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A study on learners' perceptional typology and relationships among the learner's types, characteristics, and academic achievement in a blended e-Education environment

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ABSTRACT

This study explores and describes different viewpoints on blended e-Education by using Q methodology to identify students' perspectives and classify them into perceptional types. It is also designed to examine possible relationships among learner's perceptional type, characteristics (i.e., academic self-efficacy, interest in blended e-Education, and extraversion) and academic achievement levels. Fifty undergraduate students taking blended e-Education courses at a Korean university were chosen as participants in this study. As a result of the study, four types of learners were identified and given the following descriptive labels: (I) e-Education Interested Type, (II) Traditional Lecture Friendly Type, (III) Social Interactionist Type, and (IV) Yes-But Mixed Type. Further, it was found that those who have either higher academic self-efficacy or extraversion achieved higher academic achievement. It is also shown that female students in general have less interest in blended e-Education. Implications of these results are discussed in the context of blended e-Education course design.

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1. Introduction

Due to advancements in knowledge and technology, the ways in which people teach and learn are changing in innovative directions. Blended e-Education (henceforth referred to as "BeE") is currently being tried as a promising alternative that can improve the learning environment by compensating for defects in the traditional classroom, for instance by providing flexibility and greater opportunity for active learning. There is a widespread belief that BeE is an effective mode of teaching and learning (Garrison & Kanuka, 2004; Masie, 2006). However, in order to implement BeE successfully and efficiently, it is vital to layout a strategic road map (Bonk, Kim, & Zeng, 2006). The essential variables involved in the effective implementation of BeE are learner's characteristics, instructional elements, and environmental factors (Dennis et al., 2006). Among these variables, the present paper deals with learner's characteristics, including the learner's perspective on BeE. It is necessary to consider the learner's characteristics more systematically in order to develop an effective instructional design for BeE courses. Also, compared to studies that address changes in the teacher's role and the educator's perspective in a blended environment, (Humbert, 2007; Ocak, 2011; Whitchurch, 2009; Zhu, Valcke, & Schellens, 2010) studies on students' subjective awareness and cognitive research are relatively meager.

Clearly, there is need of a more formal approach to understanding learners' psychological traits and perspectives toward BeE (Lee & Im, 2006). What is of chief concern to both educators and learners is to find a way to implement BeE in an efficacious manner that stabilizes what is now a turbulent environment. To do that, we need to analyze present conditions and users' needs, and search for a solution. It is important to examine how the users of BeE perceive BeE, and to utilize their perceptions in formulating a more detailed and realistic strategy for fulfilling their educational needs. Also, this study recognizes that learners enter the class with vastly different inherent traits in terms of gender, age, experience, learning style, preference, etc., which results in each student achieving different learning outcomes exiting the class (e.g., Lim & Morris, 2009). Thus it is necessary to adjust class management strategies in accordance with individual learners' characteristics. Information about learners' characteristics enhances individualization and personalization in managing the class, and this

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customized management and efficient delivery can lead to increased student satisfaction and better performance (So & Brush, 2008). So the main purpose of this study is to analyze the learners' perceptional typology regarding BeE. Then it examines possible relationships among different perceptional types, learners' demographic features and personal characteristics, and their academic achievement levels. It is hoped that the results of this study will prove instrumental in the pedagogical design of a successful BeE model both at the course level and at the institutional level.

Pursuant to the aim of providing a typological analysis of learners' perspectives, this study uses Q methodology to identify different viewpoints on BeE. Originally evolving from factor-analytic theory, Q methodology combines aspects of both qualitative and quantitative research traditions as a way to study the subjectivity involved in any situation. The method is ideal for deeply exploring areas of complex perceptions or opinions. Participants are asked to sort and rank a sample of statements concerning the subject of research (i.e., Q sorting). Then, the Q sorts are correlated and factor analyzed, resulting in different types that are qualitatively interpreted, providing accounts of understandings of the subject (Brown, 1980). Next, to examine the factors that influence learners' academic achievement in BeE classes, the study explores what correlations obtain between learners' typology, their psychological characteristics (namely, academic self-efficacy, interest in BeE, and extraversion), their demographic features, and their academic achievement levels.

A unique advantage of this study has to do with its study setting. While most studies about BeE have focused on part-time students (e.g., Heinze & Procter, 2010; Lee & Im, 2006), this study was conducted at a national university with full-time students. Participants in the study were undergraduate students from the Ulsan National Institute of Science and Technology in Korea, who were taking BeE courses that combine face-to-face lectures with online lessons. Also, it targeted students who were currently taking required BeE courses (e.g., in liberal arts, basic math, and IT). Extant studies (e.g., Macgregor, 2000) indicate that students who apply for online classes generally have strong introversion, thus researchers have to be wary of potential bias in results about learners' cognition of BeE and attitude toward it. However, the advantage of this study is that it minimizes such bias by targeting students with various personalities and preferences, since all the undergraduate students at the university are required to take BeE classes as basic essential courses.

2. Literature review

2.1. Context

Blended e-Education (BeE) refers to an integrated environment, which combines the advantages of e-Learning and traditional classroom teaching (Graham, 2006). For the effective implementation of this blended approach, educators should address the following desiderata: (1) pedagogical richness (improving student learning), (2) increasing accessibility to information, (3) social interaction, (4) personal agency (offering to students a means for directing their own learning), (5) cost effectiveness, and (6) ease of revising a blended system (Osguthorpe & Graham, 2003). However, poor infrastructure, limited resources and lack of time were the significant factors preventing teachers from implementing BeE (Kitchenham, 2005).

The context of the present study obviates the need to be concerned about some of these impediments like poor infrastructure. According to World Economic Forum's (2011), Korea is ranked 10th in the world in overall networked readiness, which is an index measuring a country's ability to leverage information and communication technologies for increased competitiveness. Among the variables incorporated in this index, Korea ranks 5th in cellular subscriptions with data, 12th in households with personal computers, and 5th in broadband Internet subscribers. It is also ranked 12th in the world in terms of Internet access in schools. Due to this well-supported infrastructure, the use of online lectures is on the rise in Korean universities. However, most blended learning in Korea occurs at cyber-universities that offer online courses with a small proportion of face-to-face sessions as a form of distance education. By one count, there are 17 cyber-universities among 204 universities in Korea (Lee & Im, 2006).

The present study on blended learning was conducted at the Ulsan National Institute of Science and Technology (UNIST) in Korea. As a newly established research university since 2009, UNIST adopted a blended approach to meet the needs of educational efficiency. From the very beginning, it has been offering technology-enhanced courses where information and communication technologies are used to supplement a more traditional course-delivery format. The university employs the term "e-Education", instead of the alternative term "e-Learning", to refer to the self-driven and intensive learning support system based on the Blackboard learning management system (LMS). The goal of e-Education is to improve the quality of education for the student, to reduce the workload for the professor, and to save costs for the university. It is worth noting that e-Education at UNIST is pedagogy-driven and targets students taking full-time courses, in contrast with cyber-universities where the course-delivery is technology-driven and targets part-time students. In any case, to reflect the role of e-Education at UNIST, this study adopts the term "blended e-Education" (BeE) rather than the more widely used "blended learning".

In order to implement the blended approach, the Center for Teaching and Learning at UNIST provides training, workshops, and technical maintenance and support. The center leads and encourages blended course openings. There were blended course offerings on fifteen subjects in 2010, which included three elective subjects. These are mainly large enrollment courses for first-year students (e.g., Practical IT, Statistics, Effective Communication). Since launching blended courses in 2010, approximately 5–10% of total course offerings are now blended learning courses. These courses proceed for 16 weeks each semester; they are designed and taught by individual faculty members, and facilitated by assistant instructors under the supervision of a professor.

BeE reduces face-to-face time in the classroom by 40–50%, allowing more course sections to be scheduled per course for the benefit of smaller classes. BeE at UNIST incorporates online class as part of the course, that is, students attend 75 min of offline class and one online session where they engage in independent study each week. Accompanying traditional brick-and-mortar classroom lessons, these online sessions require learners to perform the following tasks mostly via Blackboard: browse the Internet, view online lectures or streaming media content, read various course materials, participate in asynchronous online discussions, take real-time online quizzes and tests, engage in group problem-solving and collaborative tasks, share content and perform peer evaluations, submit written assignments and receive feedback on those assignments. The university provides free WiFi wireless technology on campus where most students reside, and enables students to access the Blackboard LMS by using the iPhone, thereby facilitating Internet access and constant online connectivity.

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