Effects of implementing instructional technology on student involvement and learning in basketball units

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Introduction

The world has changed dramatically from earlier ages to today’s highly technological world. Similarly, learning has also evolved from the traditional classroom to distance learning and now to online learning, where students learn in invisible classrooms. Learning in an invisible classroom setting is a change that promotes unlimited access to information. Online learning (i.e., E-learning) offers many opportunities that never seemed possible before.

However, determining whether interactive or non-interactive applications should be used, as the method of lesson delivery is crucial to ensure that learning objectives are achieved effectively and efficiently, that is, whatever has been targeted as the desired learning outcomes (Arbaugh, 2000). In addition, designing a learning environment for an entire professional program requires an overarching view of the curriculum, teaching and learning events, communication spaces and the constellation of resources, including any online/E-learning implementations of these (Segrave & Holt, 2003).

In physical education, Buck, Lund, Harrison, and Cook (2007) recommend that technology be used only if it will enhance the achievement of physical education objectives, and technology can be an effective learning tool for students with certain learning styles. Therefore, this study was designed to introduce a “hybrid model” that merges face-to-face classroom and distance education teaching methods and to examine how it affects student involvement and learning in high school basketball classes.

Methods

A total of 231 high school students in Korea participated in this study for 14 weeks. Participants were randomly assigned into experimental group (n = 114) and control group (n = 117). Basketball e-learning using a hybrid model was only introduced and implemented to the experimental group. A basketball E-learning program developed for this study included content knowledge (i.e., history and rules) and fundamental skills required for intermediate basketball classes (42 topics such as dribbling, passing, stepping, shooting, lay-ups, defense, defensive positions, game strategies, and team plays). A modified version of Personal Involvement Inventory (Zeichkowsky, 1995, PII) translated into Korean and self-report questionnaire were used to measure students’ involvement and learning achievement, respectively. The PII is consisted of 10 items using a 7-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). 18 items were used to measure students’ learning achievement, including content knowledge (6-item), understanding of game analysis (6-item), and social skills (6-item) using a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). T-tests were used to examine the effectiveness of the E-learning on students’ involvement and learning between two groups. Pre- (2nd week) and Post T-test (14th week) between two groups were used to examine and ensure effectiveness of the program. An Exploratory factor analysis (EFA) was conducted to establish construct validity and reliability for the questionnaires to be used in this study. Cronbach’s α was also analyzed for internal consistency coefficients.

Results

The results of EFA analyses and internal consistency showed that all of the factors demonstrated a high level of consistency based on Cronbach’s coefficients (i.e., 10-item student involvement α = .92, 6-item content knowledge α = .91, 6-item understanding of game analysis α = .91, and 6-item social skills α = .89) and content validity (65 percentage of variance accounted for by the four factors). T-tests results showed no group differences on students’ involvement and learning achievement (content knowledge, understanding of game analysis, and social skills). Post t-test results demonstrated group differences on students’ involvement [t(230) = 9.01, p < .001], content knowledge [t(230) = 6.38, P < .001], understanding of game analysis [t(230) = 9.01, p < .001], and social skills [t(230) = 112.72, p < .01].

Conclusion and Discussion

Using a hybrid model, the integration of basketball E-learning education methods improved the course in all aspects. Our recommendation is that instructors using this format incorporate mechanisms for student self-assessment as an integral part of the course in order to maintain a reasonable workload. In this study, self-quizzes, the writing rubric, peer feedback, and group responses to common questions were techniques used to maintain instructor input at a manageable level. Just like in life, every instruction is unique and has its own strengths and weaknesses in conducting online courses. However, the main essence of quality education in physical education is to ensure that learning objectives are achieved.

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efficiently and effectively. Last, this study strongly supported the following statement proposed by Mohnsen (2004) that an increasing number of computer programs and assessment materials for physical education, sport, and fitness make a computer station in the gym a growing necessity.

References


