



An investigation of the Information-Seeking Behaviors of Two-Year College Students Enrolled in Technology Programs

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Abstract

Few studies have assessed the online educational information seeking behavior of the technical college students in the Automotive and Aviation technology programs in South Carolina. A survey was designed to inform how technical college students with different demographics use the Internet to gather such information. This survey was administered to 112 technical college students in South Carolina. The results suggest that 65.2% of the respondents are using Internet to gain access information. Interestingly, among the Internet adopters, students in the age group of 35-49 had a higher level of frustration when compared to other age groups. On the contrary, students in the age group of 18-34 experienced a higher level of effort when looking for correct educational information on Internet. 37.7% of the total respondents were active video game players. While 31.2% of the respondents reported to have played PC-based games and 69% of the students reported to have played games on a video-game consoles. This study calls for further research to understand the information seeking challenges of technical college students with a focus on the educational materials on automotive and aviation subsystems and manufacturing processes.

1. Introduction

Increasingly, the demand for a highly skilled workforce has been front and center among media outlets, legislative initiatives, and political speeches. Two-year technical and community colleges play a key role in providing new and expanding industries with the highly skilled workforce they require. However, the current literature does not provide a clear understanding on how students enrolled in automotive, and aviation technology programs seek information that supports their technical education. In the manufacturing environment, it is an important skill to be able to locate, evaluate, and utilize information. Understanding how students seek information is important in the development of online educational resources and tools that will be most effective for their educational advancement.

The literature regarding information seeking behaviors can be divided into two major themes. The first focuses on the skills and abilities of people need to find the appropriate information. The second focuses on how people benefit from the information they have gathered depending on demographic factors. The literature explores the information seeking behaviors of various populations and topics: graduate research students^{1,2,3}, Generation Y^{4,5}, gender^{6,7,8,9}, among others.

A few studies on information-seeking behaviors focus specifically on community colleges. Metzger (2003) study demonstrates that college students need to be taught to evaluate the value of the information found on online resources¹⁰. A study on Florida community college students showed that students relayed heavily on information-seeking skills that they obtained during high school and rarely used new skills from library resources, courses, or personnel¹¹. A huge weakness in the studies performed is the focus on library resources rather than online information-seeking behavior^{11,12}. With a great number of students taking online courses and

constantly connected via mobile devices, information-seeking behaviors and perception need to focus on this medium. French (2004) found that students believe that computers and the Internet have provided them with an edge to research and write papers more effectively¹³. Speed, it seems, is a contributing factor in this belief. The study found that community college students, however, do not necessarily recognize the difference between scholarly journals found through databases and user-generated websites found through a search engine. Information overload is often a problem with community college students and they may become frustrated when it comes to narrowing a scope¹⁴.

The Center for Aviation and Automotive using Virtual E-Schools (CA²VES), whose mission is to advance aviation and automotive education, also pursues research initiatives, like the one described in this paper for technology programs across the state. As part of this regional effort to better understand internet use among technical college students, a survey instrument was deployed at four two-year technical and community colleges in South Carolina. The target population for this survey was students enrolled in Aircraft Maintenance Technology, Avionics Maintenance Technology and Automotive Technology. The primary aim of this study was to understand the online information-seeking behaviors of two-year technical college students for educational materials specific to the aviation, automotive, and manufacturing industries, as well as their perception of the value of the information they collected. In addition, the survey also pursued information about student's usage of mobile devices (*i.e.*, smart phones and tablets), social media, blogs, and video games.

3. Method

3.1 Experimental Design

This study was designed as an exploratory study of the information-seeking behaviors of two-year technical college students enrolled in Aircraft Maintenance Technology, Avionics Maintenance Technology and Automotive Technology programs. The study serves dual purposes. First, the survey allows us to understand the demographics of the populations in the above mentioned programs in South Carolina. Secondly, it provides indicators to better understand the following research questions:

RQ1: Do technical college students seek educational information from online resources? If so, what are the characteristics of information sought online?

RQ2: How does the effort required to find information on the Internet vary according to age?

RQ3: What was the nature of the frustration level (as a function of age) when automotive and aviation-related information were sought on the Internet?

RQ4: How did the internet adopters in different age groups perceive the comprehension level of the information available on Internet?

Data was collected through a survey instrument from students enrolled in the above mentioned programs in four technical colleges across the state of South Carolina. A total of 112 participants completed the survey.

3.2 Procedure

The survey instrument was developed in an online format for ease of distribution. Through established partnerships at the four technical colleges, a link to the survey instrument with its accompanying protocol was distributed to instructors at the previously mentioned programs. Follow-ups to this email were made in two ways. First, a reminder email was sent to contacts at each of the technical colleges. When the response rate was too low for statistically significant results, a visit to each of the technical colleges and their programs was scheduled. A paper version of the survey was distributed to all students present that day in the specified programs. Following protocol, students were informed about the survey instrument, the institution administering the survey, and how the survey results would be used. Students were reminded that participation was voluntary and results were anonymous. Students were also instructed that if they had completed the online survey, they should not complete the paper survey.

4. Results

The survey instrument asked participants a series of question related to demographic, broadband access, the types of data collected from online resources, and the perceptions on the value of the information obtained. A total of 112 surveys from students enrolled in technology programs in four South Carolina technical colleges were collected. The characteristics of the sample population are described in Table 1.

Table 1. Characteristics of the sample

	<i>n</i>	<i>(%)</i>
<i>Technology Associate Degree</i>		
Aircraft Maintenance Technology	57	(51.8)
Avionics Maintenance Technology	19	(17.3)
Automotive Technology	32	(29.1)
Other	2	(1.8)
<i>Age</i>		
18-34	75	(67)
35-49	26	(23.2)
50-64	11	(9.8)
<i>Gender</i>		
Male	105	(93.8)
Female	5	(4.5)
No answer	2	(1.8)
<i>Race</i>		
American Indian or Alaska Native	1	(0.9)
Asian	4	(3.6)

African American	16 (14.4)
Native Hawaiian or Other Pacific Islander	1 (0.9)
White	79 (70.5)
Don't know	3 (2.7)
Other	8 (7.1)
<i>Ethnicity</i>	
Hispanic or Latino	9 (8)
Not Hispanic or Latino	103 (92)
<i>Highest Level of Education</i>	
Less than high school	1 (0.9)
High school graduate	24 (21.4)
Some college	78 (69.6)
Bachelor's degree	8 (7.1)
Post-baccalaureate degree	1 (0.9)
<i>Annual Income</i>	
Less than \$20,000	40 (36.4)
\$20,000 to <\$35,000	12 (10.9)
\$35,000 to <\$50,000	16 (14.5)
\$50,000 to <\$75,000	10 (9.1)
\$75,000 or more	12 (10.9)
Rather not answer	20 (18.2)
<i>Occupational Status</i>	
Employed	51 (46.4)
Unemployed	22 (20)
Full time student	32 (29.1)
Other	5 (4.5)

The technology associate degrees represented from the data include Aircraft Maintenance Technology (57%), Avionics Maintenance Technology (19%), and Automotive Technology (32%). Although the majority of the respondents were between 18-34 years old (67%), one-third is above 35 years old including the 9.8% that are between 50-64 years old. Recognizing that some of the technical college population is older than usual college aged population is important in developing tools and resources targeted to as much of the population as possible. The data also indicates that the majority of the students in the technology programs are male. Out of 112 responses, only 5 participants were female. In order to obtain statistical information about gender differences, more data from female technology students must be collected. The data also shows that the sample is composed mostly of whites (70.5%) and not Hispanics or Latinos (92%). The next largest racial group identified was African-Americans with 14.4% of participants. The majority of the participants reported that they have some college classes, presumably from the degree that they are enrolled in. Interestingly, eight participants reported having a Bachelor's degree. About half (46.4%) of the participants reported being employed and 29.1% reported being full time students.

4.1 Characteristics of online information-seeking process

The descriptive analysis of the results to the survey question “Please recall the most recent time you looked for learning materials on automotive and/or aviation. Where did you go first?” suggested that only 21.8% of the respondents used books as the go-to place when encountered with an informational need. Interestingly, 65.5% of the respondents resorted to the Internet to gather information. Table 2 lists the most common resources used by the technical college students. Further analysis of the characteristics of the information suggested that 80% of the respondents sought information on aircraft and automotive subsystems and 6.3% sought manufacturing process related information. Technical college students accessed the Internet both from desktops and mobile devices at home, at work and at school. Surprisingly, 65.4% of the respondents downloaded an educational application on their mobile device to better understand the concepts. This result suggests that the probability of technical college students welcoming the presentation of learning materials in a mobile format is high.

Table 2. Information seeking behaviors

	<i>n (%)</i>
<i>Primary source of Information</i>	
Internet	72 (65.5)
Brochures, pamphlets, etc.	3 (2.7)
Friend/Co-worker	5 (4.5)
Library	2 (1.8)
Magazine	1(0.9)
Books	24 (21.8)
Others	3 (2.7)

Understanding the effect of age on the information seeking challenges during the information seeking process

Trust, ease of comprehension of information and level of frustration variables (how much do you agree with the following statement: I was frustrated in finding the correct information) accounted for the latent variable information seeking challenges. To better understand the relation between the age group and information seeking challenges associated with finding the correct information on Internet, a subset of the data consisting of only the responses from participants who resorted to Internet as the primary source of information was extracted. This data ($n=69$) was further analyzed using a one-way ANOVA with a 95% confidence interval to determine the presence of significant differences, if any, among the age groups. If the null hypothesis of an ANOVA was rejected, the results were then subjected to a *post-hoc* least significant difference (LSD) test to determine the locus of the significant differences. One of the key observations from the descriptive analysis of this sample was that 72% of the people in the age group of 50-64 resorted to the Internet for information, suggesting that the older people are increasingly using the Internet to address their informational needs.

Level of trust with online resources. This was measured using a Likert scale with the question, “In general, how much would you trust information about automobile and/or aviation topics from

the Internet?” No significant differences were found for the level of trust with online resources, $F(2,67)=0.080$, $p=0.923$, meaning Internet adopters of all age groups had an average level of trust with the online resources.

Ease of comprehension. This was measured using a Likert scale with the question, “Based on the results of your most recent search for information about learning materials on Internet, how much do you agree with the following statement: The educational materials on Internet were hard to understand”. No significant differences were found for the ease of comprehension with online resources, $F(2,65)=1.723$, $p=0.187$, meaning Internet adopters of all age groups found that the online resources were easy to comprehend.

Level of frustration. This was measured using a Likert scale with the question, “Based on the results of your most recent search for information about learning materials on Internet, how much do you agree with the following statement? I was frustrated in finding the correct information.” The results suggested a significant main effect for the level of frustration among the Internet adopters associated with finding information, $F(2,66)=6.838$, $p=0.002$. Subsequent *post-hoc* analysis reveals a significant difference between the age groups 18-34 ($M=3.59$, $SD=1.02$) and 35-49 ($M=2.42$, $SD=1.08$) ($p=0.001$), and age groups 35-49 and 50-64 ($M=3.63$, $SD=0.744$) ($p=0.010$). This suggests that the people in the age group of 35-49 had higher levels of frustration when looking for correct information on Internet when compared to the other age groups.

Level of effort. This was measured using a Likert scale with the question, “Based on the results of your most recent search for information about learning materials on Internet, how much do you agree with the following statement? It took a lot of effort to find the correct information.” The results suggested that the main effect for the level of effort among the Internet adopters associated with finding information, $F(2,66)=2.904$, $p=0.062$, approached significance. Subsequent *post-hoc* analysis reveals a significant difference between the age groups 18-34 ($M=3.22$, $SD=1.14$) and 35-49 ($M=2.33$, $SD=1.23$) ($p=0.019$). This suggests that the more effort was required by the students in the age group of 18-34 to find the correct information.

Video games and technical college students

More recently, researchers are increasingly exploring the educational potential of games and gaming environments. To better understand the gaming behavior of the technical college students, the survey included six questions on gaming activities. A total of 37.7% of the respondents were active video game players. While 31.2% of the respondents reported to have played PC-based games and 69% reported to have played games on a video-game console such as X-box and Sony Play Station 3. These results suggest that technical college students are playing video games and the potential of such games for education should be leveraged.

5. Conclusion

According to the results of the survey, college students at all ages are increasingly utilizing the internet to supplement their technical education. This is in line with previous research studies^{16, 17, 18}. Availability of the accurate information and educational resources for technical college

students is important to reduce frustration and effort. To ensure improvement on these factors, it is important to understand the characteristics and behaviors of the information seekers. Appropriate steps need to be taken to ensure that the informational needs of the technical college students are both expressed in the literature and guidelines for users are created to reduce frustration and effort of seeking information for their educational goals. A few respondents suggested that they resorted to books for more information. Students were interested in gathering more information about automotive/aviation systems and manufacturing processes. Interestingly, people in the age group of 18-34 exerted greater effort to gather correct information on Internet than any other age group. This could be due to the nature of the material they were searching for. The results also showed that respondents in the age group of 35-49 had a higher level of frustration when looking for information. A few limitations of the survey require consideration. The sampling units were a limited number of technical colleges in the state, and exclude students from the rural parts of the state. This study calls for further research to understand the information seeking challenges of technical college students with a focus on the educational materials on automotive and aviation subsystems and manufacturing processes.

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