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The Relationships between Taiwan University Students' Internet Attitudes and Their Preferred Teacher Authority toward Internet-based Learning Environments

Tzung-Jin LIN[a]* & Min-Hsien LEE[b]
[a] *Graduate Institute of Applied Science and Technology, National Taiwan University of Science and Technology, Taiwan*
[b] *Institute of Education, National Sun Yat-sen University, Taiwan*
*D9822302@mail.ntust.edu.tw

Abstract: Although the issue of teacher authority in the Internet-based learning environments has begun to gain attention recently, the relation with students' Internet attitudes is still unclear. Since a more appropriate attitude toward the Internet is required for successful Internet-based instruction, this study aimed to initially explore the relationships between students' Internet attitudes and their preferences of teacher authority in the Internet-based learning environments. A total of 259 Taiwan undergraduates were invited to complete two instruments to assess their preferences of teacher authority in the Internet-based learning environments and Internet attitudes, respectively. Through exploratory and confirmatory factor analysis, the two adopted instruments showed satisfactory validities and reliabilities. Moreover, the path analysis results indicate that, if the students prefer learner-centered process authority, they tend to possess positive Internet attitudes. For example, they may view the Internet more useful, possess higher confidence when using the Internet, and use the Internet more frequently. On the contrary, if the students show their preferences for a teacher-centered content authority, they are prone to use the Internet more often.

Keywords: Internet attitudes, Teacher authority, Internet-based learning environments

1. Introduction

Internet-based learning has been recognized an effective way to promote students' learning. When constructing the Internet-based learning environments, it is imperative for researchers to know students' preferences toward these environments. Although a handful of researchers have explored this issue (e.g., Yang & Tsai, 2008), it is claimed here that a more detailed scrutiny may be needed. For example, studies have indicated that implementing a successful Internet-enhanced learning environment depends not only on the design of the system but also on the role of instructors (e.g., Lin et al., 2012). In other words, in order to successfully implement Internet-based instruction, how students envisage the role of teacher in the Internet-based learning environments may be of importance to explore in this line of research. Under this circumstance, the extent of teachers' control over practices in the Internet-based learning environments may be imperative to influence students' preferences or perceptions toward these environments. In the traditional learning environments, the issue of teacher authority has gained much attention lately (e.g., Lee et al., 2009). Yet, in the context of Internet-based learning, this issue has not been fully understood. Recently, Lin et al. (2012) proposed that teacher authority can be conceptualized as a three-dimensional of authority including content authority (e.g., what and who determine the learning content), process authority (e.g., the control of classroom procedures and activities), and intellectual authority (e.g., the ways of what counts as knowledge and who is validated as knower). It is expected that, due to the unique features of Internet-based learning environments, the transition of teacher authority that shifts from teachers to students may occur.

In addition, since the rapid development of Internet technology in education, numerous studies have investigated how students' characteristics contribute to learning in the Internet-based context.

They also claimed that it is the fundamental step to be aware of students' preferences toward Internet-based learning environments. Among those unique characteristics within learners, Internet attitude may be one of the crucial elements. There is no doubt that a more positive attitude toward the Internet is required for successful Internet-based learning and instruction (e.g., Tsai et al., 2001). As documented in the literature, students' positive attitudes toward the Internet may influence their learning behaviors, motivations, interests, and outcomes relative to Internet-based learning (e.g., Peng et al., 2006). However, it is argued here that the relationships between students' preferences of teacher authority in the Internet-based learning environments and their Internet attitudes are still unclear. In turn, the present study aimed to extend the current understanding regarding the relationships between students' Internet attitudes and their preferences of teacher authority in the Internet-based learning environments.

2. Method

2.1 Participants

The participants were 259 undergraduates with an average age of 19.99 year-old (154 male) in Taiwan. They were invited to complete two instruments regarding the preferences of teacher authority under the context of Internet-based learning and their attitudes toward the Internet.

2.2 Assessing the university students' preferences of teacher authority toward Internet-based learning environments

In the present study, a 30-item presented with a 5-point Likert scale Revised Teacher Authority Survey (Revised-TAS) (Lin et al., 2012) was adopted to explore the participants' preferences of teacher authority toward Internet-based learning environments. According to Lin et al. (2012), the Revised-TAS consisted of two aspects, including the learner-centered aspect and the teacher-centered. For each aspect, it contains three dimensions regarding the process, content, and intellectual dimension of teacher authority, respectively. As a result, learner-centered aspects consists of three dimensions with respect to the learner-centered pedagogy, namely Autonomy (AU), Participative Management (PM), and Equity (EQ). In contrast, the teacher-centered aspect includes Dependence (DE), Teacher Control (TC), and Sole Voice (SV). It is noted that, either in the learner or teacher-centered aspects, the process (i.e., AU, DE), content (i.e., PM, TC), and intellectual (EQ, SV) dimensions of teacher authority were embraced. A detailed definition and description of the six scales is presented below:

- Autonomy scale (5 items): measuring preferences of the extent to which students have opportunities to manage and control their learning process to acquire knowledge and concept.
- Participative Management scale (5 items): measuring preferences of the extent to which students have opportunities to design and organize their learning activities, and participate in determining what assessment criteria are.
- Equity scale (5 items): evaluating preferences of the extent to which students have opportunities to make judgment on what counts as knowledge and what knowledge is important.
- Dependence scale (5 items): assessing preferences of the extent to which students perceive the teacher's assistance and support and the teacher's arrangement of their learning content.
- Teacher Control scale (5 items): measuring preferences of the extent to which students perceive the teacher's control of the learning activities and assessment criteria.
- Sole Voice scale (5 items): evaluating preferences of the extent to which students perceive the teacher' judgment of what information or knowledge is important for students to know and how the students should know and learn it.

2.3 Evaluating the university students' Internet attitudes

In order to evaluate the participants' Internet attitudes, an instrument was implemented in the present study. That is, the participants' attitudes toward the Internet were assessed by a 20-item Internet Attitude Survey (IAS) (Tsai et al., 2001) with four scales including Perceived Usefulness scale, Affection scale, Perceived Control scale, and Behavior scale. The items were presented in a five-point

Likert scale, ranging from "strongly disagree" to "strongly agree." A detailed description of the four scales is presented below:

- Perceived Usefulness (5 items): measuring the participants' perceptions about the positive impacts of the Internet on individuals and society.
- Affection (5 items): assessing the participants' feeling and anxiety when using the Internet.
- Perceived control (5 items): measuring the participants' confidence about the independent control of the usage of the Internet.
- Behavior (5 items): assessing the participants' actual practice and frequency of using the Internet.

2.4 Data analysis and procedure

The purpose of this study was to initially explore the relationships between the university students' preferences of teacher authority in Internet-based learning environments and their Internet attitudes. First, in order to establish the validities and reliabilities of two adopted instruments, both exploratory and confirmatory factor analyses were performed. The purpose of exploratory factor analysis (EFA) was conducted to reduce the items. In an EFA, only those items with a factor loading of at least 0.40 within their own factor should be retained (Stevenson, 1996). The reliability (Cronbach's alpha) coefficients were then calculated after the EFA result. Thus, the validity and reliability of the instrument were evaluated accordingly. In addition, confirmatory factor analysis (CFA) was conducted to ensure the construct validity of the two instruments and clarify their ensuing structures.

To initially explore the relationships between the participants' preferences of teacher authority in the Internet-based learning environments and their attitudes toward the Internet, the Pearson correlation coefficients were performed based on the students' responses on the two instruments (i.e., Revised-TAS and IAS). The results of the Pearson correlation analysis were then used to build the hypothesized paths. In turn, to explore the structural relationships between the two constructs, path analysis was conducted. The path coefficients were estimated through Structural Equation Modeling (SEM) analysis to acquire the predictive relationships among latent constructs (Kelloway, 1998).

3. Results and Discussion

3.1 Validation of the Revised Teacher Authority Survey

To validate the Revised-TAS, EFA with vairmax rotation was performed to initially clarify the structure of the instrument. As a result, a total of 24 items were retained in the Revised-TAS and all items weighted greater than 0.4 on the proposed six factors. The total variance explained for the Revised-TAS instrument was 63.01%. The Cronbach's alpha reliabilities are 0.70 (AU), 0.80 (PM), 0.66 (EQ), 0.80 (DE), 0.83 (TC), and 0.88 (SV), respectively, and the overall alpha value is 0.87, indicating that the proposed factors had high internal consistency and reliability in assessing the students' preferences of teacher authority under the context of Internet-based learning environment.

The CFA further served as the purpose of confirming the structure of the Revised-TAS based on the EFA results. Accordingly, all of the factor loadings and the significance of the t-values of the 24 items on the six factors specify the relations of the items to their posited underlying factors. The values of composite reliability are satisfactory, indicating the measured items all consistently represent the proposed six latent constructs. Moreover, the ratio of chi-square per degree of freedom = 1.44, RMSEA = 0.041, GFI = 0.90, NFI = 0.93, NNFI = 0.97, CFI = 0.98. In sum, these results reflect an acceptable model fit which supports our hypothesized CFA model and indicate a reasonably good fit and also confirmed the convergent and construct validity of the Revised-TAS.

3.2 Validation of the Internet Attitude Survey

To validate the IAS, EFA with vairmax rotation was performed. Consequently, a total of 16 items were retained and all items weighted greater than 0.4 on the proposed four scales. The total variance explained was 66.00%. The Cronbach's alpha reliabilities are 0.83 (Perceived Usefulness), 0.86 (Affection), 0.67 (Control), and 0.82 (Behavior), respectively, and the overall alpha value is 0.67,

indicating that the proposed factors had sufficient internal consistency and reliability in assessing the students' Internet attitudes.

The CFA further served as the purpose of confirming the structure of the IAS. Thus, all of the factor loadings and the significance of the t-values of the 16 items on the four factors specify the relations of the items to their posited underlying factors. The values of composite reliability are satisfactory, indicating the measured items all consistently represent the proposed four latent constructs. Moreover, the ratio of chi-square per degree of freedom = 2.61, RMSEA = 0.08, GFI = 0.89, NFI = 0.92, NNFI = 0.94, CFI = 0.95. In sum, these results reflect an acceptable model fit which supports our hypothesized CFA model and indicate a reasonably good fit and also confirmed the convergent and construct validity of the IAS.

3.3 Correlations between Internet attitudes and preferences of teacher authority in the Internet-based learning environments

The results of Pearson correlation analysis indicated that, first, the "Perceived Usefulness" scale of IAS is positively correlated with the "Autonomy," "Equity," "Dependence," and "Teacher Control" scales of Revised-TAS (r = 0.15~0.32). Second, the relations between "Behavior" scale of IAS and "Autonomy," "Equity," and "Teacher Control" scales of Revised-TAS are also positively related (r = 0.19~0.23). In addition, the relation between "Control" scale of IAS and "Autonomy" scale of Revised-TAS reveals a significant positive relation (r = 0.16).

3.4 Path analysis of Internet attitudes and preferences of teacher authority in the Internet-based learning environments

A path model was proposed to further explore the structural relationships between Taiwanese university students' preferences of teacher authority in the Internet-based learning environments and their Internet attitudes. The results showed that the model could approximately explain the collected data. The fit indices were indicative of fair model-to-data fit (e.g., Chi-square per degrees of freedom = 3.53, NFI = 0.80, NNFI = 0.85, CFI = 0.85, GFI = 0.89).

In the model, the Revised-TAS scale "Autonomy" has significantly positive contributions on the IAS scales "Perceived Usefulness," "Control," and "Behavior" (t = 2.22~3.37). The Revised-TAS scale "Teacher Control" can only positively contribute to the IAS scale "Behavior" (t = 2.22). These path analysis results indicate that, if the students prefer learner-centered *process* authority (i.e., Autonomy), they tend to possess positive Internet attitudes. That is, they may view the Internet more useful, possess higher confidence when using the Internet, and use the Internet more frequently. On the contrary, if the students show their preferences for a teacher-centered *content* authority (i.e., Teacher Control), they are prone to use the Internet more often.

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