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In this issue:

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Closing the Gender Gap in the Technology Major

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Abstract

Technology makes up our daily lives and is a part of everything we do. The tech job market is expanding with more and more jobs needing to be filled by those with the necessary qualifications. Students are realizing the vast opportunities a career in technology can offer them and many are making the conscience decision to major in a technical field, such as computer science, management information systems, or information technology. However, women only make up a small percentage of those students who major in technical fields. With the job market in technology expanding and opportunities widely available, why is it that women hold only a small percentage of those students majoring in those fields? The purpose of this thesis is to show the influences that impact the choice of a woman's selection in a degree of study related to technology. This research is the result of survey prepared to explore the influences behind the gender gap. Survey questions were sent to and conducted on undergraduate students registered in Computer Science, Computer Information Technology, and Management Information System courses at the local university.

Keywords: Stereotypes, Social Encouragement, Women in Technology, Gender Gap.

1. INTRODUCTION

Technology is becoming one of the most in-demand job markets. "Employment of computer and information technology occupations is projected to grow 12 percent from 2014 to 2024, faster than the average for all occupations" (U.S. Bureau of Labor Statistics, 2014). These occupations are expected to add about 488,500 new jobs, from about 3.9 million jobs to about 4.4 million jobs from 2014 to 2024 (U.S. Bureau of Labor Statistics, 2014). Jobs in technology are increasing at such a high rate that soon there will be more jobs than qualified people to fill the

positions (Robaton, 2015). An increase in students deciding to major in a technology-related field has occurred with over 47,000 graduating in 2012 with a degree in computer and information sciences (10 percent increase than the year before) (Bachelor's, Master's, and Doctor's Degree, 2012-13). However, women only make up 18 percent of the students who earn an undergraduate degree in computer and information sciences (Bachelor's, Master's, and Doctor's Degree, 2012-13). In 2014, women accounted for 57 percent of professional occupations in the United States, but only 26 percent of professional computing occupations

(U.S. Bureau of Labor Statistics, 2014). With the job market in technology expanding, why women are only a small percentage of those students majoring in technology-related fields is a question that needs to be researched.

The purpose of this study is to find out what influences affect the choice of a woman's selection of a degree of study related to technology. The influences that will be discussed in this paper are whether the perception of technology is viewed as a field only for men, how the media portrays women in technology as "geeky", role models that are reinforcing negative stereotypes, parental encouragement, access to computer courses prior to college, and confidence in technical abilities among women. This research is the result of multiple methodologies taken to explore the influences behind the gender gap. Specially, the objective of this study is to find out what the influences behind whether or not women decide to pursue a major in the technology field are.

2. THE GENDER GAP

In recent years, there has been a rise in the number of women enrolled in four-year institutions. This rise has led to more women enrolled in college than men. According to the U.S. Department of Education, in 2012 women made up 57% of the total number of undergraduate students enrolled in a four-year institution in the United States (U.S. Department of Education, 2011-12).

Although, women outnumber men in college, men dominate the technology field. Women earned only 18% of undergraduate degrees awarded in computer and information sciences in 2012 (Bachelor's, Master's, and Doctor's Degree, 2012-13). Only 12.9% of those in 2012 who were awarded an undergraduate degree in computer science were women (See Figure 1) (Snyder, T.D., and Dillow, S.A., 2015). In 2012 the percentage of women who were awarded an undergraduate degree in information technology, computer science and management of information systems were respectively 21%, 13% and 26% (Snyder, T.D., and Dillow, S.A., 2015).

Three decades ago, women were more likely to earn a degree in technology. From the late 1970's to 1984, the percentage of women in technology was on the rise with numbers steadily increasing. In 1984, the number of women obtaining a computer science degree was at its peak at 37.2%, which surpassed the number of women going to medical school, and trailed closely

behind the number of women going to law school (see Figure 1). However, as shown in Figure 1, in 1985 the percentage of women graduating with a computer science degree began to decline (National Science Foundation, 1). The descent continued and dropped to a low 18.2% in 2010, which is almost half of the 1985 percentage of women graduating with a degree in computer science. The percentage of women earning degrees in computer and information science degrees continues to wane while the number of women in law school, medical school and other STEM fields steadily increases. This trend begs the question of what has contributed to the dramatic drop in the number of woman in technology since 1984.
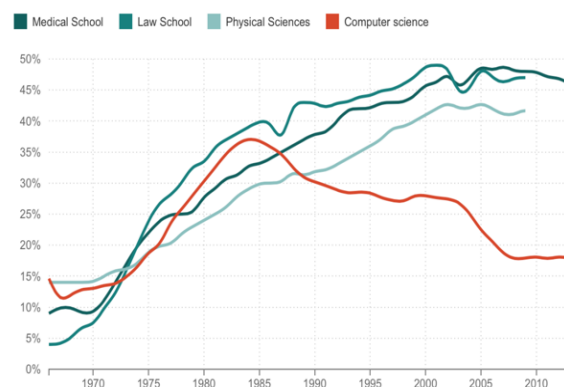
Figure 1 Percent of Women Majors, By Field. (National Science Foundation, 1).

3. MAJOR INFLUENCES

After an extensive review of literature, the major influences impacting the decision of women were narrowed down to the influence of marketing, media portrayal of women in technology, role models, social encouragement and impact of education.

Influence of Marketing

Marketing plays a huge role in impacting society's point of view (Rashotte, 2007). With marketing, if you want a certain demographic to buy your product then that demographic needs to appear in all forms of the marketing scheme. In doing so, it makes it easier for the target audience to picture themselves in the role of actually using the product. The marketing of personal computers towards men may have shifted women's view of computers since "individuals are influenced by the majority: when a large portion of an individual's referent social group holds a particular attitude, it is likely that the individual

will adopt it as well" (Rashotte, 2007). When Apple marketed the Apple II, and many of its other lines, primarily to men, it helped the stereotype that personal computers are meant for only men to use. "Over 20 years of showing the visual of men with computers is one of the many reasons why women don't even think to pursue this avenue" (Rajai & Paria, 2015).

Media Portrayal of Women in Technology
"Media has a strong influence on girl's impression of computer science and technology and may play an important part in why there are fewer women deciding to major in technology" (Gürer, Camp, 2002). How a social group is represented in the media including broadcast media (e.g., television, film), Internet media (e.g., blogs), and print media (e.g., newspapers) influences how people think about that group and their relation to it (Cheryan, Plaut, Handron & Hudson, 2013). In addition, academic fields possess stereotypes, or mental representations of the group's characteristics (Cheryan, Plaut, Handron & Hudson, 2013).

With more positive female television characters in the media to represent a field that is dominated by men, more women may consider technology as a major (Forrest, 2014). In a study when conducted by Stefanie Simon, a psychology professor at Tulane University, it was found that viewing media images of powerful women decreased women's negative self-perceptions and increased their leadership aspirations (Simon & Hoyt, 2012). Forensics was a field dominated by men in 1980s while in today's world it is one of the few sciences that are dominated by women (Potter, 2015). This increase could be attributed to primetime shows, such as CSI and Bones, due to these shows are populated with female role models, including real-life professionals or fictional characters, such as Temperance Brennan in Bones and Sara Sidle on CSI, and have become extremely popular (Chandler, 2012).

Role Models
One of the influences that has been cited as contributing to the educational gender gap in technology is the lack of female role models in the technology field (Pearl, Pollack, Riskin, Thomas, Wolf & Wu, 1990). "The U.S. Department of Education (2007) says that exposing girls to female role models who are successful in math and science can counteract "stereotype threat"— negative stereotypes that girls may develop about themselves" (Lyon & Jafri, 2010). However, many of the role models available to young girls at an early age, such as Barbie, send negative message to young girls.

Barbie has long been one of the most popular toys for young girls in the United States (Turkel, 1998). "Dolls like Barbie because of their iconic status are likely to act as salient role models, at least for very young girls" (Dittmar, Halliwell & Ive, p. 283-292). In 1992, Mattel introduced Teen Talk Barbie to the public at the American International Toy Fair (Driscoll, p. 423). One of these phrases Teen Talk Barbie would say was "Math class is tough". The negative reinforcement coming from Barbie only helped to highlight negative stereotypes about math abilities of females (Adya and Kaiser, 2005).

Since its introduction in 1959, Barbie has been portrayed with many different careers. In 2010, the first Barbie to have a career in technology was introduced as Computer Engineer Barbie along with the accompanying book called Barbie: I Can Be a Computer Engineer. While this book had the potential to portray Barbie as a positive role model, it instead reinforced negative stereotypes of women in technology. In the book, Barbie is working on designing a computer game that will show kids how computers work. However, Barbie states she is only able to create the design of the game and is not able to program the game without her male companions doing the work (Bartlett, 2014).

Social Encouragement
According to the National Center for Women & Information Technology (NCWIT), another influential factor on whether women choose a technology-related major might reside with parental support. In a study conducted by Casey George-Jackson in 2012 at the University of Illinois, undergraduate students at nine large universities were asked to participate in a survey to gather data about their pre-college and college majors. When asked who most influenced them to choose their current major, 30% of the respondents selected "myself" 25% selected parents,19% selected high school teachers and less than 10% selected peers (George-Jackson, 2012).

According to another study by NCWIT, the encouragement of parents to go into a field of technology may be the most influential factor compared to one's peers, teachers, and counselors (Ashcraft et al., 2013). The survey results also showed that women most frequently chose their father (37%) or mother (29%), as the most influential person in their decision to pursue a computing career (Ashcraft et al., 2013).

A study conducted by Google in 2014 observed women who were computer science graduates

were more likely to have their mother or father encourage them to study computer science when compared to graduates from other degrees (Google, 2014).

According to a study conducted by Turner, Bernt, and Percora in 2002 at Ohio University, the occupation of one's parents might also contribute to the reasoning as to whether or not women choose to major in technology.

Impact of Education
The lack of opportunity to take computer courses before entering college may be a contributing factor as to why many students as well as women are not pursuing technical majors (Google, 2014). "Greater access to and use of computers and other IT at home and in schools are viewed as generating interest among students to pursue CS/CE majors at the university level" (Adya & Kaiser, 2005). Taking computer courses before college can help familiarize women with technology and could lead to a decision to pursue it as a major. "Early exposure to Computer Science is important because familiarity with a subject can generate interest and curiosity while establishing a sense of competency" (Google, 2014).

4. METHODOLOGY

In order to further investigate the impact of the influences, survey questions were sent to undergraduate students registered in Computer science, Computer Information Technology, and Management Information Systems courses at a local university. While previous research has looked at only the female population, this study is conducted on both the male and female population in order to separate and better assess the influences that affect each gender and note the differences.

Pilot testing was conducted to make sure the survey questions are easily understood, conducted in a clear manner, and to eliminate poorly worded questions. A survey was conducted to find out the influences behind the choice to pursue a degree in technology.

The survey focused on collecting data from two target groups among the current students that are currently registered and taking undergraduate Management Information Systems, Computer Information Technology, and Computer Science major specific courses. The first target group was comprised of both male and female students that have already decided to major in technology and the second target group

students was compromised of students that may not necessarily have chosen to major in technology.

See appendices for the survey questions.

5. DATA AND RESULTS

Demographics
Target group one for the survey received 107 responses while target group two for the survey received 116 responses. The overall background demographics of the respondents collected from the survey questionnaires for each target group are shown in Table 1.

	Target Group 1	Target Group 2
Gender		
Male	68.22% (73)	59.48% (69)
Female	31.78% (34)	40.52% (47)
Other (Please Specify)	0%	0%
Age Range		
0-18	.93% (1)	6.9% (8)
19-22	50.47% (54)	69.83% (81)
23-30	34.58% (37)	16.38% (19)
31-40	10.28% (11)	3.45% (4)
Over 40	3.74% (4)	3.45% (4)
Ethnicity		
Black or African American	11.21% (12)	4.31% (5)
Hispanic or Latino	1.87% (2)	5.17% (6)
White or Caucasian	74.77% (80)	84.48% (98)
Native American or A10merican Indian	.93% (1)	1.72% (2)
Asian or Pacific Islander	5.61% (6)	1.72% (2)
Other	5.61% (6)	2.59% (3)
Class Year		
Freshman	1.87% (2)	16.38% (19)
Sophomore	7.48% (8)	37.93% (44)
Junior	27.10% (29)	35.34% (41)
Senior	57.94% (62)	10.34% (12)
Graduate	5.61% (6)	0.00% (0)

Table 1: Background demographic for the survey: Target group one and two

Results
The survey questions captured the impact of major influence factors determined in section 3.

The responds of the participants show that parents are overwhelmingly the most important group for both male and female majors/minors in selecting the major. Overall, results indicate that the respondent themselves and their family are two of the most important role models that encouraged both male and female respondents to major in technology. While the participants stated that parents' profession, friends, siblings, high

school advisors and media role models had no impact on their choice, the impact of college professors, college advisors and high school teachers were inconclusive.

The survey questions investigating the reasons for selecting technology as major had similar responses from both female and male students. Future hiring potential/salary, I wanted to learn more about technology, I encouraged myself, and my family encouraged me were in the top four responses (not in order) for female respondents who are/were majoring/minoring in technology. For the male respondents, the top four responses included: Future hiring potential/salary, I encouraged myself, I wanted to learn more about technology, and I enjoyed computer courses in high school (not in order). However, for male respondents, I enjoyed computer courses in high school ranked above my family encouraged me when compared to female respondents who are technology majors/minors. Based on the results, future hiring, potential/salary, wanting learn more about technology, family encouragement, encouragement from oneself, and computer courses in high school are motivating factors that may lead males and female to major in technology.

Continuing to assess the perception of technology and the impact of the media on women deciding to major in technology, participants were asked to "List two women in technology that appear on television/media? (If you do not know write N/A)", and then asked to "List two men in technology that appear on television/media?" (If you do not know write N/A). These questions were asked in order to assess the influence of media on women deciding to major in technology and if there is a lack of role models for women in technology. In every group the percentage of those who could list two men in technology far exceeded those that could list two women. Bill gates was the most popular name listed for both male and female respondents, followed by Steve Jobs and Mark Zuckerberg. Carly Fiorina was the top listed women in technology for men respondents while Sheryl Sanberg and Penelope Garcia were the top listed women in technology for female respondents. Since a high percentage of participants could not identify women in technology, but could identify men in technology on television or in the media gives creditability to the assumption that women in technology are rarely portrayed in the media or on television.

When asked about the availability of AP computer science classes only 5.9% of female respondents

that are majoring/minoring in technology at UNCW or were registered in non-pre-requisite CSC, CIT, or MIS courses stated their high school offered AP computer science and took the course. Most female respondents who majored in technology responded that their high school did not offer AP computer science and I did not take the course in high school, which shows the limited opportunity of advanced computer courses to high school students. Based on the results, a high percentage of women and men selecting "If my high school did offer AP computer science I would have taken the course" indicates the need for more AP computer science opportunities available to both male and female students, which may result in more women and men majoring in technology..

Participants were asked to check if they took any computer courses while in elementary school, middle school, or high school or none? Female respondents in pre-requisite UNCW CSC, CIT, or MIS courses had a high percentage of responses for taking computer courses in both elementary and middle school. The group also had a low percentage of responses that was much lower than female UNCW respondents in pre-requisite technology course that did not decide to major in technology for "none", which help validate that exposure to computer courses helps encourage women to major in technology. However, among female respondents at UNCW that did not major in technology, there were high percentages of responses for both taking computer courses in middle school and high school. Overall based on the results, more exposure to computer courses did not positively improve women's decision to major in technology as shown by the high percentages of computer courses taken before college for those female respondents who did not major in technology at UNCW.

47% of those female student responses who are majoring/minoring in technology in non-prerequisite CSC, CIT, and MIS courses at UNCW stated that they originally entered UNCW as a CSC, CIT, or MIS major while 53% or 39 stated that they switched to a technology major. However, 79% of males that are majoring/minoring in technology in pre-requisite CSC, CIT, and MIS courses at UNCW stated that they did not switch to technology as their major while 21% (9 respondents) of those males who responded stated they did switch their major to CSC, CIT, MIT. For males majoring/minoring in technology at UNCW, the major most switched from was business administration to CSC, CIT, or MIS, and the second most popular was biology. Based on the results, there is not a specific major

that female respondents are switching from in order to major in technology, however many of the majors respondents switched from resided in business, or science, which could be a potential area when recruiting more women into the major.

When asked what adjectives they would use to describe technology majors, the results show that both male and female student's view technology majors are "smart/intelligent", and "nerdy". This may be a deterring factor as to why women are not choosing to pursue this major. The perception that students must be academically advanced to learn it may discourage certain types of students from participating, especially if parents, teachers and school administrators reinforce this belief (Google, 2014).
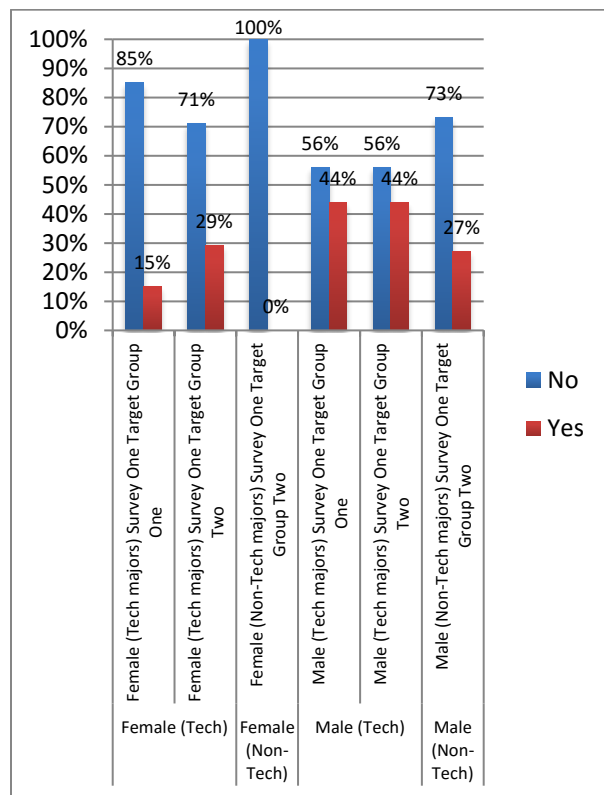
respondents that had prior programming knowledge.

For both female groups, a high percentage of women selected that they did not have prior programming experience ranging from 71%-100% (see Figure 2). It is important to note that 100% of the female respondents who were not majoring in technology did not have prior programming experience before entering college. There were still more men coming to college without prior programming experience ranging from 56%-73%, however, there was a higher percentage of men enter with programming experience when compared to their female counterpart ranging from 27%-44%.

Figure 2: Percent of respondents that had previous programming experience
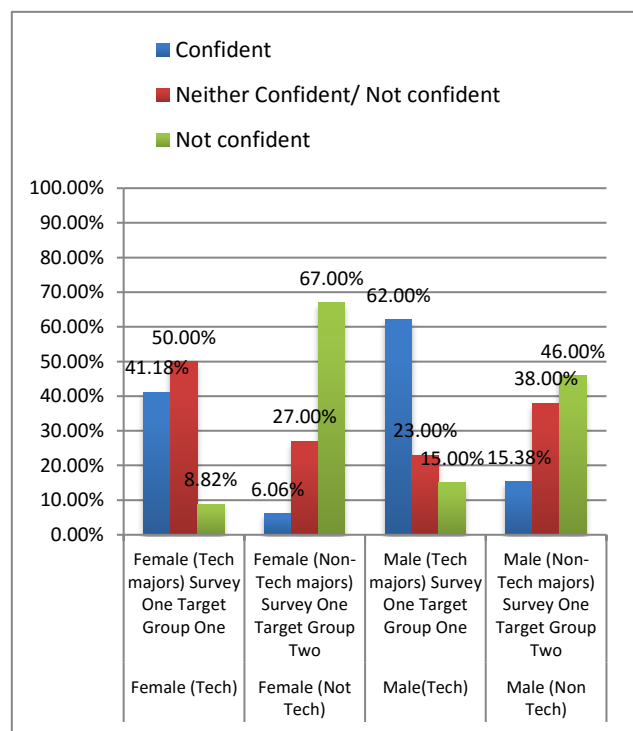
Figure 3: Confidence levels in programming abilities for both genders

According to the literature review, lacking prior programming experience may be a deterring factor as to why women are not choosing to major in technology (Margolis & Fisher, 2000). In addition, female students in technology with less experience felt vulnerable in unfamiliar territory, and confidence issues among women may lead to fewer women entering the major because as confidence drops, so does interest (Margolis & Fisher, 2002). Figure 2 reflects the percentage of

Students in both pre- requisite and major specific CSC, CIT, and MIS courses at UNCW were asked how confident they were in their programming abilities in order to assess if women in computer-related majors are less confident than their male peers shown in Figure 3. 62% of male respondents stated they were confident in their programming abilities while only 41% of female respondents were confident in their abilities. Based on these results, it is shown that men majoring in technology are more confident in their programming abilities when compared to their female peers, which could be attributed to

men having more programming experience entering college.

6. CONCLUSIONS AND IMPLICATIONS

This study uses a survey to investigate the factors influencing female and male students' decisions majoring in a technology field.

When confidence in programming abilities questioned male respondents majoring in technology in major specific courses 62% of male respondents stated they were confident in their programming abilities while only 41% of female respondents were confident in their abilities. There are more men in pre-requisite and non pre-requisite CSC, CIT, and MIS than women majoring in technology (46 women compared to 116 men) in our sample. One factor behind the higher male concentration could be the confidence level differences between two genders. Based on the questions investigating the prior programming experience, the low percentage of women entering college with programming experience gives credibility to the assumption that men enter college with more programming experience, which encourages men to major in technology more often than women.

In addition, the survey results show that more exposure to computer courses (K-12) did not positively improve women's decision to major in technology as shown by the high percentages of computer courses taken before college for those female respondents who did not major in technology at UNCW.

Another factor studied in this survey is the impact of exposure to positive role models on young women's desire to major in technology. The fact that majority of participants could not identify women in technology, but could easily identify men in technology on television or in the media gives creditability to the assumption that women in technology are rarely portrayed in the media or on television, and could be why women are not choosing to major in technology.

The results have shown that most respondents surveyed believed you have to be smart in order to major in technology. This may be a deterring factor as to why women are not choosing to pursue this major. The perception that students must be academically advanced to learn it may discourage certain types of students from participating, especially if parents, teachers and school administrators reinforce this belief (Google, 2014). Based on the results, both male and female student's view technology majors are "smart/intelligent", and "nerdy", which could be causing women not to choose technology as a major.

As a result of this study, several recommendations can be made to administrators of higher education in order to increase the number of women majoring in technology.

- College campuses should continue to emphasize how majoring in technology will create future job possibilities and a good salary because according to results this was one of the main motivators as why to why women decide to major in technology.
- The technology major needs to be reimaged, and more inclusive, instead of having the major portrayed as being only for those who are "smart", or "nerdy", it should be portrayed as inclusive and not just for students that are highly intellectual.
- Recruitment to major in technology should be implemented in science courses as an alternative major because as shown in the results, most males and females switch their major from a science related course or engineering due to "difficulty".
- Beginners programming courses should be made more readily available to middle school, high school, and college students in order to increase their exposure to programming at an early age.
- One-on-one tutor should be used to help tutor students in the programming courses, in order to increase student's confidence and understanding before college.
- AP Computer Science should be made more readily available to students in high school.
- Female technology role models should be more prominent on television, incorporate more women in technical roles on television or in the media. These women should be depicted as doing working that is helping other people and show the benefits of majoring in technology, and not always follow the "nerd" stereotype.

Although the main objective of this study was to find out the influences behind whether or not women choose to major in technology, retention of women in the major is another important factor. It is important to encourage women to join the major, but it is also just as important to keep them in the major. To further this research, another survey could be sent out targeting women in CSC, MIS, CIT courses at UNCW and assessing their satisfaction with the courses and

the major in order to find out the influences behind why women may be leaving the major at UNCW.

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APPENDIX A

Survey Questions

* **1. I identify my gender as?**

  ⚪ Female

  ⚪ Male

  ⚪ Other (please specify)

  [   ]

* **2. What is your age?**

  ⚪ 0-18

  ⚪ 19-22

  ⚪ 23-30

  ⚪ 31-40

  ⚪ Over 40

* **3. What is your ethnicity?**

  [⬍]

* **4. What year in school are you?**

  ⚪ Freshman

  ⚪ Sophomore

  ⚪ Junior

  ⚪ Senior

  ⚪ Graduate

* 5. Are any of the following your current major or minor? (Check all boxes that apply)

☐ Management Information Systems

☐ Computer Information Technology

☐ Computer Science

☐ N/A

☐ Other (please specify)

[   ]

* 6. If you checked one or more of the boxes to the question above why did you decide upon this major? (Check all that apply)

☐ My friends encouraged me

☐ My family encouraged me

☐ I encouraged myself

☐ I enjoyed computer courses in high school

☐ I enjoyed computer courses in middle school

☐ I enjoyed computer courses in elementary school

☐ Future hiring potential/salary

☐ I wanted to learn more about technology

☐ My friends were in the classes

☐ My high school teacher

☐ N/A

☐ Other (please specify)

[   ]

* 7. Did anyone in your family encourage you to major in Management Information Systems, Computer Science, or Computer Information Technology? (Mark all that apply)

☐ Mother

☐ Father

☐ Sister

☐ Brother

☐ Aunt

☐ Uncle

☐ None

☐ N/A I did not choose to major in any of those fields listed above

☐ Other (please specify)

[   ]

* 8. Did any of your teachers encourage you to major in Management Information Systems, Computer Science, or Computer Information Technology? (Mark all that apply)

☐ Elementary school teacher

☐ Middle school teacher

☐ High school teacher

☐ None

☐ N/A I did not choose to major in any of the fields above.

☐ Other (please specify)

[   ]

* 9. Did you switch your major to Computer Science, Computer Information Technology, Management Information Systems?

○ No

○ Yes (please list what major you switched from?)

[   ]

* 10. If you selected yes in the previous question please explain why you switched your major to Computer Science, Computer Information Technology, or Management Information Systems? (If you did not switch write N/A)

[   ]

* 11. Did any role models encourage you to major in Management Information Systems, Computer Science, or Computer Information Technology? (Mark all that apply)

☐ Family

☐ Friends

☐ Teacher

☐ Academic Advisor

☐ Myself

☐ People on television/media

☐ None I am not majoring in any of the fields listed above

☐ Other (please specify)

[   ]

* 12. Please rate each answer according to what your view is:

	Strongly Agree	Agree	Neutral/Unsure	Disagree	Strongly Disagree
I believe my friends played a significant part in my selection of major.	○	○	○	○	○
I believe my college professors played a significant part in my selection of major.	○	○	○	○	○
I believe my college advisors played a significant part in my selection of major	○	○	○	○	○
I believe my high school teachers played a significant part in my selection of major.	○	○	○	○	○
I believe my high school advisors played a significant part in my selection of major.	○	○	○	○	○
I believe my parents played a significant part in my selection of major.	○	○	○	○	○
I believe my siblings played a significant part in my selection of major.	○	○	○	○	○
I believe that I would have picked my major regardless of the field my family is in.	○	○	○	○	○
I believe people on television/media played a significant part in my selection of major.	○	○	○	○	○

* 13. Who do you think is more likely to be successful in Management Information Systems, Computer Science, or Computer Information Technology?

◯ Men

◯ Women

◯ Both

◯ Don't Know

* 14. Who do you think is more likely to major in Management Information Systems, Computer Science, or Computer Information Technology?

◯ Men

◯ Women

◯ Both

◯ Don't Know

* 15. Check if you took any computer classes while in elementary, middle, or high school? (Mark all that apply)

☐ Elementary School

☐ Middle School

☐ High School

☐ None

* 16. Did your classroom in elementary, middle, or high school school offer a computer literacy class? (Mark all that apply)

☐ Elementary School

☐ Middle School

☐ High School

☐ None

* 17. Select all that apply?

☐ My high school offered AP computer science and I took the course in high school

☐ My high school offered AP computer science and I did not take the course in high school

☐ My high school did not offer AP computer science and I did not take the course in high school

☐ If my high school did offer AP computer science I would have taken the course

18. Did you have any experience with computer programming (coding) before entering college?

◯ No

◯ Yes (Please write which programming languages you had experience with)

[   ]

* 19. How confident are you in your computer programming abilities?

	I am confident in my programming abilities	I am neither confident nor unconfident in my programming abilities	I am not confident in my programming abilities
How confident are you in your programming abilities?	○	○	○

* 20. How interested in computers/technology were you before attending college?

	I was extremely interested in computers/technology before entering college	I was somewhat interested in computers/technology before entering college	I was neither interested nor disinterested computers/technology before entering college	I was somewhat not interested in computers/technology before entering college	I was extremely not interested in computers/technology before entering college
How interested in computers/technology were you before attending college?	○	○	○	○	○

* 21. List three adjectives that come to mind when thinking about technology majors in general?

* 22. List 2 women in technology that appear on television/media? (If you do not know write N/A)

* 23. List 2 men in technology that appear on television/media? (If you do not know write N/A)

* 24. What do you think could be done to attract more females into the technology major?