THE INVESTIGATION OF PRE-SERVICE TEACHERS' CONCERNS ABOUT INTEGRATING WEB 2.0 TECHNOLOGIES INTO INSTRUCTION

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ABSTRACT

Studies indicated Web 2.0 technologies can support learning. Then, integration of innovation may create concerns among teachers because of the innovative features. In this study, the innovation refers to Web 2.0 technology integration into instruction. To help pre-service teachers make the best use of the innovation in their future instruction, it is essential to examine the patterns of their concerns about integrating Web 2.0 technologies into their practice. About 350 future teachers participated in the study during the spring semester of 2012 in a northern university of Taiwan. The Stages of Concerns (SOC) Questionnaire was adopted to assess seven stages of concern: awareness, informational, personal, management, consequence, collaboration and refocusing. The findings of this study indicated the pre-service teachers' concerns as a whole were most intense respectively in the stages of informational, personal, and collaboration. A few implications were indicated for teacher education programs to alleviate the concerns.

KEYWORDS

Teacher concerns, stages of concerns, Web 2.0 technology, teacher education, pre-service teachers.

1. INTRODUCTION

The advantages of high availability Web 2.0 technologies have been advocated for use in education during the latest few years. Studies indicated Web 2.0 technologies can facilitate learning by connecting school education with informal learning (Ravenscroft, et al., 2013). However, integration of innovation is destined to generate concerns among teachers because of the innovative characteristics (Fuller, 1969). When an instructional innovation takes place, teachers usually have concerns that may either facilitate or hinder the future implementation of the innovation (Hall & Hord, 1987). Fuller (1969) first explained concerns in an organized approach and defined concerns as people's feelings towards an innovation. Concerns are developmental; the categories of concerns are centered on self, task, and impact on students (if the context is in education settings.). Internal concerns (early concerns) contain concerns related to self; external concerns (later concerns) refer to concerns related to task implementation and the impact on student learning (Fuller, 1969).

In this study, the innovation refers to Web 2.0 technology integration into instruction. The study specified Web 2.0 technology as the technologies which can allow users to co-create some work synchronously or asynchronously together, for example, the tools of wikis (i.e., pbworks), concept mapping (i.e., bubbl), presenting (i.e., prezi), and so on. To help future teachers make best use of the innovation in their future teaching task, it is essential to examine the patterns of their concerns regarding technology integration. With the knowledge of their concerns, teacher education programs would be able to develop appropriate supporting resources to help the would-be teachers ease and disburden their concerns. Therefore, this investigation studied the trend of pre-service teachers' concerns. It is hoped that the results will help highlight the importance of understanding and addressing the concerns in promoting Web 2.0 technology integration in education.

2. THE STUDY

The purpose of this study was to investigate pre-service teachers' concerns on Web 2.0 technology integration. The research question was *"What are the patterns of the pre-service teachers' concern regarding integration Web 2.0 technology into instruction?"*.

2.1 Methodology

2.1.1 Participants

Data were gathered from 350 pre-service teachers who were medium-level users of Web 2.0 technology and who attended a teacher education university in north Taiwan during the spring semester of 2012. The population consisting of 38.5% of male students and 61.5% of female students, is fairly representative of the population of pre-service teachers. The pre-service teachers were invited for research participation at their class meetings. Those who agreed to participate were given the consent form and one survey, and they spent about 15 minutes filling out the questionnaire.

2.1.2 Instrument

This study adopted the Stages of Concerns Questionnaire (SoCQ) (Hall, et al., 1977) that identifies the intensity of the seven stages of concern related to a person's concern regarding an innovation (Hall, George, & Rutherford, 1986). Based on Fuller's theory of three-category concerns, Hall, George, and Rutherford (1977) developed the SoCQ to assess concerns about innovation. The SoCQ can measure concerns that someone can have when experiencing an innovative practice (Hall, 1979). Furthermore, Hall and Hord (1987) developed the Concern-Based Adoption Model (CBAM) as the theoretical framework of the seven stages of concerns. The SoCQ has been used in studies of in-service and pre-service teachers during the last two decades (i.e., Al-Rawajfih, Fong, & Idros, 2010). Therefore, this study adopted the SoCQ as the instrument.

The seven stages are awareness, informational, personal, management, consequence, collaboration and refocusing. Each stage contains five items, and totally there are 35 items listed in a mixed order, using an 8-point Likert scale from "not true of me now" (0) to "very true of me" (7). The higher number the stage has, the higher concern there is. The validity has been examined in studies (i.e., George et al., 2006). The Cronbach alpha coefficients range from .64 to .83 for the seven stages (Hord, et al., 1987).

2.1.3 Data Analysis

All data was coded and analyzed with SPSS 20. Descriptive statistics were used to present the data gathered from the SoCQ. Raw scores for each sub-scale in the SoCQ were tallied and converted to normed percentiles.

2.2 Findings

Table 1 listed the demographic statistics of the percentiles for the seven stages for the pre-service teachers. Figure 1 illustrated a line chart of the averaged percentiles for the pre-service teachers and the concern profile. According to Table 1 and Figure 1, the mean percentiles for the seven stages were between 37 and 66. Table 1 indicated the teachers had the most intense concern mean percentile in Stage 1 (information, close to 70%), Stage 2 (personal, 59.97%), and Stage 5 (collaboration, 58.43%), which looked like a two-humped profile. Regarding the least intense concern, it indicated Stage 0 (awareness) had the least concern level (37.06%). Figure 1 illustrated that the general pre-service teachers focused on their concerns in Stage 1 (information), next Stage 2 (personal) and Stage 5 (collaboration). The levels of concerns dropped in Stage 3 (management) and Stage 4 (consequence), peaked again in Stage 5 (collaboration) and dropped again in Stage 6 (refocusing).

Table 1. Descriptive statistics for stages of concern for the total participants

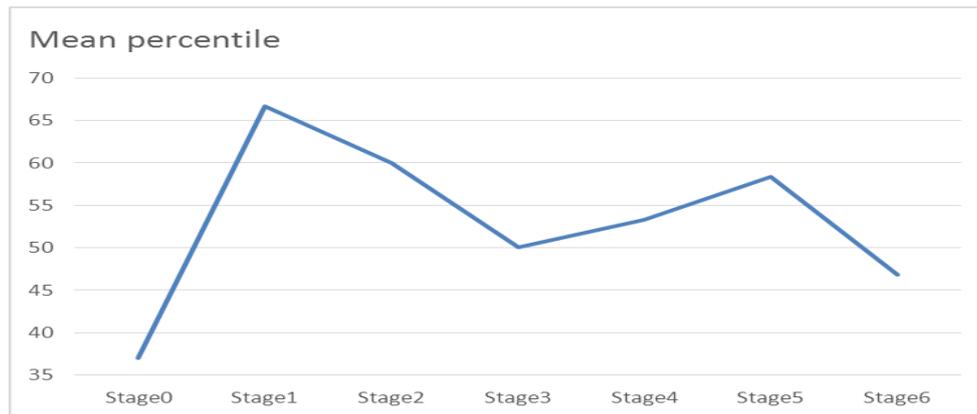| Stage	Mean±SD	Minimum	Maximum
0 (awareness)	37.06±12.57	11.43	82.86
1 (informational)	66.66±16.17	20.00	100.00
2 (personal)	59.97±15.86	0.00	100.00
3 (management)	50.11±16.91	0.00	100.00
4 (consequence)	53.34±13.60	0.00	88.57
5 (collaboration)	58.43±17.43	0.00	100.00
6 (refocusing)	46.86±14.31	0.00	88.57

n=346

Figure 1. Stages of concern for the total participants

The findings of the study brought to light some findings on the status of pre-service teachers' concerns on Web 2.0 technology integration. First, the concerns peaked at Stage 1 and 2, and afterwards they dropped gradually until Stage 5 when the concern level peaked again. It implies most of the pre-service teachers had some general awareness of the innovation, and they had interest in learning the general characteristics of Web 2.0 integration. According to George, Hall, and Stiegelbauer (2006), at the informational stage, teachers usually are not worried about themselves regarding implementing the innovation. They are more interested in the general aspects of the innovation in a selfless way. The result may imply most of the pre-service teachers had little knowledge of Web 2.0. As such, teacher education programs should provide pre-service teachers with the Web 2.0 information, resources, workshops or even courses to help pre-service teachers know the general features of Web 2.0, the effects of the technology on learning, and time, skill and equipment requirement of the technology integration. The main goal would be to deal with their concerns at the informational stage and help them progress to the next higher-level stages of concern. Besides, concern level higher at the personal stage implies that the pre-service teachers' concerns focus on how they will be influenced by the requirements of the Web 2.0 technology integration, and they wonder if they have the ability to implement the integration. In a word, their concerns center on the impact of the innovation on themselves. Therefore, after providing the pre-service teachers with sufficient information and resources on Web 2.0 integration, teacher education programs should develop these future teachers' self-efficacy by requiring teachers educators to appropriately embed the technologies into their regular instructional activities and create opportunities for the pre-service teachers to experience and practice.

Another hump the concern profile displayed was Stage 5 (collaboration). That implies that the pre-service teachers have another concern focus which is on how to work with others (including their colleagues, parents and their students). To alleviate the concern, teacher education programs can provide cases for the pre-service teachers for reference and may require teacher educators to create collaborative projects or adopt collaborative activities for the pre-service teachers to experience.

Namely, the pre-service teachers had the most intensity of concern on the informational and personal stages, which corresponded with other studies (i.e., Liu & Huang, 2005). During the early phases of an innovation, teachers' concerns tended to exhibit high in Stage 0-2. On the other hand, the pre-service teachers held high concern levels in Stage 5, which contradicted with Liu and Huang's (2005) study. That may be related to the culture in the research context. The pre-service teachers may have had little or limited collaborative learning experiences themselves through the period of their education. Therefore, it makes sense that when they were surveyed about collaborating with colleagues to integrate the technology, they expressed high levels of concern. Future study will need to clarify.

The study has a few limitations. The results of the study came from a limited sample size and from pre-service teachers in an East Asian country which made the result unable to be generalized to other types of contexts. Second, the results indicated different intensity and types of concerns, but did not investigate the relationship of the concerns and personal characteristics. The reasons behind the phenomena tended to be inferred from survey data. To make assumptions accurately, future study is suggested to adopt qualitative research methods to make up the incompleteness.

3. CONCLUSION

Although this study has some limitations, it brought to light some findings on the status of pre-service teachers' concerns on Web 2.0 technology integration. The findings of this study provide some direction for teacher education programs to effectively provide pre-service teachers with appropriate resources and instruction and hopefully to efficiently disburden pre-service teachers' concerns, before they jump in the teaching career.

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