Student perceived importance and correlations of selected computer literacy course topics

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ABSTRACT

Traditional college-level courses designed to teach computer literacy are in a state of flux. Today's students have high rates of access to computing technology and computer ownership, leading many policy decision makers to conclude that students already are computer literate and thus computer literacy courses are dinosaurs in a modern digital age. As a result some schools have eliminated the course or only require students to pass take a basic proficiency test. Yet for those many schools for which computer literacy is still a required component, what topics should be included in this course to reach today's new students? In this study 479 students who had enrolled in a computer literacy course were asked at the beginning of the course their perceived importance of a variety of computer literacy topics. Students were also asked to rate themselves regarding their use and knowledge of technology, personal ownership of technology devices, gender, age, and employment status. These elements were then correlated with the perceived importance responses to determine if any associations exist that may bring to light a better understanding of today's students in order to craft a more relevant computer literacy course. The results of this study reveals that a high student interest exists in topics related to practical hands-on end-user computer security awareness, indicating that this topic should be considered as a key component in today's computer literacy course.

Keywords: computer literacy, security awareness, computer literacy topics

INTRODUCTION

"What should be covered in our computer literacy course?" is a frequent topic of discussion among faculty members. In previous years it was a "given" that the topics should include computer hardware (transistors, integrated circuits, the binary number system, CPU machine cycle, input and output hardware, hard drive sectors, etc.), software (operating systems, user interfaces, memory and storage management, the boot process, etc.), and networking (local area networks, network architectures, transmission media, the Internet, etc.) along with basic coverage of Microsoft office tools.

However, that is generally no longer the case. A "perfect storm" of factors is converging upon the once ubiquitous computer literacy course in schools across the nation. A perceived higher level of technology aptitude of freshman by school administrators, the rapid influx of new mobile technology devices (tablets, smart phones, and e-book readers) that has made instruction about the desktop computer along with its hardware and software seem antiquated, and even teaching about technology through a lecture-based approach has caused many schools to rethink this once sacred course. Some schools have dropped the course entirely while others are in vigorous debate regarding what content should be in a computer literacy course for college students.

This paper examines the reasons for this ongoing debate and provides data from a survey of students to determine if correlations exist that can be used for defining what topics may be included in a relevant computer literacy course today.

LITERATURE REVIEW

It is generally acknowledged that there is a distinction between "computer literacy" and "information literacy." Information literacy is a set of abilities that require users to both recognize when information is needed and then locate, evaluate, and use that information. The focus of computer literacy, on the other hand, is to stress the technical skills using specific hardware and software applications. These computer literacy technical skills form the foundation for information literacy (Libraries, 2000).

Yet the precise content of what makes up computer literacy has proven to be elusive, reflecting the continual changes in technology. Over thirty years ago Luehrmann (1981) stated that computer literacy was equivalent to programming skills. More recently a variety of professional groups have attempted to define computer literacy competency standards (Capron & Johnson, 2004). Manowaluilou (2008) notes that The Goals 2000: Educate American Act, the National Standards for Business Education, What America's Students Should Know and Be Able to Do in Business, the National Standards for Business Education, the Information Literacy Standards for Student Learning, and Information Literacy Competency Standards for Higher Education have all provided criteria for educators to prepare students in computer literacy. Grenci (2013) said that the debate regarding computer literacy can be explained in part by a gap between computer usage and mastery. While high school computing courses tend to focus on keystrokes, in contrast college-level computer literacy courses place the software skills in the context of computer concepts and increases the educational value of that content (Dyer, Case, & MacKinnon, 2004).

College-level courses that are designed to teach computer literacy have shown to add value. Post-course assessments show both an increase in computer literacy (Case, MacKinnon, & Dyer, 2004) as well as in the learner's confidence (Smith, 2004).

However, today the traditional computer literacy course is in a state of flux. Whereas at one time all college freshmen could expect to find "computer literacy" on their list of required core courses, that is no longer the case. Some schools have eliminated the course altogether (Topi, et al., 2010). Other schools require students to take a proficiency test to determine if the course is needed (Cardell & Nickel, 2003) while still other schools use self-study modules (Gorgone, et al., 2003) or rely heavily on computer-based training (CBT) and assessment (Grenci, 2013).

One of the primary reasons for the diminishing role of computer literacy courses is due to what Duke calls "a great deal of rhetoric scattered throughout contemporary educational literature publications and news stories [that] describes today's younger learners, born after 1980, as inherently tech-savvy" (Duke, 2011, p. 8). Today's students who are leaving high schools and entering college are considered to be a digitally literate generation (Kilcoyne, et al., 2009) and are sometimes called "the Net generation" (Jones, 2007). Numerous studies by Thinyane (2010), Selwyn et al. (2009), Jones et al. (2010), and others have shown that these students have very high rates of access to computing technology and four out of every five students own a computer.

Due to these high levels of exposure and almost universal access to technology today's students are often resistant to taking a computer literacy course. Many entering freshmen exhibit a high computer self-efficacy (CSE) and believe that they are already computer literate (Wilkinson, 2006). Self-efficacy is defined by Bandura as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 39), and computer self-efficacy (CSE), which is derived from self-efficacy in general (Bandura, 1997), is defined as "a judgment of one's ability to use a computer" (Compeau & Higgins, 1995, p. 192). Users with high CSE tend to participate in computer-related activities and expect success in these activities; they also persist and use effective coping mechanisms when they encounter problems, and exhibit higher levels of performance than individuals with lower CSE (Compeau, Higgins, & Huff, 1999). CSE has been shown to influence an individual's choice to engage in a technology task and the effort expended to accomplish it (Hanson, Kilcoyne, Perez-Mira, Hanson, & Champion, 2011). First-semester college student's CSE of computer application skills were examined and revealed that students self-reported stronger than moderate skills in word processing, file management, presentation applications, and spreadsheet applications (DuFrene, Clipson, & Wilson, 2010), leading them to question the value of a computer literacy course.

Duke noted that this resistance by students may be contributing to policy decisions at all levels of education and is often cited as a reason to advocate sweeping changes in curriculum and teaching methods (Duke, 2011). Many computer literacy courses are being removed from higher education curriculum based on the assumption that students already are computer literate (Gaugh, 2004). Statements that the educational system must evolve in order to meet the higher-level needs of computer-literate students are common (Hartman, Moskal, & Dziuban, 2005).

Yet many researchers have found a significant discrepancy between a student's perception of computer skill levels and their competence (Hanson, Kilcoyne, Perez-Mira, Hanson, & Champion, 2011). Grant, Malloy, & Murphy compared students' CSE ratings with their actual performance on an author-developed computer skills test. Their study demonstrated a

gap between what students perceived as their computing skills and their actual assessed skills (Grant, Malloy, & Murphy, 2009). Kilcoyne et al concluded that students greatly overestimated their mastery of technology (2009). Studies by Rondeau and Li (2009), Grant et al. (2009), Shannon (2008), Hulick and Valentine (2008), Wallace and Clariana (2005) and others indicate that the majority of incoming college freshmen have not mastered basic Microsoft Office applications, including Word and PowerPoint. Often statements that a high level of student technical competency exists are actually the result of a focus on the technically superior members of the cohort (Gennett, Maton, & Kervin, 2008), even to the point that some researchers concluded that most students do not even fit the higher-level Net Generation stereotype (Judd & Kennedy, 2010).

Another reason for student resistance to taking a computer literacy course may be how the course is taught. Several researchers, such as Tapscott (2008), Frand (2000), Brown (2005), and others noted that the learning style of these Net generation students is different from previous students due to both the long-term exposure to technology as well as their ability to use it. This disconnection between how these students learn and how they are taught can often produce feelings of superiority and disinterest by students. Prensky said that these students are "not the people our system was designed to teach" (2001, p. 2).

THE STUDY

A variety of studies have been conducted regarding different aspects of knowledge, aptitudes, and satisfaction of those enrolled in a computer literacy course. As noted by Hindi et al. (2002) these studies are important because computer literacy competencies are continually changing so that it is imperative for schools to monitor the design and content of their courses. Some CSE studies have examined a student's perceived computer skills and not computer knowledge. Most computer knowledge studies examined a student's objective computer knowledge. Fewer studies still have examined a student's perceived computer knowledge instead of perceived skills or objective knowledge.

In this current study over a two-semester period of time 479 students were surveyed at an accredited mid-south regional university. The surveys were conducted either the first or second day of the students' computer literacy course prior to any specific technology training or instruction. The survey was broken into five categories of technology: security, word processing, database, Internet, and general computer technology. For each of these five categories students were asked five questions about a specific technology within that category, for a total of 25 questions. Each question was reviewed in advance by faculty currently teaching these courses. Table 1 (Appendix) lists the categories and questions.

Students were asked to rate their answers to the questions on a 5-point Likert scale: "Very Important", "Important", "Neutral", "Somewhat Unimportant", and "Unimportant". In addition, another option for each question was "Unfamiliar with Topic". Students were then asked to rate themselves regarding their use and knowledge of technology. And due to the changes in technology—smartphone, tablets, e-book readers—students were asked regarding their personal ownership of these devices, along with gender, age, and employment status. These elements were then correlated with student responses regarding their perceived importance of the common computer literacy topics in order to determine if any associations exist.

By examining the student perceived importance of topics it helps reveal student interests, which can then be used to create more meaningful computer literacy courses.

RESULTS

Initially, a series of descriptive statistics were conducted on these data in order to better describe this sample. Table 2 (Appendix) summarizes respondents with regard to sex. As shown, this sample had a slight majority of males. Table 3 (Appendix) summarizes respondents with regard to current employment. As shown, a slight majority of the sample was found to be not currently employed, with a slight minority indicating current employment. With regard to age, the mean age among this sample was found to be 20.91 years (SD = 3.74 years). Additionally, the youngest respondent was found to be 18 years of age, with the oldest respondent being 53 years old.

Initially, a series of analyses were conducted in order to determine whether measures of importance/unimportance with respect to the items included within this survey were significantly associated with respondent sex, age, use/knowledge of technology, employment status, and technology owned. First, Table 4 (Appendix) focuses upon the analyses conducted with relation to respondent sex. A series of Mann-Whitney U tests were conducted in order to determine whether significant differences in importance/unimportance were present on the basis of sex. Significant differences on the basis of gender were found with regard to scanning for malware, creating backups, installing software, connecting to the Internet, verifying information, using antivirus software, securing wireless networks, using spam filters, setting the margins, including references, inserting a comment, creating a macro, creating a table (word processing), using functions, using absolute addressing, protecting a worksheet, applying different formulas, and creating a table (database). In all cases, males were significantly more likely to indicate that those tasks are unimportant as compared with female respondents.

Next, a series of Spearman's (non-parametric) correlations were conducted between importance/unimportance and age. These results are summarized in Table 5 (Appendix). Significant correlations were found between age and connecting to the Internet, with no other significant results being found. With regard to connecting to the Internet, this analysis found a weak but positive and significant correlation between age and connecting to the Internet. This indicates that older individuals are significantly more likely to feel that connecting to the Internet is unimportant as compared with younger respondents.

Following this, Spearman's correlations were also used in order to determine the extent of the association between the use/knowledge of technology and the importance/unimportance of these items. Significant correlations were found between the use/knowledge of technology and creating backups, how computers communicate, configuring a web browser, and creating a strong password. All four of these correlations were found to be statistically significant and negative, indicating that individuals who ranked themselves as having greater use and knowledge of technology indicated that these four tasks were significantly more important. These results are found in Table 6 (Appendix).

The following series of analyses focus upon employment status. A series of Mann-Whitney U tests were conducted in order to determine whether there were significant differences in the importance/unimportance of these items based upon current employment status. Table 7 (Appendix) summarizes the results of these analyses. As shown, no significant associations were found.

A series of Mann-Whitney U tests were also conducted in order to determine the extent to which the importance/unimportance of these items were related to technology owned. For the

purposes of brevity, all six sets of analyses are summarized in Table 8 (Appendix) as opposed to including six separate tables for each set of analyses conducted. The probability levels associated with each of these analyses are reported in the table.

First, with regard to ownership of a Windows PC and ownership of a Mac, both of these items were found to be significantly associated with scanning for malware with no other significant results found. Individuals who owned a Windows PC indicated that scanning for malware was significantly more important, while individuals who owned a Mac indicated that scanning for malware was significantly less important. Ownership of a smart phone was found to be significantly associated with creating backups. This analysis found that individuals who owned a smartphone indicated that creating backups was significantly more important.

Ownership of a tablet was significantly associated with the importance of using absolute addressing, applying different formulas, creating a relational database, creating a table (database), querying a database, and setting security on a database. In all cases, individuals who owned a tablet indicated that these items were significantly more important. Ownership of an e-book reader was found to be significantly associated with the importance of including references, inserting a comment, creating a macro, creating a table (word processing), using absolute addressing, creating a table (database), and querying a database. Individuals who owned an e-book reader stated that all of these items were significantly more important than those who did not own a reader. Finally, ownership of no items was found to be significantly associated with creating a macro, with individuals who did not own any items indicating that creating a macro was significantly more important.

IMPLICATIONS AND RECOMMENDATIONS

This study revealed several significant correlations. What appears to be most interesting is that many of these correlations relate to the topic of practical computer security.

On the basis of gender the females were significantly more likely to indicate that specific tasks are important as compared with males. The tasks that seem to be the most pronounced are those that may be categorized as pertaining to practical computer security: scanning for malware, creating backups, verifying information, using antivirus software, securing wireless networks, and using spam filters. Other correlations focus on a variety of Microsoft office skills (setting the margins, including references, inserting a comment, creating a macro, creating a table using functions, using absolute addressing, protecting a worksheet, and applying different formulas). Further study many explore why females hold this interest over males.

In addition, significant correlations were found between the use/knowledge of technology and practical security topics such as creating backups, configuring a web browser, and creating a strong password. Individuals who ranked themselves as having greater use and knowledge of technology indicated that these tasks were significantly more important.

Finally, ownership of a Windows PC and Apple Mac were found to be significantly associated with scanning for malware. As to be anticipated, individuals who owned a Windows PC indicated that scanning for malware was significantly more important, while individuals who owned a Mac indicated that scanning for malware was significantly less important (it is important to note that whereas Apple Mac computers have traditionally had fewer attacks directed at them and thus their owners feel more secure, it is recognized that Macs have no superior security posture over other types of computers). Ownership of a smart phone was found to be significantly associated with creating backups. Even ownership of a tablet was

significantly associated with the importance of using setting security on a database along with other elements.

This leads to the conclusion that teaching practical hands-on end-user computer security awareness--as opposed to instruction on enterprise-wide security measures of intrusion detection systems and risk management--should be a major topic included a computer literacy course. These are topics that students have demonstrated an interest in. These practical computer security awareness topics may include creating and managing strong passwords, understanding phishing attacks, setting social networking defenses, managing patches, monitoring personal firewalls, creating data backups, Internet security defenses, Wi-Fi and mobile device attacks and defenses, and what security provisions to expect in the workplace.

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Appendix

Table 1: Categories and Questions

Category	Question 1	Question 2	Question 3	Question 4	Question 5
Security	Using anti-virus software	Using a firewall	Securing wireless networks	Using spam filers	Protecting yourself from phishing
Word Processing	How to set the margins in a document	How to include references in a document	How to insert a comment in a document	How to create a macro for a document	How to create a table in a document
Database	How to create a relational database	How to create a table	How to create reports from a database	How to query a database	How to set security on a database
Internet	How to run a complex search	How computers communicate	How to configure a computer to connect to the Internet	How to verify the information you find on the Internet	How to configure a web browser
General Computer Technology	How to copy information from one application to another	How to organize your files	How to scan your computer for malware	How to create backups	How to embed graphics, video, or sound in other software applications

Table 2: Descriptive Statistics: Sex

Category	N	%
Male	238	50.5%
Female	233	49.5%

Table 3: Descriptive Statistics: Employed

Category	N	%
Yes	224	48.1%
No	242	51.9%

Table 4: Importance Measures: Mann-Whitney *U* Tests: Sex

Measure	*Total N*	*Mean Rank*		*U*	*SE*	*z*	*p*
		Male	*Female*				
General Computer Topics							
Copy Information	470	246.16	224.57	25071.5	1334.351	1.901	.057
Organize Files	470	244.11	226.67	25560.0	1301.027	1.574	.115
Scan for Malware	453	240.15	212.95	22546.5	1243.408	2.474	.013

Create Backups	464	256.43	207.94	21283.5	1299.340	4.328	<.001
Install Software	467	251.30	216.18	23155.5	1326.151	3.091	.002
Embed Multimedia	465	243.18	222.41	24604.5	1346.659	1.792	.073
Internet Topics							
Run a Complex Search	460	237.72	223.15	24773.0	1309.146	1.279	.201
How Computers Communicate	460	228.81	232.25	26838.5	1328.394	.298	.765
Connect to the Internet	462	242.68	220.12	24073.5	1286.457	2.025	.043
Verify Information	460	247.11	213.60	22595.0	1257.133	3.065	.002
Configure a Web Browser	455	236.52	219.29	23916.0	1298.932	1.508	.132
Security							
Using Antivirus Software	468	244.73	223.92	24936.0	1214.709	2.004	.045
Using a Firewall	451	231.55	220.07	24104.0	1222.994	1.057	.290
Securing Wireless Networks	467	246.75	220.75	24217.0	1262.036	2.404	.016
Using Spam Filters	464	244.13	220.46	24160.0	1303.164	2.106	.035
Protection from Phishing	446	225.82	220.96	24273.5	1175.429	.460	.645
Creating a Strong Password	468	243.70	224.98	25179.5	1344.697	1.629	.103
Word Processing							
Set the Margins	464	253.69	210.94	21950.5	1321.650	3.753	<.001
Include References	464	249.91	214.94	22855.0	1298.067	3.125	.002
Insert a Comment	458	250.64	207.99	21335.5	1302.384	3.749	<.001
Create a Macro	413	220.86	191.04	18152.5	1131.377	2.708	.007
Create a Table	466	257.90	208.68	21409.0	1343.712	4.267	<.001
Spreadsheet							
Create Formulas	466	244.31	222.22	24560.0	1324.177	1.942	.052
Use Functions	464	246.94	217.30	23458.0	1314.637	2.614	.009
Use Absolute Addressing	415	226.00	187.50	17459.5	1125.650	3.534	<.001
Protect a Worksheet	443	236.04	206.84	21266.5	1236.397	2.611	.009
Apply Different Formulas	457	244.19	213.20	22556.5	1296.894	2.729	.006
Database							
Create a Relational Database	432	222.62	209.72	21878.5	1195.982	1.161	.245
Create a Table	460	243.73	217.04	23379.5	1301.559	2.358	.018
Create Reports from a Database	451	236.33	215.35	23054.5	1252.079	1.888	.059
Query a Database	418	216.04	202.16	20323.5	1143.606	1.264	.206
Set Security on a Database	436	221.87	214.87	22968.5	1214.473	.627	.531

Table 5: Importance Measures: Spearman's Correlations: Age

Measure	*N*	*Rho*	*p*
General Computer Topics			
Copy Information	462	-.017	.720
Organize Files	462	.078	.095

Scan for Malware	446	.021	.657
Create Backups	456	-.011	.810
Install Software	459	.055	.237
Embed Multimedia	457	-.051	.274
Internet Topics			
Run a Complex Search	452	.064	.177
How Computers Communicate	452	.087	.065
Connect to the Internet	454	.107	.022
Verify Information	452	.052	.273
Configure a Web Browser	447	.084	.075
Security			
Using Antivirus Software	460	.064	.172
Using a Firewall	443	.017	.715
Securing Wireless Networks	459	.047	.312
Using Spam Filters	456	.075	.108
Protection from Phishing	438	.009	.853
Creating a Strong Password	460	.059	.206
Word Processing			
Set the Margins	456	-.019	.682
Include References	456	.057	.220
Insert a Comment	450	-.056	.239
Create a Macro	405	-.063	.204
Create a Table	458	-.022	.639
Spreadsheet			
Create Formulas	458	.025	.600
Use Functions	456	.002	.970
Use Absolute Addressing	407	-.005	.916
Protect a Worksheet	435	.002	.964
Apply Different Formulas	449	-.026	.580
Database			
Create a Relational Database	424	.018	.713
Create a Table	452	.030	.529
Create Reports from a Database	443	-.017	.716
Query a Database	411	-.038	.446
Set Security on a Database	428	.035	.471

Table 6: Importance Measures: Spearman's Correlations: Use/Knowledge of Technology

Measure	*N*	*Rho*	*p*
General Computer Topics			
Copy Information	237	-.049	.453

Organize Files	237	-.056	.393
Scan for Malware	226	-.086	.197
Create Backups	234	-.164	.012
Install Software	235	-.125	.057
Embed Multimedia	233	-.080	.221
Internet Topics			
Run a Complex Search	235	-.095	.145
How Computers Communicate	233	-.172	.009
Connect to the Internet	235	-.113	.083
Verify Information	233	-.095	.150
Configure a Web Browser	230	-.139	.035
Security			
Using Antivirus Software	236	-.062	.344
Using a Firewall	229	-.086	.195
Securing Wireless Networks	236	-.008	.906
Using Spam Filters	233	-.030	.648
Protection from Phishing	227	-.110	.098
Creating a Strong Password	236	-.178	.006
Word Processing			
Set the Margins	236	-.076	.247
Include References	236	-.034	.601
Insert a Comment	232	-.013	.845
Create a Macro	211	.010	.887
Create a Table	237	.011	.871
Spreadsheet			
Create Formulas	236	-.044	.497
Use Functions	237	-.088	.179
Use Absolute Addressing	211	-.088	.201
Protect a Worksheet	227	-.097	.146
Apply Different Formulas	232	-.041	.535
Database			
Create a Relational Database	216	-.066	.333
Create a Table	228	-.060	.367
Create Reports from a Database	226	-.121	.070
Query a Database	209	-.081	.241
Set Security on a Database	216	-.027	.691

Table 7: Importance Measures: Mann-Whitney *U* Tests: Employment Status

Measure	*Total N*	*Employed*		*U*	*SE*	*z*	*p*
		Yes	*No*				

General Computer Topics							
Copy Information	465	238.61	227.83	25731.0	1310.974	.955	.340
Organize Files	465	231.59	234.30	27297.0	1277.576	.246	.806
Scan for Malware	448	220.53	228.06	25857.0	1220.333	.689	.491
Create Backups	459	224.12	235.32	27550.5	1276.349	1.004	.315
Install Software	462	235.02	228.22	25864.0	1303.892	.602	.547
Embed Multimedia	460	225.63	234.93	27457.0	1323.427	.807	.420
Internet Topics							
Run a Complex Search	455	224.55	231.20	26596.5	1287.733	.586	.558
How Computers Communicate	455	221.94	233.57	27154.0	1307.268	1.011	.312
Connect to the Internet	457	231.68	226.53	25473.5	1263.226	-.465	.642
Verify Information	455	228.54	227.49	25730.5	1234.938	-.097	.923
Configure a Web Browser	450	226.62	224.47	25021.5	1276.595	-.189	.850
Security							
Using Antivirus Software	463	231.62	232.35	26825.0	1191.283	.071	.944
Using a Firewall	446	218.15	228.39	25953.5	1201.040	.948	.343
Securing Wireless Networks	462	226.22	236.34	27797.5	1239.209	.942	.346
Using Spam Filters	459	223.87	235.55	27605.5	1280.150	1.044	.296
Protection from Phishing	441	218.41	223.35	24798.5	1153.814	.471	.638
Creating a Strong Password	463	227.74	235.89	27681.5	1321.118	.712	.477
Word Processing							
Set the Margins	459	226.97	232.79	26957.0	1298.863	.514	.608
Include References	459	225.73	233.97	27243.5	1275.644	.740	.459
Insert a Comment	454	229.50	225.67	25280.5	1284.117	-.338	.735
Create a Macro	408	193.44	214.52	22903.0	1112.843	1.927	.054
Create a Table	461	224.52	236.96	27951.5	1320.904	1.084	.278
Spreadsheet							
Create Formulas	461	234.02	228.19	25858.5	1302.266	.515	.607
Use Functions	459	238.29	222.30	24466.0	1292.860	1.418	.156
Use Absolute Addressing	410	204.18	206.69	21209.0	1107.194	.232	.816
Protect a Worksheet	438	218.92	220.03	24061.0	1215.611	.100	.921
Apply Different Formulas	452	225.82	227.11	25623.0	1274.599	.114	.909
Database							
Create a Relational Database	427	211.39	216.45	23310.0	1175.814	.459	.646
Create a Table	455	225.94	229.89	26281.0	1279.129	.350	.726
Create Reports from a Database	446	224.36	222.70	24647.5	1230.925	.150	.881
Query a Database	413	200.00	213.58	22701.0	1124.109	1.246	.213
Set Security on a Database	431	212.42	219.40	23956.5	1194.000	.629	.529

Table 8: Importance Measures: Mann-Whitney *U* Tests: Technology Owned

Measure	*Windows PC*	*Mac*	*Smartphone*	*Tablet*	*Ebook*	*None*
General Computer Topics						
Copy Information	.429	.738	.064	.231	.580	.495
Organize Files	.237	.646	.404	.194	.704	.144
Scan for Malware	.001	.005	.082	.157	.117	.323
Create Backups	.642	.897	.005	.094	.229	.050
Install Software	.691	.507	.073	.333	.146	.925
Embed Multimedia	.263	.294	.890	.218	.757	.625
Internet Topics						
Run a Complex Search	.735	.593	.557	.970	.867	.290
How Computers Communicate	.110	.494	.398	.525	.375	.790
Connect to the Internet	.660	.544	.515	.922	.618	.194
Verify Information	.741	.853	.859	.635	.370	.429
Configure a Web Browser	.183	.745	.101	.469	.149	.464
Security						
Using Antivirus Software	.326	.132	.296	.610	.435	.884
Using a Firewall	.724	.247	.478	.471	.882	.165
Securing Wireless Networks	.914	.683	.081	.479	.998	.221
Using Spam Filters	.581	.749	.541	.615	.411	.101
Protection from Phishing	.503	.696	.179	.264	.643	.233
Creating a Strong Password	.971	.845	.943	.304	.723	.260
Word Processing						
Set the Margins	.816	.901	.613	.320	.078	.511
Include References	.462	.708	.856	.288	.032	.815
Insert a Comment	.987	.863	.910	.600	.006	.059
Create a Macro	.514	.396	.683	.583	.025	.006
Create a Table	.428	.648	.837	.147	.028	.462
Spreadsheet						
Create Formulas	.460	.583	.986	.152	.192	.406
Use Functions	.713	.750	.984	.292	.091	.383
Use Absolute Addressing	.067	.143	.753	.025	.035	.443
Protect a Worksheet	.197	.123	.872	.215	.747	.929
Apply Different Formulas	.231	.570	.614	.041	.136	.444
Database						
Create a Relational Database	.925	.772	.290	.042	.484	.909
Create a Table	.644	.463	.529	.003	.019	.613
Create Reports from a Database	.322	.335	.712	.057	.257	.639
Query a Database	.252	.364	.629	.006	.028	.924

Set Security on a Database	.960	.931	.819	.028	.774	.942