HOW TEACHERS USE AND MANAGE THEIR BLOGS? A CLUSTER ANALYSIS OF TEACHERS' BLOGS IN TAIWAN

Eric Zhi-Feng Liu[1] and Huei-Tse Hou[2]

[1]*Graduate Institute of Learning and Instruction, Center of Teacher Education, Research Center for Science and Technology for Learning - National Central University - Taiwan*
[2]*Graduate Institute of Engineering, National Taiwan University of Science and Technology - Taiwan*

ABSTRACT

The development of Web 2.0 has ushered in a new set of web-based tools, including blogs. This study focused on how teachers use and manage their blogs. A sample of 165 teachers' blogs in Taiwan was analyzed by factor analysis, cluster analysis and qualitative content analysis. First, the teachers' blogs were analyzed according to six criteria (total posts, article category, links, page score, index score, and influence score). Then, important factors that influence teachers' use of blogs were summarized using factor analysis. Finally, cluster analysis was used to divide the sample into groups of similar blogs. Four groups were identified: the general group, the outstanding group, the high-impact group and the high-knowledge management/sharing group. Further content analysis of these four teacher groups will provide suggestions for teachers and teacher educators on more beneficial uses of blogs.

1. INTRODUCTION

Regarding the analysis of the feature and application of blogs, as for the functions, Herring, Scheidt, Wright, and Bonus (2005) analyzed the nature of blogs. Their study analyzed the presence or absence of article archives, badges, images, comments, email contact with the host, advertisements, search functions, calendars and message boards. The results showed that over half of the blogs sampled included an article archive, badges and images. Researchers also analyzed the headers and footers of these blogs and found that the information most frequently included in the header was the date, and the information most frequently displayed in the footer was the time.

To summarize the above, the studies explored the basic features of blogs, the content of knowledge-interactions, and the blogging purposes. Regarding the overall shape of blogs, knowledge-sharing characteristics of the bloggers can be analyzed to determine hidden patterns and clusters. There is little research on these aspects, which could allow us to understand blogs from another perspective. Therefore, in this study, we adopted factor analysis and cluster analysis to understand Taiwanese teachers' use of blogs.

The specific purposes of this study are 1) to use factor analysis and cluster analysis to understand potential grouping and behavioral patterns in the use of blogs by teachers in Taiwan and 2) to use content analysis to analyze blogs, including their features and content, in each group, and two research questions are addressed:

2. METHOD

2.1 Sample

The subjects of this study are the blogs of teachers in Taiwan at kindergarten through university levels. The aim of the study was to understand recent patterns in teachers' blog use. Before analyzing these patterns, researchers must understand the functions and features provided by the blog service providers (BSPs) that the teachers utilized. These functions and features will be taken into consideration during further analysis.

2.2 Procedure

During data collection, the researchers first performed a brief analysis of the BSPs used by teachers. The researchers then searched for teachers' blogs on these BSPs that met the criteria of this study. After collecting the data, the researchers first performed a criterion analysis and then used factor analysis to identify important factors influencing teachers' use of blogs. This study then divided the teachers' blogs into groups based on the results of a cluster analysis. After grouping, this study used content analysis to understand the distinguishing features of each group of blogs.

3. RESULTS

Research Question 1: Can the Characteristics of Blogs Effectively Divide Them into Unique Groups?
This study conducted a preliminary analysis on a total of eight indicators. BSP and teaching level are classification indicators and are not included in the factor analysis. This study used the number of links, the number of categories, the total number of posts, index score, influence score and page score to analyze the teachers' blogs. Based on these six items, this study used factor analysis, together with the largest variation orthogonal axis, to find common factors among these indicators. Analysis of the principal components was performed by retaining the original information in an attempt to identify a linear combination that could explain the variables. Rather than using more original factors, the goal of this analysis was to identify a few main components that could be used to explain the variables. The eigenvalue of each item must be greater than 1.0, and the factor loading value must be greater than or equal to 0.40.

The factor analysis yielded two items that can be used to describe teachers' blogs (see Table 1). Factor I includes the page, influence and index scores, and Factor II includes the numbers of links, categories and published posts. Because the items of Factor I are closely related to the impact of the blogs, this factor is referred to as Impact. Factor II includes items that the bloggers used to manage and share their knowledge content; this factor is referred to as Knowledge Management/Sharing (KM/KS).

Table 1. Factor Loadings and Eigenvalues

Analyzed items	Impact	Knowledge Management /Sharing
Page score	.974	.069
Influence score	.973	.065
Index score	.845	.254
Article category	-. 061	.767
Links	.144	.595
Total posts	.162	.556
Eigenvalue	2.813	1.175
The percentage of variance explained	44.358	22.096
Cumulative percentage of variance explained	44.358	66.454
KMO coefficient	.687	

This study used the K-Means grouping method to perform cluster analysis, where the input data are the factor scores resulting from factor analysis. Since two factors were identified above, the high and low values of each factor will generate four possibilities. Therefore, group sizes of two, three and four will be considered for cluster analysis. It was found that if this study divided the sample into two or three groups, there were too many blogs in each group, and the division was inefficient to explain the sample characteristics. Taking into account the high and low status for each factor would produce four possibilities, and thus this study used four groups for analysis. Grouping analysis results are summarized in Table 2.

Table 2. Summary Table of K-Means Cluster Analysis

	Clusters			
	Group 1	Group 2	Group 3	Group 4
Impact	-. 11	3.97	10.67	-. 08
KM/KS	-. 24	.99	-. 01	2.44
Number of blogs	148	2	1	14

The factor scores are standardized and, as a result, their values range between -3 and 3. A scale for the factor scores can be formed by dividing the factors into 11 equal parts. After the scores are converted into a scale, this scale can be used to describe the characteristics of each group.

4. CONCLUSION

Based on our findings, we offer the following suggestions for teachers and teacher educators. Authors of education-related blogs may refer to the characteristics of the four groups when deciding how to operate their own blogs. Moreover, teacher-trainers could use our findings to formulate ICT-Integration training. These courses would then help teachers make better use of blogs for teaching or professional development. For example, the trainings could conduct blog-visiting/sharing activities based on the result of our grouping. The bloggers in the general group can learn from bloggers in the other three groups about improving their knowledge-management/sharing skills and promoting their impact. They can learn about the management of blogs from excellent examples and thus improve the visibility of their own blogs. They can also attract more readers by improving their writing. Better influences and knowledge-sharing may also improve the depth and breadth of knowledge-sharing in the teacher community.

ACKNOWLEDGEMENT

REFERENCES

Herring, S. C., Scheidt, L. A., Wright, E., & Bonus, S. (2005). Weblogs as a bridging genre. *Information Technology & People, 18*(2). 141-171.