

Mobile Game Learning to Inspire Learners

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Abstract— In new year's, the mobile devices grow quickly. Both Android phones and Tablet PCs replace the desktop PCs slowly to finish simple work. Because of the mobile devices fast development the designer need to develop a lot of applications which are useful, for example: playing video recorder, taking movies, video recording, and playing sports. Many people would play games when they are travelling, waiting for someone, using the toilet, even they walking on the street. Learning Technology growth so far, there is more study in game-based learning. There is less review to combine these two elements to argue, so that this study combines the game-based knowledge to develop an app on Android phone and then we guide learners to use it in scrappy time. In this learning model, we make learners in mobile learning environment, supplementary more we could develop their learning motivation. This study directs new mental course fillings for designing the app game. Learners would learn the course subjects when they use their fingers to touch the screen to change, it will make trainees charmed. To varnish, this transmit with the portable game-based learning and computer game-based learning which could improve learners learning motivation more. The outcome shows that the learners agree the way of spending game-based learning. And in each mobile devices group were got higher learning inspiration than previous. In my paper I have also included game based learning in Symbian OS. Which help Nokia users to enjoy game based learning.

Key words: Mobile Learning; Learning Motivation

I. INTRODUCTION

Symbian is an open source operating system (os) and software platform designed for smartphone and currently maintained by Nokia. I has many versions from series 40 to latest version Symbian^3 in which we can implement the game learning. With quick growth of android phones, readings on mobile devices have erased from PDA or other handheld plans to mobile phones. Mobile phones have transformed life flair of people, and several people commonly use mobile phones on road. Among entirely users, learners are the largest user group, as they often use mobile phones to destroy time. If they dismiss use mobile phones for learning.

Learning success may be upgraded. However, scarcer learners have travelled this topic. Most learning courses are boring, ensuing in low learning stimulus. Other causes of low learning inspiration using mobile phones include minor screen and inconvenient keyboard input, which reduce the learning preparedness. This study investigated the use tradition of learners, and found that learners often practice mobile phones to browse social networking sites chat on announcement software, or play games. The population of game performers is the largest. This study proposes display of curriculum comfortable in the way of games to attract learners to use and analysis the lessons.

This study further discusses whether mobile phone game-based learning can trade computer game-based learning. The learning enthusiasm of the learners using mobile phone game for learning is matched with those who use computer games for education.

In the experiment, the section of "CPU Scheduling" in the operation scheme course was nominated as game teaching contents. Rote learning is not enough for the CPU Scheduling, and accepting of the reason operation can help to know the operation of the CPU scheduling. This course requires the operation of the CPU Preparation and completion of 5 different preparation methods. The section of "CPU Scheduling" is important in the operation system.

II. LITERATURE REVIEW

A. Mobile Learning

Mobile learning has been established for years, and there is a range of application courses. In 2009, Chen established universal learning environment in campus, allowing learners to detect the RFID tag (e.g., trees, grass land and flowers) using PDA, which can closely display adjective or phrase of the object. The learners can use these words in article script, improve their writing ability, and increase language.

Besides RFID tag, scanning of QR-code is used. Hwang affixed QR-Code to PC inner components in 2011. After learners scan the code with the mobile device, the screen exhibitions components gathering information, which tolerates students to absorb computer assembly. Correspondingly, Chen also used RFID tag in the museum to assist guidance. Weal useful RFID tag to instruments and apparatuses of hospital. Photographic apparatus was also used to record the training process, allowing the trainers to mark notes on the video recorder and piece them. The above studies displayed that mobile learning has well performance in learning outcome. However, altered courses may have different teaching modes, and thus phone applications may also change.

B. Game-Base Learning

Game-based knowledge can encourage learners to join in learning while playing, and make the leaning process more involved. It has a positive effect on mental development. Gee recommended that games can convey control feel to players, motivate thinking, and increase problem solving ability and coordination. However, players have certain battle to pressure and continuous pass-through motivation. Based on Gee's theory, this study alters the course contents into game, and cheers players to explore the learning contents through game playing, thus vigorously participating in learning, not simply passively absorbing the information. Game besides courses is shared because traditional learning process is dull, and game-based learning can progress learning motivation of learners. When learners arrive into a flow state in in performance, their concentration is higher than common.

III. MOBILE GAME-BASED LEARNING SYSTEM

In order to escape boring learning process, learners can learn by mobile devices in extra time. The development platform is based on Android system and CAI games are planned for Android mobile procedures. Past studies recommended that mobile devices have opposing factors for education. In order to safeguard that learner can successfully learn under limitations of mobile devices, course contented design is very essential.

When learning emotional concepts, learners often use pen and paper to picture the contents because pure text description is not easily assumed. Vekiri suggested that photographs are an effective learning tool Kalthoff also chatted graphics concept. If members have earlier knowledge and self-will, graphic can support and achieve better learning effect. Robinson discovered the influence of idea graphic organizers on textbooks that only contain text report. Besides text report, graphic illustration can benefit learners further know the course fillings.

The certain experiment course of "CPU arrangement" is the core concept of operation systems. As tutors often use text explanation only, learners may feel difficult to understand the procedure principles of CPU scheduling. In order to explain this problem, game graphics can be recycled. In this study, five CPU scheduling methods, including First Come First Served, Non-Preventative Shortest Job First, Preemptive Shortest Job First, Preventative Priority, and Round Robin, are incorporated into the game design, which is called "Process 716". Learners can exercise changed planning outlines to display operation sequences.

IV. EXPERIMENTAL PARTICIPANTS

The topics of the experiment were learners, who were taking the course of Operation System. A total of 132 learners joined. The learners with Android phones were in the test assembly, and those without Android phones were in the control assembly. Adjustment was ready according to beginners' level of participation and fullness of improved data. The beginners in the trial group used Android phones for learning, while two components of game-based learning and mobile learning were additional. The beginners who use PC for learning, the section of game-based learning was additional.

V. EXPERIMENTAL PROCEDURE

The experiment took two weeks. Previously the experiment, the researcher described the game procedure to all the learners, including in what way to install Process716 on mobile phones, safeguards and how to play the game on PC. Then, the learners were requested to fill out the learning motivation form, which was used to gather pre-test data. Then, the learners activated to play Process716, and game highest were uploaded at least once. After approving the regular operation of the game, the learners were fired.

The learners can performance the game freely after class. This study hopes to break the time and universe boundaries of learning, and the learners with Android phones can play game at anytime and anywhere. The learners who do not require Android phones can play the game on PC. Throughout the experiment period, learners

can upload their game registers, and check the online place list and game records of others. This may inspire competition between the learners, helping the learners to play the game constantly, and improving learning success.

After the experiment was over, the learners occupied out the learning stimulus form, which was used to assemble post-test data.

VI. QUESTIONNAIRE DESIGN AND ANALYSIS

The information motivation questionnaire uses the motivation scales of the MSLQ suggested by Pintrich as the measuring tool. The motivation scale has three mechanisms: value component, expectancy mechanism and affective component. Value mechanisms is focused on discussing basic goal direction, extrinsic goal location and task value; expectancy mechanism is absorbed on chatted control of learning principles and self-efficacy for learning and presentation, and affective component is focused on test concern.

After the experiment, 99 legal questionnaires were retrieved, and ANOVA test was conducted. A total of 44 learners were in the test group, and 55 were in the control group.

In order to demonstrate Process716 can stimulate learning motivation of the learners, ANOVA was conducted for the data of the test group and the control group before and after experiment. The descriptive statistics are shown in Table I. After the experiment, the learning motivation increased greatly. As shown in Table II variance homogeneity test table, $p=.836 > 0.05$. This reveals samples are homogeneous, and are significant after ANOVA. As show in Table III ANOVA table, $p=.000 < 0.05$. The learning motivation of the learners has significant difference before and after experiment. This demonstrates Process716 can effectively stimulate learning motivation of the learners.

i	N	AVG	Std.	95% Confidence interval of AVG	
				Lower	Upper
Pre-test	99	159.8182	23.20598	155.1898	164.4465
Post-test	99	172.1818	21.48249	167.8972	176.4664
SUM	198	166	23.14904	162.7557	169.2443

Table I. Descriptive Statistic of Learning Motivation

Levene Statistics	df (MSB)	df (MSW)	Sig.
.043	1	196	.836

Table II Variance Homogeneity Test of Learning Motivation

	SS	df	MS	F	Sig.
SSB	7566.545	1	7566.545	15.133	.000
SSW	98001.455	196	500.007		
SUM	105568.000	197			

Table III Anova Test Of Learning Motivation

The first component value component of the motivation scale in MSLQ as planned by Wilke can represent learning motivation of learners for courses. Therefore, this study conducted analysis for the value component, descriptive statistics scale, variance homogeneity test bench and ANOVA test table, as shown in Tables 11, 12, and 13. $p=.542 > 0.05$ in sameness test, and $p=.000 < 0.05$ in ANOVA test. This reveals significant difference exists in value component.

Pre-Post	N	AVG	Std.	95% Confidence interval of	
				Lower	Upper
Pre-	99	65.5354	11.12940	62.315	66.7551
Post-	99	71.8889	10.02842	69.888	73.8890
SUM	198	68.2121	11.19080	66.643	69.7805

Table IV Descriptive Statistic Of Value Component

Levene Statistics	df (MSB)	df (MSW)	Sig.
.347	1	196	.542

Table V Variance Homogeneity Test Of Value Component

Pre-Post	SS	df	MS	F	Sig.
SSB	2676.68	1	2676.6	23.85	.00
SSW	21994.40	196	112.21		
SUM	24671.09	197			

Pre-Post	SS	df	MS	F	Sig.
SSB	2676.687	1	2676.687	23.853	.000
SSW	21994.404	196	112.216		
SUM	24671.091	197			

Table VI Anova Test Of Value Component

The value component consists of basic goal location, extrinsic area orientation and task price. This study conducted ANOVA for the three parts. The results of intrinsic goal orientation are shown in Tables 14, 15, and 16; the extrinsic goal orientation is shown in Tables

The task value is shown Tables 20, 21, and 22. For the three parts, the p value of the homogeneity test is greater than 0.05. This exposes that ANOVA ratings are significant. In the ANOVA test, there is no significant difference in intrinsic goal orientation, and the other two parts have significant difference. In outlook of this, the learners are not interested in the course contents, so the intrinsic goal orientation has no significant difference. Due to encouraging effect of Process 716, significant transformation exists in extrinsic goal position. Interestingness and usability of Process716 have significant alteration in the task value.

Pre-Post	N	AVG	Std.	95% Confidence interval of	
				Lower	Upper
Pre-test	99	19.5758	3.47613	18.8825	20.2691
Post-test	99	20.1616	3.10269	19.5428	20.7804
SUM	198	19.8687	3.29943	19.4063	20.3311

Table VII Descriptive Statistic of Basic Goal Angle

Levene Statistics	df (MSB)	df (MSW)	Sig.
.990	1	196	.321

Table VIII Variance Homogeneity Test of Core Goal

Pre-Post	SS	df	MS	F	Sig.
SSB	16.990	1	16.990	1.565	.212
SSW	2127.596	196	10.855		
SUM	2144.586	197			

Table IX Anova Test of Intrinsic Goal Orientation

Pre-Post	N	AVG	Std.	95% Confidence interval of AVG	
				Lower	Upper
Pre-	99	19.4949	3.83159	18.7308	20.2591
Post-	99	20.6263	3.30610	19.9669	21.2857
SUM	198	20.0606	3.61418	19.5541	20.5671

Table X. Descriptive Statistic of Extrinsic Goal Orientation

Levene Statistics	df (MSB)	df (MSW)	Sig.
.89	1	196	.345

Table XI Variance Homogeneity Test Of Extrinsic Goal Orientation

Pre-Post	SS	df	MS	F	Sig.
SSB	63.354	1	63.354	4.947	.027
SSW	2509.919	196	12.806		
SUM	2573.273	197			

Table XII Anova Test of Extrinsic Goal Orientation

Pre-Post	N	AVG	Std.	95% Confidence interval of AVG	
				Lower	Upper
Pre-test	99	25.4646	5.39333	24.3890	26.5403
Post-test	99	31.1010	4.95798	30.1122	32.0899
SUM	198	28.2828	5.88906	27.4575	29.1082

Table XIII Descriptive Measurement of Task Value

Levene Statistics	df (MSB)	df (MSW)	Sig.
.628	1	196	.429

Table XIV Variance Homogeneity Test of Task Value

Pre-Post	SS	df	MS	F	Sig.
SSB	1572.545	1	1572.545	58.601	.000
SSW	5259.616	196	26.835		
SUM	6832.162	197			

Table XV Anova Test of Task Value

VII. EXPERIMENTAL RESULT

The latest release in Symbian platform is the Symbian^3 OS. It was designed to be more 'next generation' smartphone platform. The symbian^3 release introduced new features like a new 2D and 3D graphics architecture, UI improvements, and support for external display via HDMI. With the help of this OS the user can upload free game learning Application and enjoying learning. Though Android OS have over taken Symbian in recent years It also should be given importance. The experimental results show the no significant difference among the education drive of the test assembly and control group. However, the culture motivation of the learners is increased significantly before and after research. This reveals the planned game can increase learning motivation and has no variance when the tools are changed.

In order to growth beginners' use motivation, online ranking list is providing, and uploading of the game histories can inspire competition between the learners. During the experiment, the learners discussed their game records in SNSs. This reveals that design of online ranking

list can inspire use motivation of the learners. Besides, in order to increase use openings, the phone game can be operated wanting network relations, and network connection is needed in upload of the game record. This can increase learning opportunities of learners in spare time.

VIII. CONCLUSION

With growth of science and technology, Android phones are nonstop innovating, and can surface more and more work and tasks. Mobile learning application has converted wider and wider, and is very convenient for learning. The earlier studies on mobile learning proposed the boundaries such as: too small screen and inconvenient input; with evolution of technologies, the limitations have disappeared. Screen of the Android phones converted bigger and bigger, and text say is audible. With the technical evolution, mobile learning design is and will be continuously argued in future. The mobile learning will also become the future main education issue.

In this training, increase rate of learning motivation is the same for the test group and control group. This revelations the game learning has the equal consequence even if two different tools are used because the ready has the same nature, and the same exciting effect on education drive.

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