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Exploring Taiwanese Preschool Teachers' Information Literacy and Searching Behavior in Relation to Internet Self-Efficacy

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Abstract: This paper explores the skills experience and confidence of preschool teachers' engagement with web-based tools in support of learning and teaching. A sample of 287 early-years teachers were examined through path analysis. The results indicated that preschool teachers' Internet self-efficacy (ISE) acts as an important mediator between information literacy standard and searching behavior. In addition, the path analysis revealed that pre-school teachers' authority, multiple and content of information literacy standards are the significant positive predictors for the elaboration scale of searching behavior. That is, preschool teachers with variety information literacy standard and with higher ISE are more likely to express elaboration of searching behavior than those who with lower ISE. The findings of this study also suggest that the government and researchers need to identify effective ways for improving preschool teachers' abilities to utilize the Internet information and their use of appropriate Internet-based tools.

Keywords: Internet Self-Efficacy, Searching Behavior, Information Literacy

1. Introduction

In the past, information was often acquired through books or libraries; in the digital era, more and more individuals now turn to the sources on the Internet to find answers or solutions for the problems encountered in academic, personal, interpersonal, and occupational contexts (Goldman, Braasch, Wiley, Graesser, & Brodowinska, 2012). While the online information is convenient and easy to be obtained, the massive and diverse amount of data available can be overwhelmed and disorientated (Zhang & Wang, 2010). Research has also shown that many Internet users do not emphasize or attend to the quality of the Internet source, even though the information may be presumably inaccurate (Flanagin & Metzger, 2000; Metzger, Flanagin, & Zwarun, 2003).

Information literacy, first introduced by Zurkowski (1974), refers to the competence to identify the requirement of the task, to efficiently locate and select information, to synthesize and effectively use information, and to critically evaluate information and its sources. Consumers who are information literate can save significant time and money because they know where and how to compare and contrast the offers given by different stores; employees with information literacy receive higher payment due to their outstanding ability to find, analyze, and incorporate appropriate information through multiple sources. In other words, information literacy can empower an individual to be successful in daily life (Morville, 2005).

Previous research on information literacy revealed some inconclusive findings, leading to a question that there may be other mediating factors in the information search process. Pharo and Jarvelin (2004) have suggested that the work task, the searcher, the social environment, the search goal, and the search process are five possible factors that influence the searching behaviors. Researchers have examined some emotional factors involved in the process, such as uncertainty (Wilson, 2000), optimism (Nahl, 2004), positive and negative feelings towards the search (Flavian-Blanco et al., 2011; Tenopir et al., 2008), satisfaction (Nahl, 2004), and perceived self-efficacy (Tsai & Tsai, 2003). Because the perceived self-efficacy, among others, has frequently been reported as an influential factor

on individual's information searching behaviors, it may be presumed to be a key mediator in the process of information search.

Internet self-efficacy is conceptualized as the degree of confidence that an individual feels about accomplishing certain task or overcoming the challenges in the Internet context (Wu & Tsai, 2006; Kao & Tsai, 2011). Along with teachers' perceptions in the web-based context, Internet self-efficacy has been explored with computer usage intentions (Smarkola, 2008), beliefs about web-based learning (Kao & Tsai, 2009), electronic service acceptance (Hsu & Chiu, 2004), gender difference (Tsai, & Tsai, 2010) and other factors. Nevertheless, the knowledge of how Internet self-efficacy affects online searching behavior is still very limited.

Information search is particularly indispensable for preschool teachers. While teachers of other education levels may be able to rely much on textbooks as their core class content, preschool teachers tend to use more self-edited materials due to the nature of the curriculum. The sources of their materials, as reported by Chu (2014), mainly come from the Internet. The information search process and strategies adopted, may determine the quality of teaching materials, as well as the learning outcomes of the students. Accordingly, we aimed to understand and describe preschool teachers' information literacy and searching behaviors through Internet self-efficacy. The mediating role of Internet self-efficacy in the relationship between information literacy and searching behavior was also examined.

2. Method

The participants of this study were selected by convenience sampling from 30 preschools in the north, middle, and south geographical areas of Taiwan. The final sample included 287 preschool teachers who had previous experience of web-searching.

2.1 Instruments

In order to measure preschool teachers' self-efficacy level and their web-searching behavior, two survey scales were adopted, including the Internet Self-Efficacy Survey (ISS) and Searching Behavior Survey (SBS).

2.1.1 Internet Self-Efficacy Survey

The Internet Self-efficacy Survey (ISS) was adapted from Kao and Tsai (2009) to investigate preschool teachers' confidence in using the Internet. ISS was divided into the basic level and the advanced level. The Basic Internet Self-Efficacy Scale measures the perceived confidence in using basic level web-based tools, such as downloading pictures or copying texts online. The Advanced Internet Self-Efficacy Scale measures the perceived confidence in engaging in more advanced online activities, such as purchasing necessaries or participating in online discussions. There are a total of 16 items presented on a seven-point Likert scale ranging from strongly unconfident (1) to strongly confident (7).

2.1.2 Searching Behavior Survey

Based on Wu and Tsai (2005, 2007), the 20-item Searching Behavior is an instrument utilized to investigate the preschool teachers' evaluative standards and searching strategies in the situations of judging online academic information. The SBS consisted of six scales, the first four are searching standards, and the last two are searching strategies. *Multiple Sources Scale* measures the extent to which preschool teachers will validate the correctness of unknown information on the Web by relating to other websites, prior knowledge, peers or other printed materials. *Authority Scale* evaluates the extent to which students will examine the accuracy of unknown information in Web-based learning environments by the 'authority' of the websites or sources. *Content Scale* measures the extent to which preschool teachers will assess the usefulness of the information viewed in Web-based learning environments by the relevancy of its content. *Technical Scale* assesses the extent to which students will judge the usefulness of the information viewed in Web-based learning environments by the ease of

retrieval, the ease of searching or the ease of obtaining information. *Elaboration Strategy Scale* measures the extent to which students will have purposeful (metacognitive) thinking or integrate Web information from several websites to find the best fit that fulfills their purpose. *Match Strategy Scale* investigates the extent to which preschool teachers will be eager to find only a few websites that contain the most fruitful and relevant information when they search for Web information.

3. Results

A path analysis was performed in order to investigate whether the mediator variable significantly carried the influence of the independent variable to the dependent variable (Sobel, 1982). Some of the variables in the path analysis appeared to have both direct and indirect (mediator) effects. In order to test the significance of the mediator effects, as shown in Figure 1, analysis was performed for the following parameters:

- Authority→ Basic ISE→Elaboration showed a significant mediator effect (β =0.131, p < .01**) indicating partial mediation (due to the significant path between Authority and Elaboration).
- Multiple→Basic ISE→Elaboration showed a significant mediator effect (β =0.158, p < .001***) indicating partial mediation (due to the significant path between Multiple and Elaboration).
- Content→ Basic ISE→Elaboration showed a significant mediator effect (β =0.449, p < .001***) indicating partial mediation (due to the significant path between Content and Elaboration).
- Technical→Advanced ISE→Match showed a significant mediator effect (β =0.502, p < .001***) indicating partial mediation (due to the significant path between Content and Match).

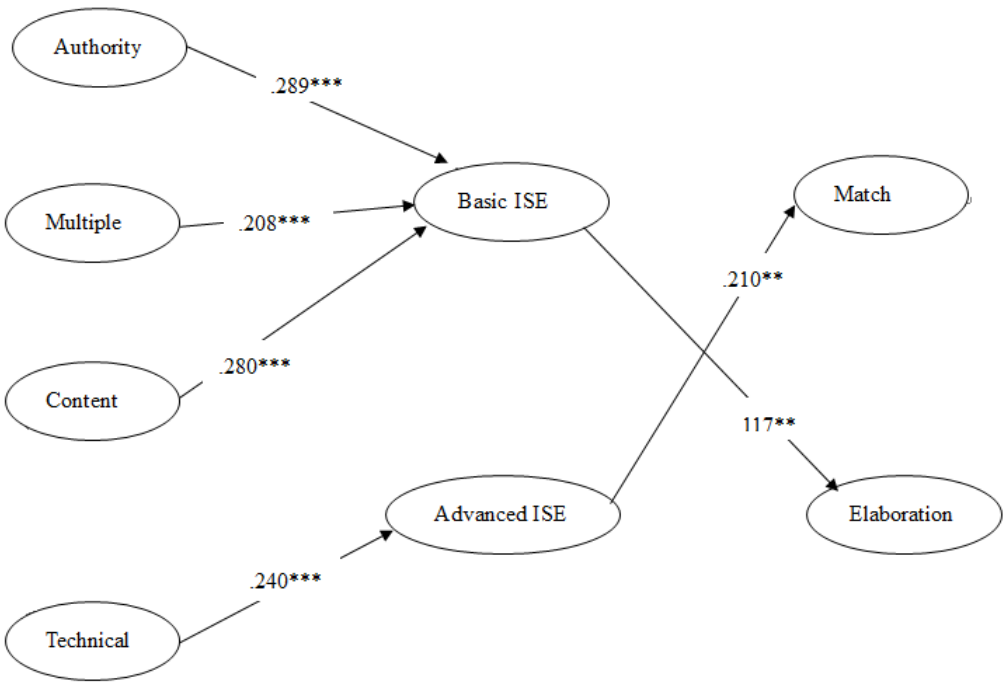

Figure 1. Results of mediation path analysis showing the relationships among Information literacy and Searching behavior

4. Discussion

The main purpose of this study was to investigate the relationship between preschool teachers' information searching behavior and their Internet self-efficacy. The results indicated that pre-school teachers' authority, multiple and content of information literacy standards are significant positive predictors for the elaboration searching strategy while Basic ISE level served as the mediator. Therefore, preschool teachers' various searching behavior should be highlighted in order to improve their Internet self-efficacy. Similar to these positive impacts of mixed information searching strategies, the results of this study indicate that early-years teachers use a variety of information searching

behaviors, including advanced and less sophisticated information searching standards and strategies. These can lead to an increase of their Internet self-efficacy within technology enhanced learning environments.

References

Chu, Y.-W. (2014). Teachers' beliefs in teaching English for kids at a kindergarten: A case study of students from the Department of Applied English. *English Language Teaching, 7*, 100-112. doi:10.5539/elt.v7n10p100.

Flavian-Blanco, C., Gurrea-Sarasa, R., &Orus-Sanclemente, C. (2011).Analyzing the emotional outcomes of the online search behavior with search engines.*Computers In Human Behavior, 27*(1), 540-551.

Goldman, S. R., Braasch, J. L. G., Wiley, J., Graesser, Arthur C., & Brodowinska, Kamila. (2012). Comprehending and Learning From Internet Sources: Processing Patterns of Better and Poorer Learners. *Reading Research Quarterly, 47*(4), 356-381.

Hsu, M. H.,& Chiu, C. M. (2004).Internet self-efficacy and electronic service acceptance. *Decision support systems, 38*(3), 369–381.

Kao, C.P., Tsai, C.C., (2009). Teachers' attitudes toward web-based professional development, with relation to Internet self-efficacy and beliefs about web-based learning. *Computer & Education, 53*(1), 66-73.

Kao, C.-P., Wu, Y.-T., & Tsai, C.-C.（2011）. Elementary school teachers' motivation toward web-based professional development, and the relationship with Internet self-efficacy and belief about web-based learning。*Teaching and Teacher Education，27*(2)，406-415。

Metzger, M.J., Flanagin, A.J., & Zwarun, L. (2003). College student web use, perceptions of information credibility, and verification behavior. *Computers & Education, 41*(3), 271-290.

Morville, P. (2005). *Ambient findability: What we find changes who we become.* Sebastopol, CA: O'Reilly Media.

Nahl, D. (2004). Measuring the affective information environment of web searchers. *Proceedings of the American society for information science and technology, 41*(1), 191-197.

Pharo, N. &Järvelin, K. (2004). The SST method: A tool for analyzing web information search process. *Information Processing and Management, 40*, 633–654.

Smarkola, C.(2008). Efficacy of planned behavior model: Beliefs that contribute to computer usage intentions of student teachers and experienced teachers. *Computers in Human Behavior, 24*(3), 1196-1215.

Tenopir, C., Wang, P., Zhang, Y., Simmons, B., & Pollard, R. (2008). Academic users' interactions with Science Direct in search tasks: Affective and cognitive behaviors. *Information Processing and Management, 44*(1), 105-121.

Tsai, M. J., & Tsai, C. C. (2003). Information searching strategies in web-based science learning: The role of internet self-efficacy. *Innovations in Education and Teaching International,40*(1), 43-50.

Tsai, M.-J., & Tsai, C.-C. (2010). Junior high school students' Internet usage and self-efficacy: A re-examination of the gender gap. *Computers & Education, 54*, 1182-1192.

Wilson, T. D. (2000). Human information behavior. *Informing science, 3*(2), 49-56.

Wu, Y.T. & Tsai, C.C. (2005). Information commitments: evaluative standard and information searching strategiesin web-based learning environments. *Journal of Computer Assisted Learning, 21*(5), 374-385.

Wu, Y.T., Tsai, C.C., (2006). University students' internet attitudes and internet selfefficacy:a study at three universities in Taiwan. *Cyberpsychology& Behavior, 9*(4), 441-450.

Wu, Y.T. & Tsai, C.C. (2007).Developing an information commitment survey for assessing students' web information searching strategies and evaluative standards for web materials. *Educational Technology & Society, 10*(2),120-132.

Zhang, J., & Wang, M. (2010). *Survey and countermeasure on undergraduates' disorientation in Internet: Case study of Jiangxi Normal University.* In 2010 2nd International Conference on Education Technology and Computer, 2, 445-449.

Zurkowski, P.G. (1974). *The information service environment relationships and priorities*, Related Paper No. 5., National Commission on Libraries and Information Science, Washington, DC., National Program for Library and Information Services.