DIGITAL LITERACY AND ACCOUNTING STUDENTS: IMPLICATIONS FOR THE PROFESSION

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ABSTRACT

Digital literacy is required for all university students to thrive in today's online environment and is especially important for Accounting Students who, as professionals, must apply critical evaluation techniques to digital information. This study looks at how university Accounting Students perceive their digital literacy abilities against the perceptions of students in other disciplines. Researchers used a ten-item survey based on the digital framework of Hobbs to measure differences in perceived digital literacy across students. Research subjects included students of multiple disciplines across three schools at a large urban university. Research results indicate that all students outside of the accounting disciple perceived themselves to be significantly better at being able to: a) analyze messages in a variety of forms; b) evaluate the quality and credibility of content in a message; c) use powerful search strategies; and d) develop multimedia creations. On the other hand, our research results indicate that Accounting Students perceive themselves as significantly better than Finance Students in their ability to a) use the Internet to connect with others with shared interests; b) use the power of communication as a tool for advocacy; c) understand the meaning of copyright; and, d) apply social responsibility and ethical principles to communication behavior. In addition, Computer Science Students perceive themselves as significantly better than Accounting Students in their ability to a) use powerful search strategies; b) develop multimedia creations; c) use the Internet to connect with others with shared interests; d) reflect on online conduct and online social responsibilities; e) use the power of communication as a tool for advocacy; and f) apply social responsibility and ethical principles to communication behavior. Lastly, younger students perceived themselves as better than older students in their ability to a) use the Internet to connect with others with shared interests and b) to use the power of communication as a tool for advocacy. This research concludes that there is a pressing need to focus on and include digital literacy skills into curriculum for Accounting Students.

INTRODUCTION

Digital literacy is no longer an optional skill for Accounting Students. In fact, it is important for accounting professionals because it enables them to better collect, analyze and synthesize digital information. Accounting professionals must be able to find and use evidence to

evaluate the credibility of digital information, and be able to conduct sophisticated digital searches to uncover information relevant to their clients. Therefore, digital literacy expands the boundaries to achieve solutions for all kinds of accounting engagements.

The global economy is driven by the Internet and its vast source of knowledge. It is practically impossible to function professionally today without digital literacy and fluency. Current students are native speakers of the digital language of computers, video games and the Internet (Meyerson, 2016). As of March 2018 one in four Americans – and 39% of those ages 18 to 29 – are online "almost constantly" (Perrin & Jiang, 2018). This online engagement in global networks has created a need for all students to become responsible global digital users.

In addition, the Association to Advance Collegiate Schools of Business (AACSB), an international accreditation body for accounting programs, recognizes the need for high technology skills in its 2020 accreditation standards. AACSB suggests that:

> *"The currency and relevancy of curriculum will focus on competencies and what students will be expected to be able to demonstrate upon completion of their program of study. Technology will be ever important, and all AACSB-accredited schools will be expected to have processes in place to ensure that both learners and faculty are competent with current and emerging technologies" (AACSB, 2020, page 10).*

Our research was guided by our attempt to assure that our programs were in compliance with AACSB guidelines. In addition, for a number of years, as we coached accounting students through competitions that involved accessing and searching databases to solve complex accounting problems, we noted that they were actively involved in Internet data sourcing and analysis. We therefore assumed that accounting students had better digital literacy capabilities than most other college students. We conducted this research to determine if our assumption was correct.

Knowing that technical competency is important, we explored past literature and found that there was only one study involving accountants and level of digital literacy (Mohammadyari & Singh, 2015). Further exploration led to The Hobbs Model of digital literacy and we decided that this was an appropriate framework to capture competency with technology.

Our research paper explores the current status of Accounting Students with regard to their perceived digital literacy and compares that literacy with other disciplines.

Digital literacy is defined by Cornell University's Digital Literacy Resource as "the ability to find, evaluate, utilize, share and create content using information technologies and the Internet." As Friedman (2015) elaborates, digital literacy involves having a working knowledge of current technology and how it can best be used. It is about understanding how information can be found and communicated through computer hardware and software, the Internet, smartphones, tablets, and other digital devices, and knowing how to use these digital outlets to interact with society in a morally responsible way.

Accounting Students need to be able to use technology and think in technical terms, embracing technology on all levels (Cunningham et al., 2016). They need to be equipped and skill-ready for the workplace (Lestari & Santos, 2019; Caballero & Walker, 2010). Research by Becker et al. (2017) indicates that college students who excel in digital literacy have higher promotion rates and find it easier to adapt to diverse work environments than students who do not excel in digital literacy. Yet a pilot study by Calloway et al. (2016) found that Accounting students were lacking in many areas of digital literacy. Therefore, educators must ensure that

students are not only ready for their future careers in accounting, but must be ready to enter the workforce, digitally prepared. (Casner-Lotto et al., 2006; Goldin, 2015).

Accounting Students must be efficient and effective in all aspects of digital literacy to have successful business careers. Students must be able to analyze Internet messages including the identification of the author, purpose and point of view of the message. This ability allows them to better evaluate alternatives in decision making. Students must also be able to evaluate the quality and credibility of the content of information they find on the Internet. This will help them develop products and services that have quality and are credible. Students must also be able to develop powerful search strategies that allow them to better identify information that can be useful in their audit, tax, consulting, valuation, analyses and reporting products. With more well-rounded digital literacy skills, Accounting Students will be able to share interests with others and attract business opportunities that might not otherwise be available to them. Wide use of online venues requires students to understand and conduct themselves in a socially responsible way. They must be able to practice social responsibility and ethical principles throughout their Internet interactions. Accounting Students must also understand the meaning of "copyright." This can enhance protection of their own future creative products and those of their clients and create a better awareness of legal and ethical responsibilities toward intellectual property. With powerful Internet communication skills, future accountants can use the power of advocacy to communicate their needs to regulators, future customers, stock analysts, potential investors, and readers of their reports. Digital literacy skills include the ability to successfully collaborate and accountants must be able to do this to achieve better business results. Being able to develop and use multimedia creations will also enhance all aspects of students' visual and audio reports. This skill enhances the quality of their products and services.

What follows in this paper is a literature review exploring prior research involving digital literacy; the methodology used; results and discussion; conclusions; and limitations of this research.

LITERATURE REVIEW OF DIGITAL LITERACY MODELS AND RESEARCH

Digital literacy models encompass competencies necessary to function effectively in a digitally enabled society. In 1997, Paul Gilster, a computer scientist, first introduced the term 'digital literacy' (Gilster, 1997). He defined digital literacy as "the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers." Gilster's original model described two digital literacy layers: the first layer was composed of computers that capture and store data and the second layer was composed of software that formatted the data into information.

Later digital literacy models included the basic skills required of people to use computer technology, including Internet skills needed to consume digital information, such as a familiarity with browsers. Martin's comprehensive description of a digital literate person was someone with the ability to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources (Martin, 2008).

Renee Hobbs authored one of the most comprehensive contemporary conceptual descriptions of digital literacy competencies in *Digital and Media Literacy: A Plan of Action* [White Paper] (Hobbs, 2010). This white paper explicated the plan developed by a premier group of scholars at the Aspen Institute and the *Knight Commission on the Information Needs of Communities in a Democracy* [White Paper]. Hobbs subsequently enumerated a list of ten

generic competencies: abilities that are required of a digitally literate citizen. This Model is still relevant today as these same concepts are now being pushed further down into the educational system as important skills for K through 12 students to develop (Loveless, 2020).

A study by Mohammadyari & Singh (2015) examined the role of digital literacy on individual performance by examining how accountants use Web 2.0 e-learning platforms that have tools such as podcasts, blogs and wikis. This study found a relationship between accountants' level of digital literacy and their performance. The findings of Mohammadyari & Singh (2015) informed our research in the following way: these results motivated us to clearly focus on the importance of digital literacy for Accounting students because they will be expected to evaluate digital information throughout their careers. While the research by Mohammadyari & Singh (2015) showed that digital literacy is important to accountants because they will need to use e-learning tools to update their skills, we believe digital literacy is more broadly important to accountants because everything they do relates to evaluating information, and most information is now in a digital form.

The authors believe it is important for all university students to be highly functional in digital literacy as they enter the global economy. We also believe that the digital literacies described in the Hobbs Model are important to facilitate that functioning. There is little research available as to the status of digital literacy of Accounting students. Therefore, this study uses the Hobbs Model to explore the perceptions of these students in their own digital abilities. This knowledge will provide universities valuable information as to the current status of perceived digital literacy in accounting programs and allow them to develop new strategies for increasing the ever-needed digital literacy of our students.

The next section presents the methodology, subjects, research instrument, discussion of self-perception and hypotheses.

METHODOLOGY

Digital literacy is an essential ability to measure and describe the various understanding and skills, based on norms, that leads to successful practices that would enhance productivity.

Our research hypothesis is that accounting students are better equipped in their digital literacy usage than finance students, computer science students and other liberal arts and business students. Stated in the null, our research hypothesis is: "There is no significant difference in perceptions between accounting students and other university students with regard to ten questions that measure digital literacy defined by the Hobbs Digital Literacy Model."

The Hobbs Digital Literacy Model suggests the following ten characteristics of a digitally literate person:
1. *The ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message.*
2. *The ability to evaluate the quality and credibility of content in a message (e.g., distinguishing between "a marketing ploy for nutritional supplements and solid information based on scientific evidence" or quality content and junk journalism).*
3. *Knowledge of and the ability to use powerful search strategies.*
4. *The ability to develop multimedia creations.*
5. *The ability to use the Internet to connect with others with shared interests.*
6. *The ability to reflect on online conduct and online social responsibilities.*
7. *The ability to use the power of communication as a tool for advocacy.*
8. *Understanding of "copyright".*
9. *The ability to apply social responsibility and ethical principles to communication behavior.*

10. *The ability to work collaboratively to solve problems in the civic sphere, which will require many of the other capabilities listed above.*

We analyzed the perceived digital literacy of Accounting students by examining their responses to the ten characteristics listed above and also by comparing their perceived digital literacy competencies with students in other disciplines.

Subjects

The sample for this study was taken from the population of undergraduate and graduate students at a large northeastern private university. These students were in three schools: computing, business, and liberal arts. According to our university research procedures, in accordance with the Code of Federal Regulations concerning the Protection of Human Subjects, no IRB was required for the administered survey (45 CFR 46.102(e)(1)), since no identifying private information was collected.

The following information describes these subjects (See Table 1). Three hundred ninety-nine students were surveyed. (A convenience sample was obtained.) One hundred and ninety were Accounting students; 34 were finance students; 78 were computing students; and 97 came from all other students. Fifty-eight percent of these subjects were under 25 years of age, and 42% were 25 years of age or older. By language, 52% spoke English as their primary language; 48% did not have English as their first language. (These non-native English speakers represented 29 other languages, with 61% of these non-native speakers, using Chinese dialects). Fifty-four percent were female and 46% were male.

Table 1	
Distribution of Students	
Accounting Students (190)	48%
Finance Students (34)	9%
Computing Students (78)	19%
Other Students (97)	24%
Age Demographics	
Under 25 years old	58%
25 or older	42%
Language Demographics	
English Speaking	52%
Non English Speaking	48%
Gender Demographics	
Female	54%
Male	46%

Research Instrument

The survey instrument used items from the Hobbs Digital Literacy Model (Hobbs, 2010). This Model represents ten generic abilities that represent digital literacy. The survey relies on self-perceptions and is measured by: a) very low ability (-2); b) low ability (-1); c) neither low

nor high ability (0); high ability (1); and very high ability (2). (See Appendix A for the Survey Instrument.) (See Appendix B for the Demographics Instrument).

Self-Perception and Actual Ability

Our survey instrument requested respondents to rank their perceived ability and understanding of the ten aspects of digital literacy from Appendix A. The underlying assumption was that these self-perceptions and assessments are correlated with objective measures of actual ability and understanding. There are convincing precedents for making this assumption. For example, Hargittai's (2009) research on survey measures of web-oriented digital literacy compared perceived behaviors and objective measures of skill levels. This study found that people's self-rated level of understanding of various computer and Internet-related terms on a 5-point scale was a relatively good predictor of how well they were able to navigate online content. In 2014, Zelt & Krizan published a meta-synthesis of 22 meta-analyses of research investigating the correspondence between self-evaluation of ability and objective performance measures. The 22 meta-analyses covered a variety of fields including academic ability, intelligence, language competence, medical skills, sports ability, and vocational skills. Although the overall correlation reported by Zelt & Krizan (2014) is moderate, the small standard deviation over the wide breadth of 22 studies supports our assumption that the results we report in this research reflect not only the self-perceptions of the respondents, but also their corresponding objective abilities and understandings.

Hypotheses

To test our hypotheses, we categorized 399 subjects into the following groups for analysis:

Hypotheses Testing Groups	
Group 1	190 Accounting Students against 209 other disciplines [other disciplines included finance, computing, communications, English, biology, economics, public relations, business management, marketing, bio-medical, special education; in total, 31 disciplines some too small to group separately]
Group 2	190 Accounting Students against 34 Finance students
Group 3	190 Accounting Students against 78 Computing Students

We hypothesized that there is no difference in digital literacy attributes between Accounting Students and all other disciplines (group 1); there is no difference in digital literacy attributes between Accounting Students and Finance Students (group 2); and there is no difference in digital literacy attributes between Accounting Students and Computing Students (group 3).

The ten individual hypotheses from the Hobbs Model follows:

$H1_0$: There is no significant difference between Accounting Students and Other Students in their ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message.

$H2_0$: There is no significant difference between Accounting Students and Other Students in their ability to evaluate the quality and credibility of content in a message (e.g., distinguishing between "a marketing ploy for nutritional supplements and solid information based on scientific evidence" or quality content and junk journalism).

$H3_0$: There is no significant difference between Accounting Students and Oher Students in their knowledge of and ability to use powerful search strategies.

$H4_0$: There is no significant difference between Accounting Students and Other Students in their ability to develop multimedia creations.

$H5_0$: There is no significant difference between Accounting Students and Other Students in their ability to use the Internet to connect with others with shared interests.

$H6_0$: There is no significant difference between Accounting Students and Other Students in their ability to reflect on online conduct and online social responsibilities.

$H7_0$: There is no significance difference between Accounting Students and Other Students in their ability to use the power of communication as a tool for advocacy.

$H8_0$: There is no significant difference between Accounting Students and Other Students in their understanding of "Copyright."

$H9_0$: There is no significant difference between Accounting Students and Other Students in their ability to apply social responsibility and ethical principles to communication behavior.

$H10_0$: There is no significant difference between Accounting Students and Other Students in their ability to work collaboratively to solve problems in the civic sphere, which will require many of the other capabilities listed above.

We analyzed the results of this survey using an independent samples t-test for Equality of Means, using SPSS. A confidence level of 95% with a p-score of less than .05 was used.

In the next two sections we present research results and discussion.

RESULTS

Table 2 compares Accounting students to all other college students (group 1). Table 3 compares Accounting students to finance students (group 2); and Table 4 compares Accounting students to computing students (group 3.) The subjects were distributed among 31 different disciplines and the numbers were not large enough to show means for students other than Accounting, finance, and computing.

Table 2 indicates that all other college students perceive themselves as significantly better than Accounting students on four of the Hobbs Model questions:

Question 1: In their ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message
Question 2: In their ability to evaluate the quality and credibility of content in a message
Question 3: In their knowledge of and ability to use powerful search strategies
Question 4: In their ability to develop multimedia creations

On the other hand, Table 3 indicates that Accounting students have higher self-perceptions of their digital literacy than Finance students in four of the Hobbs Model questions:

Question 5: In their ability to use the Internet to connect with others with shared interests
Question 7: In their ability to use the power of communication as a tool for advocacy
Question 8: In their understanding of "Copyright"
Question 9: In their ability to apply social responsibility and ethical principles to communication behavior

	Null Hypotheses	Accounting Students' mean n = 190	Other College Students' mean n = 209	P value .05 ** significant
TABLE 2 – Group 1 *Identification of Significant Differences in Digital Literacy between Accounting Students and Other College Students on the Hobbs Digital Literacy Model* [Mean from -2 to +2]				
$H1_0$:	*There is no significant difference between Accounting Students and Other College Students in their ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message.*	.82	1.01	.010**
$H2_0$:	*There is no significant difference between Accounting Students and Other College Students in their ability to evaluate the quality and credibility of content in a message (e.g., distinguishing between "a marketing ploy for nutritional supplements and solid information based on scientific evidence" or quality content and junk journalism).*	.75	.94	.019**
$H3_0$:	*There is no significant difference between Accounting Students and Other College Students in their knowledge of and ability to use powerful search strategies.*	.69	.94	.001**
$H4_0$:	*There is no significant difference between Accounting Students and Other College Students in their ability to develop multimedia creations.*	.22	.41	.035**
$H5_0$:	There is no significant difference between Accounting Students and Other College Students in their ability to use the Internet to connect with others with shared interests.	1.29	1.39	.220
$H6_0$:	There is no significant difference between Accounting Students and Other College Students in their ability to reflect on online conduct and online social responsibilities.	.93	1.09	.059
$H7_0$:	There is no significance difference between Accounting Students and Other College Students in their ability to use the power of communication as a tool for advocacy.	.74	.81	.412
$H8_0$:	There is no significant difference between Accounting Students and Other College Students in their understanding of "Copyright."	1.06	.97	.292
$H9_0$:	There is no significant difference between Accounting Students and Other College Students in their ability to apply social responsibility and ethical principles to communication behavior.	1.06	1.12	.362
$H10_0$:	There is no significant difference between Accounting Students and Other College Students in their ability to work collaboratively to solve problems in the civic sphere, which will require many of the other capabilities listed above.	.85	.87	.813

	Null Hypotheses	Accounting students' mean n = 190	Finance students' mean n = 34	P value .05 ** significant
$H1_0$:	There is no significant difference between Accounting Students and Finance Students in their ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message.	.82	.85	.811
$H2_0$:	There is no significant difference between Accounting Students and Finance Students in their ability to evaluate the quality and credibility of content in a message (e.g., distinguishing between "a marketing ploy for nutritional supplements and solid information based on scientific evidence" or quality content and junk journalism).	.75	.62	.471
$H3_0$:	There is no significant difference between Accounting Students and Finance Students in their knowledge of and ability to use powerful search strategies.	.69	.62	.633
$H4_0$:	There is no significant difference between Accounting Students and Finance Students in their ability to develop multimedia creations.	.22	.06	.304
$H5_0$:	*There is no significant difference between Accounting Students and Finance Students in their ability to use the Internet to connect with others with shared interests.*	**1.29**	**.82**	**.011 ****
$H6_0$:	There is no significant difference between Accounting Students and Finance Students in their ability to reflect on online conduct and online social responsibilities.	.93	.76	.354
$H7_0$:	*There is no significance difference between Accounting Students and Finance Students in their ability to use the power of communication as a tool for advocacy.*	**.74**	**.15**	**.001 ****
$H8_0$:	*There is no significant difference between Accounting Students and Finance Students in their understanding of "Copyright."*	**1.06**	**.68**	**.021 ****
$H9_0$:	*There is no significant difference between Accounting Students and Finance Students in their ability to apply social responsibility and ethical principles to communication behavior.*	**1.06**	**.74**	**.045 ****
$H10_0$:	There is no significant difference between Accounting Students and Finance Students in their ability to work collaboratively to solve problems in the civic sphere, which will require many of the other capabilities listed above.	.85	.82	.797

TABLE 3 – Group 2
Identification of Significant Differences in Digital Literacy between Accounting Students and Finance Students on the Hobbs Digital Literacy Model
[Mean from -2 to +2]

Table 4 indicates that Computing students perceive themselves as significantly better than Accounting students in six of the Hobbs Model questions:

Question 3: In their knowledge of and ability to use powerful search strategies
Question 4: In their ability to develop multimedia creations
Question 5: In their ability to use the Internet to connect with others with shared interests

Question 6: In their ability to reflect on online conduct and online social responsibilities
Question 7: In their ability to use the power of communication as a tool for advocacy
Question 9: In their ability to apply social responsibility and ethical principles to communication behavior

Lastly, we wanted to examine the ranking of each of the ten digital literacies to see where Accounting students perceived themselves as less proficient than non-Accounting students. Table 5 presents that ranking (with 100% representing very high perceived ability or very high understanding.) Table 5 helps highlight the lowest levels of perceived ability or understanding on the part of Accounting students that include:

Question 2: The ability to evaluate the content in messages (68.75%)
Question 7: Using technology as a tool for advocacy (68.5%)
Question 3: Using powerful search strategies (67.25%)
Question 4: The ability to develop multimedia creations (55.5%)

	TABLE 4 – Group 3 *Identification of Significant Differences in Digital Literacy between Accounting Students and Computing Students on the Hobbs Digital Literacy Model* [Mean from -2 to +2]			
	Null Hypotheses	Accounting students' mean n = 190	Computing students' mean n = 78	P value .05 ** significant
H1$_0$:	There is no significant difference between Accounting Students and Computing Students in their ability to analyze messages in a variety of forms, including identification of the author, purpose and point of view of the message.	.82	.94	.239
H2$_0$:	There is no significant difference between Accounting Students and Computing Students in their ability to evaluate the quality and credibility of content in a message (e.g., distinguishing between "a marketing ploy for nutritional supplements and solid information based on scientific evidence" or quality content and junk journalism).	.75	.94	.084
H3$_0$:	*There is no significant difference between Accounting Students and Computing Students in their knowledge of and ability to use powerful search strategies.*	**.69**	**1.10**	**.000 ****
H4$_0$:	*There is no significant difference between Accounting Students and Computing Students in their ability to develop multimedia creations.*	**.22**	**.64**	**.001 ****
H5$_0$:	**There is no significant difference between Accounting Students and** *Computing Students* **in their ability to use the Internet to connect with others with shared interests.**	**1.29**	**1.62**	**.000 ****
H6$_0$:	*There is no significant difference between Accounting Students and Computing Students in their ability to reflect on online conduct and online social responsibilities*.	**.93**	**1.23**	**.011 ****
H7$_0$:	*There is no significance difference between Accounting Students and Computing Students in their ability to use the power of communication as a tool for advocacy.*	**.74**	**.97**	**.036 ****
H8$_0$:	There is no significant difference between Accounting Students and Computing Students in their understanding of "Copyright."	1.06	1.01	.665
H9$_0$:	*There is no significant difference between Accounting Students and Computing Students in their ability to apply social responsibility and ethical principles to communication behavior.*	**1.06**	**1.28**	**.011 ****
H10$_0$:	There is no significant difference between Accounting Students and Computing Students in their ability to work collaboratively to solve problems in the civic sphere, which will require many of the other capabilities listed above.	.85	.96	.302

Table 5 Percentage Ability on Ten Hobbs' Questions for Non-Accounting Students and Accounting Subjects (100% represents high perceived ability or understanding)			
Non-Accounting Students [Questions]	Non-Accounting Students (n=209) [Means]	Accounting Students [Questions]	Accounting Students [Means] (n=190)
Q5	84.75%	Q5	82.25%
Q9	78.00%	Q9	76.50%
Q6	77.25%	Q8	76.50%
Q1	75.25%	Q6	73.25%
Q8	74.25%	Q10	71.25%
Q2	73.50%	Q1	70.50%
Q3	73.50%	Q2	68.75%
Q10	71.75%	Q7	68.50%
Q7	70.25%	Q3	67.25%
Q4	60.25%	Q4	55.50%

TABLE 6 – Age Identification of Significant Differences in Digital Literacy between Students Under 25 Years of Age and Students 25 Years of Age and Older on the Hobbs Digital Literacy Model [Mean from -2 to +2]				
	Null Hypotheses	Students under 25 years of age mean n =231	Students 25 years of age and older mean n = 171	P value .05 ** significant
$H5_0$:	*There is no significant difference between Students under 25 years of age and Students 25 years of age and older in their ability to use the Internet to connect with others with shared interests.*	1.47	1.16	.000
$H7_0$:	*There is no significance difference between Students under 25 years of age and Students 25 years of age and older in their ability to use the power of communication as a tool for advocacy.*	.88	.64	.008

To evaluate the impact of age on perceptions of digital literacy, we conducted a T-Test, dividing the subjects into those under 25 years of age and 25 years of age and older. As noted in Table 6, there are significant differences between age groups on two of the measures: Question 5, the ability to use the Internet to connect with others with shared interests, and Question 7, the ability to use the power of communication for advocacy. On both abilities, younger students perceived higher abilities for themselves.

DISCUSSION OF THE RESULTS

The results of the above research lead to interesting findings for the Accounting profession. We have learned that Accounting students, compared to all other students, are significantly lacking in several digital literacy skills that are necessary for their ongoing success. As noted by Taylor (2019), faculty must develop initiatives that incorporate digital literacy skills into today's curriculum. He insists that "enhancing a student's digital literacy will endow them with readily transferable skills that will prepare them for a workplace that is fast being augmented by technology." To help Accounting students increase their decision-making skills, we must help them better analyze messages received through the Internet, including the point of view of the message and the credibility of the content. We also need to provide opportunities for Accounting students to broaden their ability to analyze information through better search strategies. Lastly, Accounting students must be encouraged to incorporate the many aspects of multimedia into their deliverables and presentations to develop transferable skills to the workplace. Research by Becker et al. (2017) suggests that college students who can create original work using digital tools, can adapt to a wider range of work environments, have better career advancement opportunities and have higher promotion rates after college.

Research results also reveal a lack of ability by all students to use technology as a tool for advocacy. Accounting professionals advocate for clients on many different levels. For example, accounting professionals might be asked to help clients with the 2020 coronavirus relief options offered by the government and other organizations.

These are aspects of digital literacy that Accounting students need and should be discussed in accounting classes and incorporated into assignments in a purposeful way to increase digital literacy skills necessary in the practice of accounting.

Research by Riddle (2015), in a report by the Committee for Economic Development of Australia, indicates that approximately 40% of the Australian workforce (five million) will be replaced by computers in the next 10 to 15 years. The report indicates jobs most at risk of being automated to be: office administration staff, sales assistants, checkout operators, accounting clerks, personal assistants and secretaries. He cites arguments by PwC that three-quarters of the fastest-growing jobs in accounting and consulting require digital literacy skills.

Digital literacy skills empower the accountant to address the non-repetitive issues that occur with clients on a regular basis, that have not been automated yet or are too burdensome to automate economically. Accounting faculty should seriously consider how to integrate methods for addressing and increasing Accounting students' digital literacy attributes into the curriculum.

The next sections discuss conclusions of our study, limitations, and potential future research.

CONCLUSIONS OF STUDY

The digital literacy definition has evolved from being technology fluent to being able to apply information literacy skills in everyday life (Chase & Laufenberg, 2011; Meyers et al., 2013). It is important for successful accounting professionals to use digital literacy skills in most of their day-to-day activities. It enables them to better collect, analyze and synthesize digital information. Accounting students need to start preparing for their professional careers. Enhanced digital literacy would encourage this readiness.

Exploring ways in which students are already using mobile and web-based technologies, we realized that digital transformation impacts their lives personally and professionally. It not only creates opportunities for them, but also implies risks (Hobbs, 2013; OECD, 2019 a, b).

The Internet today is inextricably woven into the fabric of their social, economic and societal lives. In addition, the AACSB standards have laid out what they expect our business students to be learning. In this study, we wanted to examine the extent of digital literacy attributes of Accounting Students and wanted to compare their perceived abilities to other college disciplines. We found that Accounting Students lack important digital literacy skills when compared to all other college disciplines. We also found that Accounting Students have higher self-perceptions of ability on several items of digital literacy than do Finance Students. However, Computing Students perceived themselves as better on more digital literacy attributes than did Accounting Students.

LIMITATIONS OF STUDY

This research has face validity, as the subject respondents anticipate that questions asked in the survey do measure what they are intended to measure. The research has content validity as the survey questions cover all aspects of the construct of digital literacy, as designed by experts in this field (Hobbs, 2010).

The external validity of this research is limited as the subjects were obtained from one academic institution. While a large sample was involved, it was a convenience sample. Still the study does offer some insight into the self-perceptions of all university students and their digital literacy skills. However, generalization to the external population cannot be made due to this limitation.

FUTURE RESEARCH

Digital literacy and use of the Internet are global issues. This study indicates great potential for continued research in this area. In general, future research can study the digital literacy abilities between cultures, gender and life/work experiences and level of study around the world. In addition, the issue of language and acculturation as a handicap to enhancing digital literacy should be studied. We also note that there are a large number of military veterans attending colleges today. Although we did not study this subject group, we believe this is an area for study of digital literacy research. For example, research by Lugar et al. (2016) suggests that older veterans have less experience with digital literacy.

Additionally, our research shows that, although there is not a significant difference between subjects in their use of multimedia, all subjects are woefully lacking in their ability to create and use multimedia. This is another area for future research.

APPENDIX A
RESEARCH INSTRUMENT: DIGITAL LITERACY

The Internet is quickly becoming the critical gateway for addressing jobs, education, health care, government services, and civic participation.

This research studies the life skills needed for digital literacy.

Requirement One: Please **CIRCLE** a response to the following 10 questions.

Requirement Two: Please fill in the demographic survey.

Question 1: Rate your <u>ability to analyze</u> messages in a variety of forms, including identification of the author, purpose and point of view of the message.

Very Low Ability	Low Ability	Neither Low Nor High Ability	High Ability	Very High Ability

Question 2: Rate your <u>ability to evaluate</u> the quality and credibility of content in a message (e.g., distinguishing between "a marketing ploy for nutritional supplements and solid information based on scientific evidence" or quality content and junk journalism).

Very Low Ability	Low Ability	Neither Low Nor High Ability	High Ability	Very High Ability

Question 3: Rate your <u>knowledge of and ability to</u> use powerful search strategies.

Very Low Ability	Low Ability	Neither Low Nor High Ability	High Ability	Very High Ability

Question 4: Rate your <u>ability to develop</u> multimedia creations.

Very Low Ability	Low Ability	Neither Low Nor High Ability	High Ability	Very High Ability

Question 5: Rate your <u>ability to use</u> the Internet to connect with others with shared interests.

Very Low Ability	Low Ability	Neither Low Nor High Ability	High Ability	Very High Ability

Question 6: Rate your <u>ability to reflect</u> on your online conduct and your online social responsibilities.

Very Low Ability	Low Ability	Neither Low Nor High Ability	High Ability	Very High Ability

Question 7: Rate your <u>ability to use</u> the power of communication as a tool for advocacy.

Very Low Ability	Low Ability	Neither Low Nor High Ability	High Ability	Very High Ability

Question 8: Rate your understanding of "copyright".

Very Low Understanding	Low Understanding	Neither Low Nor High Understanding	High Understanding	Very High Understanding

Question 9: Rate your <u>ability to apply</u> social responsibility and ethical principles to communication behavior.

| **Very Low Ability** | **Low Ability** | **Neither Low Nor High Ability** | **High Ability** | **Very High Ability** |

Question 10: Rate your <u>ability to work collaboratively</u> to solve problems in the civic sphere, which will require many of the other capabilities listed above.

| **Very Low Ability** | **Low Ability** | **Neither Low Nor High Ability** | **High Ability** | **Very High Ability** |

APPENDIX B

DEMOGRAPHICS: (DIGITAL LITERACY) PLEASE CIRCLE YOUR RESPONSES

1.   **Are You a:**   **Female**   **Male**

2.   **How Old Are You:**   **Under 25 years old**   **Between 25 and 35**

           Between 36 and 50   **Over 50 years old**

3.   **What is Your Primary Native Language?** _____

4.   **What is your cultural background by continent?**
        a.   **North America**
        b.   **South America**
        c.   **Europe**
        d.   **Asia**
        e.   **Africa**
        f.   **Australia**
        g.   **Antarctica**

5.   **What was (or is) your student area of study?**
_____

6.   **How many years have you lived in the United States?**
_____

7.   **Comments: e.g., favorite digital equipment, websites, daily digital routine, etc.**
_____
_____
_____

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