

Chapter 11

College Students’ Perceptions on the Role of Digital Technology and Personalized Learning: An International Perspective

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ABSTRACT

This chapter examines college students’ perceptions on personalized learning with digital technology. Five hundred and five college students were recruited from American and Chinese institutions of higher education. Participants were given a survey questionnaire on digital technology and personalized digital learning. Using factor analysis, three conceptual constructs were perceived by college students as critical to personalized digital learning. In addition to the critical factors identified, the results also revealed significant relationships between the variables of demographic and computer experience and the constructs perceived by college students. These findings can inform the design and implementation of personalized digital learning in higher education. Recommendations for future research include focusing on the verification of the constructs in both theoretical and practical fields.

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INTRODUCTION

The fact that modern technology has significantly changed the landscape of education, coupled with the rapid increase of college enrollment with a projected growth of 17% in the next decade (NCES, 2015), has led to a substantial amount of research on the use of technology in higher education. It is believed that digital technology has significantly contributed to our understanding of students' learning in terms of information processing and knowledge acquisition (Delen & Liew, 2016; Zheng, 2009). DeSchryver and Spiro (2009) argued that modern digital technology is probably the most robust platform for learning in the 21st century where learners can engage in variety of personal expression including text, pictures, animation, audio, video, gaming, augmented virtual reality, 3D animation, and so forth. They pointed out that digital technology is "well suited to support deep learning for subjects and concepts that are complex and ill-structured" (p. 135). However, due to individual differences in cognitive and affective abilities such as cognitive styles, cognitive and metacognitive processes, as well as motivational differences, significant challenges exist regarding the design and application of digital technology in learning (Bonk, Lee, Kou, Xu, & Sheu, 2015; So, 2012). Empirical studies have shown that learners with different cognitive styles may behave differently in digital technology enriched environments like online learning. Zheng, Flygare, Dahl, and Hoffman (2009) studied the impact of cognitive styles on college students' online behavior pattern and noticed a significant relationship among cognitive styles, online social behavior, and performance. Cognitive factors aside, studies have demonstrated the correlation between digital technology and motivation (Dreon & Szczyrbak, 2017; Horzum, Kaymak, & Gungoren, 2015). Dreon and Szczyrbak (2017) examined the effects of gamification on faculty motivation in professional development and found learners were more engaged and more motivated to learn. However, the authors pointed out at the same time that digital technology like gaming "may not work for all individuals" (p. 374). The challenges associated with individual cognitive and affective differences in digital technology use have called for attention to designing approaches that would optimally support learners' unique cognitive and affective needs in digital learning.

One effort in addressing this issue is to provide personalized learning where learning is tailored to the needs of individual learners. Research in personalized learning is not new. With the advent of new technologies, however, the abilities for advancing personalized learning have been augmented to a new level where learning becomes customized based on learners' cognitive and motivational profiles and where learning is no longer just a delivery of knowledge. Instead, learning becomes an act of knowledge discovery and creation at each individual level (Farris, 2015; Samah, Yahaya, & Ali, 2011). Despite its promises, researchers are concerned about the current practices in personalized learning with digital technology (Chen, 2009; Klasnja-Milicevic, Vesin, & Ivanovic, 2011). Some argued that the current practices in digital and personalized learning "fail to consider the difficulty level of course materials, learning order of prior and posterior knowledge and learner abilities while constructing a personalized learning path" (Chen, 2009, p. 1028). Others contended that more attention should be directed toward pedagogical and social aspects in personalized digital learning (Hsiao, 2012; Hwang, Kuo, & Yin, 2010). Evidently, more research on the relationship between personalization and the use of digital technology is warranted.

A database search reveals that existing research has gravitated more towards research reflecting the perspectives of researchers, instructors, and instructional designers whereas few studies focus on how students understand and perceive the personalization and digital learning. A search in ERIC using keywords "personalized learning" and "digital technology" yielded 11 results. Adding a third keyword "student

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