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Internet cognitive failure relevant to self-efficacy, learning interest, and satisfaction with social media learning

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ABSTRACT

Social media has been postulated as a convenient online resource tool for learning. To understand the usefulness of social media, the present study focused on “Guitar Class of Uncle Ma”, one of YouTube’s most popular guitar learning channels in Taiwan, as a self-directed learning tool. Drawing upon a cognitive-affective theory of learning with media (CATLM), learners have the ability to control the pace of learning through YouTube by repeating playback, rewinding or fast forwarding the video. This study used expectation confirmation theory and structural equation modeling to explore the relationship between affective and cognitive factors in learning with social media. Using convenience sampling, data from 117 users were collected and the results showed Internet cognitive failure (ICF) was negatively correlated to self-efficacy and learning interest in using “Guitar Class of Uncle Ma” for learning guitar skills. However, self-efficacy and learning interest was positively correlated to learning satisfaction. The results suggest that “Guitar Class of Uncle Ma” is a beneficial self-directed learning tool for learners with low levels of Internet cognitive failure and high levels of self-efficacy and learning interest when learning how to play guitar using YouTube.

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1. Introduction

Improvements in web-based technologies have increased the use of interactive social media that enables users to upload images and videos on the Internet. Social media also acts as a channel for people to connect without physical and time limitation (Lenhart, Purcell, Smith, & Zickuhr, 2010). That is, social media has the potential to promote personal learning willingness as a promising new pedagogical approach to enhance learning effect (Dabbagh & Kitsantas, 2012). Among those social media, YouTube was discovered to be one of most commonly referred to resource utilized in education (Balakrishnan, Liew, & Pourgholaminejad, 2015). YouTube is a video-sharing website, which allows users to upload, share, view, and rate videos with comments (Everson, Gundlach, & Miller, 2013; Lehman, DuFrene, & Lehman, 2010). Burke and Snyder

(2008) showed that learners have advocated that YouTube enhances the learning experience and increasing user numbers on YouTube has helped to transform it into a platform of education, teaching, and a learning environment (Snelson, Rice, & Wyzard, 2012; Szeto & Cheng, 2014). In particular, YouTube has become a learning tool with user-uploaded videos that demonstrate how to play musical instruments (Lewis & West, 2009; Livingstone, 2008). Despite the popularity of YouTube, there has not been extensive assessment related to learners’ cognitive and affective factors in using it to learn musical instruments.

To assess the effectiveness of multimedia learning, Moreno (2006) proposed the cognitive-affective theory of learning with media (CATLM). Thus, the present study adapted CATLM to explore the effect of using YouTube to learn guitar skills. According to the attention-to-affect model (Critcher & Ferguson, 2011; Satpute, Shu, Weber, Roy, & Ochsner, 2013), learning is an emotional and cognitive experience (Frijda, 1986). In this cognitive experience, cognitive failure can cause absent-mindedness and failure of attention (Forster & Lavie, 2007; Tipper & Baylis, 1987). Consistent with this, cognitive failure may also reflect a decrease in the

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efficiency of perceptual levels of Internet learning (Hong, Hwang, Liu, Ho, & Chen, 2014). At present, there is limited evidence to indicate how resultant cognitive failure in social media usage is manifested physiologically or behaviorally. This study extends cognitive failure during Internet usage as Internet cognitive failure (ICF) and focused on how it correlates to other affective perspectives.

When utilizing social media in learning, learners have the choice of what, when, and how long to study. These self-directed aspects of learning play important implications in the effectiveness of the user's learning efforts (Tullis & Benjamin, 2011), which in turn can extend interest. In this sense, the implication of CATLM paved the way to study interest in learning with social media and possible correlations of learning satisfaction with social media. Moreover, Di Stasi, Antolí, and Cañas (2013) stated that individual differences in cognitive traits could be used to predict the variability of cognitive processes in relation to affective responses during human–computer interaction. In line with CATLM, the purpose of this study was to develop a conceptual framework to identify the cognitive role that internet cognitive failure plays to affect two affective factors (i.e., self-efficacy in learning a musical instrument from social media and interest in learning with social media) and how it reflects another affective factor, learning satisfaction with social media.

1.1. Internet cognitive failure (ICF)

Cognitive failure can be defined as a mistake in performing an action that a person is normally capable of completing (e.g., Wallace, Kass, & Stanny, 2002). Cognitive failure has been extended by Hong et al. (2014) to ICF to understand the interplay between cognitive and affective factors. Cognitive ability has also been recognized to be one of the most important factors for analyzing individual performance in dynamic learning systems (Laughery, Lebiere, & Archer, 2006). Moreover, an individual's cognitive ability can easily affect their choice of social media for learning (Laughery et al., 2006). Cognitive failure has been recognized as a key antecedent of behavior in particularly complex and unstructured tasks (Cohen, McClure, & Yu, 2007; Stemme, Deco, & Busch, 2007). Seldom have studies focused on how the human cognitive system interacts with hypermedia to search for information. In line with this, by using social media as a dynamic learning system, understanding how learners obtain domain knowledge in relation to the internet environment is the interest of this study.

1.2. Interest in learning with social media (ILSM)

Theories of motivation propose that interest can moderate difficulty when students are engaged in learning (Csikszentmihalyi, 1991; Deci & Ryan, 1985). In general, emotional engagement encompasses affective states that are experienced during learning, including achievement emotions and interest (Fredricks, Blumenfeld, & Paris, 2004; Pekrun & Linnenbrink-Garcia, 2012). Educational institutions should look into the possibility of incorporating social media enabled tools to improve students' learning experiences (Balakrishnan et al., 2015). According to Hidi and Renninger (2006), interest serves as a source of task value. Rotgans and Schmidt (2014) highlighted that if learners have more interest in learning, the learning system and course material would support the learners more easily. Moreover, online learning interest predicts learner's satisfaction with a learning system (Dziuban, Moskal, Kramer, & Thompson, 2013) and in this sense, interest in learning with social media (ILSM) would be taken to predict the learner's satisfaction with using social media in this study.

1.3. Self-efficacy of learning musical instruments from social media (SELMISM)

Self-efficacy is defined by Bandura (1977) as a basic belief in one's ability to exercise control over challenging demands and over one's functions. As self-efficacy beliefs are task specific, a person with high self-efficacy will tend to exhibit certain positive personal qualities such as persistence, strategic planning and high achievement (Bandura, 1997; Zimmerman, 2000). Learning a musical instrument depends on a high degree of autonomy. As such, investigating self-efficacy beliefs may reveal insights about the learners' approaches to learning (Ritchie & Williamon, 2011). Social media platforms also have the potential to enhance students' self-efficacy in learning and can support students to develop their learning to a deeper level (Tower, Latimer, & Hewitt, 2014). However, few studies have used the Expectation-Confirmation Model (ECM) to study a learner's task specific self-efficacy, which is defined as the self-efficacy in learning a musical instrument from social media (Stone & Baker-Eveleth, 2013). Thus, SELMISM will be taken to predict the learner's interest and satisfaction with using social media in this study.

1.4. Learning satisfaction with social media (LSSM)

Student satisfaction is important in the evaluation of educational courses as it is related to the quality of online programs and student performance (Chang & Smith, 2008). Learning satisfaction, one of the affective factors of CATLM (Moreno, 2006), is defined as a “short-term attitude that results from an evaluation of a student's educational experience and results when the actual performance meets or exceeds the learner's expectations” (Elliott & Healy, 2001, p.2). Information system (IS) has been used to develop many satisfaction measurements, which are grounded in the ECM (e.g., Bhattacharjee, 2001; Stone & Baker-Eveleth, 2013). Hence confirming expectancy is extremely essential for stakeholders to continue undertaking a particular behavior and this study used ECM to examine the users' satisfaction after learning guitar skills from YouTube.

2. Research hypothesis

YouTube allows users to upload videos that can be shared with a large audience. YouTube also offers convenient functions such as pausing, maximizing the screen size, or fast forwarding to a specific point in the video. When an individual engages in self-learning, they have the ability to adapt learning from specific scenarios in the video. Thus, one can easily return to any point in a video clip and practice a certain part as many times as desired (Heisz, Shedden, & McIntosh, 2012). However, the multiple components of YouTube require individuals to process, store, and retain information while performing multiple tasks and individual traits can affect how learners choose to use media to engage in their learning process (Merriam, 2008). Research suggests that a range of measurement-related variables moderate the attitude-intention-behavior relationship based upon the ECM (Ajzen, 2001). Accordingly, the hypotheses proposed are outlined below.

2.1. Internet cognitive failure relevant to self-efficacy

Several studies (e.g., Forster & Lavie, 2007) have indicated that post-perceptual levels of selective attention are less efficient for participants who have high cognitive failure. Recent experiments (e.g., Di Stasi, Antolí, Gea, & Cañas, 2011) have demonstrated that cognitive ability affects the understanding of hypertext contents. Given the presence of these features in learning guitar available on

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