



The relationship between perceptions of an innovative environment and creative performance in an online synchronous environment



Yu-Shan Chang*, Kuang-chao Yu

Department of Technology Application and Human Resource Development, National Taiwan Normal University, Taiwan

ARTICLE INFO

Article history:

Available online 9 March 2015

Keywords:

Creative performance
Innovative environment
Online synchronous environment

ABSTRACT

This study focused on the relationship between perceptions of an innovative environment and creative performance in a web-based synchronous environment. A total of 160 sophomores and juniors from the National Taiwan Normal University participated in a learning activity consisting of a pretest and posttest quasi-experimental design. Pearson's correlation coefficients and analysis of covariance (ANCOVA) were used in data analysis. Results indicated a positive correlation between personal creative performance and a free, supportive, and innovative environment. Team support and organizational obstruction had less influence on personal creative performance. Compared with a traditional classroom, a synchronous environment added to innovative essence and helped learners do better in terms of novelty, feasibility, value, and creative product design overall.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

Innovation is fast becoming the linchpin of success in the knowledge age and accounts for the majority of growth in advanced and knowledge economies (Yang & Cheng, 2010; Yusuf, 2009). Many companies have pursued innovation and creativity to obtain a competitive edge (West & Sacramento, 2012).

Creativity is now generally agreed by educational policy makers to be an important skill, and governments around the world focus on training creative students (Bruns, 2007; Leitch, 2006; Yang & Cheng, 2010). Both theoretical (Amabile, 1983; Woodman, Sawyer, & Griffin, 1993) and empirical studies (Hammond, Neff, Farr, Schwall, & Zhao, 2011; Sternberg & Lubart, 1995; Tu, 2009) have demonstrated that environmental factors affect creative performance.

Asynchronous communication is communication where the participants are not present at the same time, such as conventional snailmail, and most email conversations. In contrast to asynchronous communication, synchronous communication is experienced as more social (Offir, Lev, & Bezalel, 2008; Yamada, 2009) and can accelerate information flow within a team (Carr, Cox, Eden, & Hanslo, 2004; Dawson, 2006; Hrastinski, 2008a; Hrastinski, 2008b). Learners often have a sense of excitement and spontaneity (Hrastinski, Keller, & Carlsson, 2010; Yamada, 2009).

These characteristics of a synchronous communication environment determine whether creativity is expressed and identify the form of that expression (Hrastinski, 2006; Ivcevic, 2009). According to empirical data, an appropriate synchronous communication environment may offer more opportunity for creativity (Wegerif et al., 2010).

In addition to designing appropriate curricula, constructing an innovative environment is crucial to improving student creativity (Sternberg & Lubart, 1995). Besides that, a web-based synchronous environment is more popular for learning. It is important to utilize a web-based synchronous environment as creativity instruction environment. This investigation focused on the relationship between perceptions of an innovative environment and creative performance in a web-based synchronous environment. Those objectives of this research were: (1) Analyzed the correlation of perceptions of an innovative environment and creative performance in an online synchronous environment. (2) Examined the effects of synchronous learning environment on student's perceptions of an innovative environment and student's creative performance.

2. Research background

2.1. Innovative environment

Personal creativity is the first step in organizational innovation (Shalley, Zhou, & Oldham, 2004) and is influenced by environmental factors (Adams, 2005; Björkman & Zika-Viktorsson, 2007;

* Address: Department of Industrial Technology Education, National Taiwan Normal University, 162, He-ping East Road, Section 1, Taipei 106, Taiwan. Tel.: +886 2 23213664x32; fax: +886 2 23921015.

E-mail addresses: sam168@ntnu.edu.tw (Y.-S. Chang), kcyu@ntnu.edu.tw (K.-c. Yu).

Stevens, 2006). These are both culture and climate factors and may include organizational tradition, company values, employee values, leadership, and management practices (Brennan & Dooley, 2005; Dessler, 1998). Through management policy and socialization within the organizational environment, employees make assumptions about whether creative and innovative behavior is an important commodity that is valued by management (Brennan & Dooley, 2005).

Organizational components that make up an innovative environment include the organization's motivation to innovate and use resources as well as its management practices (Amabile, Burnside, & Gryskiewicz, 1999). The assessment instrument used in the present study, the Creative Environment Scales: Work Environment Inventory (WEI) (Amabile & Gryskiewicz, 1989), consists of eight scales describing stimulants to creativity, four describing obstacles, and two overall scales assessing organizational creativity and productivity (Center for Creative Leadership, 2010; Culpepper, 2010). The scale was designed for scholars interested in understanding contextual influences on creative behavior in work organizations (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Culpepper, 2010).

Additionally, the study employed one of the first and most highly respected measures for assessing innovative environment, KEYS to Creativity and Innovation (KEYS; Amabile et al., 1999). KEYS has 87 questions and 10 scales. Four (Freedom, Challenging Work, Managerial Encouragement, and Work Group Supports) describe management practices; two (Organizational Encouragement and Lack of Organizational Impediments) describe organizational motivations toward creativity; and two (Sufficient Resources and Realistic Workload Pressures) describe resources. Two further dimensions (Creativity and Productivity) describe perceptions of outcomes. This scale is designed for practitioners interested in diagnosing the degree to which an organization's work environment fosters creative work in individuals and groups (Amabile et al., 1996; Culpepper, 2010). However, Mathisen and Einarsen (2004) urge further study, perhaps involving external ratings of creative products, to more accurately gauge the predictive validity of KEYS.

H1. Perceptions of an innovative environment are positively correlated with creative performance.

H2. Sub-indicators (organizational encouragement, supervisory encouragement, work group support, sufficient resources, challenging work, freedom, organizational impediments, and workload pressure) of perceptions of an innovative environment are positively correlated with creative performance.

2.2. The synchronous communication environment

The use of synchronous interactive techniques has unique benefits in education (Kwok, 2007). However, asynchronous and synchronous learning environments differ in that each requires a different kind of interaction and instructor support. Synchronous online learning requires that teachers and students work together at a specific time on the Internet (Yang & Liu, 2007). Learners can raise a question at any time, and teachers can respond promptly to reinforce or extend student learning (Contreras-Castillo, Pérez-Fragoso, & Favela, 2006; Hrastinski, 2006; Huang, Kuo, Lin, & Cheng, 2008).

Using synchronous computer-mediated communication (SCMC) facilities (Yamada, 2009) for distance learning provides opportunities for group discussion, peer tutoring, and brain storming (Huang, Chen, Huang, Jeng, & Kuo, 2008; Huang, Kuo et al., 2008; Wegerif

et al., 2010). Thus, characteristics of a synchronous learning environment include teaching and interacting in physically separate locations, in real time, and with multi-media tools.

Referencing dual-coding theory (Tan, Parsons, Hinson, & Sardo-Brown, 2003), cognitive psychologists have suggested that learning efficiency is enhanced by engaging both visual learning (text and graphics) and verbal learning (audio). Both forms of learning can be achieved in a synchronous learning environment (Huang, Kuo et al., 2008). Additionally, the spatial representation of messages in a graphically mediated synchronous dialogue offers a pedagogical venue for creativity (Wegerif et al., 2010). Thus, a well-designed synchronous learning environment can improve student creativity.

H3. Students in a synchronous learning environment perceive more innovatively than do those in traditional classrooms.

H4. Students in a synchronous learning environment perform more creatively than do those in traditional classrooms.

3. Method

3.1. Participants

In all, 160 college students were recruited from sophomore and junior classes at National Taiwan Normal University in Taiwan. The proportion of male to female participants was approximately 3:2.

Accommodating existing class structure, one sophomore class and one junior class, totaling 108 students, were taught using an online synchronous learning (OSL) system and served as the experimental group. The other two classes (one sophomore and one junior classes), totaling 52 students, were taught using traditional teaching strategies and served as the comparison group. Those class requirements of two groups were the same.

3.2. Independent variable

One independent variable in this study was the learning environment, which was represented by two formats: OSL (experimental group) and traditional teaching (comparison group). With the OSL group, the instructor taught and interacted with students using the Interwise OSL system [<http://www.ithome.com.tw/itadm/article.php?c=29934>]. Interwise functions include video conferencing, text chat, shared whiteboard, and co-browsing.

The other independent variable was the perception of an innovative environment. Following research by Amabile et al. (1996), a "Perceptions of Innovative Environment" scale was developed and used for data collection. This scale included a total of eight subscales (organizational encouragement, supervisory encouragement, work group supports, sufficient resources, challenging work, freedom, organizational impediments, and workload pressure) (see also Björkman & Zika-Viktorsson, 2007; Millinger, 2006; Sørensen, 2009) and 40 questions. Responses were scored using a 5-point Likert scale. The overall Cronbach's α was .94. Factor loadings of these subscales were calculated using principal component analysis with varimax rotation and ranged from .46 to .76. The 40 questions are presented in Table 1.

3.3. Dependent variable

The dependent variable in this study was creative performance. The Scale of Design Creativity includes four subscales: novelty (material, shape, structure), newness (original, unfamiliarity), feasibility (feasibility, integrity), and value (elaboration and aesthetic, performance, multi-function). A 5-point Likert scale

Download English Version:

<https://daneshyari.com/en/article/350300>

Download Persian Version:

<https://daneshyari.com/article/350300>

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