Correlation between Digital Literacy and Self-Regulated Learning Skills of Learners in University E-Learning Environment

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Abstract. This study was aimed at identifying the correlation between digital literacy and self-regulated learning skills of learners in university e-learning environment. It was done by conducting a survey on C University students in Daejeon City. 321 copies of the questionnaire were collected, which were analyzed through SPSS 21.0. The findings are as follows. There was a correlation between the digital literacy and self-regulated learning skills of learners in university e-learning environment. Also, there was a positive correlation between the sub-factors of digital literacy, which are functional literacy, critical literacy, and social literacy, and sub-factors of self-regulated learning skills, which are cognitive control, metacognitive control, motivational control, and behavioral control. However, there was no correlation between the functional literacy and behavioral control. The findings suggest the following: Digital literacy of students in university e-learning is a variable that affects their academic performance. Thus, the digital literacy of university e-learners should be improved with various efforts. For instance, classes for university e-learners should be designed by considering their digital literacy skills.

Keywords: e-learning, digital literacy, self-regulated learning skill

1   Introduction

As digital media-based education has become common, e-learning, a learner-centered learning strategy system, has garnered attention [1].

E-learning has the following benefits. First, it can be provided anywhere, anytime without special learning tools. Second, it steers away from forceful or unified education. Instead, it offers customized education that meets the individual needs and levels of students. To develop and improve e-learning steadily, it is necessary to enhance the digital literacy of learners; it is a new learning competency based on the sharing and interaction in a digital culture and society [2]. Digital literacy is the ability to find, form, and utilize information through information technologies and the internet. It is a personal competency related to the overall aspects of information literacy, which is required in digital-based knowledge and information society [3]. To

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understand digital information, more unique, complex functions and strategies are necessary for online reading and writing[4].

Compared to face-to-face learning, many elements of e-learning such as learning time, learning space, and learning progress are determined by each learner. Therefore, e-learning won't be effective for learners with a lack of self-regulated learning skills, the ability to control one's learning[5]. The core aspect of self-regulated learning skills is that all learners have the potential to achieve their meaningful learning goals by controlling their learning situations.

In e-learning, the ability to manage one's learning activities, as well as the ability to read, use, and utilize information are crucial elements. However, there are almost no studies on the relevance of such variables. Therefore, it is necessary to identify the relationship between digital literacy and the ability to manage one's learning activities.

The purpose of this study is to explore the class strategies for boosting the effects of college e-learning by identifying the relationship between digital literacy and self-regulated learning skills.

2   Methodology

This study was conducted on 321 students who participated in e-learning classes of C University located in Daejeon City. The data was collected through a 'digital literacy test' with 15 questions and 'self-regulated learning test' with 84 questions on a 5-point Likert scale. The collected data was analyzed through average scores in each area, standard deviation, reliability analysis, and correlation analysis. For statistical analysis, SPSS 21.0 program was used.

3   Research results

3.1 General Characteristics of Subjects

The subjects were students who had taken college e-learning classes before. In terms of gender, male students represented 37.4% (120), while female students represented 62.6% (201). In terms of year in college, freshman represented 18.4% (59), sophomore 23.7% (76), junior 26.5% (85), and senior 31.5% (101).

In terms of major, humanities and social science students represented 55.5% (178), engineering students 37.1% (119), and art, music & physical education students 7.5% (24). In terms of category of e-learning classes, generation education courses represented 45.5% (146), major courses 38.3% (123), and non-academic courses 16.2% (52).

3.2 Correlation between digital literacy and self-regulated learning skill

Table 1. Correlation among Variables and Descriptive Statistics

Measurement Variables	1	2	3	4	5	6	7
1. Functional Literacy	-						
2. Critical Literacy	.64**	-					
3. Social Literacy	.49**	.58**	-				
4. Cognitive Control	.24**	.36**	.28**	-			
5. Metacognitive Control	.24**	.33**	.23**	.55**	-		
6. Motivational Control	.23**	.25**	.23**	.56**	.47**	-	
7. Behavioral Control	.06	.18**	.18**	.50**	.53**	.58**	-
M	3.65	3.60	3.69	3.74	3.70	3.56	3.31
SD	.71	.59	.58	.50	.56	.53	.47

$**p<.01$

To analyze the correlation between digital literacy and self-regulated learning skills, Pearson's Correlation analysis was conducted (<Table 1>). The correlation between digital literacy and self-regulated learning skills stood at r=.34 (p<.001). There was a significant positive correlation between functional literacy, critical literacy, and social literacy and the following: cognitive control, metacognitive control, motivational control, and behavioral control. However, there was no significant correlation between the functional literacy and behavioral control.

4   Discussion

This study is aimed at identifying the correlation between digital literacy and self-regulated learning skills of learners in university e-learning. The findings are as follows.

There was a positive correlation between the digital literacy and self-regulated learning skills of learners. However, there was no correlation between the functional literacy and behavioral control. It indicates that functional literacy — simple equipment operation activities — is not related to the following: behavioral control of learners; seeking academic help; study time management in terms of behavioral adjustment.

In particular, the functional literacy, a sub-factor of digital literacy, had a low correlation with sub-factors of self-regulated learning skills. As for critical literacy, it had a low correlation with motivational control and behavioral control, sub-factors of self-regulated learning skills. Social literacy had a low correlation with all sub-factors of self-regulated learning skills.

The results indicate that critical literacy of learners is closely related to their cognitive control, a sub-factor of self-regulated learning skills. The level of cognitive control and metacognitive control can be increased depending on their critical literacy.

Based on the findings, future studies need to examine the environmental factors of university e-learning that affect the digital literacy of learners and their personal traits-related factors. The results should be used for instructional design that can improve the digital literacy of learners.

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