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Y-Generation students fail with Google

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Abstract

Just how net savvy are the Y-Generation students entering university? This study measures the perceptions of the entry level Y-Generation university students about their ability to search the Internet for familiar everyday tasks and for non-familiar academic tasks. Their ability to perform some tasks is then tested and compared with their perceptions. We found the students have confidence in their ability to search the Internet, but their ability does not match their confidence for all types of tasks.

Keywords

Y-Generation, Internet, Search Engines

INTRODUCTION

A major concern experienced by all universities in Australia and overseas is the challenges posed by characteristics of the current and future cohorts of students (Lynch & Collins 2001). Recent high school graduates are members of The Y-Generation. The Internet has been in existence during their entire school life. It is not surprising then that The Y-Generation is the connected generation, using “land phones, cell phones, beepers, handheld devices (PDAs), email, the Internet, instant messaging, and fax machines” (Apple Education 2006). Compared with older students they “think they know more about computers” (authors names removed for review).

A recent survey conducted in USA highlighted that 45% of American users turn to the Internet when making important life decisions (Horrigan & Rainie 2006). This highlights how willing Internet users are to search and trust the Internet for answers.

Based on this trust and on The Y-Generation confidence within themselves it would therefore seem reasonable for academics to assume that students are capable of using web browsers to search the web to find material for their assignments. Academics know that students are searching the Internet through the prevalence of Internet plagiarism. Our question is how effective are The Y-Generation students at searching the Internet? An investigation is needed to determine how well students can actually search the Internet. Specifically, this study asks two questions. Firstly, do Y-generation students perceive they can use Internet search tools well? Secondly, we ask are their perceptions matched to their ability.

BACKGROUND

Before stating the research questions, a brief introduction is provided to the key components of the research area. Related research about the characteristics of The Y-Generation is now presented, followed by a description of student Internet search engine usage, perceptions and search behaviour.

The Y-Generation

The Y-Generation is defined as those born between 1979 and 1994. They are known by a number of labels: Generation Y, Echo Boomers, or Millennium Generation (Neuborne 1999). There are major

differences between The Y-Generation and its Older Generation, or *baby boomers*. The Y-Generation is more racially diverse; there is an increasing number that live in single-parent households; and more have working mothers compared to the older generation (Neuborne 1999). Neuborne (1999) goes on to assert that one important difference is that while baby boomers are still mastering Microsoft Windows and its associated applications, their children are tapping away at computers in primary school. The Y-Generation compose a substantial and growing proportion of the population: for example, in Queensland, there are currently almost 1.3 million people born since 1979, which is 35 percent of the population of the State (Australian Bureau of Statistics 2006).

Y Generation students pose a challenge in education because they are more racially and ethnically diverse and seek their entertainment and information from a proliferation of media vehicles. This makes "communication" a more daunting task (Wolburg & Pokrywczynski 2001). Y-Generation students are savvy, blunt, have a desire to be educated and their development years have been accompanied by rapid technological advances. They are goal-oriented, rewards-oriented and seek the shortest path to personal success (Flanagan 2003).

LITERATURE REVIEW

Although the Internet came into existence as a research and information sharing tool for use among scientists, it has been embraced by the general population for much the same reasons. In Australia, the percentage of the population who are Internet users, at around 68.4% (Miniwatts Marketing Group 2006a) is almost the same as the percentage of the population in the United States of America at 68.6% (Miniwatts Marketing Group 2006b).

"The Internet is becoming increasingly important to users in their everyday lives" (The Sydney Morning Herald 2006). A survey recently released, discovered that close to half of the people in the United States who use the Internet "went online for help with important life decisions". People are turning to the Internet as a valued source of information to help with the decision making processes that they undertake everyday, such decisions as "buying a car or making an investment or financial decision, looking for a new place to live, changing jobs, or dealing with illness or health condition(s)" (The Sydney Morning Herald 2006).

Increasingly then, academics and students are turning to the Internet as a convenient method of obtaining research material and to keep up to date with the current state of affairs in their particular discipline area. Lazonder et al (2000) agree that the "WWW is increasingly being used as an educational tool". While students of previous generations whose research was obtained by traditional means such as book and journal article searches were all too familiar with the concept of referencing and plagiarism, the Y-generation students seem to have missed this important concept and according to Professor Sally Brown (2006) of Leeds Metropolitan University they "see nothing wrong with copying other people's work."

Lazonder et al (2000) suggest that "users must have domain expertise...in particular with the vocabulary of the task". "The majority of college students see search engines as a perfect lifestyle fit" (Perceptions of Libraries and Information Resources report (OCLC Online Computer Library Center 2005). They therefore perceive that they are more than capable of finding anything they need using this method. "They regularly use search engines, e-mail and instant messaging to obtain and share information"

A survey of college students in America (Perceptions of Libraries and Information Resources report (OCLC Online Computer Library Center 2005) revealed that "college students trust information they get from libraries, and they trust the information they get from search engines almost equally." (Perceptions of Libraries and Information Resources report (OCLC Online Computer Library Center 2005) suggests that students use "common sense/personal knowledge" to assess the reliability of information, on the other hand Bond, Feyver and Pitt (2004) found that students make the assumption that "all information is equal, truthful and has the same value" and that they "lack skills to critically analyse information they have found." Taneichi and Istumura (2005) agree with this when they suggest that "students have a tendency to evaluate Web resources based on visual and experimental factors, but lack skills in evaluating contents quality." Whereas this may not be as obvious when using the Internet to make everyday decisions, it becomes an issue when students try to use the Internet for scholarly research.

RESEARCH QUESTIONS

This study addressed the following research questions:

1. Are The Y-Generation students confident they can use the Internet to find information?
2. Are The Y-Generation students confident they can use the Internet for assignment type research tasks?
3. Does The Y-Generation students' perception match their ability to find information on the Internet?
4. Does The Y-Generation students' perception match their ability to use the Internet for assignment type research tasks?

METHODOLOGY

The approach taken in this research involved a two staged process. The first stage involved the collection of quantitative data through a survey instrument given to the whole population of first year students studying the core business computing course within the faculty. This was conducted in the first week of the semester to determine students' perceptions about using web search engines. This questionnaire also collected data about the student's self-efficacy for using search engines with a range of search scenarios detailing the student's confidence of being able to find the requested data. Student participation in the survey was voluntary. Students were encouraged to respond but no recompense was offered.

The questionnaire included two demographic questions, three questions relating to mode of study, and a question relating to previous level of education. It also asked the student to rate their confidence about researching assignments on the Internet and using a search engine to find information. The questionnaire also asked the student to identify the type of search engine they most frequently use. A copy of the questionnaire is available on request.

The second stage of the project involved the collection of actual student usage of Internet search engines through screen video capture software. This was conducted soon after the collection of the stage one instrument. Students were asked to also volunteer to take part in this follow up data collection and a number of students were asked to participate based on their demographic data and response to the two confidence questions on the initial survey. Students were grouped into groups of recent school leavers and mature age students, and high level of confidence about using the Internet and web searching for assessment and low level confidence. Student participation in the survey was voluntary. Students were encouraged to respond but no recompense was offered.

The observations include four of the same scenarios used in the questionnaire for measuring students' self-efficacy for using search engines. Students' were asked to sit at a computer and to attempt to find the information for each of the four scenarios. A copy of the scenarios is included as appendix B.

In an effort to understand the students enrolled in the course, the following data were obtained: age; gender; the faculty they were enrolled with; their enrolment status; their enrolment mode; and the highest level of education they had previously undertaken.

Personal particulars were measured across four variables. Student email addresses were requested even though confidentiality was recognised as an important ethical consideration, but anonymity was sacrificed as the email address was necessary to allow students to volunteer for stage two of the project. The students' gender was coded as 1: Male; 2: Female. Faculty was measured as: 1: Arts; 2: Business; 3: Education; 4: Engineering; 5: Sciences. Student age was measured in the following groupings: 1: Less than 17; 2: 17 – 20; 3: 21 – 25; 4: 26 – 30; 5: 31 – 35; 6: 36 – 40; 7: 41 – 45; 8: 46 – 50; 9: Over 50. Student enrolment was measured as: 1: Full Time; 2: Part Time.

Previous Education was measured across the highest level of formal education attended - 1: high School; 2: Diploma; 3: Degree.

Perceived confidence of both researching on the Internet and using a search engine to find information was measured on a Likert scale.

Student's self-efficacy for using search engines was measured using a Likert scale where the students were asked to rate their confidence in using search engines to find the following information:

1. The transcript of the speech given by George W Bush, part of which referred to the Indian nuclear pact
2. The exchange rate for the Australian Dollar into US Dollars on the 2nd January 2006
3. The cost of train ticket from Sydney Airport to Circular Quay for a University Student
4. The academic research paper written by Fred Davis on the Technology Acceptance Model.

The stage two observation screen video capture files were each individually viewed with an aim to determine whether the students' perceived ability matched their actual ability. A limited number of students were asked to participate, but each video was then viewed by multiple researchers. Each video was assessed by the number of concurrent browsers used; the student's success or failure for each task; the keywords used with the search engine; whether the student used any advanced search engine tools – such as +, - or “ ”; whether multiple browser windows were opened for each task; whether the student worked on more than one task at a time; whether the students used the find within page option; whether the students went beyond the first search engine results page; whether the students used any intra-site search tools; whether they displayed use of prior knowledge; and whether the students refined their search from previous search results. These observations were then compared and contrasted to identify similarities and differences in the abilities and methods utilized by the students to search for answers to the final four assigned tasks.

SURVEY ANALYSIS

The survey instrument was given to the total population of 126 on-campus foundation computing students from which we received 107 responses, which was 62 (57.9%) female and 45 (42.1%) male. As expected the age range for this group was skewed heavily towards the under 21 age group with 81 (75.7%) under 21 and a further 12 (11.2%) in the 21 – 25 age group. With this level of under 25 year olds as respondents we are predominantly dealing with students falling into the Y-Generation within our on campus classes. Further, because of the age of the majority of the respondent group, it was not surprising that the largest proportion of students (86.9%) had no higher than a senior high school certificate past qualifications.

Student General Internet Usage Perceptions

Over 97% of the respondents indicated that they were confident in their abilities to perform assignment research using the Internet: as shown below in figure 1. This figure is clearly aligned with the notion that these Y-Generation students feel connected.

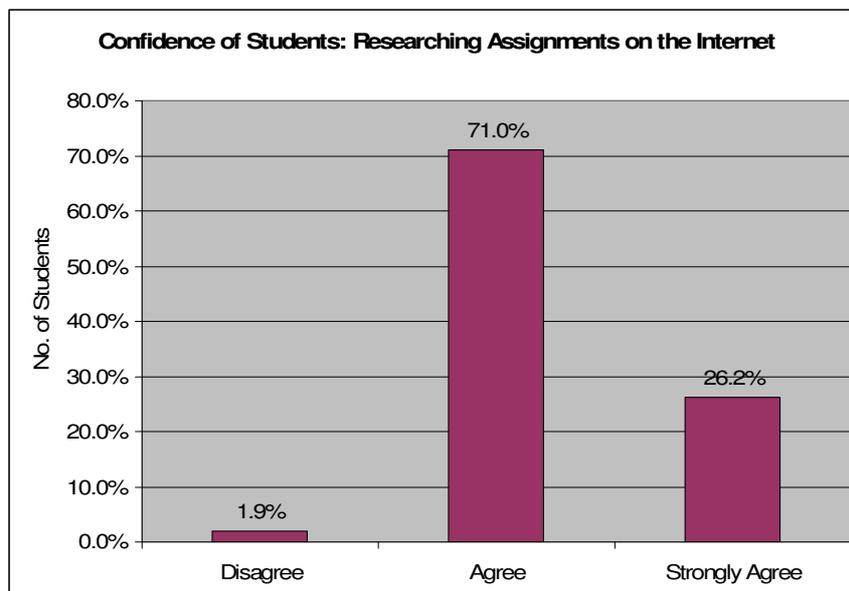


Figure 1

A subtly different question asked the students about finding the information. Shown in figure 2, over 98% of the respondents indicated that they were confident in their abilities to find information using Search Engines. There is a slight increase in the number of students who strongly agree (30.8%) with this statement compared with those who strongly agree they have the ability to research assignments on the Internet (26.2%).

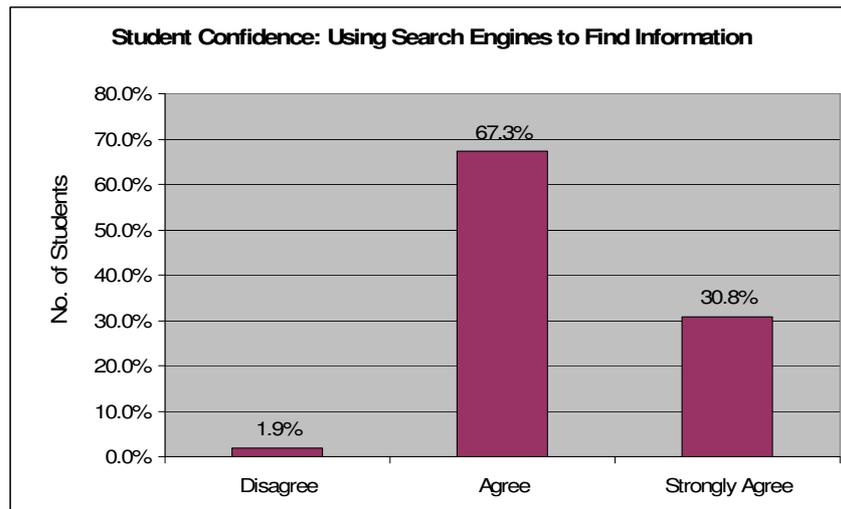


Figure 2

The high level of confidence that students have indicated to both these questions is consistent with the findings of other research that the Y-Generation perceive that they have very high Internet usage and search capabilities.

Search Engine Usage

The preferred search engine with the cohort of students was Google with 86.9% of the respondents indicating that they use it for Internet searching over any of the other options.

Students Specific Internet Usage Perceptions

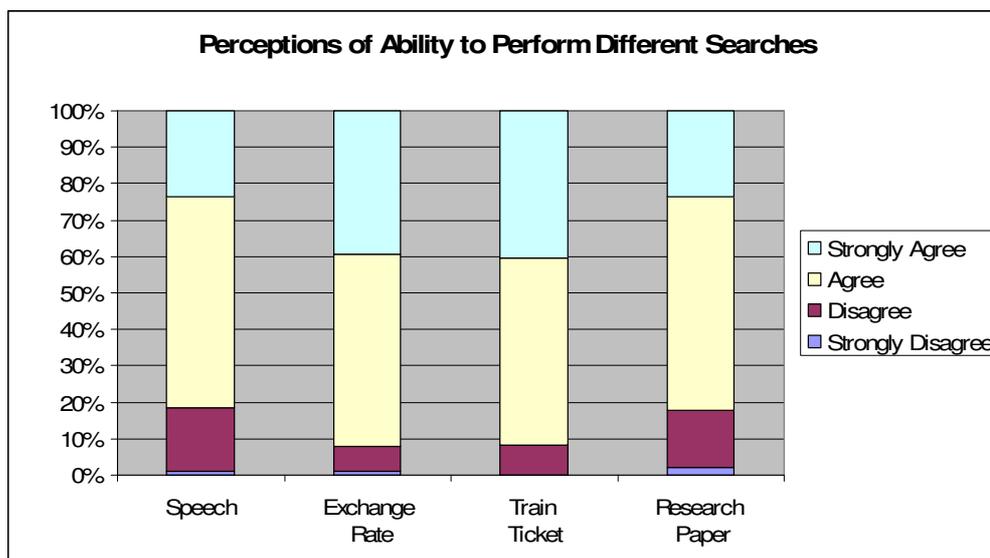


Figure 3

In all cases over 80% of the students believe they have the ability to find the answer to the tasks. The students' perceptions about their ability to search for the exchange rate and train ticket were very similar. Likewise their perceptions about their ability to search for the Speech and the Research paper were similar. However, the group as a whole were less confident about these two more academic search tasks.

A reliability analysis was performed on the four items. With listwise deletion there were 92 valid responses for reliability analysis. Cronbach's alpha was 0.851 for the four items.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
George W Bush speech	9.68	2.548	.719	.798
Exchange Rate	9.43	2.644	.747	.788
Train ticket	9.43	2.820	.637	.832
Research paper	9.70	2.610	.666	.822
Cronbach's alpha	0.851			

Table 1: Inter-Total Statistics

The scores for the student's confidence in performing searches were combined to provide the perceived ability with searches. As we expected, the relationship between gender of the students and perceived ability with searches is not significant. The limited number of non Y-Generation students did not allow an analysis to determine whether the relationship between the age of the student and their perceived ability with searches is significant.

VIDEO ANALYSIS

Following the quantitative analysis, further analysis was undertaken to measure the ability of the students with searches.

The video experiment was conducted with a small sample of the recipients from the survey. The participants were not given any prior instructions other than that they had to find the answers to the four stated questions. All Students in the experiment selected to use Google as their primary search engine. It is interesting to note that all but one student type in the Google URL into the address line, whereas this student selected Google from the address bar's list of previously used URL's. When Google did not provide one of the student's with a quick answer to one of the search questions, the student used MSN's search engine as a secondary choice. Two of the students also demonstrated the used prior knowledge of other web sites to complete their tasks (Trent specifically going to www.xe.com to find the exchange rate and Mandy used ThinkExist.com to find a quotation).

User Interface Usage Styles

The students displayed three distinct user interface styles while using the Internet browser. Table 2 highlights the results of The Y-Generation students based on the observations conducted.

	Sarah	Mandy	Trent	Megan	Kumi
Successfully Answered Questions	Questions 2 & 3	Questions 2 & 3	Questions 2 & 3	Questions 1, 2, 3 & 4	Question 2
Search Engine Used	Google & MSN	Google	Google	Google	Google
Used prior knowledge	No	Yes – ThinkExist.com	Yes – xe.com	No	No
Multiple Windows	Single	Single	Up to 14	Single	Single
Keyword delimiters	No	Incorrectly use of the minus	Correct use of plus and quotes	Used Google Advanced Search tools	No
Went past first results page	No	Once	Yes	No	No
Used find on pages	No	No	Yes	No	No
Used Google Spell correction	Yes	Yes	Yes	No	Yes

	Sarah	Mandy	Trent	Megan	Kumi
Used browsers features	History, back icon, drop down list in back icon	Back icon	Open Webpage in new window	History, back icon, drop down list in back icon	Drop down list in Address
Used natural language search	No	Yes	No	No	Yes

Table 2: Y-Generation Video Observations

The first style displayed was to use a single browser window for all of their searches. The window would initially be directed to Google.com and then the selected search result, usually from the first page, would be opened in the same window. The only deviation in this “single window style” was how a number of students returned to the original Google search page. Mandy simply selected the Back icon until she was returned to the Google page whereas Sarah re-selected Google.com from the address bar’s drop down list. Sarah also used the History facility to return to previously viewed pages. Both Sarah and Mandy worked on a single task until they were either successful or gave up before proceeding to the next task.

The second style was observed from Trent who used a “multiple window user interface” style which was distinctly different from the other students. He opened each search result to be investigated in a New Window. At one point Trent had 14 browser windows open. He navigated between the windows by selecting from the applications listed on the task bar.

Trent kept Google.com open in one window and continued to refine his search with additional delimiters. He tended to multi-task – interrupting his searching on one question to go back to refine the search for one of the previous questions as alternative parameters came to mind. If the new search didn’t produce an immediate result he would return to the search question he had been pursuing. Although Trent appeared to display advanced search abilities by continuously refining his search he never expanded his search parameters beyond the initial vocabulary of the search task he was given.

Despite Trent’s ability to multitask, he was no more successful than Sarah or Mandy who focused on a single task at a time.

The third user interface style observed was by Megan, she immediately went to the Google advanced search option. In the advanced search options Megan utilised different combinations of words in the “exact phrase” option and the “at least one of the words” option, moving words between each to refine the search. Megan also utilised the advanced search “language” option to constrain the search results to English. Megan did not focus on more than one task at a time and hence did not use multiple windows. She did choose to temporarily stop working on one task to pursue other tasks before returning to complete the task later.

Megan’s use of the advanced search features of Google made her the most successful of all the students and the only student to find the answers to all four questions.

The same test was also given to two mature age students to observe how non Y-Generation students would perform. Table 3 highlights the results of these two non Y-Generation students based on the observations conducted.

	Darlene	Nancy
Successfully Answered Questions	None	None
Search Engine Used	Google (struggled to get there)	Google
Used prior knowledge	No	No
Multiple Windows	Single	Yes, but more due to lack of navigation ability
Keyword	No	No

delimiters		
Went past first results page	No	Yes
Used find on pages	No	No
Used Google Spell correction	No	No
Used browsers features	No	No
Used natural language search	No	No

Table 3: Non Y-Generation Video Observations

The results were different from The Y-Generation group with neither of the students successfully finding the answers to any of the questions. Both still used Google as the search engine but showed little experience using it. Darlene suggested during the experiment that she would not use the Internet to find the information, preferring to use other non-computer related methods of achieving the answer.

DISCUSSION

All of the students had similar successes and failures. Tasks that were straight forward and perhaps considered more everyday type questions were handled with confidence. However, tasks that were somewhat vague proved to be exceptionally difficult for them. Their level of expertise with the search engines was not a problem. Some students did show a greater sophistication by using multiple windows to work on more than one task at a time. None of the students demonstrated the ability to use the search results to do a more refined search with the exception of Megan. This suggests their search skill level is adequate for finding specific, clearly defined information where the appropriate keywords are used in the task. However, tasks that are less clear and require the students to refine the search parameters beyond the vocabulary used are outside their current capacity.

Most academics would probably expect that students should be able to use Google to find answers to any task. Indeed we suspect that academics, when setting assessment tasks, assume a level of ability that equals or exceeds the tasks given in this experiment. Furthermore, we anticipate that academics would also grossly under estimate the time taken to perform these searches both by themselves and certainly by students.

Using the Internet for research is commonplace among both students and academics. Many academics would assume the level of ability needed to perform these tasks would be possessed by students, especially recent high school graduates. Indeed, the students perceive their ability to be much greater than it is. Further research will be undertaken to test the hypothesis that academics share the belief that recent high school graduates are able to perform the Internet searches both successfully and quickly. This research also needs to examine the time academics anticipate students would need to perform these types of tasks.

In the interim, it is essential that we educate the students on how to effectively search the Internet, and to inform the academics about the students' poor ability at performing this essential skill.

CONCLUSION

This research has some clear limitations. The tasks the students were asked to perform were designed for this study, and were not part of an actual assignment. Consequently the students' attitude and approach may have been compromised. The students were all volunteers and they may not reflect the ability of others. The small number of students observed makes it difficult to generalize. Nevertheless, the results are interesting and worth reporting. The observed students' perceptions did match their ability for the more "familiar" tasks but did not match their ability for the more academic type of task. Further observations are required to verify this. If these observations are confirmed with other students, then adjustments need to be made to the curriculum for foundation courses to facilitate developing Internet search skills to a higher level.

A follow-up study will be performed to confirm these findings. Additional studies will also be carried out to determine the perceptions and abilities of academics, and academics perceptions of students' abilities. Are we correct in our belief that academics assume students are capable of performing

searches similar to those used in this study? How long do academics think students would take to perform the tasks outlined in this study? Would academics expect students to be able to successfully perform these tasks? The results of this further work are likely to have some impact on assessment tasks set by academics.

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