

Colloquium

The relationship between internet perceptions and preferences towards internet-based learning environment

Chin-Chung Tsai

Address for correspondence: Chin-Chung Tsai, National Chiao Tung University, Institute of Education, 1001 Ta Hsueh Rd., Hsinchu, 300, Taiwan. Email: cctsai@mail.nctu.edu.tw, cctsai@cc.nctu.edu.tw

Introduction

Many researchers have attempted to investigate factors influencing students' acceptance and usage of the Internet, but Tsai (2004) has highlighted the importance of a more fundamental issue, ie, students' general perceptions towards the Internet. Tsai (2004) suggests that the perceptions shape students' views and then their behaviours about internet-based instruction. Therefore, Tsai (2004) undertook interviews to investigate adolescent students' perceptions towards the Internet and found 4-T categories (technology, tool, toy and tour) for describing their perceptions towards the Internet. As students' perceptions towards the Internet may guide their views about internet-based learning environments, this study further explored the relationships between high school students' internet perceptions and their preferences towards internet-based learning environments.

Method

Sample

This study included 322 high school students (around 17-year-olds), coming from six high schools in Taiwan. One hundred fifty-three of the students were females. All students completed two questionnaires; one explored their perceptions towards the Internet, while the other investigated their preferences towards internet-based learning environments.

Instruments

On the basis of Tsai's (2004) study, this study developed a questionnaire to explore students' internet perceptions, including the Internet as technology, tool, toy and guiding tour. The participants were required to fill out a number (between 1 and 100) that matched the perceived roles that the Internet played on a 1–100 scale. The participants were asked to allocate 100 points to the four roles to show their extent of agreement with each internet-themed role. For instance, the students might place the number 30 in Internet as technology, 20 as tool, 40 as toy and 10 as tour, and these numbers add up to 100 to represent their perceptions towards the Internet. In addition to allocating

the score into each category, the respondents were asked to write their justifications for the score allocation. It was found that 85% of their responses were consistent, suggesting satisfactory validity in representing students' internet perceptions.

To investigate students' preferences towards the internet-based learning environments, the Preferences for Internet Learning Environment Survey (PILES), developed by Chuang and Tsai (2005) and Lee and Tsai (2005), was administered. PILES was presented with bipolar agree/disagree statements in a 5-point Likert mode, including the following eight scales, with a sample item provided:

When navigating in the internet-based learning environments...

1. Ease of use scale: I prefer that they are easy to use.
2. Relevance: I prefer that they present information that is relevant to me.
3. Multiple sources: I prefer that they can connect to rich web resources.
4. Challenging scale: I prefer that they make me think.
5. Student negotiation scale: I prefer that I can get the chance to talk to other students.
6. Inquiry learning scale: I prefer that I can design my own ways of investigating problems.
7. Reflective thinking scale: I prefer that I can think deeply about new ideas.
8. Epistemological awareness scale: I prefer that they can explore deeply about the nature of knowledge.

The reliability for each scale was high (alpha ranging from 0.85 to 0.93). Students having higher average scores on a scale showed stronger preferences for the specific feature of internet-based learning environments.

Results and Conclusions

Table 1 shows descriptive data for students' internet perceptions, revealing that students tended to mainly perceive that the Internet was a tool, and then a technology. On average, they placed fewer emphases on the Internet as a toy or as guiding a tour. Table 1 also makes gender comparisons for the internet perceptions. Females tended to show statistically more agreement for the 'technology' perception, while males tended to support more about the 'toy' position. That is, females tended to perceive the Internet as simply a technological product, while males, compared with females, tended to express more pleasant views about the Internet.

Table 2 shows descriptive data for students' responses and gender comparisons on PILES. Female students showed more preferences for ease-of-use internet learning environments than males, while male students tended more to prefer learning environments with multiple information sources.

Table 3 shows correlational analyses between students' internet perceptions and their preferences towards internet learning environments. Students with stronger technology perception tended to underline the 'ease of use' internet learning environments, probably because their perception focussed more on the technical issues of the Internet.

Table 1: Students' perceptions towards the Internet and gender differences

	All		Male		Female		t
	Mean	SD	Mean	SD	Mean	SD	
Technology	29.42	12.48	25.97	10.82	33.23	13.11	-5.44***
Tool	40.64	10.87	40.77	10.79	40.49	10.98	0.23
Toy	15.08	9.30	18.02	9.34	11.84	8.12	6.35***
Tour	14.86	7.90	15.24	7.62	14.44	8.19	0.91

*** $p < 0.001$

Table 2: Students' responses on Preferences for Internet Learning Environment Survey and gender differences

	All		Male		Female		t
	Mean	SD	Mean	SD	Mean	SD	
Ease of use	4.16	0.54	4.06	0.62	4.26	0.40	-3.35**
Relevance	4.27	0.46	4.31	0.49	4.23	0.43	1.59
Multiple sources	4.20	0.51	4.27	0.54	4.13	0.47	2.46*
Challenge	3.94	0.59	3.97	0.62	3.91	0.55	0.88
Student negotiation	4.09	0.55	4.13	0.59	4.05	0.50	1.26
Inquiry learning	4.01	0.47	3.99	0.48	4.04	0.45	-0.89
Reflective thinking	3.98	0.56	4.04	0.50	3.92	0.61	1.90
Epistemological awareness	4.05	0.45	4.04	0.50	4.06	0.46	-0.34

* $p < 0.05$; ** $p < 0.01$

Table 3: The relationship between internet perception and preferences for internet learning environments

	Technology	Tool	Toy	Tour
Ease of use	0.39***	-0.12*	-0.32***	-0.06
Relevance	-0.34***	0.29***	0.02	0.12*
Multiple sources	-0.22***	0.34***	-0.03	-0.08
Challenge	0.01	-0.40	0.11*	-0.09
Student negotiation	-0.25***	0.29***	0.01	-0.01
Inquiry learning	-0.23***	0.10	0.04	0.19**
Reflective thinking	-0.02	-0.03	-0.03	0.10
Epistemological awareness	-0.07	-0.04	-0.08	0.26***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

These students, however, tended to display relatively less preferences towards the internet learning environments with the features of 'relevance', 'multiple sources', 'student negotiation' and 'inquiry learning'. However, the students with 'tool' or 'toy' perceptions tended to show relatively less interests in the 'ease of use' issue, but more on the content, such as 'relevance', 'multiple sources' and 'challenge', as well as student negotiation involved in internet learning environments. Finally, there were significantly positive relationships between the extent of students' 'tour' perception and their preferences for the opportunities of developing 'inquiry learning' and 'epistemological awareness' provided by internet-based learning environments.

In conclusion, there are some relationships between students' internet perceptions and their preferences towards internet learning environments; ie, the perceptions towards the Internet play a role on their learning preferences. Students holding the technology perception tended to highlight some technical issues of internet learning environments (such as the ease of use), while students with tool or toy perceptions tended to show more interests in the content (eg, relevance, multiple sources and challenge) or cognitive activities (eg, student negotiation) engaged in internet-based instruction. Finally, students with the perception of 'Internet as guiding a tour' tended to emphasise higher order cognitive (eg, inquiry learning) and epistemological (eg, epistemological awareness) aspects of internet-based instruction. This concurs with the conclusion by Peng, Tsai and Wu (2006) that students with the tour perception tend to express better attitudes towards Internet *per se* and thus internet-based learning.

Acknowledgement

Funding of this research work was supported by National Science Council, Taiwan, under grant numbers NSC 92-2524-S-009-003.

References

- Chuang, S.-C. & Tsai, C.-C. (2005). Preferences toward the constructivist internet-based learning environments among high school students in Taiwan. *Computers in Human Behavior*, 21, 255–272.
- Lee, M.-H. & Tsai, C.-C. (2005). Exploring high school students' and teachers' preferences toward the constructivist Internet-based learning environments in Taiwan. *Educational Studies*, 31, 149–167.
- Peng, H., Tsai, C.-C. & Wu, Y.-T. (2006). University students' self-efficacy and their attitudes toward the Internet: The role of students' perceptions of the Internet. *Educational Studies*, 32, 73–86.
- Tsai, C.-C. (2004). Adolescents' perceptions toward the Internet: A 4-T framework. *CyberPsychology & Behavior*, 7, 458–463.