Educational Camps and Their Effects on Female Perceptions of Technology Programs

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Abstract

The purpose of this study was to investigate the impact of Cheering in the Classroom, a four-day program designed purposefully to increase female awareness and perceptions of technology fields. The camp included discipline-based activities from the 13 different programs of study based in technology. The camp targeted high school cheerleaders and dancers, allowing them the opportunity to engage in hands-on-activities and competitions using new technology that was directly related to the cheerleading or dance. Each activity allowed the participants to see how technology can be used to understand and improve cheerleading/dance activities. The study compared participant's perceptions of the Cheering in the Classroom camp to the perceptions of the TEAM (Technology Expanding All Minds) camp. Data were collected with the use of a Lyket-type scale through pre and post surveys. Responses from the survey calculated participants' awareness and perceptions of technology to determine the effectiveness of the Cheering in the Classroom camp. Results of the study indicated that the cheering in the classroom camp had a more positive influence on participants perceptions of technology,

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leading the researcher to believe that building recruitment initiatives based upon participant personal interests can aid in positive perceptions of technology and technological careers.

Background

In the past 15 years, numerous reports have identified low numbers of females working in technology related fields (National Science Foundation) [NSF], 2002, 2003a, 2003b). This could be due in part to the fact that society does not always encourage females to pursue nontraditional careers in technical areas (Morris, 2002). However, several efforts on multiple levels to increase the number of females in technology have been attempted. Present efforts to improve gender equity in technology have failed to make any significant impact (NSF, 2003). This is a concerning issue because as noted by Zuga (1999, p. 1) women are natural “technologists” who have been a part in creating our world. However, females in engineering and technology have worked with a male dominated culture with “male driven philosophy” and male “paradigms in society” for years (Zuga).

Although a small increase in female participation in high school technology education classrooms has been noted, data indicates that more attention has been focused on preparing males than females for futures in technology (Welty & Puck, 2001). There is need to recognize the importance of educating all students to realize the opportunities that are available to them in technology. In Wisconsin 80% of the jobs available require a technical background, which heightens the importance of training all populations, both represented and underrepresented, in technology (Welty & Puck, 2001). In addition, it has been discovered that females are attracted to subjects that demand the exercise of highly developed inter-personal as well as intellectual skills, which are commonly needed skills in technical and engineering careers (Siann, 1997).

Smith (2000) suggested that relating technology to a variety of subjects would help engage students in the learning process. This study examined if relating technology to a favorite activity or specific interest, such as cheerleading, would increase the recruitment rate of females into technology majors at the post-secondary level.

As mentioned before, technology has traditionally been a male dominated field. Due to the lack of females in technology, the global market suffered the loss of innovations that women could have brought to different professions within technology (Metz, 2006). This study was designed to examine an innovative way to recruit females into the field of technology. The advancements that females could contribute to the technology majors are endless (Shanahan, 2006). Silverman (1999) noted that:

> Experience has shown that women are interested in nontraditional occupations when they are actively recruited. Female high school students who are good at math and science and enjoy hands-on technology projects often turn away from higher level classes in these subjects because they are not aware of the kind of nontraditional careers available to them and cannot see themselves in technical or scientific jobs (p. 3).

In addition, studies show that females are turned away by the gender stereotypes and feel a need to avoid certain classes in school due to stereotypes (Oregon State University Extension Service, 2005). With the additional innovations that females can bring to the field of technology, our society can achieve higher levels of technological success (Darby & Bland, 1994).

Increasing the number of females in technology has been an ongoing issue. If more effective recruitment in technology is not developed it is expected that there will be a decreasing number of females entering the technology and engineering fields. Tallow noted, “The world cannot afford the loss of the talents of half its people if we are to solve the many problems which beset us” quoted Nobel Laureate Rosalyn Tallow (NSF, 2003a, p.178).

Purpose and Research Questions

The purpose of this study was to determine the effectiveness of a pilot recruitment program designed to recruit females into technology majors at the post-secondary level. Data from a traditional technology recruitment camp, TEAM, and a pilot recruitment program, the Cheering in the Classroom camp were compared. The TEAM camp was designed to recruit female participants into postsecondary technology majors through various academic activities. The cheer camp had an identical goal but was designed to relate technology activities to cheerleading activities.

From the literature reviewed, it was discovered that gender equity was not a new problem, but an ongoing problem in need of further research. Although advancements in gender equity have been made, these advancements are not enough. The fields of Science, Technology, Engineering and Mathematics (STEM) currently have a shortage of females in the workplace and universities. This study does not solve the STEM shortage, but looks at a small portion of the post-secondary recruitment solution. This study determined if a nontraditional camp was more successful in helping females to become interested in technology majors. The study was designed to explore following questions:

1. Did attending the Cheering in the Classroom or TEAM camp affect participant's perceptions concerning technology?
2. Did attending the Cheering in the Classroom or TEAM camp increase participant's awareness of various college majors within the academic discipline of technology?
3. Which camp, Cheering in the Classroom or TEAM, had a greater influence on participants.

Significance of the Problem

Males working in the field of technology outnumber females four to one (Sciannamea, 1997). In addition, research indicates that male and female brains process language, information, emotion, cognition, etc. differently (Sabbatini, 1997). When the shortage of females in technology was combined with the fact that each gender processes information and solves problems differently, a gap in potential technological progress arose. Not utilizing diversity, our society has been omitting possible technological advancements. Wulf, the President of the National Academy of Engineering, stated that with our lack of diversity "we pay an opportunity cost, a cost in designs not thought of, in solutions not produced" (Metz, 2006, p. 2).

By 2020, the federal labor department forecasts that the United States will need to import seventy percent of the engineers and technicians that American industries need to maintain the nation's current quality of life (NSF, 2003). Despite the millions of dollars spent on trying to overcome the shortage of females, little change has been implemented towards increasing female participation in the STEM fields (McCarthy, 2007). If more females were recruited into technology fields more diversity in the workplace would become a reality. With a more diverse population, possibilities will be achieved in technological careers.

Assumptions of the Study

This study and its conclusion were subject to the following assumptions:

1. Participants completed the survey instrument honestly and without bias.
2. Participants completed all activities of the camp.
3. Participants who attended Cheering in the Classroom had an interest in cheerleading or dance.

Limitations of the Study

This study had the following limitations:

1. Both camps were limited to the participants who attend the summer camps.
2. The sample size was limited to the participants in the Cheering in the Classroom camp and TEAM camp.
3. TEAM camp participants consisted of only 8th and 9th graders.
4. Cheering in the Classroom camp consisted of 9th, 10th, 11th and 12th graders

Review of Literature

The U.S. Department of Labor (2005) predicts employment in professional, scientific, and technical services will grow by 28.4% and add 1.9 million new jobs by 2014. Employment in computer systems design and related services will grow by 39.5%, and add almost one-fourth of all new jobs in professional, scientific, and technical services (U.S. Department of Labor Bureau of Labor Statistics, 2005).

> An insufficient number of Americans obtain degrees in science, technology, engineering, and mathematics compared to the nation's economic competitors. More Americans need to be encouraged to pursue such fields so that the United States has the workforce necessary to generate the new ideas that led to the new industries. Individuals who obtain STEM degrees are smart people who can work in a variety of occupations beyond those traditionally assumed for those who earn such degrees (Stine, 2008, p.18).

Even with this documented future need for a technical workforce, undergraduate engineering and technology programs were still unable to attract females to their program (Shanahan, 2006).

In an effort to increase females in technology, myths concerning females and technical careers need to be banished, such as the myth "that girls cannot do math or science at a high level of success" (Kleinfeld, 1998, p. 1). According to Silverman and Prichard (1996) female students who choose STEM courses on purpose (as opposed to being assigned into a class by counselors due to a lack of other interests by the student or openings in other classes) were often in the top 10% of the class. In addition, it was largely accepted that Technology and Vocational Education (TVE) can equip women for the job market or self-employment, thereby increasing their self-reliance and self-confidence besides inculcating in them the capacity to make vital decisions about themselves and a society at large (Mishra, Khanna, & Shrivastava, 2000). However, females want to feel accepted into their culture and have an image of how females should act in order to be welcomed fully into society and oftentimes a technical career isn't part of this "accepted image"

(Kandaswamy, 2003; Avsievich 2001). Mindock (2006) agreed, children discover gender stereotypes for "observational learning" by watching, practicing and internalizing adults' behaviors (McCarthy, 2007). While girls need to overcome these cultural biases in all parts of American education, the areas most resistant to change in the sense of gender equity are STEM and technology education (McCarthy).

Efforts need to be made to increase female awareness/interest in technical careers. This needs to begin at an early age. For instance, females in middle school are not making the connection between what they are learning in technology education classrooms to how they can apply it in technological careers (Silverman & Pritchard, 2003). It is the responsibility of the career counseling and middle school technology education teachers to focus on relaying information about nontraditional occupations that relate to the work they do in technology classes (Wisconson, 2000). Because of this disconnect at an early age, there are a disproportionately high number of girls who are losing interest in STEM courses during their middle school and high school years (NSF, 2002).

Opportunities for women in engineering and technology seem endless (Shanahan, 2006). Shanahan suggested that the secret to increasing females in technology was not to "fix" the girls, but make the technology classroom and profession more appealing to and welcoming of girls. Rather than trying to replicate the approaches and interest of the small number of girls successful in technology to a larger group, the secret was to make the environment one that the larger group wishes to join.

Current Programs and Publications to Recruit and Retain

McCarthy (2007) stated that there have been hundreds of programs attempting to redirect female interest to the STEM fields; however, these programs have had little success, and the amount of female involvement has leveled off. The NSF highlighted 209 funded grants for projects addressing gender issues in its publication of, *New Formulas for America's Workforce: Girls in Science and Engineering* (NSF, 2003a). They have support programs for mentoring, current teachers and classes that "feed and not weed" female students into the technology fields. A majority of the programs featured in this report suggests that all programs are paired up with a mentoring program. Several programs have proven successful when pairing students up with a more experienced student, professor or professional. A community-based mentoring program written by Linda H. Mantel found that 94% of her students intended to get married and 77% of them intended to have children. It was because of these goals that there was a need for role models to show students the possibility of completing their personal goals along with their professional goals (NSF, 2003a).

Pamela E. Jansma from the University of Arkansas found an activity for undergraduate and graduated students with the broadest impact thus far (NSF, 2003a). Her activities included weekend field trips, 10-day field experiences, mentoring ladders, and scholarly seminars. The largest impact was from the mentoring speakers. The speakers were invited by the current students, creating a greater interest from both sides. Luncheons and receptions were paired with each mentoring speaker and were very well attended and beneficial to the students (NSF, 2003a).

Research publications, including the *American Association of University Women Educational Foundation's Tech Savvy* (American Association of University Women

Educational Foundation, 2000) and *Women at Work* (Women at Work, 2003), have also recognized the gender gap and documented the troubling shortage of females preparing to work in these fields (Dyer, 2004). In response to this shortage governmental and nongovernmental organizations have created a wide array of programs and strategies (Dyer). There were 123 technology projects, which focused on computer development and application along with career information. Fifty-seven of the projects offered were intended for females only. The goals were to increase awareness and academics.

The American Association of University Women Educational Foundation and NSF are two of the largest foundations that are addressing gender diversity in the STEM fields (Dyer, 2004). These foundations together donated nearly $90 million between 1993 and 2001. The funds were distributed to 416 projects targeted to increasing the participation of females in STEM fields.

In summary, the gender gap in engineering and technology fields has been well documented. Gender equity in engineering and technology is an issue that continues to persist at the national level. From the studies presented, the accomplishments and discouragements of females entering into technology careers are evident. The literature indicates that females are needed in technical fields of study. With all of the previous deterrents females have faced in entering into the workforce, it is imperative to discover what attracts females to technical careers.

Methodology

This study was a descriptive study that used a Lykert-type survey instrument to collect data pertaining to participants’ perceptions of two different technology recruitment efforts. TEAM was a five-day summer camp that taught high school females about the career opportunities in technology. Information was relayed to participants through traditional activities (such as hands-on lab activities that were directly related to a career in technology), lectures, and through personal contact with current students; however, no attempt to capture personal interests (other than technology) was made in the camp. The Cheerleading in the Classroom camp had the same goal and used the same methods to relay information, but utilized cheerleading as a platform to explain the same technologies. For example, all lab activities not only had a direct correlation to technology, but also some aspect of cheerleading as well. The pilot four-day camp, Cheerleading in the Classroom, was the new recruitment camp for females offered by the College of Technology. This study examined the effectiveness of the four-day and five-day camps, specifically on the participant's knowledge and attitudes pertaining to careers in technology.

This study was based upon a previous study conducted at University of California Davis in California. It was a three year, NSF funded, pilot project that tried to improve the engineering climate for females in K-12. Efforts were acquired using outreach programs and research/mentorship opportunities for the high school students. The participants of this study completed a pre and post questionnaire to determine the significance of the attended workshop, luncheon, or day on campus. The data were collected and evaluated through qualitative and quantitative research. Part of the research found that when asked, "How much do you know about engineering?" students rated their self –knowledge as significantly higher after attending a "Day on Campus" (Darby & Bland, 1994).

This study has followed techniques and advice from the previous UC Davis study. During the opening session of camp, the participants completed a Lykert-type survey pertaining to their knowledge and interests in technology prior to any camp activities. Participants then completed the same questionnaire at the conclusion of camp. The survey was examined to determine if a difference was made in participant perceptions during the course of the camp.

Population and Sample

Each camp consisted of 7-18 high school females who attended one of the two technology camps. While no one was excluded from attending the camp, high school female cheerleaders were the target populations. For the TEAM camp, three hundred brochures were sent out to females in the Purdue University database who labeled herself as a female with an interest in technology. The 200 Cheerleading in the Classroom brochures were targeted more specifically to females who labeled herself with an interested in cheerleading or dance. Thirty packets accompanied by brochures were sent to Indiana and Illinois cheerleading coaches. Phone calls were made to schools within the 200-mile radius of Purdue University. Packets were sent out to the schools that answered their phones and provided a current address for a packet to be sent. Information was available online making both camps accessible to any interested student.

Data Collection

The survey was distributed to participants of two separate summer programs at Purdue University, TEAM, and Cheering in the Classroom. The data was collected through the use of a Likert-type survey instrument. An alphanumeric code was assigned to both the pre and post camp questionnaires to identify all participants. Numbers were assigned, replacing participant's names, to protect the identity and confidentiality of the participants.

Demographic information

Participants were first asked to include basic demographic information through thirteen questions. The demographic information provided was hometown and state, gender, year in school, favorite classes in school, plans for highest degree of education, plans to major in a technology field, knowledge of women working in a technical field, plans for their own future job along with **what it is**, and if they personally know of anyone or females in that specific field, the steps to take to achieve their dream job, who influences their decision, what influences their decision, does their mother do scientific or technical work, and does their father do scientific or technical work.

Pilot Activities

Participants were asked to participate in multiple activities that were grounded in the area of technology, but had a cheerleading theme. One or two representatives from the different majors within the College of Technology directed each of the activities. Eight different activities were created exclusively for the Cheering in the Classroom camp. In the area of computer and information technology, participants designed digital cheerleading routines via computer using motion capture software and technology. Photos were edited using photo editing software in the computer graphics technology area. Participants designed and programmed an animated cheerleading pyramid using and programming animation software. In electrical engineering technology participants designed and created a choreographed dance that was performed by robots. Participants were given the opportunity to explore the mechanics of sound waves and amplitude through mixing music in GarageBand in mechanical engineering technology. In aviation technology participants applied the concepts of physics to cheerleading as they analyzed physics behind many different cheerleading tosses and jumps. And finally, participants learned about supply chain management by building, shipping, and selling a cheer item.

Data Analysis

Surveys were distributed to twenty-five female participants who attended a summer camp. Eighteen of the 25 females were studied at the TEAM camp and the other seven females were studied at the Cheering in the Classroom camp. Three of the participants in TEAM camp were not included in the study due to absent Internal Review Board (IRB) consent from a parent or legal guardian. Twenty-five surveys were completed and deemed valuable information for the study.

State of residence of the participants

Participants were asked to indicate in which state they resided. The majority of participants in both camps were from the state of Indiana. Indiana represented 72% (n = 13) of the participants for the TEAM camp and 71% (n = 5) of the participants who attended Cheering in the Classroom camp. Other states represented in the TEAM camp included: Michigan (n = 2, 11%), Kentucky (n = 1, 6%), Ohio (n = 1, 6%), and California (n = 1, 1%). Illinois (n = 2, 29%) was the only other state represented during the Cheering in the Classroom camp. Complete demographics of the represented home states for both camps are graphically displayed in Table 1.

Table 1
Current home state of the participants of the survey

TEAM

State	n	%
Indiana	13	72%
Michigan	2	11%
Kentucky	1	6%
Ohio	1	6%
California	1	6%

Cheering in the Classroom

State	n	%
Indiana	5	71%
Illinois	2	29%

Participant's grade level

Participants were asked to indicate which grade level they would be entering during the fall. More than half (n = 12, 67%) of the TEAM participants were entering into 10th grade in the fall. Almost half (n = 3, 43%) of the Cheering in the Classroom participants were entering 9th grade in the fall. A complete breakdown of the participants' grade level for both camps can be found in Table 2.

Table 2
Participant's grade level

TEAM

Grade	n	%
8th	1	6%
9th	5	28%
10th	12	67%

Cheering in the Classroom

Grade	n	%
6th	1	14%
9th	3	43%
10th	1	14%
11th	1	14%
12th	1	14%

Technology and Career Perceptions

The second and third portions of the survey asked the participants to rank various statements on a Lykert-type scale. The second section asked participants to respond to questions regarding their personal perceptions of technology. The third section tested the participants' knowledge of the 13 majors represented in Purdue University's College of Technology. Responses on the Lykert-type scale ranged from one to four. One represented "not true"; two represented "somewhat true"; three represented "true"; and four represented "very true." When evaluating the data, the researcher assigned the original number of one to four to each response to collect the statistical data. Statistical data for each question was calculated to determine the statistical mean, standard deviation and T-score. The statistical information was then used to evaluate each camp, compare the two camps together, and determine the effectiveness of each camp compared to each other.

Research Question #1
Did attending the Cheering in the Classroom or TEAM camp affect participant's perceptions concerning technology?

Technology Perceptions

Participants responded to the following statements on the Lykert-type scale: "I like technology," "I would feel comfortable in a technology field," "I would enjoy a future in a technology field," "I think technology is interesting," and "I think technology holds a bright future for me." Neither camp documented a statistical difference when responding to the question "I like technology". Cheerleading in the Classroom showed a decrease in the statistical mean on the post-test for the statement, "I would feel comfortable in a technology field" (T = .2229) while TEAM showed a small increase. Although there was an increase in the T-score, neither camp had a T-score that was large enough to be proven statistically significant. The statement, "I would enjoy a future in a technology field" (T =.6), had a greater increase for Cheering in the Classroom but was not enough to be deemed statistically significant. Between both camps, two statements did prove to be statistically significant. The statements, "I think technology is interesting" (T = 2.0857) and "I think technology holds a bright future for me" (T = 1.8601), were statistically significant for Cheering in the Classroom. For a complete breakdown of all the statistical data, refer to Table 3.

Table 3
Perception Statements of Each Camp

Perception Statement	Camps	Pre-Survey			Post-Survey			T-score
		M	SD	N	M	SD	N	
I like technology	TEAM	3.1	0.68	18	3.1	0.76	18	0.0000
	Cheering	3.1	0.90	7	3.1	0.90	7	
I feel comfortable with technology	TEAM	2.8	0.62	18	3.0	0.77	18	0.2229
	Cheering	2.9	1.35	7	2.7	1.11	7	
I would enjoy a future in technology	TEAM	2.7	0.67	18	3.0	0.78	18	0.6
	Cheering	2.1	1.21	7	2.6	0.98	7	
I think technology is interesting	TEAM	3.1	0.68	18	3.2	0.62	18	2.0857
	Cheering	2.3	0.76	7	3.3	0.95	7	
I think technology holds a bright future for me	TEAM	2.5	0.79	18	2.5	0.85	18	1.8601
	Cheering	2.1	1.07	7	2.9	1.07	7	

Research Question #2
Did attending the Cheering in the Classroom or TEAM camp increase participant's awareness of various college majors within the academic discipline of technology?

Participant's awareness of various college majors

The participants were asked to identify their awareness of the various college majors within the academic discipline of technology using the Lykert-type scale. Responses on the survey ranged from one to four. One represented "I have never heard of it," two represented "I have heard of it," three represented "I know a little bit about it," and four represented "I know a lot about it."

Of the 13 majors, all of the statistical means increased on the post survey from the pre survey for both the TEAM and the Cheering in the Classroom camp. During the TEAM camp, four of the 13 majors had means with a larger increase than the Cheering in the Classroom post surveys. Those majors included: Aviation Management (T = 1.50), Aviation Technology (T = 1.56), Industrial Distribution (T = 1.47), and Organizational Leadership and Supervision (T = 1.51). For data to be deemed statistically significant, the T-score was required to be equal or greater than 1.740. None of the majors proved to be statistically significant.

During the Cheering in the Classroom camp, 9 of the 13 majors had means with a larger increase than the TEAM post surveys. Those majors included: Aviation Flight Technology (T = 1.3077), Building Construction Management (T = 1.382), Computer Graphics Technology (T = 1.0954), Computer and Information Technology (T = 1.4491), Electrical & Computer Engineering Technology (T = 1.1225), Industrial Technology (T = 1.3638), Engineering Technology Teacher Education (T = 1.1533), Manufacturing Engineering Technology (T = 1.1045), and Mechanical Engineering Technology (T = 1.2767). In order for the data to be deemed statistically significant, the T-score was required to be equal or greater than 1.740. As with TEAM, none of the majors proved to be statistically significant. For a complete breakdown of all the statistical data, refer to Table 4.

Table 4
Perception of Each Major

Technology Major	Camps	Pre-Survey			Post-Survey			T-score
		M	SD	N	M	SD	N	
Aviation Management	TEAM	1.8	0.86	18	3.0	0.34	18	1.5
	Cheering	1.7	1.11	7	2.7	0.76	7	
Aviation Technology	TEAM	2.1	0.94	18	2.9	0.54	18	1.5556
	Cheering	1.9	1.21	7	2.1	1.21	7	
Aviation Flight Technology	TEAM	2.2	0.94	18	3.1	0.42	18	1.3077
	Cheering	1.9	1.07	7	3.1	0.90	7	
Building Construction Management	TEAM	2.2	0.55	18	3.2	0.54	18	1.382
	Cheering	1.7	0.95	7	3.0	0.82	7	
Computer Graphics Technology	TEAM	2.7	0.91	18	3.1	0.58	18	1.0954
	Cheering	2.0	1.15	7	3.1	0.90	7	

Computer Information Technology	TEAM	2.6	0.92	18	3.1	0.54	18	1.4491
	Cheering	1.4	0.79	7	3.0	0.82	7	
Electrical Computer Engineering Technology	TEAM	2.4	1.04	18	2.9	0.64	18	1.1225
	Cheering	1.7	0.95	7	2.7	1.03	7	
Industrial Technology	TEAM	2.0	0.59	18	2.9	0.73	18	1.3638
	Cheering	1.6	1.13	7	2.8	0.57	7	
Industrial Distribution	TEAM	1.8	0.86	18	2.9	0.73	18	1.4697
	Cheering	1.6	1.13	7	2.4	0.98	7	
Engineering Technology Teacher Education	TEAM	2.2	0.73	18	2.9	0.96	18	1.1533
	Cheering	2.0	1.15	7	3.0	0.82	7	
Manufacturing Engineering Technology	TEAM	2.2	0.99	18	2.7	0.67	18	1.1045
	Cheering	1.7	0.76	7	2.7	0.76	7	
Mechanical Engineering Technology	TEAM	2.5	0.92	18	2.9	0.68	18	1.2767
	Cheering	1.6	1.13	7	2.9	0.69	7	
Organizational Leadership and Supervision	TEAM	2.1	1.11	18	3.2	0.81	18	1.5133
	Cheering	1.4	1.13	7	2.3	0.95	7	

Research Question # 3
Did attending the Cheering in the Classroom or TEAM camp have more of an influential effect on the participants?

After analyzing the data, two items from the survey were determined to be statistically significant in having a greater effect on the participants during their respective camp. The items included: “I think technology is interesting” (T-score = 2.086) and “I think technology holds a bright future for me” (T-score =1.86). Both of the questions were statistically significant in favor of Cheering in the Classroom. Therefore, the researcher found Cheering in the Classroom had a greater effect on the participants than the TEAM camp. For a complete breakdown of each question and the statistical data, refer to tables 3-20.

Summary, Conclusions, and Recommendations

Currently, there are several programs that are focused on mentoring high school, undergraduate, and graduate students in the STEM fields. The majority of these programs are focused on retention of females who are successful in a STEM area of interest. Nationally, America has recognized the need to recruit and educate females in various technology fields. Traditional methods of recruitment have been in place for several years now.

Cheering in the Classroom was a non-traditional recruitment method that engaged middle and high school students in technology activities without having a prior interest in a technology-based field. The goal of this camp was to have participants leave with a greater knowledge and interest in a technology field from their arrival at camp. Through unique activities, participants were given an opportunity to explore all available technology. In a non-threatening environment participants utilized hands-on activities to simulate future job possibilities.

The purpose of this study was to determine the effectiveness of applying a previously related interest/activity to technology concepts. Due to the uniqueness and originality of this camp, the TEAM camp was used as a control group. Cheering in the Classroom was unique in that it applied a cheerleading theme to all activities. These camps were chosen for this study because of their shared goal to educate and recruit females into pursuing a technology major.

Conclusions

Statistical results found both camps to have had an overall positive effect on the participants. Due to the various sample sizes for each camp, in order to be deemed statistically significant a large increase in the post data was required to be noted in this study. Statistically, Cheering in the Classroom was proven to have had a greater effect in increasing participants' positive technology perceptions and awareness. Participants' interest in technology increased significantly after attending the Cheering in the Classroom camp. Participants also believed that they had a brighter future in a technology field and were more interested in technology after attending the Cheering in the Classroom camp. From this, statistical data has proven that technology related to a previous/current interest area can help to increase female's perception of technology.

Cheering in the Classroom gave the participants a unique experience to explore the various technology-related majors. With the cheerleading related activities, participants were able to relate technology to their own personal interest. The connection between technology and cheerleading was clear to the participants. The correlation aided the learning of technology for the participants in Cheering in the Classroom.

Therefore it is recommended that additional recruitment initiatives that capitalize on participants personal interests be created and these initiatives be further studied.

With the time constraints of the study, a long-term observation was not possible. The researcher recommended a study should be conducted to measure how effective the camps are several months after their conclusion. It is important to observe the participants' perceptions during their high school, college, and professional careers. The ultimate goal of the technology camps was to encourage participants to pursue a professional career in a STEM field.

Due to the limitations of this study, it is recommended that the study be replicated with the following revisions:

1. The study should be replicated with closer to 30 participants attending both camps.
2. The study should be replicated multiple times to evaluate the consistency of the camp.
3. An additional longitudinal study should be conducted in which the participants are observed during the following school years to determine what academic courses are completed.
4. A longitudinal study should be conducted that tracks participants to determine if they matriculate into a technology major.
5. A longitudinal study should be conducted that tracks participants to determine if they matriculate into a technology career.

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