABLE IV. SHOW THE PAIRWISE COMPARATIVE DATA ON CLASS LEVEL OF STUDENTS AND THE NEED OF MOBILE LEARNING ABOUT LEARNER

Study Level	$\bar{X}$	1	2	3	4
		3.28	3.30	3.37	3.55
1 <sup>st</sup> year	3.28		0.781	0.312	<b>0.005*</b>
2 <sup>nd</sup> year	3.30			0.330	<b>0.001*</b>
3 <sup>rd</sup> year	3.37				<b>0.026*</b>
4 <sup>th</sup> year	3.55				

As shown in Table IV, the fourth-year students have the most significant need for mobile learning about learner than all students in the other study levels at significant level 0.05.

TABLE V. SHOW THE PAIRWISE COMPARATIVE DATA ON CLASS LEVEL OF STUDENTS AND THE NEED OF MOBILE LEARNING ABOUT CONTENT

Study Level	$\bar{X}$	1	2	3	4
		3.29	3.42	3.52	3.63
1 <sup>st</sup> year	3.29		0.261	0.048	<b>0.004*</b>
2 <sup>nd</sup> year	3.42			0.243	<b>0.021*</b>
3 <sup>rd</sup> year	3.52				0.265
4 <sup>th</sup> year	3.63				

The analysed results of LSD (See in Table V) found that the fourth-year students have significant need for mobile learning about content components more than the second and third-year student at significant level 0.05.

TABLE VI. SHOW THE PAIRWISE COMPARATIVE DATA ON CLASS LEVEL OF STUDENTS AND THE NEED OF MOBILE LEARNING ABOUT ENVIRONMENT

Study Level	X	1	2	3	4
1 <sup>st</sup> year	3.57		0.324	0.112	0.396
2 <sup>nd</sup> year	3.47			0.403	<b>0.020*</b>
3 <sup>rd</sup> year	3.40				<b>0.003*</b>
4 <sup>th</sup> year	3.65				

The pairwise comparative data in Table VI illustrates that the fourth-year students have significant need for mobile learning about environment components more than the second and third-year student at significant level 0.05.

TABLE VII. SHOW THE PAIRWISE COMPARATIVE DATA ON CLASS LEVEL OF STUDENTS AND THE NEED OF MOBILE LEARNING ABOUT ASSESSMENT

Study Level	X	1	2	3	4
1 <sup>st</sup> year	3.27		0.751	0.830	<b>0.026*</b>
2 <sup>nd</sup> year	3.30			0.903	<b>0.012*</b>
3 <sup>rd</sup> year	3.29				<b>0.012*</b>
4 <sup>th</sup> year	3.52				

The analysed results of LSD (See in Table VII) found that the fourth-year students have significant need for mobile learning about assessment components more than all students in other years.

**Hypothesis 2:** The different student’s faculty affects difference with the need of mobile learning. The statistic use in this hypothesis is One-Way ANOVA with 95% confident, as shown in Table VII.

TABLE VIII. DEMONSTRATE AN EFFECT WITH FACULTY AND THE NEED OF MOBILE LEARNING

m-learning		Sum of square	Mean square	F	P
<b>Learner</b>	Between Groups	10.395	1.039	3.304	<b>0.000*</b>
	Within Groups	124.586	0.315		
	Total	134.981			
<b>Teacher</b>	Between Groups	7.298	0.730	1.845	0.052
	Within Groups	156.670	0.396		
	Total	163.967			
<b>Content</b>	Between Groups	7.128	0.713	1.466	0.150
	Within Groups	192.556	0.486		
	Total	199.684			
<b>Environ-ment</b>	Between Groups	7.725	0.772	2.072	<b>0.026*</b>
	Within Groups	147.617	0.373		
	Total	155.342			
<b>Assessm-ent</b>	Between Groups	3.165	0.317	0.706	0.719
	Within Groups	177.542	0.448		
	Total	180.707			

There is a significant difference as a result one way ANOVA test between the faculty of the students and the

need of mobile learning about learner and environment (See in Table VIII ). However, the faculty of the students has no significant difference with the need of mobile learning about teacher, content, and assessment. A significant ANOVA effect the Least Significant Difference (LSD) method was used to perform pairwise comparisons between the different of faculties. Statistical significant was used at the 0.05 level.

The analysed results of LSD found that the students who study in the business administration faculty have significant need for mobile learning about learner components more than the students who study in arts(0.002\*), science and technology (0.018\*), home economics (0.000\*), engineering (0.043\*) and architecture0.022\* faculties at significant level 0.05.

Also, the students of the business administration faculty have significant need for mobile learning about environment components more than the students of the arts (0.000\*), science and technology (0.007\*), engineering (0.046\*), agriculture technology (0.042\*) and liberal arts (0.023\*). Moreover, the students of mass communication faculty have significant need for mobile learning about environment components more than the students of arts (0.007\*) and science technology (0.042\*) faculties at significant level 0.05

**Hypothesis 3:** The different Period time of using a mobile phone of the student’s university affects difference with the need of mobile learning. The statistic use in this hypothesis is One-Way ANOVA with 95% confident, as shown in Table IX.

TABLE IX. DEMONSTRATE AN AFFECT WITH PERIOD TIME OF USING MOBILE PHONE/DAY AND THE NEED OF MOBILE LEARNING

m-learning		Sum of square	Mean square	F	P
<b>Learner</b>	Between Groups	12.532	2.506	8.208	<b>0.000*</b>
	Within Groups	122.449	0.305		
	Total	134.981			
<b>Teacher</b>	Between Groups	10.250	2.050	5.348	<b>0.000*</b>
	Within Groups	153.717	0.383		
	Total	163.967			
<b>Content</b>	Between Groups	13.528	2.706	5.828	<b>0.000*</b>
	Within Groups	186.156	0.464		
	Total	199.684			
<b>Environ-ment</b>	Between Groups	8.114	1.623	4.420	<b>0.001*</b>
	Within Groups	147.228	0.367		
	Total	155.342			
<b>Assessm-ent</b>	Between Groups	14.177	2.835	6.828	<b>0.000*</b>
	Within Groups	166.530	0.415		
	Total	180.707			

As shown in Table IX, the period time of using a mobile phone has effect with all the need of mobile learning at significant level less than 0.05. Therefore, the LSD was used to calculate pairwise comparisons between the different of daily average internet usage time, as shown in Table X - XIV.

TABLE X. SHOW THE PAIRWISE COMPARATIVE DATA ON THE DAILY AVERAGE INTERNET USAGE TIME OF MOBILE LEARNING ABOUT LEARNER

Time/ Hour	$\bar{X}$	<=1	>1- <3	>3 - < 6	>6	All time	Not use
		3.17	3.28	3.40	3.59	3.74	3.23
<=1	3.17		0.230	<b>0.018*</b>	<b>0.000*</b>	<b>0.000*</b>	0.647
>1- <3	3.28			0.114	<b>0.002*</b>	<b>0.000*</b>	0.678
>3- <6	3.40				0.060	<b>0.000*</b>	0.171
>6	3.59					0.183	<b>0.009*</b>
All time	3.74						<b>0.000*</b>
Not use	3.23						

As shown in Table X, the undergraduate students who daily average internet usage all time (24 hours) have the most significant need for mobile learning about learner than all the other groups of internet usage time at significant level 0.05.

TABLE XI. SHOW THE PAIRWISE COMPARATIVE DATA ON THE DAILY AVERAGE INTERNET USAGE TIME OF MOBILE LEARNING ABOUT TEACHER

Time/ Hour	$\bar{X}$	<=1	>1- <3	>3 - < 6	>6	All time	Not use
		3.25	3.25	3.45	3.65	3.58	3.12
<=1	3.25		0.999	0.070	<b>0.002*</b>	<b>0.007*</b>	0.377
>1- <3	3.25			<b>0.019*</b>	<b>0.000*</b>	<b>0.001*</b>	0.321
>3- <6	3.45				0.076	0.197	<b>0.017*</b>
>6	3.65					0.624	<b>0.001*</b>
All time	3.58						<b>0.002*</b>
Not use	3.12						

The analysed results of LSD (See in Table XI) found that the students who internet usage all time (24 hours) and more than 6 hours have significant need for mobile learning about teacher components more than the other groups of internet usage time at significant level 0.05.

TABLE XII. SHOW THE PAIRWISE COMPARATIVE DATA ON THE DAILY AVERAGE INTERNET USAGE TIME OF MOBILE LEARNING ABOUT CONTENT

Time/ hours	$\bar{X}$	<=1	>1- <3	>3 - < 6	>6	All time	Not use
		3.23	3.36	3.58	3.63	3.81	3.33
<=1	3.23		0.26	<b>0.002*</b>	<b>0.004*</b>	<b>0.000*</b>	0.526
>1 - <3	3.36			<b>0.014*</b>	<b>0.025*</b>	<b>0.000*</b>	0.820
>3 - < 6	3.58				0.702	0.051	0.085
>6	3.63					0.199	0.072
All time	3.81						<b>0.003*</b>
Not use	3.33						

The pairwise comparative data in Table XII illustrates that the students who internet usage all time (24 hours) and more than 6 hours have significant need for mobile learning about content components more than the students who internet usage time less than or equal 3 hours per day and not use at significant level 0.05.

TABLE XIII. SHOW THE PAIRWISE COMPARATIVE DATA ON THE DAILY AVERAGE INTERNET USAGE TIME OF MOBILE LEARNING (ENVIRONMENT)

Time/ hours	$\bar{X}$	<=1	>1- <3	>3 - < 6	>6	All time	Not use
		3.39	3.44	3.47	3.71	3.80	3.36
<=1	3.39		0.582	0.432	<b>0.011*</b>	<b>0.001*</b>	0.818
>1 - <3	3.44			0.739	<b>0.013*</b>	<b>0.000*</b>	0.493
>3 - < 6	3.47				<b>0.030*</b>	<b>0.002*</b>	0.384
>6	3.71					0.479	<b>0.018*</b>
All time	3.80						<b>0.002*</b>
Not use	3.36						

As shown in Table XIII, the undergraduate students who daily average internet usage all time (24 hours) and more than 6 hours have the most significant need for mobile learning about environment more than all the students who internet usage time less than 6 hours and not use at significant level 0.05.

TABLE XIV. SHOW THE PAIRWISE COMPARATIVE DATA ON THE DAILY AVERAGE INTERNET USAGE TIME OF MOBILE LEARNING (ASSESSMENT)

Time/ hours	$\bar{X}$	<=1	>1- <3	>3 - < 6	>6	All time	Not use
		3.17	3.23	3.43	3.58	3.66	3.02
<=1	3.17		0.56	<b>0.021*</b>	<b>0.002*</b>	<b>0.000*</b>	0.327
>1 - <3	3.23			<b>0.024*</b>	<b>0.002*</b>	<b>0.000*</b>	0.122
>3 - < 6	3.43				0.184	<b>0.034*</b>	<b>0.004*</b>
>6	3.58					0.552	<b>0.000*</b>
All time	3.66						<b>0.000*</b>
Not use	3.02						

The analysed results of LSD (See in Table XIV) found that the students who internet usage all time (24 hours) and more than 6 hours have significant need for mobile learning about assessment components more than the students who internet usage time less than or equal 3 hours per day and not use at significant level 0.05.

## V. CONCLUSION AND DISCUSSION

The research results show that the most respondents have a smart phone in the highest rate at 80%. Most participant usage the internet per day more than 3 hours was the highest rate at 48.20%, less than or equal 3 hours was 45.20% and not use was 6.60%. It confirmed that most undergraduate students have a mobile phone that support m-learning. This result was corresponding with the analysis of [9-10] that the undergraduate students have available devices support teaching and learning through mobile phones.

The average need for m-learning of the undergraduate students was in the moderate level at 68.4%. The need for m-learning about the environment component was the highest rate at 70.2% followed by the need of content component at 69.6%. The top-three highest need for m-learning were the need of fast and free Wi-Fi, data security of the privacy information and cheap smart phone from university's sell respectively.

The class level of student has significant difference with the need of mobile learning components includes; learner, content, environment and assessments. The fourth-year students have significant difference with the need of mobile learning more than the students in the other class levels at significant level 0.05. This result illustrates that the need of mobile learning related with the class level of students. The class level of students was the factor that seems to be an effect with m-learning which corresponding with the research of [11].

The faculty of the students has significant difference with the need of mobile learning about learner and environment components. Moreover, the results show that the students of the business administration faculty have significant need for m-learning about learner and environment components more than the students who study in arts, science and technology and engineering faculties at significant level 0.05.

Also, the analysing results confirmed that the daily usage internet time has significant difference with the need of m-learning in all aspects (learner, teacher, content, environment and assessment). By the students who usage the internet per day more than 6 hours or all time (24 hours) have significant difference with the need of m-learning more than the students who usage the internet less than or equal 6 hours per day. It is argued that the students who usage much internet have more need for m-learning than the students who usage less internet. The time of usage the internet per day can reflect likeness of using internet and a preliminary preparedness of m-learning. This result corresponds with [12] that the readiness for mobile learning differs according to the daily average internet usage time.

In summary, the results of the research conclude that m-learning is an essential that should be provide for undergraduate students. Moreover, both the government and universities should be recognized the need for mobile learning of the undergraduate student. This results can use to education reform, improve basic m-learning infrastructures, guidelines for creating modern m-learning model and support to self-learning.

## VI. FURTHER STUDY

This research is a survey of the need for m-learning and the factors that have an affect with the need for m-learning. The results confirm that the undergraduate

students have available mobile device and need to learning through a mobile device. These results as a preliminary step before implement the m-learning in universities.

In future work, the preparedness for the m-learning of the undergraduate students should be explored. Also, these results will be transforms to features and abilities to implement a suitable m-learning for the undergraduate students.

## REFERENCES

- [1] Fezile, O. and Nadire, C. (2011). *Procedia-Social and Behavioral Sciences* 28, pp.937-942.
- [2] Electronic Government Agency (Public Organization) (EGA). (2017). Digital Government towards Thailand 4.0. [online] Available at: <https://www.ega.or.th/en/content/2031/11769/> [Accessed 19 Dec. 2017].
- [3] Rukspollmuang, C. (2016). Adoption of Technology in the ASEAN Region Education as a Key Driver for Digital Thailand. *The Asian Education Technology Conference*, pp.10-21.
- [4] Watson, H. and WHITE, G. (2006). *M-Learning in Education: A Summary*. Education. au Limited.
- [5] Norazah, M. et al. (2010). The Mobile Learning Environment for the In-Service School Administrators, *International Conference on Learner Diversity 2010, Procedia-Social and Behavioral Sciences* 7, p. 671-679
- [6] Yi, C., et al. (2009). Acceptance of mobile learning: a respecification and validation of information system success. In *Proceedings of World Academy of Science, Engineering and Technology*, 41, 2070-3740.
- [7] Pei-Wen Liao, C., Chin-Feng, H. and I.-Hui, H. (2010). Acceptance of mobile learning: a respecification and validation of information system success. *International Journal of Human and Social Sciences*, 5(7).
- [8] Taleb, Z. and Sohrabi, A. (2012). Learning on the move: the use of mobile technology to support learning for university students. *International Conference on Education and Education Psychology (ICEEPSY 2012)*, pp.1102-1109.
- [9] Khongeid, M. (2008). A study of status, requirements for using and the mobile learning network model (m-Learning) for the students of Silpakorn. Thesis Master Degree. Silpakorn University.
- [10] Waree, C. (2011). M-LEARNING Instructional Model for Surindra Rajabhat, *Graduate School Journal, Surindra Rajabhat University, Thailand*, 5(2).
- [11] Uzunboylu, H., Cavus, N., & Ercag, E. (2009). Using mobile learning to increase environmental awareness. *Computers & Education*, 52(2), 381-389.
- [12] EroÄŸlu, M., Kaya, V. D., & Ramazan, Ä. (2017). Can Mobile Learning Be An Opportunity for Undergraduate Teacher Education?. *EJSER European Journal of Social Sciences Education and Research Articles*, 11.