The factors related to learning outcome in Web-based lifelong learning program

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ABSTRACT

The purpose of this study was to identify factors’ direct and indirect influence on learning outcome and to examine relationship among learning outcomes. In this study, all independent variables were categorized into four main factors and under these factors, 16 sub-factors were grouped. Regression and path analysis between these factors and three aspects of learning outcome (participation, satisfaction, and achievement) as dependent variables indicated that instructional design-related factors were the most influential. In addition, learning environment-related factors were also the more important factors than learner and online facilitator-related factors. To maximize learners’ educational outcomes, a strategy to maintain learner’s motivation and to interact with learners must be established under well-harmonized learner’s environment. This paper also presents some important suggestions to faculty, administrators and instructor who develop web-base lifelong course.

I. Introduction

The web-based education has various educational benefits, but its benefits cannot be achieved without an appropriate design and program development. To maximize the benefits the best strategies must be well established based on the consideration of factors that affect learning outcome.

Numerous studies have examined factors related to the successful implementation of web-based (e.g. [1]) and distance education (e.g. [3]). Based on previous studies, the factors can be classified into four categories: learner-related, online facilitator-related, instructional design-related and learning environment-related factors. Although previous studies have provided useful information, it is difficult to integrate results from the studies to make a holistic picture of the factors because the studies have examined factors individually. The holistic picture can be achieved after considering factors of four categories together and comprehensively as the factors do not always work independently.

Therefore, the purpose of this study was to identify factors’ direct and indirect influences on learning outcome when four categories were considered together as independent variables, and the relationship between learning outcomes was examined through path analysis.

II. Method

For this study, 124 adult learners were selected. They were taking a Web-based lifelong education course consisted of contents about child counseling and psychology for ten weeks organized by Sookmyung Women’s University in Korea. The reasons of selecting these participants were because that all learning were provided via only online and this course had appropriate conditions to identify whether online facilitator, who manages and directs this course, affects learning outcome or not.

The independent variables of this study were sixteen factors in four categories: learner factors (self-regulated learning strategies, Internet ability, intrinsic control, learning motivation, attitude toward cyber education, and previous knowledge), online facilitator factors (pedagogical, social, and managerial roles), instructional design factors (interactive design, motivation design, interface design, and content organization), learning environment factors (physical environment, psychological environment, and technical support). For measuring these independent variables, survey was conducted. After survey items were developed by researcher on the basis of review of literature and previous survey work [4], factor analysis was conducted to identify sub-factors and validity of questionnaire. The reliability was α=.93. Participation, satisfaction and achievement as dependent variables were investigated through survey and server database. Collected data was analyzed through regression and path analysis by using SAS program.

III. Result

By extracting only sub-factors whose β value revealed statistical significance after hierarchical regression with all variables, simultaneous regression was conducted. The results were schematically described in Figure 1. First of all, of these sub-factors, physical environment showed the greatest influence on participation. The five sub-factors affecting participation explained 31 percentage of participation in web-based lifelong education (F=11.68, p<.001). Second, it was revealed that motivation design factor was the most influential factor on satisfaction. Also, of five factors affecting satisfaction, three factors included in instructional design-related factor explained almost 58 percentage of
satisfaction (F=176.04, p<.001). Third, motivation design had the greatest influence on achievement and three sub-factors affecting achievement explained 37 percentage of achievement (F=14.56, p<.001).

Path analysis to see indirect influence of independent variables on learning outcomes (participation, satisfaction and achievement) and relationships between learning outcomes showed that physical environment, motivation design, and psychological environment affected achievement indirectly via participation (Data not shown). Particularly, influence of physical and psychological environments liable to be ignored in regression analysis was estimated by using path analysis in this study. In overall, the result indicated that motivation design was the most powerful factor affecting learners' achievement both indirectly and directly. However, there was no factor that indirectly affected satisfaction via participation.

![Figure 1. The result of regression](image)

**IV. Discussion**

Results of this study provide some important suggestions to faculty, administrators, designers and instructors who develop curriculums for web-based lifelong education. First of all, instructors and designers have to focus on systematic instructional design because this study showed that instructional design-related factors including motivation design were the most influential factors on learning outcomes. In particular, strategies to maintain learner's motivation during learning need to be well established because adult learners who have to work and learn simultaneously tend to lose their motivation due to a variety of changes in their circumstance and stress from their personal and social lives. Second, results of this study suggest that it is important that adult learner's personal environment is well harmonized and integrated with their learning. Therefore, a well-established system to facilitate communication and to check learner's progress is required because instructors in web-based course can understand and support learners' learning environment by checking their progress and communicating with them continuously. Third, in general online facilitator in web-based education does not perceive the importance of their social role [2]. However, the results of this study revealed that their social role and support have important influence for learners to implement successful achievement. This suggests that facilitators have to support the online course focusing on their social roles to promote learners to participate in learning activities and to make learners familiar with other course-mates.

**V. Reference**