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Research in brief

Research on factors influencing perceived usefulness of a virtual teacher community: A case study of rural teachers in Inner Mongolia, China

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1. Introduction

With the development of the economy, educational equity has become one of the national education policies in China. But due to the regional difference of economic performance, an even distribution of educational resources has been a great challenge of Chinese K-12 education. The Ministry of Education of China launched the National Training Plan in 2009. This network-based training aims to enable teachers across the country, especially rural areas to receive good resources and get high quality professional training as well as information exchange opportunities. Among them, TeacherClub.com.cn is a well-known virtual community for teachers' professional development, and xcjyyxw.cn, supported by TeacherClub.com.cn, not only offers opportunities of network training and research activities of teachers in Xicheng District, Beijing, but also provides online support for teachers in remote areas such as Bijie in Guizhou Province and the Arong Banner of Inner Mongolia. In those rural areas, once teachers finish initial network training under the supervision of the local Board of Education, they seldom actively continue the network training later on. Therefore, how to make teachers in rural areas continue network training has been a concern of administrators in K-12 education.

In early studies on the adoption of information systems, there is no strict distinction of users' information technology adoption at different stages (Elena et al., 1999). Until 1999, Karahanna and Straub divided it into two phases: initial adoption and continued adoption or usage. They believed that factors affecting technology adoption varied at different stages. Initial adoption was solely influenced by normative considerations, while continued usage was determined by attitudinal factors and the extent to which usage was mandated. Furthermore, with the exception of image, all other innovation attribute beliefs underlay pre-adoption attitude, whereas only perceived usefulness and image underlay post-adoption attitude (Karahanna and Straub, 1999). The differences between the two adoption stages were addressed in two popular models: Technology Adoption Model (TAM) and Expectation-confirmation Model (ECM). TAM explains the acceptance of information systems. It mainly considers two factors for determining the technology adoption level: perceived usefulness and perceived ease of use and ignores other factors. Perceived usefulness was found to have a direct impact on users' attitude toward using and their behavioral intention to use in the initial adoption (Karahanna and Straub, 1999). ECM, on the other hand, focuses on users' continued adoption of an information system. It identifies two factors that directly affect users' intention to continue to use an information system after having used it for some time (Bhattacherjee, 2001). They are perceived usefulness and satisfaction. Studies found that users' perceived usefulness decided their intention of continued use (Chen et al., 2004; Lin et al., 2013; Praveena and Thomas, 2014).

The models above are focused on general technology systems, not a specific one such as education where prior literature review on teachers' use of technologies showed a deficit of studies (Sorebo et al., 2009). In addition, factors of users' continued adoption vary in different communities. Thus expansion and improvement of models are needed in order to better explain users' behavior. In addition, for certain specific subjects, such as users in a professional learning community, studies

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on what deeper reasons can cause users' perceived usefulness and continuous adoption of community resources are in shortage.

This study was conducted in a professional virtual community called Teachers' Network Community (TNC) and was constructed on the platform of TeacherClub.com.cn. TeacherClub.com.cn recognized by Chinese Ministry of Education is currently the largest online teacher community in China. It is sponsored by the national teacher education institute, one of the professional institutions that provides comprehensive professional development services for teachers and school administrators. TNC was expected to bridge the distance between teachers in different regions and create favorable conditions for the interaction, exchange and learning. In this study, we aimed to investigate factors influencing teachers' perceived usefulness of TNC with large sample data obtained by the field research in the Arong Banner, China. We then discussed ways to improve rural teachers' continued adoption of the virtual teacher community.

2. Research model and development of hypotheses

2.1. Extraction and research hypotheses of factors influencing perceived usefulness

Davis was the first to define perceived usefulness (Davis, 1989). In his TAM model, perceived usefulness was defined as the degree to which a person believed that using a particular system would enhance his or her job performance. Only when individuals perceive usefulness of a product or service could they be further affected in terms of their attitudes and purchase intentions. This paper focuses on perceived usefulness of TNC, which we define as teachers' perceived improvement of teaching ability after joining the TNC. Based on the theories and literature review, we identified six factors that may influence teacher users' perceived usefulness of TNC, namely, knowledge acquisition, information quality, teaching task matching degree, quality of virtual community, personal influence promotion, and interpersonal relationship improvement.

2.1.1. Knowledge acquisition and its hypothesis

Existing studies suggested that learning technology systems had a positive effect on the collaborative learning where knowledge acquisition was the desired outcome (Zhu et al., 2006). It facilitated communication and was conducive to sharing of knowledge and information (Fan and Liu, 2006; Shoham and Hasgall, 2005). Information diffusion mechanism in the network environment makes the network community a source of valuable knowledge (Whelan et al., 2010).

With various functions provided by the TNC, teachers can manage their own teaching materials, explore other teachers' curriculum design, test preparation, case studies, teaching materials, and share experience of teaching and student management through collaborative groups and symposiums. Therefore, we proposed Hypothesis 1:

H1. Knowledge acquisition had a direct and positive effect on teachers' perceived usefulness of TNC.

2.1.2. Information quality and its hypothesis

Delone and Mclean (1992) first proposed in 1992, that system quality and information quality had direct impact on users' satisfaction and use behavior, but with no empirical validation (Delone and Mclean, 2004). In 2003, McGill verified that there was a positive correlation between information quality and customer satisfaction in an information system (McGill and Hobbs, 2003). So we proposed Hypothesis 2.

H2. Information quality had a direct and positive effect on teachers' perceived usefulness of TNC.

In addition, teachers in the Arong Banner explored the information uploaded by other teachers in the developed areas to prepare for teaching tasks. Therefore, we assumed that the quality of information would directly affect the results of knowledge acquisition, and hence came with Hypothesis 3:

H3. Information quality had a direct and positive effect on teachers' knowledge acquisition in the TNC.

2.1.3. Teaching task technology matching and its hypothesis

The concept of task matching degree is often applied in studies on users' continued use of information systems. It was proposed based on the task matching degree concept of the Task-Technology Fit (TTF) Model. TTF refers to features and support provided by a technology are capable of matching the needs of users' other tasks (Goodhue and Thompson, 1995). After the TTF was proposed, some scholars integrated the TTF with perceived usefulness in TAM to promote the development of information system adoption theory (Goodhue and Thompson, 1995; Mathieson and Keil, 1998). Their results confirmed that perceived usefulness had a significant correlation with task technology matching. Larsen later verified the positive effect of task technology matching degree on perceived usefulness (Larsen et al., 2009).

One objective of the TNC is for rural teachers to receive updated resources so as to enhance their teaching skills. Therefore, in this study, teaching task matching was defined as the degree to which the functionality of the TNC matched the teaching task as well as the needs of the teachers. The better the TNC supported teachers' teaching tasks, the more the teachers enjoyed using it (Yan, 2009). Accordingly, we proposed Hypotheses 4 and 5:

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