PROBLEM STATEMENT

PROBLEM

How might we foster pre-teen girls’ natural interest in STEM through decreasing isolation?

Who:
The targeted subjects are pre-teen girls, ages 9-12, before gender identity and stereotypes intensify when they enter into middle school.

What:
Girls are underperforming, underrepresented and pushed out of STEM fields by gender identity and stereotypes. This problem includes three underlying obstacles inhibiting girls from pursuing STEM and performing well in competitive math and science environments: girls lacking role models in STEM, girls having a misconception of what engineering is, and girls being isolated and lacking confidence in STEM areas.

When:
The girls will begin the program from ages 9-12, but will be followed progressively throughout middle school and high school. While the problem needs to be first addressed before middle school, the full extent of the effects of the program will not be seen until the girls are further in their education and experiencing the competition associated with the fields.

Where:
To begin with, Girl Scouts of Greater Atlanta will be targeted in order to test the program locally. In the future, the program may branch out to other Girl Scout regions and beyond the Girl Scouts altogether.

Why:
By targeting girls at this age, they will be prepared to face stereotypes associated with STEM fields that they will likely encounter in the future, will perform better in competitive STEM environments, and will be encouraged and motivated to pursue their interests in STEM.

SIGNIFICANCE

The underperformance and underrepresentation of females in STEM derives from the perpetuation of the stereotype that women are “biologically inferior” to men in science and math. Data supports the notion that the cause of underrepresentation of women results from sociocultural factors, not biological causes (Ceci, Williams, & Barnett, 2009). Girls perform just as well if not better in a classroom setting in math and science. In fact, according to Dr. Valle, a professor in the Mechanical Engineering department and the director of the Women in Engineering program at Georgia Tech, the top performers in her class are consistently females. In fact, girls who believed this stereotype performed worse compared to girls who did not hold this belief. This supports the idea that negative mentalities correlates to negative performance, which can be detrimental to a girl’s success and confidence (Beilock, Gunderson, Ramirez & Levine, 2010).

One of the most significant negative performances is the impact on standardized testing. In fact, more males than females score in the top percentiles of the SAT and ACT (Ceci, Williams, & Barnett, 2009). In addition, females fall behind males on mathematics SAT scores by as many as 35 points, a gap that has only decreased by 3 points within the past decade (Good, Aronson, & Inzlicht, 2003). These “gatekeeper tests” are a key aspect in of a college application. Many schools currently use the ACT and the SAT as “weed out” for their applicant pool. Because of their underperformance on the math and science portions of standardized testing, girls who aspire to attend tech schools and want to become engineers face an unfair disadvantage. This limits the number of girls at top tier engineering universities
and colleges. A college rejection is defeating for girls, and can dissuade them from pursuing a STEM career, regardless.

A combined cause and effect of the stereotype and the lower test scores is that females feel isolated. Females struggle with pressure to represent their gender when it comes to STEM. A study by Gunderson, Ramirez, Levine & Beilock in 2010 showed that boys believed more in the incremental theory of knowledge, that knowledge and brain capacity is malleable and can be added onto, and the girls more in the entity theory of knowledge, that one is given a set amount of knowledge and brain capacity. This, in combination with the pressure, makes girls feel as if they must perform the best level possible to be successful in STEM. This is not necessarily true, and so when they do not perform perfectly, girls are discouraged heavily from continuing with it. Once again, this creates a lack of confidence and perpetuates the incorrect stereotype.

When discouragement happens, numbers of women in STEM begin to fall. This leads to only a few females pursuing STEM, and even fewer at the top positions. This is a critical problem because women possess the same amount of innate potential as men, but are not reaching the same heights. What’s more, with fewer females in the STEM community, other females lack role models and a community to thrive off of. Without mentors and support, feelings of isolation continue, leading to one giant cycle.

STAKEHOLDERS

**Young girls currently interested in math and science:**
A recent study found that in fourth grade, 66% of girls and 68% of boys reported liking science. However, by the time these students are in eighth grade, boys are twice as likely to report liking science. These four years, filled with gender intensification fueled by stereotypes, cause these to lose drive in math and science. Why are girls changing their minds? Interests and careers in STEM are associated with males and girls often feel out of place or discouraged when surrounded by males. Media portrays these as male dominated fields and women who are in them as nerdy or unhappy. These fields as labeled as “male,” and girls become discouraged, isolated, and less confident in their skills because of their gender. They stop following STEM paths, and therefore, do not pursue STEM careers. These girls are giving up larger potential salaries and jobs they may have excelled in (National Science Foundation, 2007).

**Companies:**
According to Business Insider, the gender disparity in the careers hurt the Tech companies themselves. A study by Deloitte showed that “women’s choices impact up to 85 percent of purchasing decisions. By some analyses, they account for $4.3 trillion of total U.S. consumer spending of $5.9 trillion, making women the largest single economic force not just in the United States, but in the world.” Therefore, a representation of this huge economic power would massively benefit companies (Khanna, 2013).

**Women entering the job market:**
STEM fields, particularly computing, are among the fastest growing job sectors in the country. At current graduation rates, only 30 percent of the jobs created by 2020 can be filled with U.S. computing graduates. This will create an excess of jobs to computer science graduates that can’t be filled by women who decided against STEM fields due external factors earlier in their lives. This means these girls will be missing out on the high salaries and range of opportunities associated with these fields (Khanna, 2013).

**Everyone:**
Those in the STEM fields play a huge role in shaping the world around us. When girls are discouraged from following these paths, essentially half of the population’s potential is being cut from these fields. A woman’s perspective is being lost in these fields. For example, early voice-recognition systems were
calibrated to typical male voices. So, when they were released women’s voices were essentially unheard to the products. Similarly, the first airbags were created by men and tested on dummies that resembled the typical male body. Because of this, avoidable deaths to women and children ensued. The potential for cures, new products, and new breakthroughs could be lost because a female students decided not to pursue math and science based on her gender (Corbett, 2011). In February of 2013, President Obama said, “One of the things that I really strongly believe in is that we need to have more girls interested in math, science, and engineering. We’ve got half the population that is way underrepresented in those fields and that means that we’ve got a whole bunch of talent ... not being encouraged the way they need to” (Office of Science and Technology Policy, n.d.).

**CONTEXT AND EXISTING SOLUTIONS**

The aspect of our problem space we are focusing on pertains to the physical environment where girls are exposed to STEM. Within the classroom, girls face a multitude of barriers when they are exploring STEM-related disciplines. For example, math anxiety is a common phenomenon observed in female primary and secondary teachers, and this disproportionately affects young girls because at that age, children relate to teachers of their same gender. Thus, if a girl is taught math by a female teacher who doesn’t believe she is skilled at math, the girl will subliminally begin to believe that math is not something that she (or women in general) are proficient in (Beilock, Gunderson, Ramirez, & Levine, 2010). By adopting this stereotype, the girl is falling prey to the stereotype threat, which has been shown to translate into an actual deficit in math performance. The stereotype threat (which maintains that if a girl is told she is not good at math or science, then she will perform worse in that subject) is most effective when the girls are in a mixed-gender environment, but research has shown that the deficit does not exist when a girl is in an all-female environment (Huguet & Regner, 2007).

This is where our solution intervenes. More than just the stereotype threat manifests itself in the average fourth and fifth grade classrooms, such as a lower inclination of teachers to praise and remediate comments made by female students, and subtle communication of lower academic expectations of boys and girls (Dee, 2010). These issues all pertain to the environment, so we have decided to change the environment girls are in, which will hopefully increase their performance. Similar projects at high schools, universities, and corporations have been developed that address the same intervention. For example, Tulane has a program called GIST (Girls Interested in STEM at Tulane), which allows 5th-8th grade girls to tour laboratories and attend information sessions hosted by faculty and students (School of Science and Engineering. n.d.). Larger corporations have outreach programs as well, such as the Lockheed Martin Girls Inc. program, which exposes girls to various STEM fields through workshops where they complete activities involving programming and other science projects. For their 12-14 year old girls, they have a Thinking SMART program where they work alongside industry professionals in the STEM fields, and the professionals themselves plan the program (Chen, Weiss, & Nicholson, 2010). Georgia Tech has a program called GEMS (Girls Excelling in Math and Science), where girls from Inman Elementary gather once a week to do various science activities.

All of these programs are similar in that they take girls from a male-dominated arena and bring them to a feminine space. Each of these programs claims to be effective in educating girls, and the girls report having a greater interest in STEM disciplines. The Lockheed Martin program is the most intensive of the programs mentioned. It is a multi-year program where mentors work with girls in their area (specifically underrepresented and low-income) and educate them in many areas outside of STEM as well. As they move along the five-year program, the girls are placed in internships at locations nearby, participate in college visits, workshops, and learn technical skills. It’s an all-encompassing program that is very successful with college placement, but the program is limited in that the success is determined by
the strength of the local network. The chapter they highlighted on the website was located in Oakland, CA, which is surrounded by more affluent neighborhoods and thus has access to a stronger network of mentors who have the resources to make the most out of the program. Without these resources, it would be difficult for the students to have the educational tools and the same exposure to industry jobs. Our solution addresses this issue by creating a network of girls and mentors on an online platform, so if a girl cannot travel and intern at a certain location, she can still observe what other girls did when they upload a video diary, make a post, or participate in other virtual interactions.

Another attempt at a solution we discovered was a virtual game called “Click!” directed at middle-school aged girls, created by researchers at the University of Pittsburgh through a Carnegie Mellon design team. The girls chose teams of their friends to apply for the game, and then competed in this virtual-reality while having in-person workshops to learn about engineering techniques that they would be able to apply in the online game. While extremely successful, as measured through a pre- and post-test and now extended as an annual summer camp at a local science museum, the study itself argues that “games alone are not sufficient to lead to interest and learning” (Giarratani, Parikh, DiSalvo, Knutson, & Crowley, 2011). Other inadequacies of the solution are the limit of its scope, only addressing a select handful of girls in the Pittsburgh area, and the inability to measure continued impact and success as the girls enter high school.

These collegiate initiatives are effective at generating interest and allowing girls to experience a taste of the real-life atmosphere, but what they lack is consistency. In most programs the girls attend workshops for a few days, tour laboratories and maybe observe a class. These experiences are eye-opening and exciting for a while, but they do little to cultivate technical skills and sustain interest once the program ends. What makes our solution more effective is that we integrate a pre-existing social group (the Girl Scout troop) and consistently expose them to new aspects of STEM over a period of time, so that the girls aren’t taken out of their comfort zones, which can make the girls less receptive to the activities and STEM as a whole. We are hoping to bring math and science to an already feminine realm, rather than take the girls to math and science, ultimately enhancing learning through presenting a new stimulus of a STEM focused virtual community in a familiar environment (Lubow, Rifkin, & Alek, 1976). We are also planning on making our solution progressive, in order to track progress from initiatives aimed at fourth and fifth graders to understand the impacts at the high school level, when a lack of confidence transitions into underperformance, which transitions into underrepresentation. Through partnering with the Girl Scouts, we will have a nation-wide organization to implement our solution.

WHY IT’S STILL A PROBLEM

In exploring our problem space for this project we have consistently found that there are three underlying obstacles inhibiting girls from pursuing STEM. Girls are lacking role models in STEM, girls have a misconception of what engineering is, and girls are isolated and lacking confidence in STEM areas. The problem is not solved because people are not working to focus on one of these key areas, which are each very difficult to work on.

Early in our project, we found that girls, regardless of other demographics, consistently were subject to lower confidence in STEM fields. The fact that in most cases females scored just as well as their male counterparts notwithstanding, societal factors that begin in early middle school can begin to dissuade females from exploring their interests within STEM. This causes them to question their ability to succeed within those fields, and be scared of pursuing them. As a result, a bevy of future scientists and engineers is stopped before it even starts and females who could excel in those fields are instead stuck trying to find a fit for college majors, and then careers, that may not exist outside of STEM. From a pure utility standpoint this result seems nonsensical because it under-utilizes half the population;
however, on a human level, it goes beyond utilization, it becomes a matter of empowering the part of the population who has these interests (Niederle & Vesterlund, 2010).

We have found that at the age of nine through eleven girls are the most open to exploring new ideas and are most prone to getting enthusiastic about STEM fields (Good, Aronson, and Inzlicht, 2003). After this age girls get discouraged from studying STEM increasingly as they get older. By the time girls get to high school they already have a lack of confidence in their abilities and are less likely to pursue a STEM field. It is so important to target girls at this young age to spark their interest for STEM fields so as they are put into competitive environments as they get older they have confidence in themselves and believe that they can do just as well in STEM as boys can. One reason this problem is not being solved is because many groups are creating programs and encouraging high school girls to go into STEM. If you break down this problem and look at the root causes one will find that the underlying problem starts when girls are young. If you do not encourage them to be confident and pursue math and science then they will be less likely to change their mind in high school. Dr. Valle, a mechanical engineering professor at Georgia Tech, noticed that girls were more open to exploring math and science at a young age.

Women in Engineering at Georgia Tech is impacting younger girls now by introducing them into STEM and then keeping up with the girls through high school to see if they pursue a STEM field. High school programs should be about mentoring girls once they are interested in STEM and the initial time a girl is introduced into STEM should be at a younger age (C. Valle, personal communication, January 14, 2015).

This problem still is not solved because younger girls are left lacking confidence and are isolated in engineering. If a younger girl is convinced to explore a STEM field then she must face the many obstacles that come with that pursuit. She will be one of the few girls in her math and science classes and in her field when she gets a job. She will have to face sexism that does occur in the classroom and workplace too. This problem has not been solved because people have not worked as hard on engaging younger girls before they are pressured to be “pretty and ditsy” around middle school. If more girls are encouraged to pursue STEM together then they will not be as isolated. Solutions to engaging girls in STEM should focus on a community aspect. If girls support each other in STEM then they will be more likely to stay in the field (C. Valle, personal communication, January 15, 2015). The focus needs to be on getting girls to pursue STEM together. This also incorporates the idea that women are known to compete with each other and with men for the top spots. If women were to work together to add additional top spots instead of tearing themselves down then they would not feel as isolated in STEM. Ultimately, solutions need to focus on decreasing isolation and increasing confidence in young girls. This also ties into the idea of increasing access to female role models in STEM.

Many organizations and programs have created sessions where girls can hear from a woman who is working in a STEM field, such as the Girl Scouts of America’s current STEM Expo (B. Messer, personal communication, March 5, 2015). While these programs have made some progress they may not be as beneficial as if a girl had a mentor or role model closer to her age. The problem of girls being underrepresented in STEM is partly due to a lack of role models. If solutions to this problem provided a girl with access to someone who could show her how great it would be to be a woman in engineering as a college or high school student this would be more relatable to younger girls. Solutions need to help girls feel comfortable pursuing STEM. Many girls also lack parental guidance for pursuing a STEM field, while the majority of women in STEM have had a parental figure involved in STEM (Modi, Schoenberg, Salmond, 2010).

A parent’s attitude about math and science really affects if their daughter gets involved in STEM activities. We found that if a parent lacked confidence in him or herself in math and science then they are less likely to support their daughter in STEM (Yee & Eccles, 1988). We would like to get parents involved with their daughter’s pursuit in STEM. If parents realize how important math and science is and are prepared to help their daughters explore STEM then girls are more likely to succeed in the field. In the future they will believe that they can do well in STEM and therefore help their daughters pursue
their potential too. This would start a cycle of parent involvement in helping their children explore careers in math and science. This will ultimately prove more beneficial to everyone because more students will explore STEM fields and improve our society in the future. Without parental support girls have a major obstacle in their way to pursuing STEM. Solutions should be focused on including parents in the process of engaging girls in STEM fields (C. Colatrella, personal communication, January, 2015).

To conclude, one of the major reasons for girls under representation in STEM is due to lack of role models. A parent’s lack of knowledge and encouragement about STEM hinders their daughter and leaves them without a role model or encouragement to go into the field. At the same time girls need someone closer to their age who can guide them into what could be their near future. Both of these obstacles are reasons that this problem is still not solved.

The last main obstacle that inhibits girls from pursuing STEM is their misconception of what engineering actually is. Dr. Valle mentioned a study where young girls were asked to draw what engineering was. Girls drew men in lab coats and men building bridges. Girls are raised to believe that engineers are nerdy people and mostly men. They often believe that girls are not pretty and smart. Television shows such as the Big Bang Theory show that girls who study STEM are nerdy, quirky, ugly, and weird. On the Big Bang Theory, the pretty girl is supposed to be dumb and the smart girl is ugly and awkward. To solve this problem a solution should incorporate teaching younger girls that women in STEM are feminine and beautiful. Additionally, many people in society have a perception that engineering is not creative and fun to work on. Therefore many girls are raised to believe this as well. If young girls could be taught that engineering improves their daily lives then they would be more engaged in it. If they see how people working in STEM developed the products they use on a daily basis, such as lotion or conditioner, then STEM will become more applicable and personal to them. However, changing a stereotype of a society is very difficult. Many adults in society still believe STEM is nerdy and not engaging. If younger girls were taught and shown otherwise this could be avoided (C. Valle, personal communication, January 14, 2015).
GOAL

One major problem in our problem statement is that girls are isolated in math and science. To decrease this isolation we hope to create a community where girls can build each other’s confidence and interest in math and science. Ultimately, we hope to work with Girl Scouts of America to create a community where a college student could mentor a troop and engage girls in person. The mentor would create an environment in person that fosters girls’ interest in STEM by engaging the girls in activities to participate in with each other. This would decrease isolation because the girls could grow with each other while also having a role model to show them how engaging STEM can be. We hope our solution will build upon the existing community for young girls and turn it into a place where girls can support each other in their pursuit of STEM.

OBJECTIVES

The first objective will be to find a source of mentors that are willing to “adopt-a-troop”. This can be done through two methods. One option is to create a new on-campus organization whose sole focus is to develop and maintain this mentorship program. In terms of membership, our team members would be founding members, and recruitment for the program would be done by reaching out to girls on the campus currently. A benefit to this approach is that the program could be given individualized attention. A challenge with this is that the creation of an entirely new organization is that it somewhat redundant, because one or two organizations currently exist that focus on girls in STEM, such as SWE or WIE. Working with one of these programs would benefit us, because it provides us a potential mentor pool that is already interested in STEM outreach. In addition, partnering with one of these organizations allows us to use their logistics and existing influence on campus, so that we do not have to worry about those issues. Analyzing the costs and benefits of either option will help us determine the best approach for our goals.

The next objective will be to determine the content for the “adopt-a-troop” program. As college students, we do not fully understand things that appeal to the demographic we are addressing. One key task will be to sit down with a focus group of girls and note their likes and dislikes regarding STEM and their reactions to leaders and different personalities. This will help structure the program and types of activities that will be incorporated, so that it appeals to the younger crowd and takes into consideration their preferences. In addition to this, we must define the duration of the program, as well as how often the troops and mentors would meet over the course of the program. We have met with the Girl Scouts of the Greater Atlanta Area and they are willing to provide us access to their troops as our focus groups. This is very helpful, because on the onset of our solution, we want to start small and expand the network beyond the Atlanta region if it achieves success here. The troops will also be a great liaison to reach parents and to address their take on STEM and their daughters, so we must address the extent of parental involvement. The amount of parental involvement is tied into how much of the STEM exploration will be done when the mentor and troops meet and how much will be done outside. That is another concern to be addressed. Once again, the focus group will help us achieve this.

Additionally, another objective is to determine a method for our community to be progressive in that girls will remain involved, encouraged, and motivated after the initial mentorship curriculum. Our mentorship program will be directed at 9-12 year olds within the Girl Scouts, yet we will not see results or be able to determine the success of the program until these participating girls reach high school and must perform in competitive math and science environments. Along similar lines, we also need a means to track the success of our program. Therefore, it is necessary to arrange meetings with other organizations that have developed methods to track similar information over large time-spans.
However, we anticipate a problem in determining the extent of the effect of our program since we cannot know what the involved girls would have done had they not been involved.

Another objective is to determine the best strategy to interest and maintain interest for girls in our program. This will require a method such as surveying to gauge what the girls, troop leaders, and parents like or dislike, to determine mentor approval of the program, and to rate potential perceived effectiveness of the mentorship program. We want to ensure we do so periodically, also formulating a way for these girls and other people involved in the program to be able to voice opinions and suggest ideas. Additionally, we will need to develop a method to analyze the results of these surveys and to implement suggestions into the program for the future.

In order to evaluate our proposed ideas, we will also need to develop an experiment that tests the program and interaction with the Girl Scouts. This objective will allow us to determine what may cause problems in the program, what is working well, and improvements that can be made. Even more, it will allow us to test the exchanges between troops, mentors, and parents. Conducting an experiment that reflects our planned programming, evaluating the results, and adjusting accordingly, will allow us to develop an even stronger curriculum and overall solution.

**RESEARCH TEAM**

Our team will consist of the following members:

- **Head of relations with the Girl Scouts and other outside advisors and contacts**
  - Addresses the objectives of finding a source of mentors, of modeling a progressive system, and of developing an experiment for the mentorship program.
  - Spokesperson for the team; speaks for Team Girl Power to officials, advisors, and key contacts.
  - This person must be comfortable reaching out to sources who may contribute to our success. This person should be persistent, as well as timely and reliant in responding. They must be able to relay Girl Power’s goals and project in a way that positively represents the team, while encouraging outside sources to contribute.

- **Heads of designing the program, developing activities, safety, and parental involvement (2)**
  - Addresses the objectives of developing the content of the mentorship program, of modeling a progressive system, and of developing a method to measure progress and success.
  - In charge of research and development for the actual activities done with the troops. These heads will also be in charge of relations with parents and guidelines for interaction with the troops.
  - These members must be willing to carefully research and test activities and past programming that has been done to encourage STEM. They must be able to converse with the troop leaders, the scouts themselves, and parents. This person should be outgoing and comfortable talking to children, college students, and adults. They must be understanding and patient in order to ensure that activities are accepted by the scouts, troop leaders, and parents. More, they must be willing to continuously reevaluate and update activities.

- **Head of recruitment and relations with the role models**
  - Addresses the objectives of finding a source of mentors and of developing a method to measure progress and success.
  - In charge of the recruitment and evaluation process for college students who will role model. Leads recruitment, application, and selection process.
- **Proposed Work**

  - This person must be very friendly and willing to put themselves out there for the benefit of Girl Power. They must have an active presence in the community, as well as organized so that recruitment is effortless and mentors do not feel unwelcome in the program.

  - **Creative head**
    - Addresses the objectives of developing the content of the mentorship program, of finding a source of mentors, and of developing an experiment for the mentorship program.
    - Ensures that materials, activities, shirts, etc. are visually appealing, useful, and professional.
    - This person must be a creative thinker, as well as have graphic and visual design skills. They must be reliable and willing to take constructive criticism.

  - **Head of meetings, timeline, and progress checks**
    - Addresses the objectives of developing the content of the mentorship program, of developing a method to measure progress and success, and of modeling a progressive system.
    - Ensures that work is being evaluated and changed so that progress is continuously made. Organizes team meetings and updates. Tracks and records progress, problems, and future goals.
    - This person must be very organized and timely, to prevent chaos and lack of coordination amongst all the parts of the team. They must also be a natural leader, passionate about the program, and be realistic about goals the team has and potential problems that may occur as they are essentially overlooking the logistics of the entire program. In addition, they must be a good listener, yet willing to make final decisions.

**Advisors:**

Our committed partner from the Girl Scouts side of operations would be Beth Messer, who is the director of the Girl Scouts of Greater Atlanta chapter. We have met with her and have talked to her about our problem space and potential idea for a solution, and she is extremely willing to help in any way she can and provide us access to the troops throughout northern Georgia.

**Timeline**

**Summer 2015:**
- Determine content of mentorship program through discussion with members and parents involved with the Girl Scouts of America.
- Develop experiment to initially test mentorship program.
- Receive IRB approval.

**Fall 2015:**
- Recruit Girl Scout troops as part of the experiment and implement experiment.
- Develop method to recruit college-aged mentors.
- Determine method to measure success of in-person interactions between each troop and a college-aged female role model.
- Determine method to develop a progressive tracking system for the mentorship program.

**Spring 2016:**
- Analyze results of experiment and make adjustments to proposed mentorship program content.
- Finalize details of mentor recruitment, of a method to measure success, and of a progressive tracking system.
• Develop a second experiment based upon results of initial experiment.

**Summer 2016:**
• Implement a second experiment to determine progress and success
• Make updates to program based on experimental findings, feedback from troops, role models, and parents, and continued research.
• Depending on progress, consider initial implementation and expansion of size and reach of program.

**BUDGET**

**Materials and Supplies:**
While building a relationship with the Girl Scouts, we need materials to do experiments with the troops to test initial engagement. However, some of this cost can be offset by the Girl Scouts’ willingness to help fund our cause.

**Equipment:**
While uncertain now, it will be based upon the content of our program. We do expect to have some sort of technology incorporated into our curriculum since STEM is a focus, but no more than personal laptops or tablets.

**Services:**
There is a potential to need funding for the startup of a new organization on campus. This includes any fees associated with becoming and organization. In addition, there is a potential for fees for online resources used in the activities, or any field trips that are taken.

**Travel:**
During experimentation, some of the team members will be traveling to the Girl Scouts in order to begin researching and building relationships with our eventual users. These trips can be driven, so gas would be the main cost. Transportation would also be a factor for field trips associated with the mentorship program and for mentor transportation to troop locations.

**EXPECTED OUTCOMES AND FUTURE DIRECTIONS**

In order to decrease the isolation experienced by girls naturally interested in STEM, Team Girl Power is striving to utilize role models in developing girls’ budding aspirations. By partnering with the Girl Scouts of America, the team is targeting fourth and fifth grade girls in order to counteract isolation before it intensifies.

The team hopes to design and maintain a program to enable college-aged female mentors in STEM to “adopt-a-troop.” With this, the team hopes to provide the girls relatable role models and promote mutual support amongst the scouts, fostering their natural interest in STEM. However, by the end of the project, whenever that occurs, we reasonably expect to have exposed and encouraged girls, at least in our local area, to pursue their interests in STEM, hopefully to the point that some pursue STEM fields in college in large part because of the support they received via our program. This will combat the problems of isolation and lack of role models that perpetuate their decreased confidence.

As far as resources and partners, the Girl Scouts will be our primary organization. They have offered us finding, space, and any number of Girl Scout Troops with which to begin to implement some of our ideas, including the in-person mentorship program. While it would be possible for us to expand the program to other female positive small communities, such as certain after school programs, starting small with the Girl Scouts will greatly improve our efficacy. However, when and if our program grows larger than the immediate area, we will also need to establish and maintain relationships with the
women in the engineering departments of other universities. Whether done via pre-existing organizations (such as SEE) or independently, these tires will allow us to bring the mentoring part of our solution to a wider audience.

To further build upon the content and structure of the program, a technological aspect could be potentially introduced, such as an interactive website or app that coordinates with the program. This would enable better communication between mentors and troops and connect the participating Girl Scouts to other resources outside of the mentorship program. In addition, it emphasizes the importance of technology and could help keep the program relevant for the future.
REFERENCES


