Teachers' Adoption of Teaching Blog: Analysis of Elementary Schools in Central Taiwan

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Abstract—The purpose of this study is to investigate elementary school teachers' usage behaviors and attitudes toward teaching blogs. 419 elementary school teachers in Taichung metropolitan area participated in the survey. The results indicated teachers' positive attitude toward teaching blog in terms of perceptions of usefulness and affect toward use. In addition, the results showed significant differences on attitude of teachers with different backgrounds including gender, teaching experiences, and computer training. Furthermore, the obstacles of adoption of teaching blog were investigated. Lack of time was the most common obstacle.

Index Terms—ICT in education, social media, teaching blog, technology adoption.

I. INTRODUCTION

The rapid advancement of computer network has changed the modern life by accelerating the transfer of human knowledge [1]. Among many Internet services, social network service, such as blog, has been used in establishing relationship and sharing learning experiences. With a 'soapbox' all to themselves, blogs provide their maintainers with the rare opportunity to publish their personal thoughts for the public consumption of such a vast audience can be an uplifting and sometimes cathartic experience [2].

Blog is a means of reaching a wider audience. With many ready and willing to respond to the opinions and commentaries of bloggers, an online network of unknown people of common interest, goal, or experience can interact, share knowledge and information. They strengthen users' concept of behavior and experience, especially in absorbing others' experience [3]-[6].

In addition to serve as an online journal encouraging personal reflection, blogging encourages collaboration through the sharing of links to resources and up to date information, Oravec observes that the blog has many dimensions that are suited to students' 'unique voices', empowering them, and encouraging them to become more critically analytical in their thinking [7].

Godwin-Jones indicates that through blogging, people are able to document their reflections about things relevant to their daily life experiences, providing new opportunities and

incentives for personal writing [8], [9].

Many prior studies confirm that blog is an effective educational technology to promote learning by providing learning resources or facilitating collaborative activities [10]-[14]. In this study, the authors investigated teachers' attitude toward teaching blog and identified the major obstacles of adoption.

II. RESEARCH METHODS

Survey was used to investigate teachers' intention and behaviors. Questionnaires were mailed to elementary teachers in central Taiwan.

A. Subjects

The subjects are the elementary teachers in Taichung city, which owned schools of different sizes. There were 234 elementary schools and 4344 teachers in 2011. To avoid bias in scale of schools, stratified sampling was used. As shown in Table I, 450 questionnaires were mailed to elementary teachers in central Taiwan. In the end, 419 valid questionnaires were used as the data for analysis. Among them, 72.6% were female teachers.

TABLE I: SAMPLING OF THE SURVEYED TEACHERS

School Size	Number of all teachers	Percentage of all teachers	Number of sampled teachers
Small size (< =36 classes)	1481	34%	153
Medium size (37 to 60 classes)	1369	31%	140
Large size (>= 61 classes)	1494	35%	157
total	4344	100%	450

B. Instruments

The questionnaire was designed to collect information on teachers' background, attitude toward using teaching blogs, actual usage of teaching blogs, and feedback from students and their parents.

The background session consisted of items on teachers' gender, age, years of teaching, education, and computer skills.

The attitude session consisted of items on knowledge, self-efficacy, affect toward use, and perceived usefulness.

The actual usage session consisted of items on the names of teaching blogs used, duration of usage per day, articles

posted per day, and posted content.

The feedback session consisted of items on skills on blogging, teachers' professional reflection, communications with students and parents, students' reaction and use behavior, and students' learning achievement.

C. Data Analysis

ANOVA and t-test were used to verify the differences. Person correlation analysis was used to test the connection between the usage of teaching blogs and behavior changed.

III. RESULTS: USAGE

As in Table II to Table V, the descriptive statistics showed teachers' use behaviors of teaching blogs. The most popular blog platforms are owned by school and Uschool (see Table II). These two platforms are specific designed for educational purposes, whose functions meet the teachers' needs.

TABLE II: BLOG PLATFORMS USED BY TEACHERS

Platforms used	n	%
Owned by School	324	79.0
Kimo Yahoo	56	13.7
Wretch	71	17.3
Sino	7	1.7
Windows Live Messenger	35	8.5
Kimo Yam	26	6.3
Owned by self	13	3.5
Uschool	126	30.7
Roodo	5	1.2
Xuite	29	7.1
Others	4	1.0

TABLE III: NUMBER OF ARTICLES POSTED PER WEEK

Number of articles	n	%
Less than 1	318	75.9
1 to 3	85	20.3
4 to 6	16	3.8

TABLE IV: TIME SPENT ON MAINTAINING BLOG PER DAY

Time spent	n	%
Less than 30 minutes	370	88.3
Between 0.5 to 1 hour	40	9.5
Between 1 to 1.5 hour	6	1.4
Between 1.5 to 2 hours	1	.2
More than 2 hours	2	.5

Most teachers spent less than 30 minutes in browsing or maintaining blog content. The reason is they are busy with class activities (see Table III to Table V).

Most teachers used blogs to make announcements and display photos and students' works (see Table VI).

TABLE V: TIME SPENT ON BROWSING BLOG

Time spent	n	%
Less than 30 minutes	358	85.4
Between 0.5 to 1 hour	46	11.0
Between 1 to 1.5 hour	11	2.6
Between 1.5 to 2 hours	2	.5
More than 2 hours	2	.5

TABLE VI: FUNCTIONS OF THE BLOGS THAT TEACHERS USED

Functions on the blogs used	n	%
Display students' works	320	76.6
Class affairs announcements	319	76.3
Communications with parents	170	40.7
Display photos of activities	340	81.3
Teachers' reflection notes	96	23.0
Supplements to teaching	142	34.0
Communications with students	141	33.7
Others	17	4.1

IV. RESULTS: DIFFERENCES

Statistical methods such as t-Test and ANOVA were used to test the significance of differences between the usage behavior and background.

The SI unit for magnetic field strength *H* is A/m. However, if you wish to use units of T, either refer to magnetic flux density *B* or magnetic field strength symbolized as $\mu_0 H$. Use the center dot to separate compound units, e.g., "A·m^2."

A. Gender

TABLE VII: GENDER DIFFERENCE IN ATTITUDE TOWARD TEACHING BLOG

	gender	n	M	SD	t
Knowledge	M	115	3.26	.50	2.85**
	F	304	3.11	.45	
Self-efficacy	M	115	3.23	.52	1.5
	F	304	3.15	.44	
Affect Toward Use	M	115	2.93	.49	1.03
	F	304	2.87	.51	
Perceived Usefulness	M	115	2.94	.51	1.57
	F	304	2.85	.52	

**p<.01

In terms of gender, male teachers tend to know about the history and functionalities of teaching blog. Besides, no significant differences exist in attitude between male and female teachers (see Table VII).

B. School Size

In terms of school size, teachers at large schools tend to express positive attitude toward teaching blog (see Table VIII).

TABLE VIII: SCHOOL SIZE DIFFERENCES IN ATTITUDE TOWARD TEACHING BLOG

	School Size	n	M	SD	F	Comp.
Knowledge	Small	134	3.15	.47		
	Medium	136	3.10	.44	1.81	
	Large	149	3.21	.49		
Self-efficacy	Small	134	3.15	.47		
	Medium	136	3.11	.41	3.40*	3>2
	Large	149	3.25	.48		
Affect Toward Use	Small	134	2.78	.51		
	Medium	136	2.84	.42	10.77*	3>1
	Large	149	3.03	.53		3>2
Perceived Usefulness	Small	134	2.80	.54		
	Medium	136	2.80	.48	8.96**	3>1
	Large	149	3.02	.53		3>2

*p<.05, **p<.01

C. Educational Background

In terms of education background, no significant differences exist in attitude between teachers with different educational degrees (see Table IX).

TABLE IX: EDUCATION LEVEL DIFFERENCES IN ATTITUDE TOWARD TEACHING BLOG

	Degree	n	M	SD	F
Knowledge	Associate	0	0	0	
	Bachelor	187	3.13	.47	0.96
	Mater	232	3.17	.47	
Perceived Behavior Self-efficacy	Associate	0	0	0	
	Bachelor	187	3.13	.44	2.46
	Mater	232	3.20	.47	
Affect Toward Use	Associate	0	0	0	
	Bachelor	187	2.88	.52	0.18
	Mater	232	2.90	.49	
Perceived Usefulness	Associate	0	0	0	
	Bachelor	187	2.88	.51	0.32
	Mater	232	2.87	.53	

* p<.05 ** p<.01

D. Computer Training

In terms of computer background, significant difference exists in knowledge and self-efficacy between teachers majoring in computer or non-computer (see Table X).

E. Teaching Experience

In terms of computer background, no significant differences exist in attitude between teachers majoring in computer or non-computer (see Table XI).

TABLE X: COMPUTER TRAINING DIFFERENCES IN ATTITUDE TOWARD TEACHING BLOG

	College major	n	M	SD	F
Knowledge	Non-Computer	378	3.13	.46	
	Computer	41	3.38	.46	11.28**
Self-efficacy	Non-Computer	378	3.15	.46	
	Computer	41	3.35	.42	6.62*
Affect Toward Use	Non-computer	378	2.88	.51	
	Computer	41	2.94	.49	0.52
Perceived Usefulness	Non-computer	378	2.87	.51	
	Computer	41	2.85	.61	0.78

* p<.05 ** p<.01

TABLE XI: TEACHING EXPERIENCE DIFFERENCES IN ATTITUDE TOWARD TEACHING BLOG

	Years of teaching	n	M	SD	F
Knowledge	Under 5	29	3.16	.42	
	6~10	162	3.18	.47	
	11~15	123	3.13	.48	0.84
	16~20	42	3.05	.48	
	Above 21	63	3.19	.45	
Self-efficacy	Under 5	29	3.02	.28	
	6~10	162	3.19	.50	
	11~15	123	3.16	.45	1.02
	16~20	42	3.18	.43	
	Above 21	63	3.21	.45	
Affect Toward Use	Under 5	29	2.86	.44	
	6~10	162	2.88	.56	
	11~15	123	2.89	.45	0.35
	16~20	42	2.85	.52	
	Above 21	63	2.95	.48	
Perceived Usefulness	Under 5	29	2.91	.39	
	6~10	162	2.84	.55	
	11~15	123	2.91	.49	0.44
	16~20	42	2.86	.58	
	Above 21	63	2.90	.53	

V. RESULTS: CORRELATION

Pearson correlation method was used to test the correlation between teachers' attitude and feedback. As in Table XII, affect toward use is highly related to teachers' perceptions on the rewarding results from using blogs. The next is perceived usefulness. The result showed that a useful and delightful design of blog platform would attract teachers to use and then created positive impacts on their teaching tasks.

The least relevant pair was knowledge and teachers' reflection. It indicated that using blog, instead of knowing the functions, was able to facilitate teachers' reflection.

TABLE XII: CORRELATION BETWEEN TEACHERS' ATTITUDE AND FEEDBACK

	Blogging skills	Class management	Communi-cation	Teachers' reflection
knowledge self-efficacy	.38** .46**	.30** .40**	.21** .34**	.11* .19**
Affect toward use	.58**	.69**	.60**	.41**
perceived usefulness	.57**	.57**	.54**	.38**

*p<.05, ** p<.01

VI. RESULTS: OBSTACLES

Among the obstacles of using teaching blog, lack of time is the top reason. In addition, insufficient facility is the second reason (see Table XIII).

Authors of rejected papers may revise and resubmit them to the journal again.

TABLE XIII: PERCENTAGE OF PERCEIVED OBSTACLES

obstacle	number	percentage
1. User-unfriendly interface design	136	32.9
2. Functionalities not fit for job	71	16.9
3. Little feedback	80	19.1
4. Lack of time due to heavy workload	353	84.2
5. Insufficient computer abilities	100	23.9
6. Difficulty in writing	142	33.9
7. Slow upload speed or insufficient storage	197	47.0
8. Pressures from job evaluation	126	30.1
9. No support for solving problems	57	13.6
10. Students lack of computer skills	96	22.9
11. Students do not access to computers	150	35.8
12. Students are interested	86	20.5

VII. DISCUSSION

Blogs allow people to exchange information without space and time constraints, to broaden their knowledge, and to meet personal needs and interests at the same time. With this media for educational purpose, teachers are able to deliver and share information, as well as communicate with students and parents.

The research findings indicated the positive attitude toward teaching blog. Although teachers are too busy to post many articles and pictures, they still consider technology a good tool to facilitate communication between teachers and students/parents. Nevertheless, more research should be conducted before encouraging schools or teachers to integrate teaching blog in schools.

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