Evaluation of pre-service teachers' technology acceptance of a mobile social networking App for teachers' professional development

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Abstract: Our research group has implemented a professional development platform for teachers, WIDEKM (Web-based Instructional Design Environment with Knowledge Management modules) since 2006. WIDEKM was mainly a blog-based professional development environment that, in a recent count, had approximately twenty thousand members, but the social interaction between teachers was still limited. Therefore, the purpose of this study was to evaluate the technology acceptance and usage motivation of the pre-service teachers after they operated a mobile social networking application (WIDEKM App) that was developed by our research group in 2012 to promote interaction between the teachers. There were 10 participants in this pilot study. The results of technology acceptance showed that most participants expressed positive attitudes toward most WIDEKM App functions.

Keywords: Social Network Services, Mobile Application Platform, Professional Development

Introduction

Using social networking services (SNSs), people can communicate learning-related knowledge with their friends in a highly interactive way [1]. People have more opportunities to learn because their homepage is always full of posts provided by friends. However, teachers seldom consistently make use of their current professional development platforms to learn with others because of a lack of time and incentives during the semester [2, 3]. Currently, the social networking characteristic is insufficiently present in most teachers' professional development platforms. Since the WIDE-KM platform was implemented in Taiwan by our research group in 2006 [4, 5], twenty thousand teachers have registered in total. Teachers could effectively discuss their instruction, instructional design and the problems that they faced in class. Although teachers could effectively exchange knowledge and experiences, the usage and interaction rates were still low. Therefore, we [6] developed a mobile professional development application, *WIDE-KM App*, which was combined with a series of mobile social networking functions. Through the functions, we expect to enhance the teachers' usage motivation and the social interaction between teachers. There were 10 participants (pre-service teachers) in this pilot study, and two primary research questions are proposed in this study (1) after the pre-service teachers manipulated the WIDEKM App, what was their technology acceptance attitude of the entire platform? (2) After the pre-service teachers manipulated the WIDEKM App, what was their technology acceptance attitude of each function?

1. Method

This study included 10 qualified pre-service teachers as participants. The research tool, *WIDEKM App* was designed and implemented by our research group [6]. Following the original functions of WIDEKM, we developed the app (i.e., WIDEKM App, as shown in Figure 1) and combined social networking with mobile portability to the original platform based on some social networking concepts such as "Openness" and "Active State" [1]. Social networking functions were combined with our platform to provide teachers with more opportunities to interact and have discussions with other teachers, especially unfamiliar teachers to them. Moreover, by combining the instant dynamic function of social networking, our platform could increase knowledge sharing among teachers. For example, whenever users logged into our platform, they could observe plenty of content posed by other teachers [1].

Figure 1 Screenshot of *WIDEKM App*

We also designed a questionnaire based on Technology Acceptance Model (TAM) [7] to assess pre-service teachers' satisfaction after using our platform. There were 19 questions regarding the technology acceptance of the entire platform ($\alpha=.660$). Moreover, the technology acceptance of each function was evaluated by two questionnaires: a perceived usefulness questionnaire and a perceived ease of use questionnaire. In the perceived usefulness questionnaire, there were 21 questions ($\alpha=.719$). In the perceived ease of use questionnaire, 21 questions were included ($\alpha=.872$). All of the teachers were asked to use our new mobile social networking platform, the *WIDEKM App*, approximately 30 minutes in the experimental process to allow them to understand whether this platform would meet their needs. Next, all of the teachers completed the TAM technology acceptance questionnaire to express their perception and satisfaction regarding our platform.

2. Results and Discussion

We referred to TAM to implement percentile statistic and a five-point scale questionnaire to evaluate pre-service teachers' attitudes and behavior toward our system. The score of each question was above 3.7, and the average score was 3.963, indicating that these teachers had positive technology acceptance towards of the entire platform. Here, we list the questions of top five high scores (as shown in Table 1).

Table 1 Technology acceptance of entire platform

Rank	Item	Mean	SD
1	I think that the function of WIDEKM App is clear and understandable.	4.30	.483
2	I think that the interface design of App's blog system is ease-of-use.	4.30	.675
3	I think that WIDEKM App can help me obtain high-quality teaching materials more easily.	4.20	.632
4	I like to use WIDEKM App to obtain other teachers' teaching materials and information.	4.10	.568
5	I think that the function of WIDEKM App can help me know other teachers' latest information rapidly.	4.10	.568

Regarding the questionnaire regarding the perceived ease-of-use, the scores for the questions regarding all of the function dimensions were above 3.9, indicating that the WIDEKM App was suitable for teachers' use. Regarding the perceived usefulness, the scores of the 19 questions were positive and over 3.6, indicating that the pre-service teachers had positive technology acceptance toward each function's perceived usefulness. Here we list the top five high-score questions (i.e. functions) (as shown in Table 2).

Table 2 Technology acceptance of each function

Rank	Item	Mean	SD
1	Preview high-quality teaching material.	4.50	.527
2	Read latest blog articles.	4.40	.516
3	Download high-quality teaching material.	4.30	.483
4	Read friends' blog articles.	4.30	.483
5	Reply peers' blog articles.	4.20	.422

3. Conclusions

Social networking characteristics may improve teachers' interaction and usage motivation (e.g., [1]). Thus we designed a professional development platform, WIDEKM App. The results of technology acceptance in this pilot study showed that most pre-service teachers expressed positive attitudes toward most WIDEKM App functions, especially the functions of accessing high-quality teaching materials and blog interactions. However, this study did not analyze the interaction in the teachers' actual use. Thus, we will proceed with further interaction pattern analysis for providing further references to improve the system.

Acknowledgments

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