

Technology In The Classroom Versus Sustainability

Cynthia L. Knott, Marymount University, USA
G. Steube, Marymount University, USA
Hongqiang (Mason) Yang, Marymount University, USA

ABSTRACT


The use of technology in universities and colleges is an issue of interest and speculation. One issue related to technology use in the classroom is sustainability of resources that support the technology. This paper explores faculty perceptions about technology use and sustainability in an east coast university. This university has initiated a new program that has been charged with the objective of creating and maintaining a sustainability program. The program is still being developed, but a few of the key goals are to look at recycling campus-wide, printing costs in the computer labs and library, and exploring what the faculty perceptions are about using technology in the classroom. This paper focuses on the last goal; and in order to explore this objective, a survey was administered to the Schools of Business, Health Professions, Arts & Sciences and the Library.

The research question addressed in this paper is the relationship between the use of technology in the classroom and the course discipline of the faculty teaching the class. The faculty participants in the survey included four of its academic schools - Business, Health Professions, Arts & Sciences, and the Library. Consequently, there are four different faculty affiliations based on their school. The research questions related to school assignments presented in this paper:

- *Are there significant differences in the use of technology based on the school in which the faculty member is associated?*
- *Do technology-driven programs in the schools of business and library science tend to perceive the use of technology in the classroom differently than other schools?*
- *Are differences in the school of affiliation reflected in faculty views of importance of technology to the learning process?*
- *Are differences in the school of affiliation reflected in faculty perceptions in the use of technology devices, including the desktop computers, iPad/Tablets, Laptops, Smartphones, or E-Readers?*
- *Do faculty affiliations with schools impact their view of the importance moving toward the use of electronic documents?*
- *Do faculty affiliations impact whether technology devices are viewed as distractions?*
- *Are sustainability enthusiasts also technology enthusiasts?*

Keywords: Technology in the Classroom; Sustainability; Faculty Viewpoint; Teaching; Learning Perceptions; Electronic Devices; Learning Support Tools

INTRODUCTION

he development of technology can have an impact on teaching. New technologies encourage educators to leverage these developments in the classroom (Klopfer, Osterweil, Groff, & Haas, 2009). Technology also changes the way instruction is delivered by offering educators effective

ways to reach different types of learners and assess student understanding through a wider array of options. It can also alter the relationship between instructor and student; effective technology integration moves instructors into the roles of adviser, content expert, and coach (Edutopia, 2011). The use of technology over the past 40 years has been investigated by Tamim, Bernard, Borokhovski, Abrami, and Schmid (2011). The role of technology in the classroom has accelerated over time and will continue to be a factor in classrooms of the future.

At the same time that the growth of technology has occurred, there has been a growing interest in sustainability. Sustainability is based on the simple principle that survival and well-being depends, either directly or indirectly, on the natural environment (United States Environmental Protection Agency, n.d.). Colleges and universities have also turned their attention to addressing sustainability. The Association for the Advancement of Sustainability in Higher Education (AASHE) (2011) holds conferences, workshops, and webinars on a regular basis to promote sustainability. Two major objectives of the AASHE are to make sustainable practices the norm within higher education and to the efforts of higher education institutions to integrate sustainability into teaching, research, operations, and public engagement. The goal of this paper is to examine the relationship between technology use in the classroom and sustainability in higher education.

PROCEDURE

A survey was administered to faculty at a small private university on the east coast. Four of the university's academic schools participated in the survey - the Schools of Business, Health Professions, Arts & Sciences, and Library. A copy of the survey questions is available in the Appendix. The purpose of the research was to gather information about the use of technology in the classroom and sustainability. The subject university initiated a new program that has been charged with the objective of creating and maintaining a sustainability program. Some of the goals of this program include campus-wide recycling, reduction of hard copy output, and to explore faculty perceptions about using technology in the classroom to augment sustainability efforts.

Population

The target population for this research is full time faculty at the university. This research sampled faculty in four of its schools of instruction. The sample size was 108. It is believed that the results of the sampling process used are generalizable to the target population of faculty at the subject university and at other similar institutions and reflects attitudes and behaviors about the use of technology in the classroom and sustainability.

RESEARCH QUESTIONS

The research questions addressed in this paper focused on the relationship between the use of technology in the classroom and sustainability. The faculty participants in the survey included four of its academic schools - Business, Health Professions, Arts & Sciences, and the Library; the School of Education and Human Services did not participate in this study. Consequently, there are four different faculty affiliations based on their school. The research questions related to school assignment presented in the paper include the following:

- Are there significant differences in the use of technology based on the school in which the faculty member is associated?
- Do technology-driven programs in the schools of business and library science tend to perceive the use of technology in the classroom differently than other schools?
- Are differences in the school of affiliation reflected in faculty views of importance of technology to the learning process?
- Are differences in the school of affiliation reflected in faculty perceptions in the use of technology devices, including the desktop computers, iPad/Tablets, Laptops, Smartphones, or E-Readers?
- Do faculty affiliations with schools impact their view of importance moving toward electronic documents?
- Do faculty affiliations impact whether technology devices are viewed as distractions?
- Are sustainability enthusiasts also technology enthusiasts?

Survey Instrument

Table 1 identifies the sources of the analysis from the survey questions. In this table, each question and a brief caption is presented to identify the relationships that were examined. Several variables were recoded to develop categorical groups for the analysis; these groups and their labels are in Table 2. Tables 1 and 2 connect the questions in the survey to the variables that will be examined in this research. The results of this analysis are presented in the following section.

Table 1: Questions and Captions

Question	Caption
1	School Affiliation
2	Faculty Rank
3	Years of Teaching Experience
4	Importance of Technology in Teaching
5	Permit Electronic Devices for Note Taking
6	Importance of Technology in the Learning Process
7	Importance of Desktop Computers in the Classroom
8	Importance of iPad/Tablet in the Classroom
9	Importance of Laptop/Netbook in the Classroom
10	Importance of Cell Phones in the Classroom
11	Importance of E-Readers in the Classroom
12	Level of Distraction Caused by Electronic Devices
13	Authority for Decisions about Electronic Devices
14	Frequency of Using Handouts in the Classroom
15	Shifting to Electronic Documents

Table 2: Categorical Groups

Question	Category Name (Value)
1. Which school are you working at?	
a. School of Arts/ Sciences	Arts/Science (1)
b. School of Business Administration	Business (2)
c. School of Education	Education (3)
d. School of Health Professions	(4) Health
e. Library and Learning Services	(5) Library
2. What is your faculty status at the Marymount University?	
a. Professor	
b. Associate Professor	
c. Assistance Professor	
d. Term Appointment	
e. Adjunct or Instructor	
3. How many years have you been teaching college students?	
a. More than 10 years	Experienced (1)
b. 5 to 10 years	Experienced (1)
c. 2 to 5 years	Less Experienced (0)
d. Less than 2 years	Less Experienced (0)
4. How important do you think classroom electronics, such as desktop PC, projector, or Smartboard, is to your teaching?	
a. Extremely Important	Highly Important (1)
b. Somewhat Important	Highly Important (1)
c. Important	Important (2)
d. Not very Important	Not Important (3)
d. Not Important	Not Important (3)
5. Do you allow laptops or other electronic devices in your classroom for students to take notes and access files electronically?	
Y	Yes (1)
N	No (0)
6. How important do you think laptops or other electronic devices are to the learning process in the classroom?	
a. Extremely Important	Important (1)
b. Somewhat Important	Important (1)
c. Important	Important (1)

d. Not very Important	Not Important (0)
d. Not Important	Not Important (0)
7. How would you rate the importance of desktop computers in the classroom?	
a. Extremely Important	Important (1)
b. Somewhat Important	Important (1)
c. Important	Important (1)
d. Not Important	Not Important (0)
8. How would you rate the importance of iPad/tablets in the classroom?	
a. Extremely Important	Important (1)
b. Somewhat Important	Important (1)
c. Important	Important (1)
d. Not Important	Not Important (0)
9. How would you rate the importance of laptop/netbooks in the classroom?	
a. Extremely Important	Important (1)
b. Somewhat Important	Important (1)
c. Important	Important (1)
d. Not Important	Not Important (0)
10. How would you rate the importance of cell phones in the classroom?	
a. Extremely Important	Important (1)
b. Somewhat Important	Important (1)
c. Important	Important (1)
d. Not Important	Not Important (0)
11. How would you rate the importance of e-readers in the classroom?	
a. Extremely Important	Important (1)
b. Somewhat Important	Important (1)
c. Important	Important (1)
d. Not Important	Not Important (0)
12. How distracting are those electronic devices when students use them in the classroom?	
a. Extremely Distracting	Distracting (1)
b. Somewhat Distracting	Distracting (1)
c. Distracting	Distracting (1)
d. Not very Distracting	Not Distracting (0)
d. Not Distracting	Not Distracting (0)
13. Who should have the authority of making the decision to allow or ban those electronic devices in the classroom?	
a. Instructor	Instructor(1)
b. School	School/University(0)
c. University	
14. How frequently do you require students to bring printed handouts to class?	
a. Once a week	Frequent (1)
b. A few times a month	Less Frequent (0)
c. A few times a semester	Less Frequent (0)
d. Don't require at any time	Less Frequent (0)
15. How difficult would it be to make the shift to using electronic documents/information instead of printed handouts in the classroom?	
a. Extremely Difficult	Difficult (1)
b. Somewhat Difficult	Difficult (1)
c. Difficult	Difficult (1)
d. Not very Difficult	Not Difficult (0)
d. Not Difficult	Not Difficult (0)

SURVEY DISCUSSION

This section discusses the results of the survey based on answers to the questions. In the following section, the results of answering the research questions are presented. Table 3 displays the results for Question 1. The majority of participants were from the School of Arts and Sciences.

Table 3: Question 1 – School Affiliation

School	Frequency	Percent	Valid Percent	Cumulative Percent
Arts/Sciences	48	44.4	44.4	44.4
Business	27	25.0	25.0	69.4
Health	25	23.1	23.1	92.6
Library	8	7.4	7.4	100.0
Total	108	100.0	100.0	

Information about faculty rank from Question 2 is displayed in Table 4. Over 50% of the participants in the survey were at the full or associate professor rank.

Table 4: Question 2 – Faculty Rank

	Frequency	Percent	Valid Percent	Cumulative Percent
Missing Data	4	3.7	3.7	3.7
Professor	27	25.0	25.0	28.7
Associate Professor	29	26.9	26.9	55.6
Assistant Professor	43	39.8	39.8	95.4
Term Appointment	4	3.7	3.7	99.1
Adjunct or Instructor	1	.9	.9	100.0
Total	108	100.0	100.0	

Years of teaching experience, as captured in Question 3, are provided in Table 5. The majority of faculty who responded to the survey had over 10 years of teaching experience.

Table 5: Question 3 – Years of Teaching Experience

	Frequency	Percent	Valid Percent	Cumulative Percent
More than 10 years	67	62.0	65.7	65.7
5 to 10 years	21	19.4	20.6	86.3
2 to 5 years	9	8.3	8.8	95.1
Less than 2 years	5	4.6	4.9	100.0
Total	102	94.4	100.0	
Missing Data	6	5.6		
Total	108	100.0		

Table 6 presents the results to Question 4 which identified the importance of laptops and other electronic devices is to the teaching process in the classroom. The majority of faculty (73%) view technology as extremely important to the teaching process in the classroom.

Table 6: Question 4 – Importance of Technology to the Teaching Process in the Classroom

	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely Important	79	73.1	76.0	76.0
Somewhat Important	13	12.0	12.5	88.5
Important	4	3.7	3.8	92.3
Not very Important	5	4.6	4.8	97.1
Not Important	3	2.8	2.9	100.0
Total	104	96.3	100.0	
Missing Data	4	3.7		
Total	108	100.0		

Question 5 addressed the use of laptops or other electronic devices in the classroom. Table 7 reveals that 93% of the faculty allows the use of electronic devices for note taking or accessing information in the classroom.

Table 7: Question 5 - Laptop use in the Classroom

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	93	86.1	89.4	89.4
No	11	10.2	10.6	100.0
Total	104	96.3	100.0	
Missing Data	4	3.7		
Total	108	100.0		

The importance of laptops or other devices in the learning process in the classroom is asked in Question 6. Table 8 shows that only 10% of the faculty surveyed considered technology as not important in the learning process.

Table 8: Question 6 - Importance of Technology to the Learning Process in the Classroom

	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely Important	27	25.0	27.3	27.3
Somewhat Important	36	33.3	36.4	63.6
Important	7	6.5	7.1	70.7
Not Very Important	19	17.6	19.2	89.9
Not Important	10	9.3	10.1	100.0
Total	99	91.7	100.0	
Missing Data	9	8.3		
Total	108	100.0		

Tables 9 thru 13 provide the results for Questions 7 through 12 which assessed five technology devices. The ranking of devices that received the highest scores as extremely important are desktop PC, laptop/notebook, iPad/tablet, e-reader, and cell phone.

Table 9: Question 7 - Desktop Importance in the Classroom

	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely Important	50	46.3	55.6	55.6
Somewhat Important	11	10.2	12.2	67.8
Important	7	6.5	7.8	75.6
Not Important	22	20.4	24.4	100.0
Total	90	83.3	100.0	
Missing Data	18	16.7		
Total	108	100.0		

Table 10: Question 8 - iPad/Tablet Importance in the Classroom

	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely Important	13	12.0	13.4	13.4
Somewhat Important	20	18.5	20.6	34.0
Important	11	10.2	11.3	45.4
Not Important	53	49.1	54.6	100.0
Total	97	89.8	100.0	
Missing Data	11	10.2		
Total	108	100.0		

Table 11: Question 9 - Laptop/Notebook Importance in the Classroom

	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely Important	23	21.3	24.5	24.5
Somewhat Important	25	23.1	26.6	51.1
Important	9	8.3	9.6	60.6
Not Important	37	34.3	39.4	100.0
Total	94	87.0	100.0	
Missing Data	14	13.0		
Total	108	100.0		

Table 12: Question 10 - Cell Phone Importance in the Classroom

	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely Important	2	1.9	2.1	2.1
Somewhat Important	2	1.9	2.1	4.3
Important	7	6.5	7.4	11.7
Not Important	83	76.9	88.3	100.0
Total	94	87.0	100.0	
Missing Data	14	13.0		
Total	108	100.0		

Table 13: Question 11 - E-Reader Importance in the Classroom

	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely Important	8	7.4	8.7	8.7
Somewhat Important	16	14.8	17.4	26.1
Important	9	8.3	9.8	35.9
Not Important	59	54.6	64.1	100.0
Total	92	85.2	100.0	
Missing Data	16	14.8		
Total	108	100.0		

The perceived level of distraction arising from the use of electronic devices in the classroom is provided in Table 14. Less than 20% of the respondents felt that technology devices were not very distracting or not distracting.

Table 14: Question 12 – Level of Distraction

	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely Distracting	34	31.5	34.7	34.7
Somewhat Distracting	27	25.0	27.6	62.2
Distracting	16	14.8	16.3	78.6
Not very Distracting	14	13.0	14.3	92.9
Not Distracting	7	6.5	7.1	100.0
Total	98	90.7	100.0	
Missing Data	10	9.3		
Total	108	100.0		

Authority for making decisions to allow or ban the use of technology devices in the classroom is presented in Table 15. Almost all participants in the survey agreed that authority for the use of electronic devices in the classroom should be determined by faculty.

Table 15: Question 13 – Authority for Decisions

	Frequency	Percent	Valid Percent	Cumulative Percent
Instructor	99	91.7	96.1	96.1
University	4	3.7	3.9	100.0
Total	103	95.4	100.0	
Missing Data	5	4.6		
Total	108	100.0		

The frequency of using printed handouts in the classroom is displayed in Table 16. About 40% of the faculty surveyed did not require the use of printed handouts at any time in the course.

Table 16: Question 14 - Frequency of Using Printed Handouts

	Frequency	Percent	Valid Percent	Cumulative Percent
Once a week	19	17.6	20.0	20.0
A few times a month	10	9.3	10.5	30.5
A few times a semester	22	20.4	23.2	53.7
Don't require at any time	44	40.7	46.3	100.0
Total	95	88.0	100.0	
Missing Data	13	12.0		
Total	108	100.0		

The difficulty in transitioning to using all electronic documents instead of printed handouts is provided in Table 17. A slight majority (50.9%) of faculty felt that there would be some degree of difficulty in making the transition to electronic documents.

Table 17: Question 15 - Shifting to Electronic Documents

	Frequency	Percent	Valid Percent	Cumulative Percent
Extremely Difficult	21	19.4	20.6	20.6
Somewhat Difficult	26	24.1	25.5	46.1
Difficult	8	7.4	7.8	53.9
Not Very Difficult	22	20.4	21.6	75.5
Not Difficult	25	23.1	24.5	100.0
Total	102	94.4	100.0	
Missing Data	6	5.6		
Total	108	100.0		

RESEARCH QUESTIONS DISCUSSION

This section discusses the following research questions:

1. Are there significant differences in the use of technology based on the school in which the faculty member is associated?
2. Do technology-driven programs in the schools of business and library science tend to perceive the use of technology in the classroom differently than other schools?
3. Are differences in the school of affiliation reflected in faculty views of importance of technology to the learning process?
4. Are differences in the school of affiliation reflected in faculty perceptions in the use of technology devices, including the desktop computers, iPad/Tablets, Laptops, Smartphones, or E-Readers?
5. Do faculty affiliations with schools impact their view of the importance moving toward the use of electronic documents?
6. Do faculty affiliations impact whether technology devices are viewed as distractions?
7. Are sustainability enthusiasts also technology enthusiasts?

These questions were analyzed using contingency tables with a chi-square to test the existence of an association and with a phi coefficient to assess the strength of the associations. Phi is a chi-square based measure of association; the chi-square coefficient depends on the strength of the relationship and sample size. Since phi has a known sampling distribution, it is possible to compute its standard error and significance (Howell, 2002). For this analysis, the strength of the association will be assessed through a rule of thumb which provides a range of values for Phi and verbal assessment. Strong negative and strong positive associations are represented by Phi values between -1.0 to -.7 and .7 to 1.0, respectively. Weak negative and positive associations are between -.3 and .3 to .7, respectively. Values of Phi indicating little or no association are between -.3 to .3 (Simon, 2005).

Research Question 1

The first research question examines the relationship between the use of technology in the classroom and the faculty member's school affiliation. Questions 1 and 5 from the survey were investigated to explore the relationship. Figure 1 displays the distribution of technology use in the classroom by academic affiliation. The relationship was not significant at the .05 level $\chi^2(3) = 7.612, p = .055$; the strength of the association was also low with a Phi coefficient of .271.

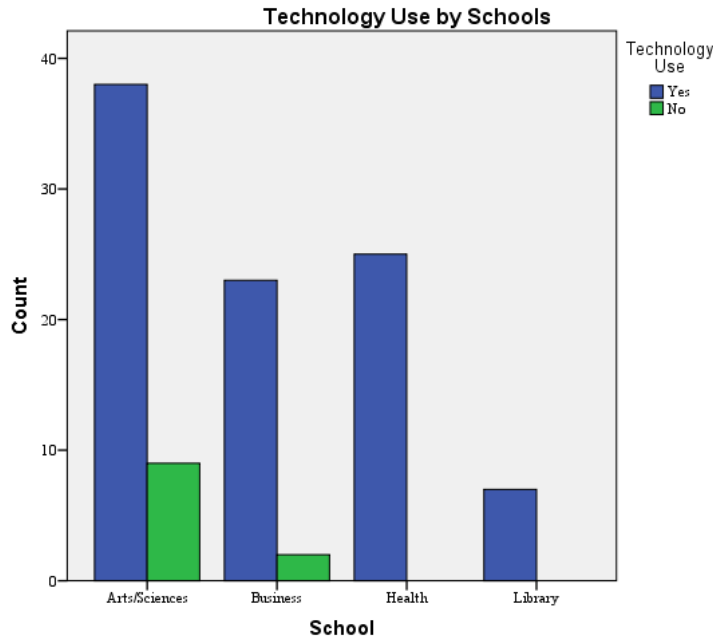


Figure 1

Research Question 2

Research question 2 examined whether the relationship between the use of technology in programs in the schools of business and library science in the classroom differs from other schools. Questions 1 and 5 were used for this analysis. The data for the schools of business and library science were combined into one group; the data for the schools of arts and sciences and library services was also pooled into a single group. Figure 2 displays the results of this analysis. There was no significant relationship between the combined schools and their use of technology in the classroom, $\chi^2 (1) = .231, p = .631$; the Phi coefficient also indicated the lack of a relationship with a value of $-.047$.

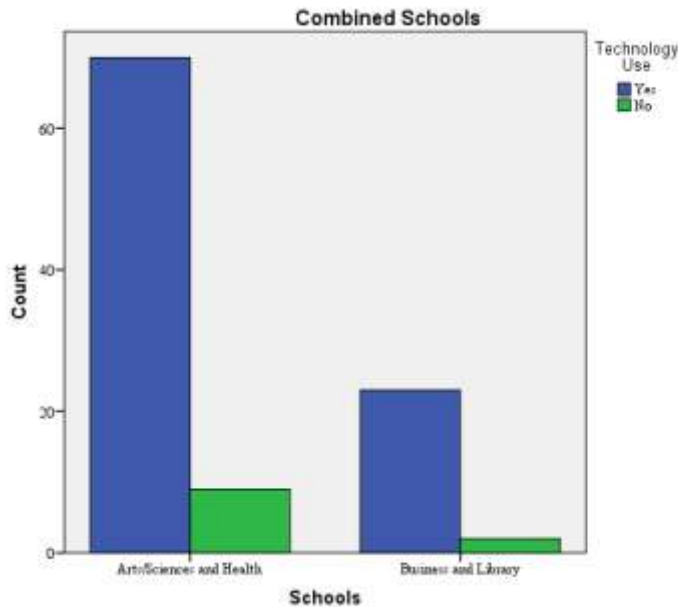


Figure 2

Research Question 3

This question investigated the relationship between school of affiliation and faculty views of the importance of technology to the learning process. Questions 1 and 6 were used to inspect this association. Figure 3 displays the graph for this analysis. In question 6, the first three choices (extremely important, somewhat important, and important) were grouped to create the category of “important”; responses of “not very important” and “not important” were combined into the less important class. At the .05 level of significance there is a relationship between the school of affiliation and the perception of the importance of technology in the classroom to learning, $\chi^2(3) = 19.881, p < .0;$ the Phi coefficient was .448, which indicates a weak association.

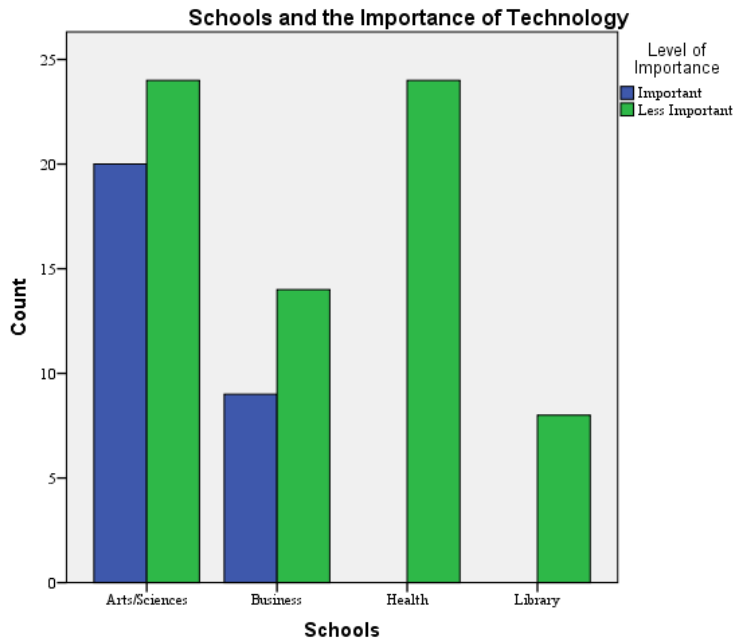


Figure 3

Research Question 4

The issue explored in this question was the relationship between the school affiliation and faculty perceptions about the use of technology devices, including desktop computers, iPad/tablets, laptops, smartphones, and e-readers. Questions 1 and 7 were examined to analyze this relationship. Figure 4 displays the cross tabulations for each of the devices. There was a significant relationship at the .05 level between the school affiliation and importance of the desktop PC $\chi^2(9) = 23.344, p = .005;$ the Phi coefficient was .509. The perceived importance of the iPad/tablet was also significant, $\chi^2(9) = 34.285, p < .00;$ the Phi coefficient was .595. The importance of the laptop/netbook was significant, $\chi^2(9) = 23.165, p = .006;$ the Phi coefficient was .496. The cell phone and its importance among the schools was significant, $\chi^2(9) = 31.486, p < .0;$ the Phi coefficient was .579. The association between the e-reader’s importance and the school was not significant $\chi^2(9) = 14.795, p = .097;$ the Phi coefficient was .401.

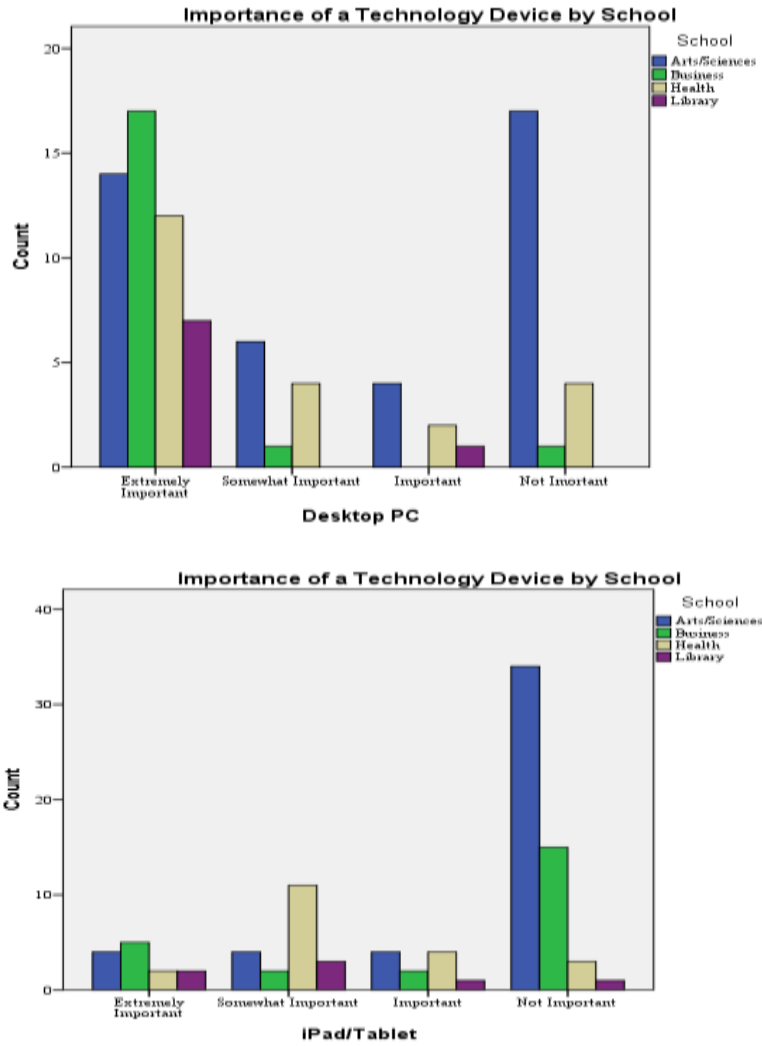


Figure 4

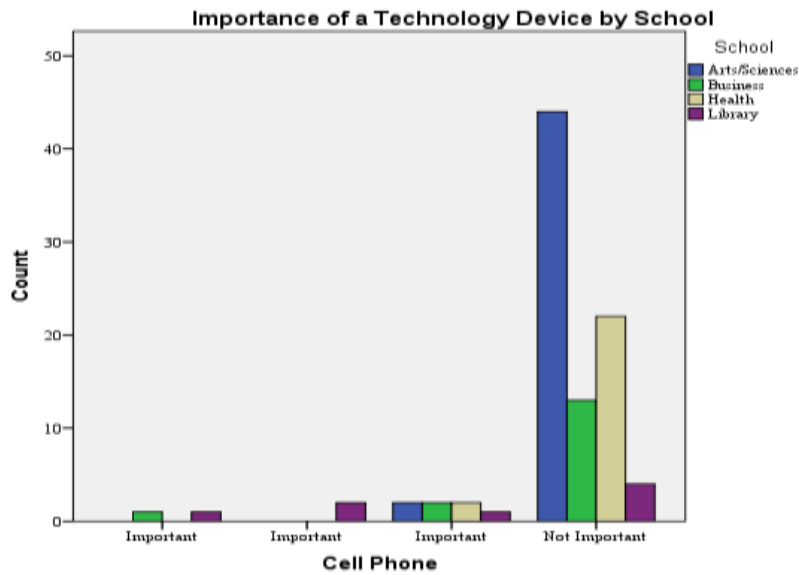
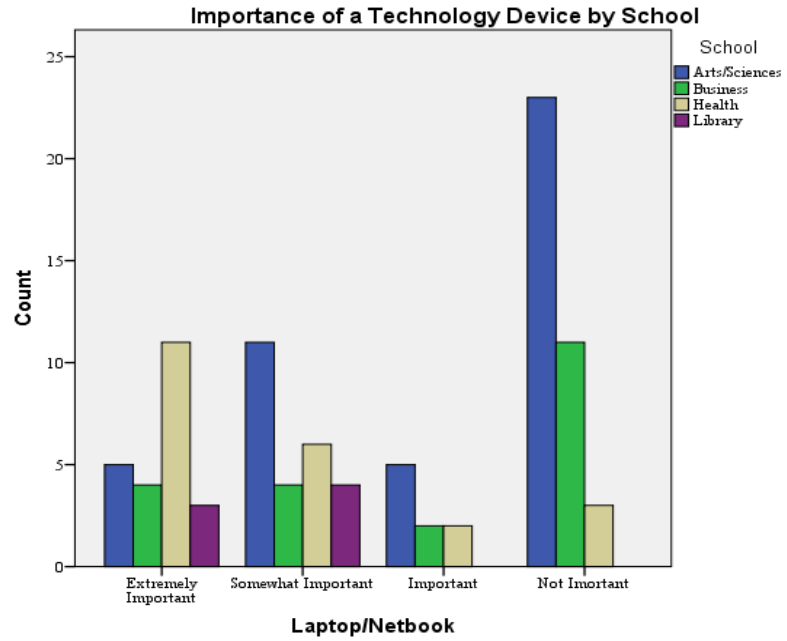


Figure 4 continued

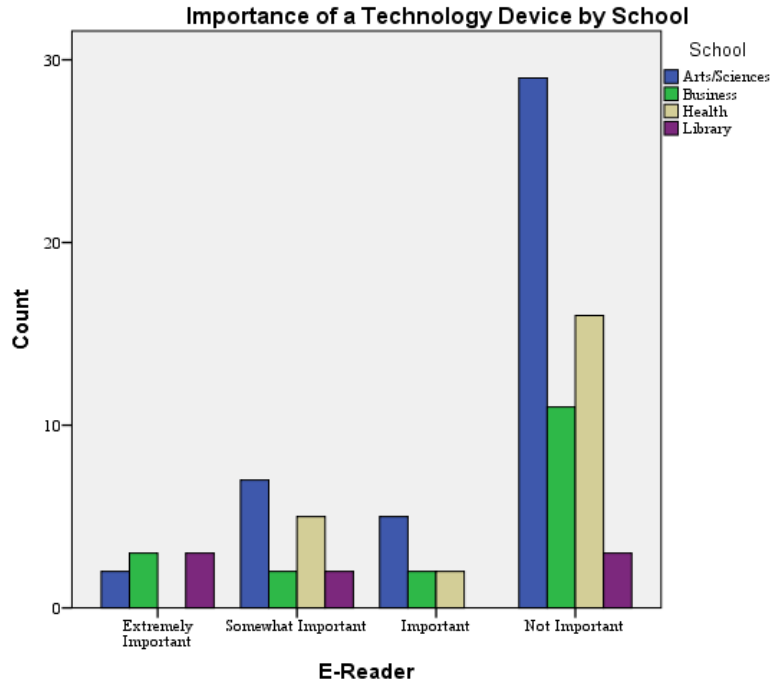


Figure 4 continued

Research Question 5

This question examines the relationship between the school affiliation and difficulty in moving toward electronic documents instead of printed handouts. Questions 1 and 11 were used for this part of the study. Figure 5 shows the relationship between these variables. This association was significant at the .05 level $\chi^2 (12) = 35.804, p < .0$; the Phi coefficient was .592.

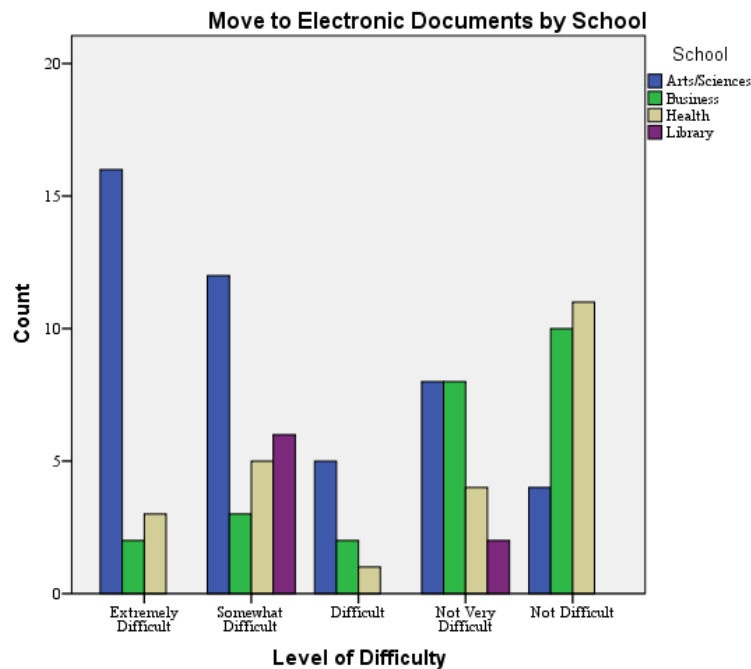


Figure 5

Research Question 6

This question investigated the relationship between faculty affiliations and whether technology devices are viewed as distractions. Questions 1 and 12 were used to examine this association. Figure 6 presents a bar graph of the data. This relationship was not significant at the .05 level $\chi^2 (12) = 15.72, p = .204$; the Phi coefficient was .401.

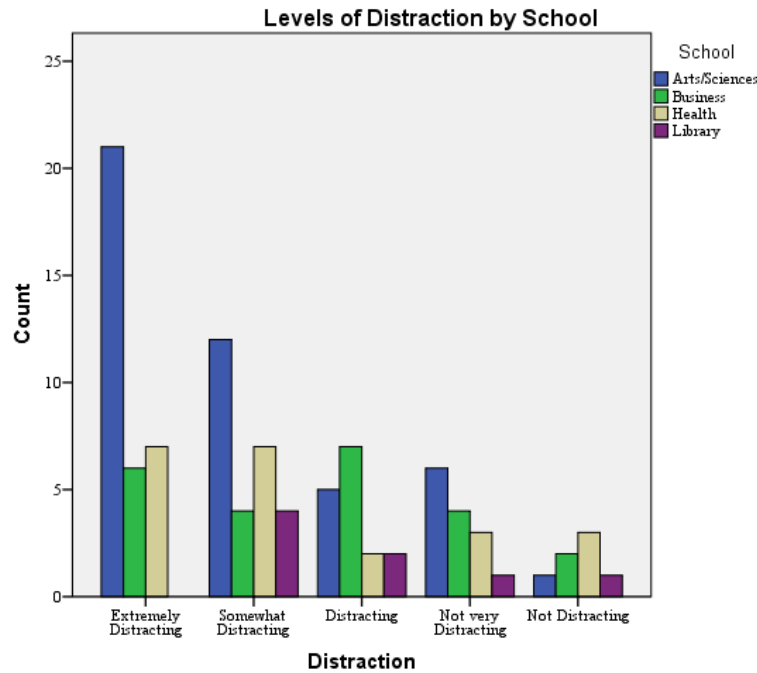


Figure 6

Research Question 7

This question explores the relationship between faculty who are technology enthusiasts and faculty who are sustainability advocates. Questions 4, 5, and 10 were applied to this analysis. If a faculty member answered Question 4 as “extremely important”, “somewhat important” or “important”, they were classified as a technology enthusiast. If a faculty member answered Question 5 as “yes” and Question 10 as “do not require any printed handouts”, they were categorized as a sustainability advocate. Figure 7 displays the results of the comparison. The association between technology and sustainability advocates was not significant at the .05 level $\chi^2 (1) = 2.528, p = .232$; the Phi coefficient was .167.

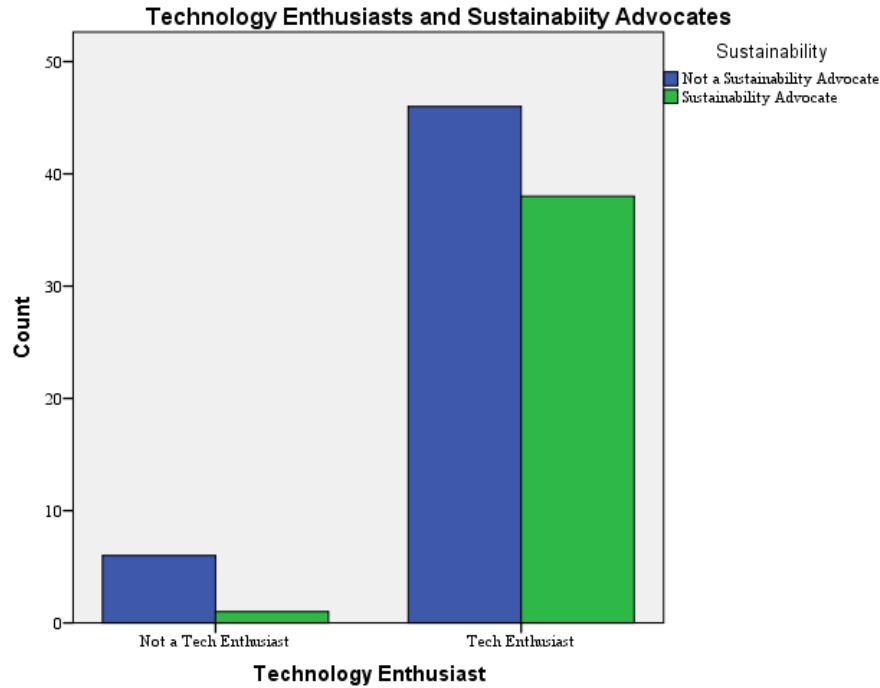


Figure 7

FINDINGS

Responses to the questionnaire revealed information that is useful in profiling the attitudes of faculty toward the use of technology in the classroom and in efforts toward sustainability. Among the respondents in this study, faculty from the School of Arts and Sciences were the most represented. The average teaching years of all respondents was over 10 years. The importance of using laptops/netbooks in the classroom was given the highest level of importance. The majority (86%) of faculty surveyed permit the use of electronic devices in their classrooms. Over 73% of faculty view technology as extremely important in their teaching. According to respondents in the survey, the technology devices that are important in the classroom, in order of their importance, are desktop PCs, laptop/netbooks, iPad/tablets, e-readers and cell phones. About 71% felt that electronic devices were distracting to some extent. The number of faculty who did not require the use of printouts in the classroom was 40%. A slight majority (50.7%) of the people surveyed felt that there would be some degree of difficulty in moving toward the use of electronic documents.

The findings of this study, with regard to the research questions, are varied. No significant relationship was found between differences in the use of technology based on the faculty member’s school affiliation. Faculty who teach in technology-based programs, as could be expected in the School of Business or Library Services, did not perceive the use of technology differently from faculty in other schools. There was a significant difference detected in faculty affiliations and the faculty member’s view of the importance of technology to the learning process in the classroom. Differences were also found in the perception in the type of technology (desktop computers, iPad/tablets, laptops, cell phones and e-readers) and its use based on school affiliation. There was a significant association between school affiliations and the importance of moving toward the use of electronic documents. Faculty affiliations did not impact whether technology devices were viewed as distractions. Finally, it was found that sustainability enthusiasts did not have a significant relationship with technology advocates. Sustainability enthusiasts may or may not be technology advocates.

CONCLUSION

This study examined the role of technology in the classrooms at a university through the use of a questionnaire. The importance of technology to both the teaching and learning processes was investigated. Effort was also made to capture information about sustainability. Four academic schools were included in the survey and provided a basis to determine if the school affiliation was a determining factor in the use, view, or role of technology in the classroom. Differences were found in the perception of the use of technology, in the use of technology devices, and in the difficulty in moving toward the use of electronic documents based on school affiliation. The results of this study did not conclude whether sustainability enthusiasts would or would not also be technology advocates. It is recommended that additional research be conducted to examine the relationship between sustainability and technology.

AUTHOR INFORMATION

Dr. Cynthia Knott has been a member of the Marymount faculty since 2005. Dr. Knott teaches undergraduate and graduate courses in information systems, operations management, statistical analysis, and decision making. Dr. Knott holds an MBA and a Ph.D from The George Washington University in Washington, DC. Dr. Knott has presented her research internationally, including conferences in Chile, Turkey, Japan, and Switzerland. She has also been published in the *Journal of the Operations Research Society*, the *Journal of the International Federation of Operational Research Societies (ITOR-IFORS)*, and the *Journal of Applied Business and Economics*. Her current research interests include quantitative methods and their application to education, business, and society. Specifically, Dr. Knott is investigating innovative ways to teach and engage students in operations research and statistical methods as well as in the area of encryption and portable data storage. She is also working in the area of health care, information technology, and marketing. She collaborates extensively with other Marymount faculty members and presents her research with these colleagues at professional conferences around the world. E-mail: cknott@marymount.edu (Corresponding author)

Dr. G. Steube, CCP. With expertise in Information Technology and Management Science, Dr. Gerard Steube has conducted research in a wide variety of areas including health, defense, and education. He has participated in presentations on software complexity at major computer science conferences and conducted research that profiles computer hackers. In addition, he has provided consulting services for federal, state, and private organizations in developing information technology policies, software management plans, and outsourcing strategies. Dr. Steube provided statistical examination of Medicare and Medicaid data for the state of Maryland. He has worked on federal grants for investigating software complexity and networking and has developed software in C++, COBOL, FORTRAN, Perl, PHP, SQL, and Java. In industry he has held positions including the director of information technology, chief computer scientist, executive director of technology, director of software research, and research statistician. He was awarded the CCP (Certified Computer Professional) designation from the Institute for the Certification of Computer Professionals (ICCP) and is certified for Institutional Research Board work by the Collaborative Institutional Training Initiative. Dr. Steube is a member of MENSA and a certified MENSA test proctor; he has served as the editor for the *MENSA International Journal*. He serves as a reviewer and editorial board member for the *Journal of Information Systems Education (JISE)*. Dr. Steube is a voting member in the American Psychological Association, the Mathematical Association of America, the Association for Computing Machinery, and the American Statistical Association. He is a published restoration photographer and a Web site designer. E-mail: gsteube@marymount.edu

Mr. Mason Yang has been the Electronic Services Librarian at Marymount University since February, 2010. Before joining Marymount University, he worked as a Reference Librarian for the Loudoun County Public Library for 4 years. He graduated from Jiang Su University, China, with a B.S. in Mechanical Engineering. He received his master's degree in Computer Science and Application from Virginia Tech and his M.L.S degree from University of Maryland. Mason Yang has been an active advocate for using technologies to enhance teaching and learning across the campus.

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APPENDIX

Survey Questions

1. Which school are you working at?
 - a. School of Arts and Science
 - b. School of Business Administration
 - c. School of Education and Human Services
 - d. Malek School of Health Professions
 - e. Library and Learning Services

2. What is your faculty status at the Marymount University?
 - a. Professor
 - b. Associate Professor
 - c. Assistance Professor
 - d. Term Appointment
 - e. Adjunct or Instructor

3. How many years have you been teaching college students?
 - a. More than 10 years
 - b. 5 to 10 years
 - c. 2 to 5 years
 - d. Less than 2 years

4. How important do you think classroom electronic equipment, such as desktop PC, projector, or SmartBoard, is to your teaching in the classroom?
 - a. Extremely Important
 - b. Somewhat Important
 - c. Important
 - d. Not Very Important
 - e. Not Important

5. Do you allow laptops or other electronic devices in your classroom for students to take notes and access files electronically? Y N

6. How important do you think laptops or other electronic devices are to the learning process in the classroom?
 - a. Extremely Important
 - b. Somewhat Important
 - c. Important
 - d. Not Very Important
 - e. Not Important

For Questions 7 through 11, use the scale below to rate each of the following devices listed in Table 1. How would you rate the importance of each of them in the classroom?

(1-Extremely Important, 2-Somewhat Important, 3-Important, 4-Not Important)

Table 1: Important of Electronic Devices

Question No.	Extremely Important	Somewhat Important	Important	Not Important
7. Desktop Computer	1	2	3	4
8. iPad/Tablet	1	2	3	4
9. Laptop/Netbook	1	2	3	4
10. Cell Phone	1	2	3	4
11. E-Reader	1	2	3	4

12. How distracting are those electronic devices when students use them in the classroom?
 - a. Extremely Distracting
 - b. Somewhat Distracting
 - c. Distracting
 - d. Not Very Distracting
 - e. Not Distracting

13. Who should have the authority of making the decision to allow or ban those electronic devices in the classroom?
 - a. Instructor
 - b. School
 - c. University

14. How frequently do you require students to bring printed handouts to class?
 - a. Once a Week
 - b. A few times a Month
 - c. A few times a Semester
 - d. Don't require at any time

15. How difficult would it be to make the shift to using electronic documents/information instead of printed handouts in the classroom?
 - a. Extremely Difficult
 - b. Somewhat Difficult
 - c. Difficult
 - d. Not Very Difficult
 - e. Not Difficult

NOTES