



Full length article

A multivariate investigation of gender differences in the number of online tests received-checking for perceived self-regulation^{*}Gulsah Basol ^{a,*}, Esra Balgalmis ^b^a Gaziosmanpasa University, Faculty of Education, Department of Educational Sciences, Tokat, Turkey^b Gaziosmanpasa University, Faculty of Education, Department of Elementary Education, Tokat, Turkey

ARTICLE INFO

Article history:

Received 2 September 2015

Received in revised form

25 December 2015

Accepted 10 January 2016

Available online 25 January 2016

Keywords:

Perceived self-regulation

Formative e-assessment

E-tests

Gender differences

ABSTRACT

The purpose of the study was to investigate whether the number of formative e-tests taken differed by gender, using students' perceived self-regulation levels as a covariate. The sample was 340 teacher candidates reached through purposeful sampling. The study lasted a semester; students were involved in a blended learning environment where classroom lessons supported by self-regulatory e-tests as a part of an online course management system, called MOODLE. It was possible for students to take 10-item online quizzes and 20-item practice tests as many as they wanted. In the analysis, a factorial ANOVA design was applied. Findings indicated a moderate correlation between the number of formative e-tests taken and the perceived self-regulation levels, indicating higher perceived self-regulation levels as the number of formative e-tests increased. By using perceived self-regulation levels as a covariate, the gender differences in the number of e-tests taken were also investigated. According to finding, gender variable did not explain the differences in the compound variable "the number of formative e-tests". However, after controlling for the effect of perceived self-regulation, the findings were significant. Hence, we can conclude that self-regulated behavior is independent of students' gender; therefore, e-assessments is a self-regulated, technology-based instructional aid in higher education.

© 2016 Elsevier Ltd. All rights reserved.

1. Introduction

Students' self-regulatory skills, prior knowledge, attitudes towards learning (Scheiter & Gerjets, 2007) and classroom practice play an important role in their learning. Several studies indicate that learners' skills and abilities partly determine their academic achievement, and that achieving goals, changing things, and performing tasks are all related to one's belief in his or her ability to do them (Bandura, 1997).

Social cognitive theory posits that individuals can contribute to their own learning by channeling their thoughts, emotions, and actions (Pajares, 2002a); therefore, affective factors such as motivation, interest, self-efficacy, self-regulation, satisfaction, anxiety, and usefulness etc. are important determinants in students'

learning (Liaw & Huang, 2013; Zimmerman, 2002).

Since it fosters life-long learning skills, self-regulated learning becomes an important issue to consider in schools. Based on Zimmerman's (1989) conceptualization, the self-regulated learners are "meta-cognitively, motivationally, and behaviorally active participants in their own learning process" (p. 4).

Research into educational technology, learning environment, and effectiveness of instruction has identified students' self-regulation as an important determinant for their learning (Gerjets & Hesse, 2004). Liaw and Huang (2013) emphasized that a high level of self-regulation contributes to greater engagement with e-learning systems.

Self-regulation, as an abstract concept, is hard to define/measure as many others likewise, e.g. motivation, efficacy, anxiety, or attitude. When a direct measure used as a sign of the presence or absence of any of the above, we need to make sure its convergent validity. For example, over seven well-documented, clinically significant, adequately treated sore throats in the preceding year are taken as one of the criteria for tonsillectomy by Scottish Intercollegiate Guidelines Network (SIGN, 2010). Likewise, in the current study, we took the number of online assessments taken by students

^{*} Abstract is submitted to International Journal of Arts and Sciences Conference for oral presentation. The American University of Rome, Rome, Italy on October 19–22, 2015.

^{*} Corresponding author.

E-mail addresses: gulsahbasol@gop.edu.tr (G. Basol), esrabalgalmis@gmail.com (E. Balgalmis).

as an indicator of their course involvement, also it can be considered as a sign of their readiness to self-regulated e-learning.

Recently, the development of information technologies such as applets, graphing calculators, dynamic geometry software, spreadsheets, electronic white boards, web page simulations and interactive online learning systems have been used in education to improve the quality of teaching and the learning environment (Kim & Baylor, 2008; Papanastasiou & Angeli, 2008; Scheiter & Gerjets, 2007).

In particular, a number of studies showed significant correlations between students' perceived self-regulation, their intention to adhere to the course requirements, and gender in online learning environments. In light of these considerations, the present study aims to investigate the relationship between the perceived self-regulation levels and the number of practice tests and quizzes students took before the exam and their gender in an online learning environment, from a self-regulation theory perspective. We evaluated a multidimensional measurement of students' self-regulated behaviors by means of a MANCOVA and tested the perceived self-regulation levels across gender.

2. Theoretical framework

2.1. Conceptualization of students' self-regulation

Self-regulation has been considered as a key factor for successful learning because it provides students to regulate their learning by improving knowledge, skills, and attitudes (Boekaerts, 1999). Important characteristics of self-regulated learners are setting goals, being aware of what they know, being capable of developing knowledge and skills, and transferring skills (Boekaerts, 1999; Winne, 1995).

There are several models for self-regulated learning in the literature. Models developed by Boekaerts (1997), Pintrich (2005), Winne (1995), Winne and Perry (2005) and Zimmerman (2005) are widely used over the literature. Although the models differentiate as the constructs used and the conceptualizations proposed, the self-regulated learning was generally assumed cyclical; and overall, the *cognitive/meta-cognitive strategy use and motivation* were also shared by all. From a social cognitive perspective, Zimmerman (2005) described self-regulation as a cyclic process that included three phases; forethought, self-reflection, and performance. In the forethought phase, students set goals and make strategic planning. Their motivational beliefs, such as self-efficacy and expectations of outcome, stem from their learning related beliefs and these beliefs are the other component of the forethought phase. Self-reflection involves self-judgment and self-reaction. Individuals' self-reflections about the events influence the next forethought phase, thus forming a cyclical process. The third phase, performance, consists of self-control, in which the strategies selected during the forethought phase are used, and self-observation, in which individuals record or make notes about themselves (Zimmerman, 2005).

2.2. Online learning environment and TAM

Following Zimmerman's (2005) conceptualization of self-regulation, Liaw and Huang (2013) defined self-regulation in online learning environments, based on the Technology Acceptance Model (TAM). Since these environments require self-regulation, the students are expected to be more active in their learning process (Jou & Wu, 2012). Online learning environments support students' self-regulatory actions (Azevedo & Cromley, 2004; Cigdem, 2015) through online assessments and downloadable course materials from Internet.

TAM is a well-known, solid model for information technology studies (Davis 1993; Liaw & Huang, 2013; Venkatesh, Morris, Wu, Chen & Lin, 2003; Wu & Wang, 2005). It was suggested by Davis (1989), originated from the Theory of Reasoned Action (TRA) (Wu & Wang, 2005; Wu, Chen, & Lin, 2007) and has been broadly used to predict and explain human behavior in various domains (Wu et al., 2007). According to the TAM, students' beliefs about the technological system determine their success in technology-based activities (Chuttur, 2009; Liaw, Huang, & Chen, 2007; Venkatesh & Davis, 2000; Wu et al., 2007). In this environment, teachers can encourage students to set goals and provide them learning opportunities at their own pace. Students can choose academic tasks and work on them, evaluate their work, and monitor their improvement. They can access the learning program and meet their counterparts, discuss problems anywhere at any time (Wright, Stewart, Wright, & Barker, 2002). Interactive learning environments provide students with applicable learning content, instruction and feedback to manage their learning and getting involved in several learning activities regardless of time and place (Cigdem & Oncu, 2015; Heemskerk, Kuiper, & Meijer, 2014; Hsu & Li, 2015; Johnson & Liber, 2008; Lau & Lee, 2015). In addition, in blended learning environments where the lesson is supported by an online course management system, students can take formative e-tests (Basol, Cigdem, & Kocadag, 2013; Maurer, 2006; Maurer & Longfield, 2015; Yaure & Schwab, 2011). This advantage of online learning environment enables instructors to give students a number of quizzes outside the class. Instructors can also automatically grade students' responses and provide feedback, simultaneously (Maurer, 2006; Spector, 2013; Yaure & Schwab, 2011). This system collects data on student performance while a student or group of students is working online on a problem solving activity (Spector, 2013). With the help of this tool, instructors can analyze students' activities through log reports. In addition, they can also collaborate with other students through product-like artifacts, or performance-like presentations (Lazonder, 2005). In this interactive learning environment, students can actively take part in their learning instead of passively receiving the knowledge and skills transmitted by the teachers and they can collaborate with each other in an effective way (Kester & Paas, 2005; Kirschner, Strijbos, Kreijns, & Beers, 2004; Pedersen & Liu, 2003).

The TAM explains students' self-regulatory learning behavior under five cognitive skills (Liaw & Huang, 2013). The importance of students' beliefs recognized in the context of the model and Liaw and Huang (2013) pointed out these skills that are particularly important to successful online learning as perceived self-efficacy, anxiety, interactivity, usefulness of the system and satisfaction (Liaw & Huang, 2013). According to the TAM, other factors: e.g. perceived self-efficacy as a positive individual characteristics or anxiety as a negative individual characteristic may influence self-regulation. Positive learning attitudes (e.g., perceived satisfaction and perceived usefulness) and useful learning environments (e.g., interactive, collaborative learning environments) are pre-requisite for developing effective e-learning environments (Liaw & Huang, 2013; Shee & Wang, 2008). Anxiety is expected to be the only negative predictor of self-regulation, while the rest that are self-efficacy, interactive learning environment, usefulness, and satisfaction are all positively related to the self-regulation. In this model, students' beliefs about usefulness of technology and its ease of use affect their attitudes toward technology and their decision to integrate it into their learning experiences (Kibelloh & Bao, 2014). The components of the TAM which are perceived satisfaction and perceived usefulness were the key factors, explaining learners' behavioral intention to use e-learning (Kibelloh & Bao, 2014; Liaw, 2008). According to the TAM, students need to have access to course documents as a learning source whenever they need in

Download English Version:

<https://daneshyari.com/en/article/6837587>

Download Persian Version:

<https://daneshyari.com/article/6837587>

[Daneshyari.com](https://daneshyari.com)