

## Rapid Communication

# What Is the Internet? Taiwanese High School Students' Perceptions

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### ABSTRACT

This study gathered 588 Taiwan high school students' responses about their perceptions of the Internet. The high school students highlighted the views that the Internet was a technology and a tool. Further analyses revealed that the students in lower grades and female students tended to conceptualize that the Internet was mainly a technology. On the other hand, the students in higher grades or male students emphasized other pragmatic aspects of the Internet, such as using it for functional or pleasure purposes, for instance, using the Internet as a tool, a toy, or a method of guiding a tour.

### INTRODUCTION

MANY RESEARCHERS have believed that attitudes toward the Internet are viewed as an important factor in its acceptance and usage.<sup>1,2</sup> However, researchers have been urged to examine a more fundamental issue, that is, students' general perceptions toward the Internet.<sup>3,4</sup> Consequently, a preliminary study was conducted to probe students' perceptions toward the Internet.<sup>3</sup> By analyzing the interview data through a phenomenographic method, 4-T categories (or positions) were proposed in the study, including "Technology," "Tool," "Toy," and "Tour." However, the study included a fairly small sample of students ( $n = 40$ ) and involved only 10<sup>th</sup> and 11<sup>th</sup> graders.<sup>3</sup> As students in younger ages, such as 7<sup>th</sup> and 8<sup>th</sup> graders, may gradually be one of the major groups using the Internet, more research should be undertaken to investigate their perceptions toward the Internet. Therefore, this study was conducted to explore a large group of Taiwanese high school students' (7<sup>th</sup> to 11<sup>th</sup> graders') perceptions toward the Internet.

### METHODS

#### *Sample*

The sample included 588 students, coming from eight high schools in Taiwan. Among these respondents, 303 were 7<sup>th</sup> or 8<sup>th</sup> graders (junior high school students), while the remaining 285 students were 10<sup>th</sup> or 11<sup>th</sup> graders (senior high school students). In the 7<sup>th</sup> and 8<sup>th</sup> grade sample, 140 were female, while in the 10<sup>th</sup> and 11<sup>th</sup> grade sample, 136 were female. All of them had experience using the Internet; hence, they had an adequate background for their views regarding the Internet.

#### *Data collection*

A questionnaire was administered to explore students' perceptions toward the Internet. The students were asked to compare and weigh their agreement among the 4-T categories: Technology, Tool, Toy, and Tour. Then, they were asked to allo-

cate a total of 100 points into each category, as done in previous research.<sup>4</sup> In addition to assigning a score into each category, each student was asked to write his or her justification for the score allocation. The students' written responses were viewed as an indicator for the validity of their score allocations. One trained researcher examined the consistency of students' score allocations and their written justifications, and it was found that at least 90% of their responses were consistent, suggesting satisfactory validity in representing students' perceptions toward the Internet.

#### Statistical analysis

The students' scores (1–100 score allocation among the categories) on each category were averaged. For each category, a series of t-tests were conducted to examine gender and grade differences on the scores.

## RESULTS AND CONCLUSION

Students' average score allocation among the categories of technology, tool, toy, and tour is presented in Figure 1. The students tended to perceive the Internet as a technology (mean = 37.74, SD = 15.97) or a tool (mean = 38.53, SD = 11.35). On average, these two categories of perceptions constituted approximately three-quarters of their views regarding the Internet in the 100-point scale. The views "the Internet as a toy" and "the Internet as guiding a tour" were not be emphasized by the students (mean = 13.17 and 10.56, respectively).

However, when students' responses were analyzed by grade levels, some interesting differences of their perceptions toward the Internet were revealed. Figure 2 shows a comparison between the 7<sup>th</sup>/8<sup>th</sup> graders and 10<sup>th</sup>/11<sup>th</sup> graders. It was found that 7<sup>th</sup> and 8<sup>th</sup> graders tended to show significantly more agreement with the view "the Internet is a technology" than 10<sup>th</sup> and 11<sup>th</sup> graders (mean = 42.15 and 33.06, respectively,  $t = 7.18$ ,  $p < 0.001$ ). On the other hand, 10<sup>th</sup> and 11<sup>th</sup> graders tended to more perceive the Internet as a tool, a toy, or guiding a tour than did 7<sup>th</sup> and 8<sup>th</sup> graders ( $t = 3.82$ ,  $p < 0.001$ ;  $t = 4.99$ ,  $p < 0.001$ ;  $t = 4.15$ ,  $p < 0.001$ , respectively).

Figure 3 illustrates gender comparisons of students' perceptions toward the Internet in the 7<sup>th</sup> and 8<sup>th</sup> grade sample. The female 7<sup>th</sup> and 8<sup>th</sup> graders tended to express significantly more agreement with the view that the Internet was a technology than their male counterparts ( $t = 5.15$ ,  $p$

$< 0.001$ ). On average, the females allocated about half of the score into the "technology" category (mean = 46.68; Fig. 3), while the male 7<sup>th</sup> and 8<sup>th</sup> graders highlighted the perceptions of "tool" and "tour" more than their female counterparts ( $t = 4.88$ ,  $p < 0.001$ ;  $t = 3.47$ ,  $p < 0.01$ , respectively). A similar gender comparison is presented in Figure 4 for the 10<sup>th</sup> and 11<sup>th</sup> grade sample. Female 10<sup>th</sup> and 11<sup>th</sup> grade students tended to conceptualize the Internet as a technology more than their male counterparts did ( $t = 5.95$ ,  $p < 0.001$ ). However, male 10<sup>th</sup> and 11<sup>th</sup> graders seemed to express significantly more pragmatic views regarding the Internet than females, as they showed more agreement with the categories of "tool," "toy," and "tour" ( $t = 3.54$ ,  $p < 0.001$ ;  $t = 4.21$ ,  $p < 0.001$ ;  $t = 2.43$ ,  $p < 0.05$ , respectively).

Table 1 shows content analyses of the written responses of the 588 students. About half of the students expressed the ideas that the "Internet is a technological product" and the "Internet helps me do something" in their writing (49.7% and 51.2%, respectively). Many students perceived the Internet as a useful tool (43.7%). Only approximately 15% of the students supported the positions of "toy" and "tour" in their written responses. Table 1 also shows students' ideas by different grade levels. More than half of 7<sup>th</sup> and 8<sup>th</sup> graders ( $n = 165$ , 54.5%) expressed the view that "the Internet is a technology," while 44.6% ( $n = 127$ ) of 10<sup>th</sup> and 11<sup>th</sup> graders revealed the same view in their written responses. A greater proportion of 10<sup>th</sup> and 11<sup>th</sup> graders indicated that "the Internet is a tool" (47.4%,  $n = 135$ ) and "the Internet helps something" (58.9%,  $n = 168$ ) than 7<sup>th</sup> and 8<sup>th</sup> graders (40.3%,  $n =$

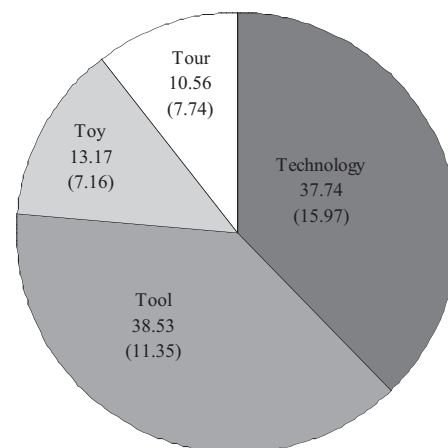
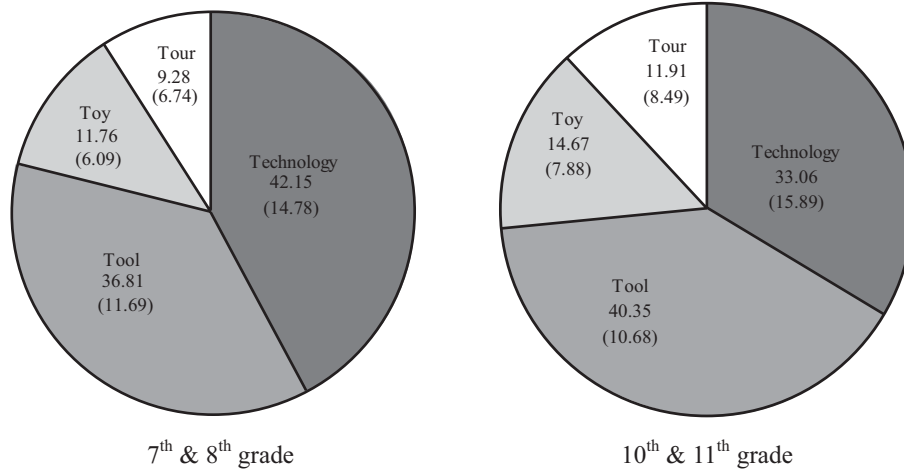
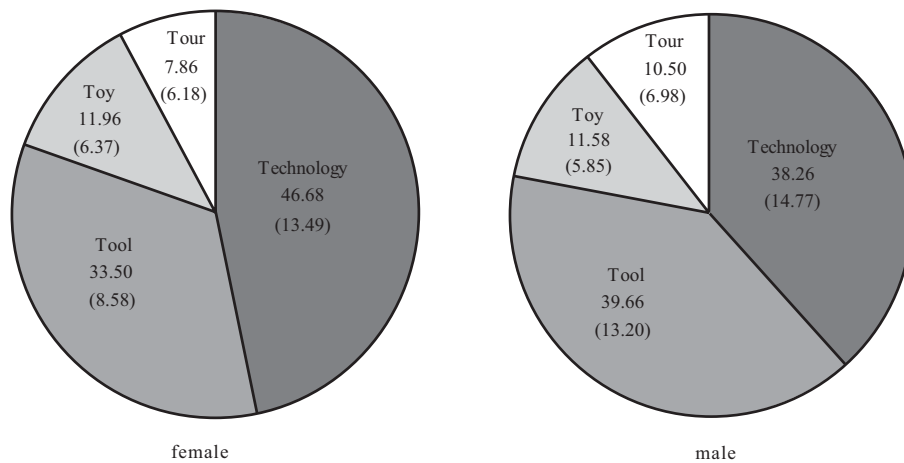


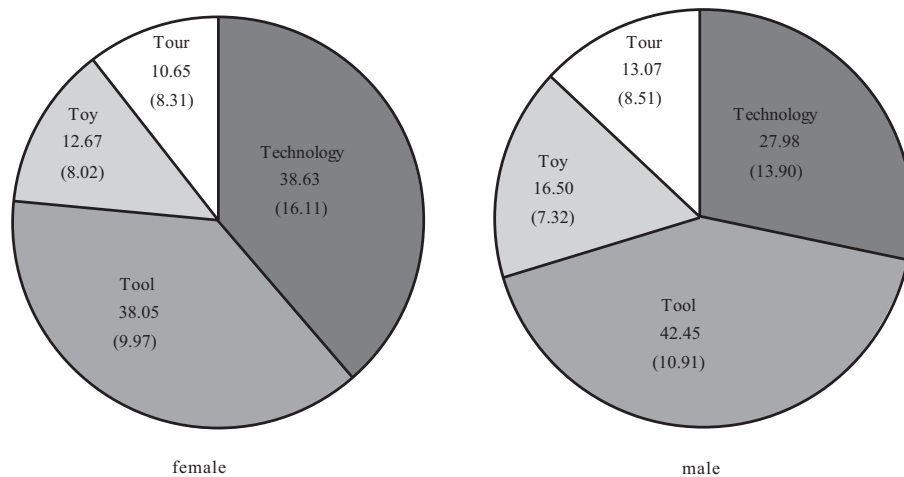
FIG. 1. Students' perceptions toward the Internet ( $n = 588$ ). Value in parentheses is standard deviation.



**FIG. 2.** The perceptions toward the Internet by different grades. Value in parentheses is standard deviation. For 7<sup>th</sup> and 8<sup>th</sup> grades,  $n = 303$ , and for 10<sup>th</sup> and 11<sup>th</sup> grades,  $n = 285$ .



**FIG. 3.** Gender differences in perceptions about the Internet for 7<sup>th</sup> and 8<sup>th</sup> graders. Value in parentheses is standard deviation. For females,  $n = 140$ , and for males,  $n = 163$ .



**FIG. 4.** Gender differences in perceptions about the Internet for 10<sup>th</sup> and 11<sup>th</sup> graders. Value in parentheses is standard deviation. For females,  $n = 136$ , and for males,  $n = 149$ .

TABLE 1. CONTENT ANALYSES OF WRITTEN RESPONSES SORTED BY GRADE LEVELS AND GENDERS

Written response	All N (%)	7 <sup>th</sup> & 8 <sup>th</sup> grades (n)		10 <sup>th</sup> & 11 <sup>th</sup> grades (n)		Position
		Female (n)	Male (n)	Female (n)	Male (n)	
The Internet is a (new) technology (or a technological product) in contemporary society.	292 (49.7%)	87	165	69	127	Technology
The Internet is a useful tool.	257 (43.7%)	51	122	60	135	Tool
The Internet helps me do something (such as searching and communication).	301 (51.2%)	58	133	71	168	Tool
I use the Internet for entertainment purposes (such as playing on-line games).	92 (15.6%)	15	41	17	51	Toy
The Internet guides a tour or provides a process of navigation.	86 (14.6%)	15	40	16	46	Tour

122, and 43.9%,  $n = 133$ , respectively). Similarly, views that the Internet is a toy or guided a tour were expressed by a greater percentage of 10<sup>th</sup> and 11<sup>th</sup> graders (17.9%,  $n = 51$ , and 16.1%,  $n = 46$ , respectively) than 7<sup>th</sup> and 8<sup>th</sup> graders (13.5%,  $n = 41$ , and 13.2%,  $n = 40$ , respectively) in their written responses.

Furthermore, this study examined the gender differences for students' views (Table 1). Again, more female 7<sup>th</sup> and 8<sup>th</sup> graders perceived the Internet simply as a technological product than their male counterparts (87 versus 78). The views related to the positions of "tool," "toy," and "tour" were favored by more male students. Table 1 presents a similar gender comparison for 10<sup>th</sup> and 11<sup>th</sup> graders, and the findings were the same as those of 7<sup>th</sup> and 8<sup>th</sup> graders. Female 10<sup>th</sup> and 11<sup>th</sup> graders tended to favor the position of "technology," but their male counterparts tended to support other positions more, including "tool," "toy," and "tour."

In conclusion, the high school students in this study perceived the Internet, overall, as a technology and a tool. Further analyses revealed that students in lower grades (i.e., 7<sup>th</sup> and 8<sup>th</sup> grades) and

female students tended to believe that the Internet was mainly a technical product (i.e., technology). On the other hand, students in higher grades (i.e., 10<sup>th</sup> and 11<sup>th</sup> grades) and male students emphasized other pragmatic aspects of the Internet, such as using it for functional or pleasure purposes, for instance, using the Internet as a tool, a toy, or a method of guiding a tour.

Students' perceptions toward the Internet may shape an epistemology toward the technology and thus influence their learning in relevant environments. Educational researchers are strongly encouraged to investigate students' perceptions toward the Internet and their impact on learning before widely implementing Internet-based instructional activities.

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