

A Study of Adult Learners' Perception and Needs for Smart Learning

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Abstract: This study investigates adult learners' perception and needs for smart learning. It analyses adult learners' possession, use, and perspectives on smart devices and examines how they value smart learning competencies. Two questionnaires were conducted to 227 and 270 adult learners in Korea. The first survey was conducted to investigate possession, use, and perspectives about smart devices, and the second survey asked participants to rate their perception about possession and importance of smart competencies. In survey 1, results showed that over seventy percent of participants possessed smartphones, eighty nine percent used e-mails, and fifty seven percent used social network services daily. However, regarding the perspectives on smart devices, participants' responses about self-efficacy, perceived ease of use, interaction, social identity, and continuance about smart devices were relatively low. In survey 2, results showed that learners answered their possession of smart competencies are lower than their evaluation of importance. That is, in all smart competencies, learners confirmed the needs to develop smart competencies. Moreover, among twelve items, gap between importance and possession of ability to design adaptive and preferred activities and ability to understand the functions and cultural codes of smart media ranked the highest. This confirms the needs for developing smart learning competencies. This study not only confirmed the needs for smart learning, but also explored the areas in order to prepare smart learning.

Key words: adult learners, adult education, smart learning, smart learning competency, educational needs

1. Introduction

Instructional media has been used in various areas as a result of researchers' effort to improve the quality of adult education. There have been attempts to integrate e-learning used in formal education into non-formal or informal education for adult learners. However, use of instructional media in adult education has been skewed to development and implementation. As the most advanced media in the market has been adopted to the field without appropriate needs analysis, an adequate design and evaluation were not properly carried out so that it often not only excluded merits of traditional methods, but also confused learners by not being able to offer enough explanation and interpretation about subjects (Lee, 2010). Also, current e-learning efforts continue to put heavy emphasis on content delivery and technology. Such problems are parallel with general e-learning problems in school context with low learning outcome and satisfaction (Oh, 1997). As Kim (2010) claims, use of multimedia is meaningful only when conventional environment such as nature and culture functions well and multimedia plays a supplemental role.

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In order to respond to limitations of e-learning as well as changes in educational paradigm including advancement in smart devices and technologies, smart learning emerged (Noh, 2011). As an alternative o e-learning, smart learning is intelligent and personalized learning to meet learners' diverse needs and learning styles. It can also improve communication, thinking and problem-solving skills by integrating a new type of e-learning technologies with smart devices. It is defined as a learner-centred humanistic learning system that provides easy access to learning sources and enhances interaction among learners and between learners and an instructor, and supports a self-directed learning environment (Kwak, 2010). Thus, smart learning is expected to supplement the existing the e-learning system and extend the territory of learning (Kim, 2010). It makes it possible to crate and provide a learning environment transferred from content-driven and technology-driven to innovative knowledge-driven and learner-driven (Badawy, 2012).

In short, characteristics of smart learning that are learner-centred, collaborative, flexible, interactive, self-directed and realistic (Jang, 2010) can lead to improve the quality of education. In this sense, this paper focuses on analyzing the needs for smart learning in adult education. The purpose of this study is to examine adult learners' possession, use, and perspectives on smart learning and analyze their perceived needs to develop smart learning competencies. Results of this study can be used to design, plan, and develop smart learning programs that are adaptive to learners so that the quality of adult education can be improved with higher learner satisfaction and learning outcome.

2. Literature Review

2.1 Adult Learners

The continuum model of lifelong learning illustrates how people use different modes of learning as they grow. It is built around objective, subjective and relational modes of learning (Smith, 1995). The objective mode is the dynamic process of the learner accumulating raw data, and the subjective mode is where the learner can internalize, personalize or own the meanings and experiences encountered in the objective mode. In this mode, it is no longer a matter of knowing, but rather a matter of understanding and expressing. In the relational mode, the learner integrates and organizes information and experience into an interrelated, holistic pattern. In this mode, the learner relates socially to a community as both a receiving and contributing member. These modes are innate, active processes used continuously and simultaneously by learners.

In the continuum model of lifelong learning, adult learners predominantly use the relational mode (Smith, 1995). Adult learners usually do not see the objective mode or subjective mode as the main task. Instead, they tend to focus more on problem-centred tasks that correspond to the relational mode. They relate to people and issues. It is the work of the adult to not only come to a personal commitment to some integrated and balanced understanding of principles and relationships in life, but also come to an ever-widening discovery of their involvement within the large community of learners and the whole context of lifelong learning.

2.2 Smart Learning

Researchers have tried to define smart learning to reach a consensus on its definition. According to Noh, Joo, and Jung (2011), smart learning is a human-centred and self-directed learning method which connects the smart information communication technology to the learning environment. Other researcher has claimed that smart learning is intelligent and adaptive learning that considers many learning types and abilities and enables learners to foster thinking, communication, and problem solving skills using various smart devices (Kwak, 2010). In

addition, smart learning is carried out based on the smart infrastructure of cloud computing, networks, servers, smart devices, and other embedded devices. It is achieved through smart ways of personalized, intelligent, and integrated approaches, social learning, and collective intelligence (Noh, 2011). In short, smart learning is a humanistic approach to learning that offers hands-on and personalized opportunities to acquire information, manage knowledge, interact, and collaborate with peers and instructors so that learners can apply their knowledge and skills to solve problems and achieve goals in an authentic context.

Lee (2010) stated that smart learning is realistic, engaging, informal, and creative. Smart learning increases a sense of reality and engagement, diminishes the boundary between play and learning, and enhances cognitive and creative abilities. The characteristics of smart learning claimed by Kim (2010) are motivational, self-directed, real-time, and personalized. Park (2011) argued that smart learning is mobile device attached, intelligently applicable, customizing according to levels, collaborative through social networks, and inclusive of formal and informal learning.

According to Korean Ministry of Education, Science, & Technology (KMEST, 2011), smart learning is self-directed, motivated, adaptive, resource-enriched, and technology-embedded. These characteristics imply that smart learning extends educational time, methods, competencies, contents, and spaces (see Figure 1).



Figure 1 Concepts of Smart Learning

The self-directed feature extends educational time by allowing for just-in time and any-time learning. The motivated feature extends educational methods by providing experiential and collaborative activities. Also, the adaptive feature extends educational capacities by offering customized and individualized learning. In addition, the resource-enriched feature extends the educational content by facilitating various educational resources. Lastly, the technology-embedded feature extends educational time by offering local and global networks of communication.

3. Methods

3.1 Participants

There were two groups of participants for this study (see Table 1). 270 people taking church education classes participated in survey 1. These participants were adult learners who were taking Bible study classes in small groups in G city, Korea. After accounting for missing information and incomplete responses, 227 usable responses were used for further analyses, which shows 84 percent response rate. There were 69 males (30.4

percent) and 158 females (69.6 percent). As for age, there was 1 person between 20 and 29, 54 between 30 and 39, 101 between 40 and 49, 64 between 50 and 59, and 7 over 60 years old. 270 people joined survey 2. There were 149 males and 121 females. Regarding the age proportion, 52 people were aged between 20 and 29, 125 between 30 and 39, 28 between 40 and 49, 45 between 50 and 59, and 20 over 60 years old.

Variable	Subordinate Variable	Survey 1		Survey 2		
		Frequency	Percentage	Frequency	Percentage	
	20-29	1	0.4	52	19.3	
	30-39	54	23.8	125	46.3	
Age	40-49	101	44.5	28	10.4	
	50-59	64	28.2	45	16.7	
	Over 60	7	3.1	20	7.3	
Total		227	100	270	100	

Table 1	Age of Pa	articipants
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3.2 Instruments

Survey 1, which consists of ten questions with a Cronbach's alpha of 0.91, investigated the possession, use, and perspectives about smart devices. Subordinate variables are self-efficacy, perceived ease of use, interaction, social identity, and continuance intention. Each subordinate variable was two items, and these variables were developed by Venkatesh and Davis (2000), Venkatesh (2000), Thong et al. (2006), Kim et al. (2009), Agarwal and Venkatesh (2002), Kwon and Wen (2010), and Bhattacherjee (2001).

Survey 2 that investigated the perception of smart competencies also used a survey composed of twelve questions with a Cronbach's alpha of 0.86. Subordinate variables are identical with components of smart learning: self-directed, motivated, adaptive, resource-enriched, and technology-embedded. These items were developed by Kim, Kwon, and Sung (2013), and Sung (2013).

4. Results

4.1 Possession, Use, Perception about Smart Learning

Results of survey 1 that examines possession, use, and perspectives of smart devices are presented in Table 2. Results showed that 70.4 percent of the respondents have smartphones and 89.9 percent use e-mails. In addition, 10.9 percent of the participants use SNS very often over five times per day; 23.3 percent do one to four times per day; and 16.3 percent do two to three times per week. The results showed that over 70 percent of the participants use smartphones, e-mails, and SNS daily.

Moreover, the survey contained questions on self-efficacy, continuance intentions, social identity, interaction, and perceived ease of use that measured their perspective on smart learning. Overall, the means of all the responses were lower than the three that represents "neutral". In other words, the average participants answered that they did not have decent knowledge about SNS; it was not easy to use Facebook; it was not easy to use SNS; they would not like to interact with other people on Facebook; they did not feel comfortable to open up about themselves on Facebook; they would not actively participate in Facebook for the class; and they would not actively use SNS. These results confirmed that learners are ready instrumentally, but they are not ready to engage

in smart learning conceptually and functionally. In other words, learners are lack of knowledge and skills on smart devices so that it is difficult to engage in smart learning. In short, results of survey 1 confirm the needs for education on smart devices followed by smart learning.

Division	Subdivision	Frequency	Percentage
Current al an a	Yes	159	70.4
Smartphone	No	67	29.5
Email Use	Yes	204	89.9
E-mail Use	No	23	10.1
	Over 5 times daily	22	10.9
	1-4 times daily	47	20.7
SNS Use	2-3 times weekly	37	16.3
	Once a week	18	7.9
	Others	78	34.4
Total		227	100

 Table 2
 Learners' Possession, and Use, and Perspectives of Smart Devices

Table 3 Learners' Perspectives of Smart Devices $(N = 227)$					
Item	Questions	Mean	S.D.		
9	I have decent knowledge about SNS.	2.53	1.18		
10	It is easy to use Facebook.	2.58	1.18		
13	It is easy to use SNS.	2.46	1.23		
14	I like to interact with other people on Facebook.	2.75	1.31		
15	I feel comfortable to open about me on Facebook.	2.38	1.19		
20	I will actively participate in Facebook for the class.	2.79	1.14		
21	I will actively use SNS.	2.46	1.23		

able 3 Learners' Perspectives of Smart Devices (N = 227)

4.2 Needs for Smart Learning

Results of survey 2 that analyzed needs for smart learning are presented in Table 4. This intended to compare the extent of learners' possession and the importance of competencies required in a smart learning environment. In other words, the differences in how learners view possession and the importance of competencies can imply the need for learning. Analyzing the results showed that all the responses were rated over the average. All the scores of importance were higher than 3.7, and those of possession were higher than 3.2. Also, all the importance scores were higher than possession scores in all the responses. That is, scores of needs are all positive. Among these positive scores, the highest is an ability to design adaptive and preferred activities which is an adaptive component of smart learning. The second competency with differences is an ability to understand the functions and cultural codes of smart media, which is the technology-embedded component. Moreover, critical judgment and collective intelligence which are both the resource-enriched component are the third and fourth competencies respondents expressed their needs to learn.

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	No	Competency	Possession	Importance	Needs	Order
s -	1	Ability to carry out self-directed learning	3.65 (0.82)	4.29 (0.79)	0.36	9
	2	Ability to engage in daily academic work	3.56 (0.77)	4.48 (0.72)	0.08	12
М -	3	Ability to motivate others to participate	3.55 (0.76)	4.22 (0.81)	0.33	10
	4	Ability to provide appropriate feedback	3.44 (0.84)	3.85 (0.81)	0.41	7
А	5	Ability to utilize diverse methods to present the information	3.42 (0.83)	4.24 (0.80)	0.18	11
	6	Ability to design adaptive and preferred activities	3.24 (0.86)	3.94(0.83)	0.70	1
R	7	Ability to collect and appropriate information	3.39 (0.83)	3.86 (0.90)	0.47	6
	8	Critical judgment	3.45 (0.79)	4.02 (0.88)	0.57	3
	9	Collective intelligence	3.41 (0.79)	3.96 (0.85)	0.55	4
Т	10	Ability to understand social community	3.39 (0.79)	3.77 (0.85)/	0.38	8
	11	Ability to understand the functions and cultural codes of smart media	3.42 (0.86)	3.89 (0.85)	0.67	2
	12	Ability to interact with others persistently by using networked infrastructure	3.41 (0.82)	3.96 (0.85)	0.55	4

 Table 4
 Possession and Importance of Smart Competencies (N = 227)

5. Conclusion

The purpose of this study is to investigate the perception and needs for smart learning and its competencies. Results show that high percentage of adult learners already has smartphones and uses e-mails. Nevertheless, learners are not only uneasy with communicating with other users, but also unskilled technically. This means that there is a need for teaching skills and transforming the culture. Moreover, regarding the smart learning competencies required for smart learning, learners all agreed the needs for education. Specifically, abilities in technology, resources use, and adapting various resources were ranked high in the list.

The implication of these results can be discussed as follows. First, high scores of possession and use of smart media reflect widespread of technological advancement. Korea has the highest smartphone penetration rate of 67.6 percent in the world (Kim, 2013). Possession rate of 70.4 is even higher than the penetration rate. Moreover, eve considering the high proportion of older participants in survey 1, many learners are equipped for smart learning in terms of device. Second, low scores of perspectives on smart learning indicate that users are not yet aware of differentiated functions and benefits of devices. In particular, the lowest scores of self-efficacy and continuance intention imply that learners did not have many changes to experience social network services and interact with each other by using social media. Third, high scores of both possession and importance of smart learning competencies in survey 2 indicate that participants not only acknowledge, but also have developed these competencies. However, even though they possess these competencies, they expressed needs for education.

Contribution of this study is that it measured the current status. Also, it analyzed the educational needs for smart learning and competencies required for smart learning. Finally, it provided areas of what to teach when preparing for smart learning. For successful smart learning, students need to learn about devices. Moreover, learners should develop smart learning competencies. Learners should acknowledge and understand that smart learning is not learning simply adopting smart phones in the classroom, but learning becoming more ubiquitous, effective, and humanistic with adequate and adaptive use of devices so that they can open, share, and collaborate with each other.

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