



STEM
Florida



**The Motivations Behind Students
Pursuing STEM Majors**

Formative Research Results and Evaluation Report

**Research conducted by Alpha PRoductions
Micana Gallaway, Roberta O. Roberts, Katherine Shearouse
7/26/2010**

Table of Contents

Executive Summary.....	2
Situation Analysis	3
Subject Audiences.....	3
Objectives.....	4
Strategies and Tactics	5
Methodology/Sampling Approach	6
Quantitative.....	6
Online survey	6
Qualitative	7
Focus groups.....	7
In-depth Interviews	8
Data Analysis Procedures	8
Limitations.....	8
Online Research Findings	9
Findings	9
When did students become interested in STEM studies?	9
What encouraged students to pursue/choose STEM majors/careers?	9
Who or what influenced you to pursue a STEM major/career?	9
What discouragements have you encountered while pursuing a STEM major/career?	11
How to turn a seed into a STEM.....	12
General Thoughts	13
Focus Groups and In-Depth Interviews.....	14
Findings	14
Factors that contributed to your decision to choose a STEM major	14
Factors that excites and motivates you to stick with the challenging class work required for your major... ..	14
How to encourage middle and high school students to pursue STEM fields	15
General Thoughts	16
The importance of teachers, opportunities and the school system.....	16
The relationship between creative arts and mathematics.....	18
Overall Findings	18
Timeline.....	19
Evaluation.....	20
Conclusion.....	21
Appendix	22
Social Media/Publications.....	23
STEM florida Research Survey.....	25
STEMflorida Focus Group Questions	30
Qualtrics Online Survey Report – Raw Data	31

Executive Summary

The STEM council, funded by a \$580,000 grant from Workforce Florida, was created to connect business, education and the workforce of STEM-related industries. STEM is an acronym for the science, technology, engineering and mathematic fields, and these are innovative skill sets that are in high demand in Florida in part to better Florida's economy. **STEM**florida plans to launch its "Get Into Energy" high school multimedia competition in June 2011. This program aims to develop Florida's future workforce and enable students with the knowledge and opportunity to pursue STEM-related careers. STEM businesses are not acquiring the people they need, and graduates are not pursuing careers where there are available jobs that can build Florida's economy, especially in the science and math fields. Based on the information provided, Alpha PProductions researched students' decision-making processes who choose to engage in STEM careers.

Alpha PProductions contacted and connected with professional STEM-related University of Florida organizations along with statewide organizations at other university institutions, also affiliated with STEM studies, to disseminate surveys. Alpha PProductions found participants for the focus groups and in-depth interviews on the University of Florida campus using the Gator Times publication, Facebook and viral marketing, based on the target audience selected consisting of undergraduate students. The team used an online survey, provided by Qualtrics survey software, to research undergraduate students around the state. The goal was to understand why students were influenced to take the more difficult courses in order to apply themselves in STEM fields, what encouraged them to choose these majors, what were their motivations to stick with the programs and what helped to make the programs work for them. In addition, the team examined the kind of messages that resonate with the people connected to STEM fields to identify the messages undergraduate students would give to high school and middle school students about STEM-related industries today.

In order to achieve this goal, the Alpha PProductions team conducted focus groups, surveys and in-depth interviews to reveal the motivations behind desiring and continuing STEM education, and later on, a career in STEM-related fields. The reoccurring topics discovered through research were the following:

- Students felt they were good at math and science
- Students started deciding what they liked to do in middle school and most already disliked some subjects by high school
- Students need fun, hands-on activities to remain interested in subjects
- High schools should improve the preparation of students for higher education and teach them how to learn rather than just memorize facts for an exam
- Magnet schools and advanced classes help
- Students noted they like the feeling of challenging themselves
- Teachers
 - Bad teachers ruin STEM classes (and other subjects) for students
 - Teachers with a degree in the subject taught it better
 - Teachers need to care and push students, not undermine them
- There is a range of choices within STEM fields that are very extensive, but students don't realize that because STEM majors/careers are not very visible and when they are, people just talk about how hard STEM subjects are.

These topics fell into three main categories including teaching the teachers, engaging the students and involving professionals. The information collected from this research can be used to develop **STEM**florida's key messages to communicate with the overall initiative's target audience. The success of the **STEM**florida research will be measured based on the specific objectives. If the strategies and tactics are implemented as stated then the research can build a platform that will generate effective messages that best targets and encourages students to go into a STEM-related career.

Situation Analysis

In today's world, knowledge-based industries are becoming more and more important to the job market and economy of the state of Florida, creating a higher need for workers with strong skill sets in the STEM fields - science, technology, engineering and math. Studies show that 15 of the 20 fastest-growing fields require extensive knowledge of STEM subjects. While progress toward increasing STEM skill sets is being made in Florida's education system, many students in grades K-12 still perform below their grade level in math and science, and less students in Florida are enrolled in upper-level math and science classes than other states. Furthermore, Florida high school students outperform students in other states on Advanced Placement exams in every subject except math and science. It is *STEMflorida's* goal to change these statistics in order to create a viable workforce for jobs requiring STEM skills.

In order to do this, it is important to understand the motivations behind students who have chosen to pursue STEM fields by picking STEM-related majors and looking for jobs in STEM industries. This information will be invaluable to *STEMflorida* in developing strategies and tactics to encourage today's youth to gain interest in STEM topics and eventually choose STEM-related areas of study and career paths themselves. Alpha Productions understands *STEMflorida's* need for this research and was qualified and ready to engage in the work necessary to collect the necessary data. Our strengths in this endeavor have been that we have had open accessibility to the target demographic of undergraduate college students through the use of contacts at various networks of STEM students and the University of Florida and around the state of Florida. Also, with the help of *STEMflorida* contacts, Alpha Productions was able to research other university institutions in the state of Florida. We saw a huge opportunity in performing the research at some of the top universities in the state, given that these universities are among the top-rated schools for various STEM programs and attracts some the brightest math and science minds.

We realized our main limitation was that we had a short period of time to complete this research. Additionally, we recognized that the time period we performed the research in was not ideal; giving that it was during the academic summer term and around the time of exams, which could have decreased the number of, and discouraged, students from participating in our research. We are confident, however, that we overcame these obstacles and collected information that will be instrumental to achieving *STEMflorida's* goal of encouraging interest in STEM education and careers among today's youth.

Subject Audiences

STEMflorida's primary target audience for this initiative consists of middle school and high school students. For the purpose of this research, Alpha Productions' target audience for the focus groups and in-depth interviews was University of Florida undergraduate students in STEM majors, due to the convenient location of a physical presence on the UF campus. The target audience for the digital/online survey had a wider span, reaching out to other Florida institutions including the following:



Objectives

Objective 1:

To conduct focus groups/in-depth interviews among 50 STEM students by June 12, 2010, in order to extract qualitative data about their motivations for pursuing STEM industries.

- On the contrary to the other two objectives, Alpha Productions failed to meet this objective. Fifteen students participated in the week-long focus groups and our team completed only two in-depth interviews. The team believes this objective could have been met with more students on the college campus during the summer months and more time to reach out to the key public. Also, this can be attributed to schedule discrepancies interfering with attendance and the lack of incentives, such as monetary compensation.

Objective 2:

To conduct surveys among 300 STEM students by July 23, 2010, in order to extract quantitative data about their motivations for pursuing STEM industries.

- Alpha Productions met and surpassed this objective by attaining 656 total students who started, and partially answered, the survey and 454 students who completed the entire survey. Participants were targeted from around the state of Florida and their answers were compiled to provide generalized results explained in this report in the findings.

Objective 3:

To understand the decision-making process of 350 state of Florida students in the choice to pursue STEM industries by July 23, 2010.

- Alpha Productions met and surpassed this objective by reaching a total of 675 students and had the capability to analyze the decision-making process of 473 state-wide undergraduate students.

Strategies and Tactics

Strategy A: To conduct diverse quantitative and qualitative research in order to gain insight into the motivations of STEM students.

- **Tactic 1.** Conduct focus groups and in-depth interviews on the University of Florida campus.
- **Tactic 2.** Disseminate and analyze surveys among undergraduate STEM students attending Florida universities.

Strategy B: Utilize existing networks that hold value with STEM students to motivate them to participate in research.

- **Tactic 1.** The first step is linking up with point people within STEM student organizations, fraternities, honor societies and undergraduate programs. The main goal in this contact will be to establish an incentive system for members to participate in the research.
- **Tactic 2.** Attend meetings and encourage focus group and survey participation through a quick distribution and briefing.
- **Tactic 3.** Leverage list serves of groups in order to distribute focus group invitations and surveys.
- **Tactic 4.** Attend any pertinent group events that fall within the month of May to recruit focus group members and encourage survey participation.

Strategy C: Reach out to STEM academic programs and colleges in order to reach less active STEM students, who may offer a different perspective on their selection process.

- **Tactic 1.** Leverage academic list serves of specific STEM programs in order to disseminate focus group and survey information.
- **Tactic 2.** Post research invitations on the University-wide Gator Times e-newsletter, in order to reach students who may have solely pursued a minor in a STEM field. This also offers a broad audience that may have been neglected through other outreach efforts.
- **Tactic 3.** Publish research information through STEM college newsletters.
- **Tactic 4.** Briefly conduct surveys in STEM classes, with professor permission.

Methodology/Sampling Approach

The research project included a variety of quantitative and qualitative research methods such as an online survey, in-depth interviews and focus groups.

Quantitative

Quantitative research was used to yield statistically significant, representative, quantifiable results.

Online survey

A 44-question online survey was created and distributed using Qualtrics survey software. It remained open for seven weeks and one day. The survey included multiple choice, open-ended, ordinal and Likert scale question formats. The survey link was distributed via a Facebook event and all STEM-field related list serves at UCF, UF and USF. At UF this included STEM-related student organization list serves and students enrolled in the following colleges:

- Agricultural and Life Sciences
- Business Administration
- Dentistry
- Design, Construction and Planning
- Engineering
- Fine Arts
- Health and Human Performance
- Liberal Arts and Sciences
- Medicine
- Nursing
- Pharmacy
- Public Health and Health Professions
- Veterinary Medicine

The survey link was distributed via Facebook because Facebook has been found to be the most popular website among college students within the past few years according to Anderson Analytics GenX2Z Youth Research Initiative.

UCF, UF and FSU were chosen as the sample population for the online survey for various reasons, including:

1. **STEM***florida* has already established contacts at these three institutions
2. UCF, UF and USF are the three highest ranked schools in Florida in terms of enrollment
3. UF is a land-grant research institution, UCF is a space-grant institution and USF is ranked first in the state of Florida for research funding by the Carnegie Foundation for the Advancement of Teaching
4. Each institution has a strong math and science concentration

Qualitative

Qualitative research was used to yield rich, in-depth, personable data.

Focus groups

Four focus groups with a total of 15 UF STEM majors were conducted in a one-week span in early June. One moderator was present along with two note-takers and two digital voice recorders. Micana Gallaway, account director, served as moderator while Roberta O. Roberts, account executive, and Katherine Shearouse, account associate, served as the two note-takers. Participants received free pizza and beverages in exchange for answering six questions about their motivations for pursuing STEM majors. Focus groups ran an average of 30 to 40 minutes long. Participants were recruited via Facebook, Gator Times, the weekly e-mail sent directly to all UF undergraduate students, and various STEM-related list serves.

Besides the previously stated reasons, focus groups were conducted using UF students because:

1. AlphaPRoductions is based on the University of Florida campus so locations to hold the focus groups, moderators and note-takers and additional resources were more readily accessible at UF than any other institution
2. The focus groups had to be conducted in a short amount of time with limited resources and using the UF campus was most convenient
3. The research team resides in Gainesville, Fla., where UF is located

The focus group procedures were as follows:

Participant recruitment and confirmation

1. Send e-mail to various list serves, newsletters, Facebook, etc. asking for focus group participants
2. Record the names and stated dates of attendance of students who agree to participate
3. Send follow-up e-mail confirming the participant's attendance

Focus group set up

1. There will be six chairs placed in a circle in the middle of the room (chairs accommodate up to five participants and one moderator)
 - a. Digital audio recorders will be placed on a table in the center of the circle
2. A table with food will be located at the front of the room
3. Two chairs will be placed in two opposite corners of the room for note-takers/observers

Focus Group Process

1. As participants enter, have them sign in and give them the appropriate paperwork (consent forms) to complete
2. Collect completed paperwork from the participants
3. Have participants fill out and wear nametags
4. Invite participants to eat food
5. Have participants discard of food waste and sit in the circle
6. Moderator will introduce themselves and note-takers/observers will introduce themselves
7. Moderator will explain what a focus group is, lay down ground rules and encourage open, honest answers
8. Moderator will turn on audio recording equipment
9. Moderator will begin to ask focus group questions

In-depth Interviews

Two in-depth interviews were conducted in the same time span offering the same incentives. The interviews lasted about 15 to 20 minutes each. Each individual was asked a specific question and told to talk about whatever comes to mind. The moderator then asked additional questions depending on their answers.

Data Analysis Procedures

Online survey results will be recorded through Qualtrics survey software. Correlation coefficients, linear regression, descriptive statistics such as cross tabulation and frequencies, and other statistics were used to analyze quantitative data and determine relationships between variables. Audio from the focus groups, along with transcripts from focus groups and in-depth interviews, was analyzed by finding common, recurring themes.

Limitations

The limitations of this study include a significantly lower number of students physically enrolled in the summer semester available to participate in focus groups, a higher number of students not checking their e-mail regularly during the summer months, inadequate time to conduct enough focus groups, a lack of a personal presence at other state institutions and a delay with receiving research approval materials from UF's Institutional Review Board (which must be received before research involving human subjects may begin).

Additional limitations include a lack of monetary incentives for students, a variety of schedule discrepancies (such as other events were held at the same time as the focus groups), and some students who agreed to participate in the focus groups didn't attend the focus group they signed up for.

Also, out of the 656 students who responded to the online survey, 202 of them only partially completed the survey.

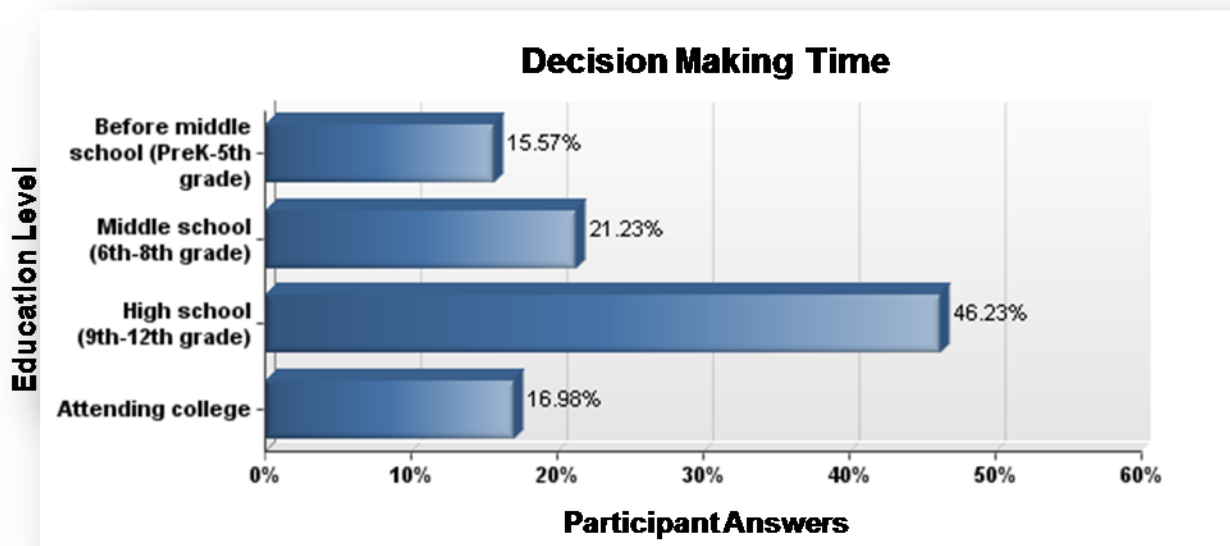
Online Research Findings

Findings

When did students become interested in STEM studies?

After conducting primary research through focus groups, in-depth interviews and surveys over a six week time period, several key messages appeared for the following topics below.

According to the online survey, 46 percent of participants stated they had decided they were interested in pursuing a STEM major and/or career in high school, grades nine through 12, and 21 percent of participants believed middle school was the beginning of their interest, as shown in the graph below.

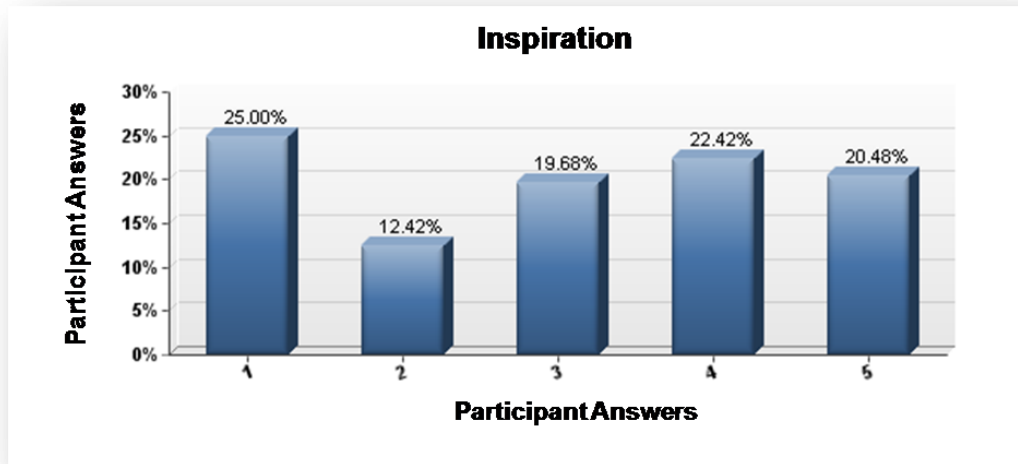


What encouraged students to pursue/choose STEM majors/careers?

Participants were asked what encouraged them to choose these majors and what factors contributed to their decision to precede in a STEM field. Eighty-two percent of participants noted the main contributing factor was that they excelled at math and science. Also, 73 percent of participants showed interest in STEM fields due to future employment opportunities in high demand occupations. Throughout the survey, job opportunity appeared quite often looking at future employment from all angles including, but not limiting to salary, placement and advancement.

Who or what influenced you to pursue a STEM major/career?

We then asked participants if there were outside influences in the decision to follow STEM studies, and if so, who or what were they? In the graph below, numbers show that there was no true one major influence only from teachers, classes and/or related experiences on participants decision making, and that it is in fact a series of influences that come together to inspire students in a collaborative effort.



X-axis above: This is a 1-5 Likert scale, 1 being that it played no role at all and 5 being that it played a significant role.

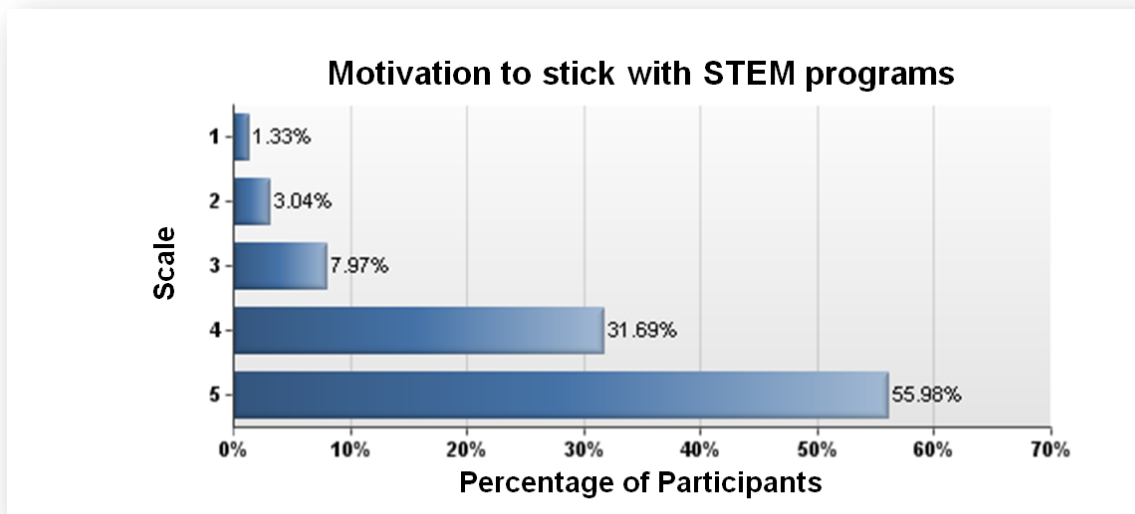
Twenty-five percent of participants stated that the selected influences provided in the survey question played no role in their decision to partake in STEM education, and around 42 percent showed that these influences were pivotal (ranking at a four or five) in their decision to pursue STEM. Those who expressed an influence aside from teachers, classes and/or related experiences, divulged sources such as family, the dislike of any other subject and an overall passion for STEM studies. Five to ten people mentioned that their families were part of these featured industries and that they were “born into it.” For some participants there was no other option but to go into a STEM career because that is all they have been familiar with and it has become instilled in them as a lifelong value.

Participants who spoke of teachers, classes and/or related experiences being a large influence, noted the use of direct applications and “hands-on” activities initiated the interest for the subject and made them want to learn at school and keep learning beyond that. Participants that attended schools that offered higher-level coursework felt a sense of self-fulfillment that was motivated by the desire to surpass expectations from teachers and reach their highest potential. The opportunity to take “harder” classes was challenging, and a few participants noted that the chance to have a passionate teacher along with the harder classes gave more incentive to absorb the material. Two other reoccurring suggestions were to involve more “field trips,” or tours, to STEM-related facilities and have more guest speakers from STEM industries visit middle and high schools to talk about what their daily schedule consists of and what students can look forward to with a future in STEM. Students reminisced about analytic and engaging games teachers used as demonstrations and this shows how the hands-on activities can stick with students and keep them engaged in a subject.

What discouragements have you encountered while pursuing a STEM major/career?

Alpha Productions wanted to study why students choose to pursue a STEM major/career, but the team also wanted to reveal what factors can discourage a student from entering STEM fields. Many of the participants stated their major isn't daunting and/or discouraging, that they are intrigued to challenge their intelligence and work through theories and mental exercises. Fifty-five percent of participants believed that the challenging coursework, the time required to work on that coursework and time studying for their classes has not been a discouragement to the progression of their education. Those that displayed factors they have discouraged them while in STEM studies wrote about the perception of intimidation that is partnered with studying STEM fields and the longevity of the scholastic curriculums with added financial struggles. When participants noted feeling discouraged the common anecdote according to the survey was the willingness to work harder and think about the outcome of receiving the degree. Apart from the few discouragements noted above, the majority of participants didn't appear to be discouraged by STEM programs or the work associated with these subjects.

Fifty-six percent of participants are motivated to stick with the program for the high-income opportunities following graduation. Eighty-three percent of participants ranked the ability to help people, and "make a mark," in people's lives drives them to stick with the programs and find outlets to make the program work for them. As shown below, 88 percent of participants stated (ranked four or five) that they enjoy the work required for their field, and exploring the intricate inner workings of their studies on a daily basis "keeps them going and wanting more" more than any other factor.



Y-axis above: This is a 1-5 Likert scale, 1 being that it played no role at all and 5 being that it played a significant role

Other topics that arose from the results included the comfort of knowing that there are jobs for graduates in their fields, especially with the current economy scaring students about job security and stability. Students noted that they now see the world in a variety of ways and they have a better understanding about "how the world works." Also, students felt that since they have come this far, they can't go back, but "that thought hardly crosses your mind when you love what you do."

In addition, the team examined the kind of messages that resonate with the people connected to STEM fields, and asked what type of messages college students would give to high school and middle school students about STEM-related industries today.

How to turn a seed into a STEM

In this portion of the survey, we had participants fill out text responses to gather detailed information. According to the online survey results, the initiative should first target each education level differently as all are important in the progression of turning students into STEM students, but along with the presentation of STEM field opportunity, the main factor is “talking about it [STEM] more.” Participants believed academia should “show them [students] early on, since middle school or high school, the panoply of careers that can be pursued with a STEM field education.” One student noted that having a “video game designer” be a guest speaker at a school could show students an outcome of pursuing STEM to the excitement behind STEM industries. Participants believed getting teachers more “up-to-date and relevant on issues like job variety and industry happenings” could help students reach deeper into their field of interest earlier on in life to create the “desire to learn.” Participants share the thought that the desire to learn comes from creating opportunities for children to learn how they learn best and then giving them materials to apply those learning skills.

A majority of students showed interest in aiding and providing teachers with the tools to become better teachers. Participants that had teachers who were passionate, experienced and/or had a degree in a particular STEM field made better educators and the students that had these types of teachers wrote about memories from specific activities from the classroom and field trips. A student who was inspired by his/her teacher stated the following:

“I was inspired to like mathematics in high school. My 11th grade math teacher was an aerospace engineer who loved math and science. He would always show us videos of rockets and talk about the type of work that he did. His enthusiasm inspired me to like math. I was in community college struggling with declaring a particular major when I thought about him. I remembered all the fun that I had in his class, and so I decided to research engineering. Until that point I had never realized how broad the field of engineering was. I had NO idea. After I had researched the field of engineering I became incredibly excited to join that major. I had a love for science and math, but I didn't want to be a 'pure' scientist or mathematician. Engineering opened my eyes to a field that I love. My high school math teacher inspired me to like math by showing applications of it, and by emphasizing that it was fun.”

Providing students with opportunities to take part in activities not only from a textbook, like the participant that “volunteered in a fossil preparation lab,” allows students to see an intriguing side of STEM. A participant remembering how he/she became a STEM student made the following quote:

“Started with a group project on Pesticides I had to do in my 8th grade science class. I then took an Ecology class in 9th grade and after reading *Silent Spring* by Rachel Carson, I knew I wanted to be an ecologist. I then had the opportunity to take an extracurricular course called Ohio Wildlife Field Studies that my high school offered where we did research on local flora and fauna. I also participated in a Marine Biology class that went to the Bahamas my senior year in high school. The wide range of life science classes offered at my school (and amazing science teachers) I left high school knowing there was nothing else I wanted to do but be an ecologist.”

The participant above had multiple opportunities to explore beyond the classroom, and participants who noted they didn't have field trips like they wanted, they stated it was clubs and organizations that ignited the passion to stick with STEM.

General Thoughts

This section contains quotes from participants that brought up themes that weren't in the majority of answers, such as family, social perceptions, memories and how they think students can be targeted.

"We had a guest student in my math class that was a civil engineer from the Florida State University that influenced me to get into civil engineering. Otherwise, I always like mathematics and engineering was a lot of math and how I could make money using math."

"I had a very good biology teacher in high school who encouraged me to pursue research. He sparked my interest in the subject through his own enthusiasm."

"Take the needs of these fields and connect students with them. It's simple. For example, the field of nuclear engineering is in desperate need of new students because a vast majority of the workforce in this field is approaching the retirement stage of their career. This provides a lot of opportunities for students to find a good, secure job. Just share what the industry is in need of, and how that need benefits these young students. They're bright; they'll make the connection."

"My father continually asked me what I wanted to be in life, since I was in elementary school till (sic) I left high school. I knew I was interested in computers, and I liked to know how they worked along with electronics. My dad's questions made me think about my future career plans which made me conclude on computer Engr (sic) & electrical Engr (sic)."

"My father was an engineer, he would teach me more advanced math or something about science every time I asked, when I was little."

"My father did not discuss any potential careers other than engineering or architecture. I was pressured to a technical degree because my family didn't value a liberal arts education."

"I chose to be a chemist because a few good teachers got me excited about it. Over time, I came to understand that I would be able to make a positive difference in the world while being able to provide for my family in a stable job market. My father was a mathematician, and his love of the subject made a very early impression on me."

"When I was 8 years old my dad took me to Kennedy Space Center, and I fell in love with NASA while I was there, and decided that I wanted to be an aerospace engineer one day, and haven't changed my mind since."

The quotes above were detailed and passionate and could provide valuable information, however, they also were not a part of the reoccurring themes found throughout both the quantitative and qualitative research.

Focus Groups and In-Depth Interviews

Findings

Four focus groups consisting of 15 undergraduate students and two in-depth interviews were conducted in the span of one week.

Factors that contributed to your decision to choose a STEM major

Focus group and in-depth interview participants discussed a variety of general and personal reasons for deciding to become a STEM major. These included the more general “I’m good at math and science” and “STEM fields are recession-proof” reasons to “I come from a long line of family in the sciences” to “I hurt my back running track senior year [of high school] and now I want to build prosthetics.”

The common themes throughout the focus groups and in-depth interviews were that students entered STEM-related fields because they first realized they had a knack for the subject at a young age, usually by middle school. Participants knew what they were good at and by high school went toward the subjects they excelled in, which in this case were math and science. As one student said, “I’m just good at math. It’s something you can brag and boast about.”

However, the students said additional factors other than being good at math and science went into play, such as they had an inspiring teacher who showed them that STEM was an interesting field through hands-on activities or by encouraging their students to go into these fields, being around family members with STEM-backgrounds, the culture (Iraqi, Mexican, British, etc.) they grew up in and wanting to be in a profession that allowed them to not only support their families but also contribute to society and essentially mankind in a significant way. They like the feeling of being part of something new and innovative and having the ability to do something that not everyone is capable of doing. They also enjoy how extensive STEM fields are and that there will always be a demand for people with STEM skills.

As one student said, “I’m interested in the process of how to actually make things happen, the ‘realization of the abstract.’ I’m excited to be able to apply what I learn and do the job, seeing fruition of what I’m doing now. Modern society needs engineering. It’s kind of recession proof.”

Another student said he feels a STEM degree “gives you the power to do anything and gives you a more enriched view on life.” He said that taking physics changed his outlook on life. “It’s more objective. I’m more a part of a bigger thing,” he said. “I’m not just an individual but part of a whole system of something.” This student equated learning STEM subjects to “learning the truth.”

Interestingly, most participants stated having an interest in something else, such as music, dance, education, philosophy, film or history, but not knowing how to transfer those interests into a lucrative career that their families would be proud of. For example, “I’m interested in history but I knew wasn’t going to go anywhere with that. I think sciences are the only fields to study if going off to college,” “I love music, it’s cool and fun but not good for job security,” and “we weren’t supposed to graduate from IB and ‘go dance.’”

Factors that excites and motivates you to stick with the challenging class work required for your major

Common themes found throughout the focus groups include the prestige that comes with STEM fields, liking the feeling of challenging themselves to do things others can’t and feeling that they fulfilled their capabilities.

The minority, immigrant and students with families who immigrated to America noted self-motivation to be the best that they can be, proving the people who said they couldn’t do it wrong and making a better life for their families as their main motivation for sticking with STEM coursework. One student said “As the child of immigrants, I want to experience the American dream and put my mind to its full potential and reach the benefit

of my full potential.” The same student also said that she is excited to make a difference and wants a big house because no one else has that in Trinidad, her native country.

Another student said her motivation is “my name on that white coat. It represents my entire life.” This particular student’s mother quit her job as a pharmacist to home-school the student and her brother. Other students noted making their families proud and re-paying them for all of their hard work as a major motivation to stick with the challenging coursework.

Money was also noted as a motivation, but not the number one factor. As one student said, “money is very important but if you’re not happy with what you’re doing, then the money will be irrelevant.” What most excited these students is the future because there’s so much they can do in the STEM fields. Some are also excited to teach others and help society. One minority student said she sticks with her STEM major (math) because she wants to show children and other minority students that it is possible to excel in STEM subjects and it’s not all bad. She wants to stick with it to show others that it can be done.

How to encourage middle and high school students to pursue STEM fields

All participants agreed that students need to be engaged and perform hands-on activities. They suggested offering robotics and bridge-building competitions, having students perform experiments, such as making ice cream, to show them how chemistry works, having interactive activities such as turning the classroom into a grocery store complete with play money to show students how math is used in everyday life and a variety of other hands-on activities. Participants shared stories of various activities they participated in when they were younger. One participant, a Gainesville native, said she participated in the Southeastern Consortium for Minorities in Engineering (SECME) program at UF and built bottle rockets and tried to drop eggs off a rooftop without breaking them.

The two most important things, participants said, are to show the students how STEM fields are relevant to their lives and have teachers who not only understand STEM but love teaching and motivating their students. Students suggested having STEM mentors, taking the students to go meet with engineers and see the things they build and overall engaging them more on the professional side as well. “Show students the fun, but realistic side of STEM, like Disney engineers or something,” one participant said.

Participants also suggest exposing middle school students to what STEM is so they are aware that these fields exist, but then sit them down in early high school and explain to them the job opportunities available in STEM and how extensive the STEM field is. As one student said, “middle school kids are trying to find friends, they’re not trying to find jobs.”

Several other participants agreed with exposing students in middle school. “Middle school is a crucial turning point,” one participant said. She plans to teach math after graduation. “If they have an experience or chapter that they didn’t like, it leaves a bad taste in their mind. Their minds are already made up by high school. It’s like ‘I hate science so I just know I’m going to hate 10th grade biology.’” Another student said middle school math classes weren’t that inspiring and that he didn’t have a good grasp of what these math and science stuff he learned was used for. As another participant said, “some kids just know they’re learning math but they don’t even realize that they’re learning a real-life thing.”

This relates to what another participant, a math major, shared. “I feel that when people learn math they just get the numbers and never realize how this is useful and where it came from. Math was random when it started, it wasn’t that rigid, and the history of math would give more emphasis on it.” This participant suggests presenting math as a general humanity instead and that way students might find a more genuine interest in the subject.

Other participants stressed starting to expose students to STEM fields at birth or “plant the seed while the dirt is soft,” as one participant said. Another participant said to “start early from birth because once you’re a pre-teen you feel like you’re grown and don’t want to do math.” On a more philosophical side, one student stated that a child could have excessive amounts of potential but if the parents don’t recognize it and act on it, then that child’s potential is lowered. His suggestion was to act on a child’s intelligence and encourage them to do well in school. He said to teach the children that even if they fail they will succeed in the end. He also said that grades meaning nothing. “Teach the child that it is about learning the material. Learning how to learn increases your appreciation for knowledge.”

Participants also noted that STEM fields aren’t very visible in popular media. “No one wants to watch a show about an engineer,” one student said. “All you see on TV are rappers or models or maybe lawyers. Put an engineer on Arthur [the children’s TV show].” A Korean engineering student said he dreamed of being a scientist after the cartoons he watched in his childhood. “See,” another participant said, “media is very important. It’s the number one way we get taught anything. Bring some people on Sesame Street!” she said.

General Thoughts

The following are two additional topics that were brought up during the focus groups and in-depth interviews that were not covered in our original research. We decided to list quotes relating to these subjects to inspire additional analysis in the future.

The importance of teachers, opportunities and the school system

“The best teachers actually had degrees in the field rather than just a secondary education. They actually know what they are talking about.”

“A lot of students are used to being spoon-fed material. It’s fleeting when the teacher just does it but it sticks when you do things yourself.”

“It’s very helpful when teachers have degrees in the fields rather than just teaching out of the book and that’s it.”

“Presentation and teachers are so important in this field.”

“It’s all about presentation.”

“Classes for these STEM fields need to be taught well. Otherwise, students won’t want to pursue it.”

“If you don’t want to be teaching then honestly, don’t teach. Give those kids the opportunity, fake it if you have to, but please don’t negatively affect those children.”

“I’ve had an affinity for math since elementary school except in Algebra 1 when I had a bad teacher and walked out hating math. I wanted to learn but the teacher didn’t have control over the class. I took geometry the next year in the ninth grade and that teacher made math interesting again.”

“I really liked history before I had a bad teacher. A bad teacher really turns students off the subject.”

“When I first learned chemistry I hated it because the teacher put us down because we didn’t get it right away and we were supposed to be IB. I wanted to do biology in high school but after I got to college I wanted to do chemistry after taking Chemistry 1.”

“When a teacher tells students they should already know something by now it makes students think negatively.”

“Students need to actually learn the material for themselves rather than just memorizing facts for an exam. Students need to learn how to learn.”

“There was a teacher who didn’t want me to take Algebra 1 in eighth grade because she didn’t think I was ready for it. I ended up getting an A. When people doubt me it motivates me to show them I can do this.”

“In fourth grade I had a teacher who said ‘when you get older you’re probably going to be a mathematician.’” (She is now majoring in mathematics).

“We weren’t supposed to graduate from IB and ‘go dance.’ It was a push, they encouraged a post-grad path for us to go on. But no one pushed non-IB kids with what to do. They were not encouraged.”

“The problem in the school system is to separate smart kids from stupid kids. I think every kid has the capacity to learn if given the opportunity but not everyone has the same resources; IB isn’t as prominent as it should be in schools.”

“High school doesn’t prepare you for college. You really don’t know how to study. They need to get a reality check.”

“I took algebra in seventh grade. The faster they start in advanced math the more they can continue development in math and science. Once they get to high school they have a better chance of taking harder classes.”

“Kids aren’t even prepared to do well in college. They need to be pushed to learn these hard classes.”

“Florida public schools only teach you how to just pass the test, so students get out of high school realizing they didn’t learn anything.”

“Parents, teachers, students don’t care. Our kids don’t know what they want to do until 25, while other countries at age 10 they know what they want to do.”

“There’s no reason India or China should graduate more engineers.”

“In high school start telling people to think about what they want to do. Use magnet programs, get kids exposed, tell them that if they realize they’re really good at being geometry then ‘maybe being a mathematician is for you.’”

“Taking tests is not good, they’re worried about taking tests and too busy to learn anything.”

“My mom arranged prizes at Miami Edison [High School]. Show kids that you care and the kids will care more if you show them and guide them and show them the way. They’re still young and can be influenced.”

“Kids haven’t learned how to like math, they think of it as a monster from the beginning. They think it’s hard before they even attempt to do the problem.”

The relationship between creative arts and mathematics

Six out of 17 students in the focus groups and in-depth interviews said they played instruments and thought about being a musician. One student said “I played clarinet and the band director said ‘you guys are probably going to be good at math.’” Another participant played the clarinet for eight years and said playing music notes and doing math go hand and hand. Three other STEM students said that they would still like to be musicians and one participant said he played snare drums which is “very technical and makes your mind sharper.” This participant is an electrical engineering major.

One participant suggested integrating different subjects together in the primary schools. He said the great scientists weren’t just physicians but they also liked philosophy and music, so we should integrate instead of segregate these classes. “Try playing classical music lightly in the background while the kids are doing math,” he said. “I’m willing to bet they’d do better in math.” He also suggested combining biology and chemistry because they are very similar. He suggested students “start thinking on their own at a young age, not just brought out of a structured environment. Give them drive!”

This relates to what another participant, a math major, shared as stated before; “I feel that when people learn math they just get the numbers and never realize how this is useful and where it came from. Math was random when it started, it wasn’t that rigid, and the history of math would give more emphasis on it.” This participant suggests presenting math as a general humanity instead and that way students might find a more genuine interest in the subject.

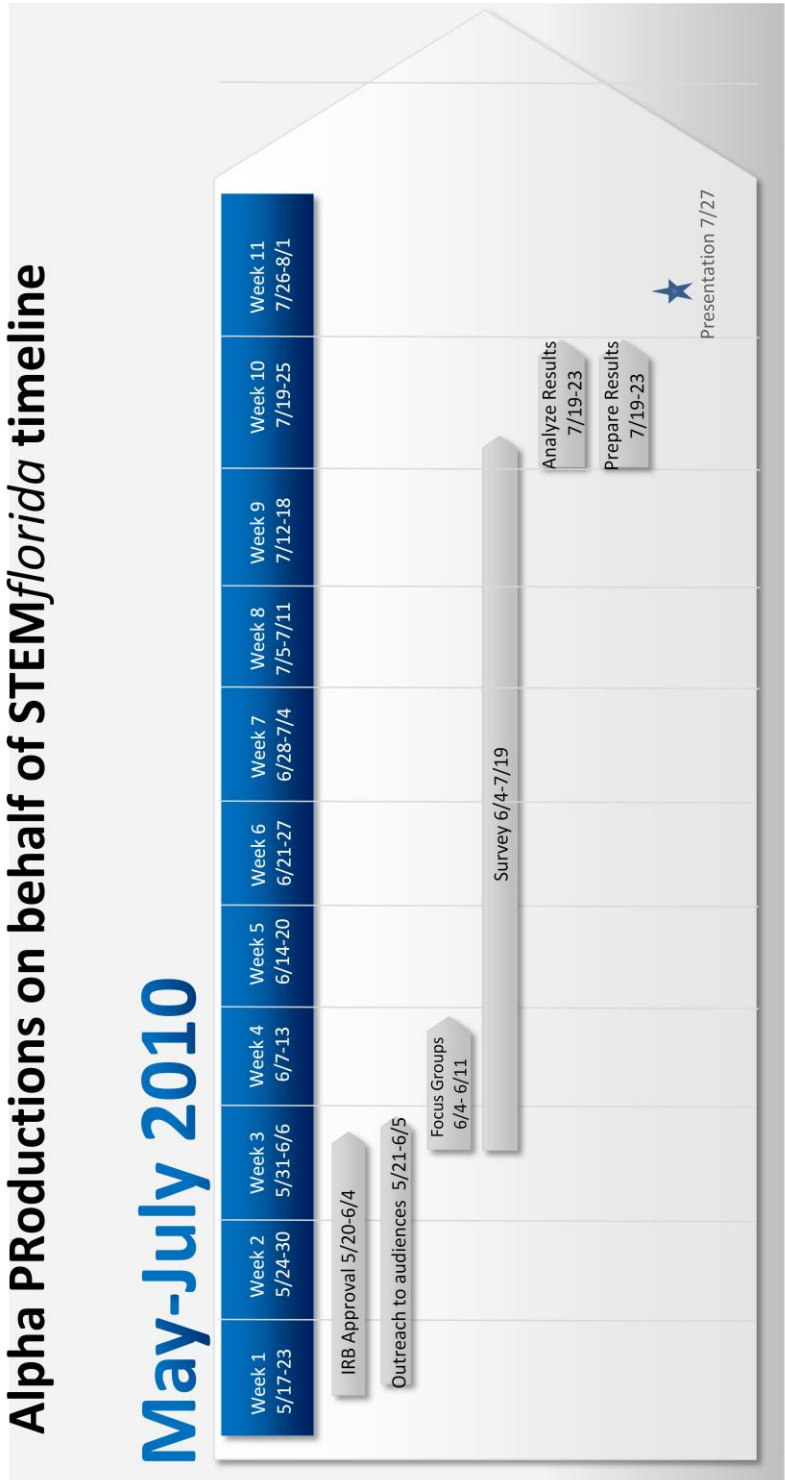
Also, as stated before, interestingly, most participants stated having an interest in something else, such as music, dance, education, philosophy, film or history, but not knowing how to transfer those interests into a lucrative career that their families would be proud of. For example, “I’m interested in history but I knew wasn’t going to go anywhere with that. I think sciences are the only fields to study if going off to college,” “I love music, it’s cool and fun but not good for job security,” and “we weren’t supposed to graduate from IB and ‘go dance.’”

Overall Findings

The focus groups, in-depth interviews and online survey yielded the same results in terms of what factors motivate students to pursue STEM majors, stay in them and how they would engage middle and high school students in STEM fields. However, the focus groups and in-depth interviews brought two very important, previously untouched topics to our research: 1) the importance of teachers, opportunities and the school system (in terms of what is currently wrong with the system and how it can be fixed) and 2) the relationship between creative arts and mathematics and how the two can be combined to increase STEM retention. We recommend analyzing the above “General Thoughts” section and looking further into these two additional topics.



Timeline



Evaluation

Alpha Productions researched and gathered information to understand the decision making process of students interested in selecting STEM-related fields. Our team then conducted focus groups, in-depth interviews and an online survey.

Our team conducted qualitative focus groups and in-depth interviews to retrieve personal experiences prior to launching the online survey to students in STEM-related fields. This gave us comprehensive information on the behaviors, views and the motivations of undergraduate students who chose to go into these fields. Engaging the campaign's key audience will best serve in other areas of the **STEM**florida campaign. The focus groups and in-depth interviews provided detailed, segmented categories and the survey garnered quantitative information and generalizable results.

Combining the results of the quantitative and qualitative research yielded solid suggestions, comments and observations from the participants. The three main concepts identified to encourage middle and high school students to pursue STEM fields are the following:

- 1) Teach the teachers
- 2) Engage the students
- 3) Involve professionals

These concepts are derived from participants stating that “bad” teachers (teachers who undermine students or lack knowledge of the material) can, and have, ruined a subject for students. They also stated that the most memorable and influential teachers they had, either had a degree in or actually worked in a STEM field. This means that teachers with STEM qualifications, encouraging demeanors and knowledge of the material are extremely important in recruiting STEM students. As one student said, “it’s all in the presentation.” Teachers must make STEM subjects seem as interesting and less intimidating as possible. Participants said teachers can do this by engaging the students.

Engaging the students includes using fun, hands-on activities to show the students how STEM is relevant to their lives and providing students with opportunities to pursue their STEM interest, such as offering field trips or other extracurricular activities. Participants suggested to first expose the students to STEM fields in middle school so they know STEM exists, then inform them in high school of the diverse opportunities available in STEM fields. As one student said, “middle school students are looking for friends. They’re not looking for jobs.”

Participants also suggested involving professionals in the curriculum by inviting them into the classroom, inviting students to tour facilities and see STEM professionals at work and creating a STEM Day or STEM mentorship program. Involving professionals could also help teachers stay current on issues in STEM industries.

Some participants even suggested using creative arts, such as presenting math as a humanity or playing classical music softly in the background while students do math problems, to enhance STEM retention.

This research could build a platform that will generate effective messages that best targets and encourages students to go into a STEM-related career. Success of the **STEM**florida research proposal was measured based on the specific objectives.

Conclusion

By constructing a thorough situation analysis and gathering the findings of qualitative and quantitative research, Alpha Productions results can assist **STEM**florida in producing effective messages and programs to best reach its goal to increase the number of middle and high school-aged students who will go on to enter the fields of science, technology, engineering and mathematics.

The collected data will generate valuable information on what avenues are best suited to target the client's key audience, and how to create and reach children early on in their academic careers with messages best geared toward a STEM-related field. Also, this information could be used to devise research on non-STEM students to find out discouraging factors in pursuing STEM fields. Identified discouragements could be sought out and corrected in the aim to help **STEM**florida's initiatives.

Overall, students revealed consistent ideas about how hands-on activities at a younger age in STEM-related coursework spurred the interest in these fields. Students believed "it's all about presentation," and this combined with a passionate teacher who has experience or contact with the specific industry of the class, offers the best motivations to remain in STEM fields and leaves room for less discouragement.



Research conducted and prepared by
Micana Gallaway, Roberta O. Roberts and Katherine Shearouse



On behalf of



Appendix

Informed Consent

Protocol Title: The motivations behind entering and pursuing STEM majors
Please read this consent document carefully before you decide to participate in this study.

Purpose of the research study:

STEM*florida* is a statewide organization trying to understand the motivations behind students entering and pursuing science, technology, engineering and mathematics. Surveying students majoring in these related fields would be beneficial to **STEM***florida*'s campaign to increase awareness for the need of students to pursue these fields.

What you will be asked to do in the study:

For this study you are just asked to take a brief survey about some of the factors that contributed to your involvement in your major, and asked to provide further thoughts about why it is important for others to enter these professions.

Time required:

5-15 mins approx.

Risks and Benefits:

There are no risks or compensation to you for participating in the study.

Confidentiality:

Your identity will be kept confidential to the extent provided by law. Your information will be assigned a code number. When the study is completed and the data have been analyzed, the list will be destroyed. Your name will not be used in any report.

Voluntary participation:

Your participation in this study is completely voluntary. There is no penalty for not participating.

Right to withdraw from the study:

You have the right to withdraw from the study at anytime without consequence.

Whom to contact if you have questions about the study:

If you have and difficulties or questions about the survey please contact Micana Gallaway of Alpha PProductions at micanag10@gmail.com. If you have any questions concerning the results of this research or about the **STEM***florida* campaign initiative contact Mary Chance, Executive Director of the Consortium of Florida Education Foundations at marychance@cfef.net

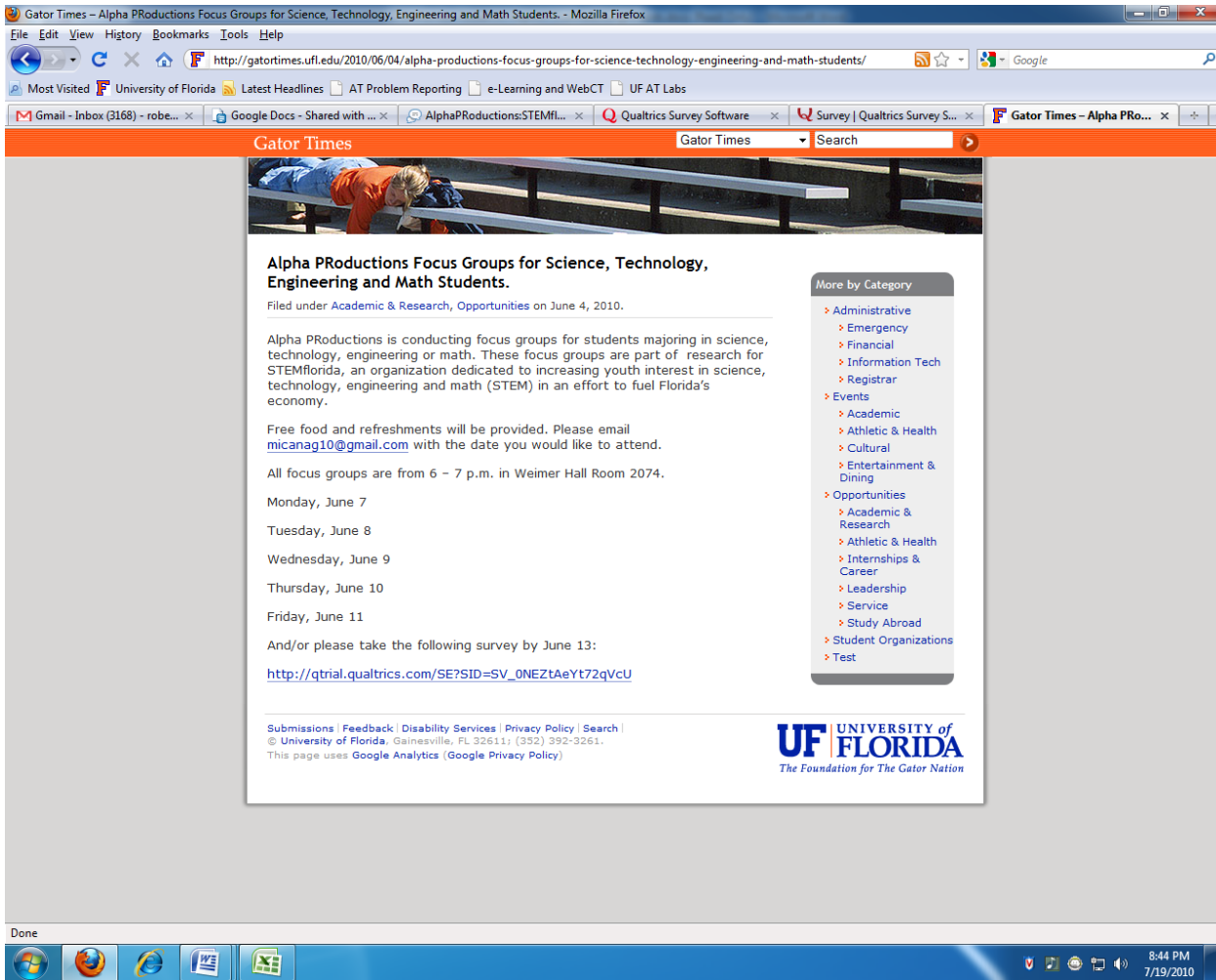
Whom to contact about your rights as a research participant in the study:

IRB02 Office, Box 112250, University of Florida, Gainesville, FL 32611-2250; phone 392-0433.

Agreement:

I have read the procedure described above. I voluntarily agree to participate in the procedure and I have received a copy of this description.

Social Media/Publications



Gator Times – Alpha PProductions Focus Groups for Science, Technology, Engineering and Math Students. - Mozilla Firefox


File Edit View History Bookmarks Tools Help

http://gatorimes.ufl.edu/2010/06/04/alpha-productions-focus-groups-for-science-technology-engineering-and-math-students/

Most Visited University of Florida Latest Headlines AT Problem Reporting e-Learning and WebCT UF AT Labs

Gmail - Inbox (3168) - robe... Google Docs - Shared with ... AlphaPProductions:STEMf... Qualtrics Survey Software Survey | Qualtrics Survey S... Gator Times – Alpha PPro...

Gator Times Gator Times Search



Alpha PProductions Focus Groups for Science, Technology, Engineering and Math Students.

Filed under [Academic & Research](#), [Opportunities](#) on June 4, 2010.

Alpha PProductions is conducting focus groups for students majoring in science, technology, engineering or math. These focus groups are part of research for STEMFlorida, an organization dedicated to increasing youth interest in science, technology, engineering and math (STEM) in an effort to fuel Florida's economy.

Free food and refreshments will be provided. Please email micanag10@gmail.com with the date you would like to attend.

All focus groups are from 6 – 7 p.m. in Weimer Hall Room 2074.

Monday, June 7

Tuesday, June 8

Wednesday, June 9

Thursday, June 10

Friday, June 11

And/or please take the following survey by June 13:
http://qtrial.qualtrics.com/SE?SID=SV_ONEZtAeYt72qVcU

Submissions | Feedback | Disability Services | Privacy Policy | Search |
 © University of Florida, Gainesville, FL 32611; (352) 392-3261.
 This page uses Google Analytics (Google Privacy Policy)

UF UNIVERSITY of FLORIDA
 The Foundation for The Gator Nation

More by Category

- Administrative
- Emergency
- Financial
- Information Tech
- Registrar
- Events
- Academic
- Athletic & Health
- Cultural
- Entertainment & Dining
- Opportunities
- Academic & Research
- Athletic & Health
- Internships & Career
- Leadership
- Service
- Study Abroad
- Student Organizations
- Test

Done

8:44 PM
7/19/2010


Facebook | FREE FOOD for Science, Technology, Engineering and Math Majors in FL! - Mozilla Firefox

File Edit View History Bookmarks Tools Help

http://www.facebook.com/event.php?eid=131767533506334

Most Visited University of Florida Latest Headlines AT Problem Reporting e-Learning and WebCT UF AT Labs

Gmail - STEM Fa... Facebook | FREE... Google Docs - Sh... AlphaProductio... Qualtrics Survey ... Survey | Qualtrics... Gator Times - Al... Facebook



+ Select Guests to Invite

FREE FOOD for Science, Technology, Engineering and Math Majors in FL!

You are Attending · Share · Public Event

Time	June 4 at 6:00pm - June 11 at 7:00pm
Location	Weimer Hall Room 1074, University of Florida
Created By	Roberta Oluwaseun Roberts, Micana Gallaway, Katherine Shearouse

More Info

CALLING ALL SCIENCE, TECHNOLOGY, ENGINEERING AND MATH STUDENTS!

Alpha Productions, UF's student-run PR firm, is currently conducting focus groups for all students majoring in the fields of Science, Technology, Engineering or Math. These focus groups are part of our research for STEMFlorida, an organization dedicated to increasing youth interest in the industries of science, technology, engineering and math (STEM) in an effort to fuel Florida's economy.

There will be *****FREE FOOD AND REFRESHMENTS PROVIDED***** and you would be playing a pivotal role in helping STEMFlorida in their mission of encouraging middle and high school students to pursue these great fields.

Below are the dates, times and location of the focus groups, which will last about 30 minutes. You are only required to choose one. Please choose a date and e-mail R.Roberts@ufl.edu with the date you would like to attend so we can plan accordingly. Please e-mail micana10@gmail.com of Alpha Productions with any questions you may have. Hope to see you all there!

*****All focus groups are from 6 - 7 p.m. in Weimer Hall Room 1074.*****

Monday, June 7
 Tuesday, June 8
 Thursday, June 10
 Friday, June 11

Please also follow the link below to participate in a brief survey about your future! The survey closes June 13 and we need 200+ respondents. The results of this survey will also be used for STEMFlorida research.

Click here to take the brief survey: http://qtrial.qualtrics.com/SE/?SID=SV_ONEZtAeY72qVcU

Sponsored

Thanks for your feedback. Over time, this information helps us deliver more relevant ads to you.

Thanks for your feedback. Over time, this information helps us deliver more relevant ads to you.

Thanks for your feedback. Over time, this information helps us deliver more relevant ads to you.

More Ads

Chat (76)

Done

8:55 PM 7/19/2010

STEMflorida Research Survey

STEMflorida is a state-wide initiative dedicated to increasing the skills of Florida's students in the areas of Science, Technology, Engineering and Math (STEM). To meet the increased demand for jobs that require proficiency in these areas, one of their goals is to increase the number of middle and high school students pursuing STEM-related majors in college and eventually STEM-related careers. This survey is part of research on behalf of **STEMflorida** to learn the reasons students currently in these majors chose their fields. In turn, this information can be used to determine the most effective ways to encourage middle and high school students to choose to go into STEM fields.

When did you decide you were interested in pursuing a STEM major or career?

- A. Before middle school (PreK – 5th grade)
- B. Middle school (6th – 8th grade)
- C. High school (9th – 12th grade)
- D. Attending college

Indicate the level that at which the following factors **contributed to your decision to choose a STEM major**, 1 being that it played no role at all and 5 being that it played a significant role.

The ability to make a large amount of money in your field

1	2	3	4	5
No role at all				Played a significant role

The ability to help people in your field

1	2	3	4	5
No role at all				Played a significant role

Future employment opportunities in a high-demand occupation

1	2	3	4	5
No role at all				Played a significant role

The fact that you are good at math and science

1	2	3	4	5
No role at all				Played a significant role

The fact that you enjoy math and science

1	2	3	4	5
No role at all				Played a significant role

Miscellaneous

Middle and high school students are aware of job possibilities in STEM fields and a future need for employees in those fields?

1 2 3 4 5
Strongly Disagree Agree Strongly Agree

If STEM Florida were going to target one age group of students as their primary audience for a multimedia campaign encouraging students to enter STEM fields, what age group would you select?

- A. PreK-3
- B. 4-6
- C. 7-8
- D. 9-10
- E. 11-12

To better influence students, who should be more informed about the need for students to pursue STEM studies? Numerically list in order of importance with 1 being most important, 2 being important and so on.

- ___ Teachers
- ___ Parents
- ___ Guidance Counselor
- ___ Other (Specify): _____

The following questions are qualitative in nature. We highly encourage you to honestly and openly answer these questions as they can provide valuable, insightful information.

How can educators make STEM studies more appealing?

What would you say to students to get them interested in pursuing a STEM career?

What suggestions do you have for making students aware of the job possibilities in STEM fields and a future need for employees in those fields?

Demographics

1. What is your gender? Male Female
2. What is your age? _____
3. What year are you?
 Freshman Sophomore Junior Senior
4. What is your major(s)? _____
5. What is your ethnicity?
 Caucasian
 African American
 Hispanic
 Asian
 Other (please specify): _____
6. Where are you currently enrolled in college? _____

Thank you for volunteering to complete this survey. We appreciate your time and participation.

If you have any difficulties or questions about the survey please contact Micana Gallaway of Alpha PRoductions at micanag10@gmail.com.

If you have any questions concerning the results of this research or about the **STEM***florida* campaign initiative contact Mary Chance, Executive Director of the Consortium of Florida Education Foundations at marychance@cfef.net.

STEMflorida Focus Group Questions

STEMflorida is a state-wide council dedicated to increasing the skills of Florida's students in the areas of Science, Technology, Engineering and Math (STEM). To meet the increased demand for jobs that require proficiency in these areas, one of their goals is to increase the number of middle and high school students pursuing STEM-related majors in college and eventually STEM-related careers. This survey is part of research on behalf of **STEMflorida** to learn the reasons students currently in these majors chose their fields. In turn, this information can be used to determine the most effective ways to encourage middle and high school students to choose to go into STEM fields.

Please state your name, what year in college you are and where you're from.

When and why did you decide to pursue a STEM major and career?

What influenced, and motivates, you to stick with your STEM interests?

What most excites you about your future career in a STEM field?

How would you suggest alerting students about the possibilities in pursuing STEM careers?

Qualtrics Online Survey Report – Raw Data

Report 1

Last Modified: 07/20/2010

1. Informed Consent Protocol Title: The motivations behind entering and pursuing STEM majors Please read this consent document carefully before you decide to participate in this study. Purpose of the research study: STEMflorida is a statewide organization trying to understand the motivations behind students entering and pursuing science, technology, engineering and mathematics. Surveying students majoring in these related fields would be beneficial to STEMflorida's campaign to increase awareness for the need of students to pursue these fields. What you will be asked to do in the study: For this study you are just asked to take a brief survey about some of the factors that contributed to your involvement in your major, and asked to provide further thoughts about why it is important for others to enter these professions. Time required: 5-15 mins approx. Risks and Benefits: There are no risks or compensation to you for participating in the study. Confidentiality: Your identity will be kept confidential to the extent provided by law. When the study is completed and the data have been analyzed. Your name will not be used in any report. Voluntary participation: Your participation in this study is completely voluntary. There is no penalty for not participating. Right to withdraw from the study: You have the right to withdraw from the study at anytime without consequence. Whom to contact if you have questions about the study: If you have and difficulties or questions about the survey please contact Micana Gallaway of Alpha PROductions at micanag10@gmail.com. If you have any questions concerning the results of this research or about the STEMflorida campaign initiative contact Mary Chance, Executive Director of the Consortium of Florida Education Foundations at marychance@cfef.net Whom to contact about your rights as a research participant in the study: IRB02 Office, Box 112250, University of Florida, Gainesville, FL 32611-2250; phone 392-0433. Agreement:

#	Answer	Response	%
1	I have read the procedure described above. I voluntarily agree to participate in the procedure and I have received a copy of this description.	651	100%
2	I decline to participate in this survey.	3	0%
	Total	654	100%

Statistic	Value
Mean	1.00
Variance	0.00
Standard Deviation	0.07
Total Responses	654

2. STEMflorida is a state-wide initiative dedicated to increasing the skills of Florida's students in the areas of Science, Technology, Engineering and Math (STEM). To meet the increased demand for jobs that require proficiency in these areas, one of their goals is to increase the number of middle and high school students pursuing STEM-related majors in college and eventually STEM-related careers. This survey is part of research on behalf of STEMflorida to learn the reasons students currently in these majors chose their fields. In turn, this information can be used to determine the most effective ways to encourage middle and high school students to choose to go into STEM fields. When did you decide you were interested in pursuing a STEM major or career?

#	Answer	Response	%
1	Before middle school (PreK-5th grade)	99	16%
2	Middle school (6th-8th grade)	135	21%
3	High school (9th-12th grade)	294	46%
4	Attending college	108	17%
	Total	636	100%

Statistic	Value
-----------	-------

Mean	2.65
Variance	0.88
Standard Deviation	0.94
Total Responses	636

3. The ability to make a large amount of money in your f...

#	Answer	Response	%
1	1	52	8%
2	2	85	14%
3	3	171	28%
4	4	221	36%
5	5	91	15%
	Total	620	100%

Statistic	Value
Mean	3.35
Variance	1.30
Standard Deviation	1.14
Total Responses	620

4. The ability to help people in your field.

#	Answer	Response	%
1	1	39	6%
2	2	81	13%
3	3	154	25%
4	4	191	31%
5	5	155	25%
	Total	620	100%

Statistic	Value
Mean	3.55
Variance	1.39

Standard Deviation	1.18
Total Responses	620

5. Future employment opportunities in a high-demand occupation.

#	Answer	Response	%
1	1	25	4%
2	2	49	8%
3	3	93	15%
4	4	223	36%
5	5	230	37%
	Total	620	100%

Statistic	Value
Mean	3.94
Variance	1.20
Standard Deviation	1.09
Total Responses	620

6. The fact that you are good at math and science.

#	Answer	Response	%
1	1	8	1%
2	2	25	4%
3	3	80	13%
4	4	173	28%
5	5	334	54%
	Total	620	100%

Statistic	Value
Mean	4.29
Variance	0.86
Standard Deviation	0.93
Total Responses	620

7. Your parents/family pressured or influenced you to choose your field.

#	Answer	Response	%
1	1	289	47%
2	2	132	21%
3	3	100	16%
4	4	62	10%
5	5	37	6%
	Total	620	100%

Statistic	Value
Mean	2.07
Variance	1.56
Standard Deviation	1.25
Total Responses	620

8. A specific teacher, class or experience inspired you to choose your field.

#	Answer	Response	%
1	1	155	25%
2	2	77	12%
3	3	122	20%
4	4	139	22%
5	5	127	20%
	Total	620	100%

Statistic	Value
Mean	3.01
Variance	2.17
Standard Deviation	1.47
Total Responses	620

9. Please share this experience.

Text Response

I knew i wanted to be a chemical engineer once i realized i was good at chemistry

Dissatisfaction with the Political Science Department and classes --> More rigorous, fulfilling courses in sciences.

In middle school I had a really strict science teacher who always wanted to prove that I know NOTHING. It was a really upsetting experience but it motivated me to learn more. When I went to high school I realized that my science knowledge is way above my class level. My new teacher appreciated it I started to enjoy science even more.

I grew up with my father always purchasing the newest and best technologies

My father continually asked me what I wanted to be in life, since I was in elementary school till I left high school. I knew I was interested in computers, and I liked to know how they worked along with electronics. My dad's questions made me think about my future career plans which made me conclude on computer Engr & electrical Engr

I was inspired to like mathematics in high school. My 11th grade math teacher was an aerospace engineer who loved math and science. He would always show us videos of rockets and talk about the type of work that he did. His enthusiasm inspired me to like math. I was in community college struggling with declaring a particular major when I thought about him. I remembered all the fun that I had in his class, and so I decided to research engineering. Until that point I had never realized how broad the field of engineering was. I had NO idea. After I had researched the field of engineering I became incredibly excited to join that major. I had a love for science and math, but I didn't want to be a 'pure' scientist or mathematician. Engineering opened my eyes to a field that I love. My highschool math teacher inspired me to like math by showing applications of it, and by emphasizing that it was fun.

After taking math and science classes in middle school I genuine grew interest and curiosity to understand how things worked the way they did

I like science and math

Several teachers throughout my middle school and high school education whom were very knowledgeable made me very interested in studying any STEM related field

Fun

College professor reaching out to me in this field.....also my father's work

I had a college professor introduce the multiple benefits of using technology as an elementary teacher. I was so impressed by his class that I chose to specialize in the field of technology.

jlkj

My father was an engineer, he would teach me more advanced math or something about science every time I asked, when I was little.

My Father did not discuss any potential careers other than engineering or architecture. I was pressured to a technical degree because my family didn't value a liberal arts education.

...I don't know what is being asked here.

My high school chemistry teacher was such a good teacher. I learned so much from her and her interest in the subject that I felt compelled to study something involving a lot of chemistry in high school. I loved the reactions and synthesis of chemicals and materials. That is why I chose to study Materials Science and Engineering.

My high school physics teacher was an engineering major and would relate the subject directly to engineering. He would also bring in real life problems that could be solved with math and science. His stories inspired me to pursue engineering.

My guidance counselor almost forced me to take AP Computer Science, telling me that it was a math class. I hated the first 3 weeks and then realized that I was good at it and liked solving the puzzles of programming.

I decided to withdraw.

ok

Good?

An excellent High School calculus teacher demonstrated to me that advanced mathematics can be very fun and intellectually satisfying.

Mr. Sean Crowe at my highschool was an ex-Lockheed Martin Engineer and gave me examples of what the field was like from real experiences and helped me along into the direction of engineering

My grandfather was an engineer

I chose to be a chemist because a few good teachers got me excited about it. Over time, I came to understand that I would be able to make a positive difference in the world while being able to provide for my family in a stable job market. My father was a mathematician, and his love of the subject made a very early impression on me.

My senior year of high school I took AP Physics with a fantastic teacher. I enjoyed the class so much that I change my college major to physics from pre-vet.

the Step-Up program.

My highschool Chemistry teacher made me realize that I wanted to pursue a career in science.

Which one?

Great, I enjoy what I do at my work and spare time with the help of my education

General interest in promotion of science, skepticism, & critical thinking.

I wanted to be an electrician. However I found they are limited in application so I furthered my horizons by pursuing Electrical Engineering.

To improve the welfare and living conditions of people everywhere.

How?

.

Professional courses means they help in future profession.

I'm not sure what experience this is referring to. If it is a teacher that inspired me, then I would have to point to my high school physics teacher who was able to demonstrate how physics works through simple and interesting experiments. He also challenged me to live up to my potential.

Science fair in middle school. Calculus teacher in highschool allowed me to realize my abilities, my teacher was formerly an engineering major in college and stressed to me the importance of reaching one's potential

Mostly from working in the racing field, I was drawn away from mechanics and towards engineering.

We had a guest student in my math class that was a civil engineer from the Florida State University that influenced me to get into civil engineering. Otherwise, I always like mathematics and engineering was a lot of math and how I could make money using math.

I have always enjoyed racing and that is why I decided to pursue a career in engineering

Math and Physics courses at Santa Fe Community College were a wonderful experience and the teachers were really inspiring.

Various teachers through middle school inspired a longing for Mathematical/Physics career

It was great

When I was 8 years old my dad took me to Kennedy Space Center, and I fell in love with NASA while I was there, and decided that I wanted to be an aerospace engineer one day, and haven't changed my mind since.

I always want to know "why" - my highschool physics teacher took the time to explain things to me, which inspired me to pursue physics in college.

This experience is rewarding.

i dont know what this is asking

In high school my mathematics teacher that I had all four years inspired me

I was took AP physics and AP Calculus with two teachers who loved the field. I enjoyed the probem solving aspects, and these teachers really instilled a love of the subjects in me.

Through gifted education, I was introduced to elements of electrical engineering early in school. My abilities in math and science, combined with an awe of the inner workings of electronics made the decision an easy one.

I attended a Math and Science magnet elementary school where the teachers focused on a math and science cirriculum

I went to a magnet middle school and had an encouraging set of teachers there

Good

Our class visited a steel mill senior year of high school, and I was absolutely blown away by how cool the process was.

I was always just good at math and science and didn't like english as much so it was a natural choice to move towards engineering.

Enjoying all math and science classes in highschool and having the best teachers and succeeding in them, while still being challenged

I was in a pre-freshman engineering program that made me interested in the field of engineering.

N/A

I was surrounded by friends in my class who's goal was to help society, just as mine was. They were a positive influence who served as motivation for me to push myself further regarding my studies. Basically, I was very lucky.

Many teachers influenced me in this decision.

I realized that I often think analytically, and have a problem-solving mindset.

A couple teachers throughout my high school experience really connected with me. Because of their genuine interest and how they presented their material I felt I became interested in engineering and science. It's all about the right teachers who are passionate about their subject.

Not one specific experience happened, more of a series of events

I attended a technical high school where I was in the drafting academy. I decided that I did not want to be an arquitect but wouldn't mind doing something that used similar technology (like AutoCAD) so I am pursuing civil engineering.

I don't understand the question. STEM experience or experience of taking the survey.

I just always wanted to do science.

My parents fostered science learning and bought me kits & stuff. Also highly interesting classes & field trips to marine sites & kennedy space center. (MICANA -OVERALL)

Na

I had a good math teacher and I realized that if I pursued something math oriented, I would enjoy my future work.

I did dual enrollment during high school, and was in the building construction program at the local community college. My professor for the hands on classes of the program was actually a certified civil engineer that had chosen to get his contractors license and move into the construction field. He loved his work and teaching his students how to do his work. I especially admired his ambition. Construction is a field you can get into without a college degree, but he wanted to know how EVERYTHING worked on a

construction site. I knew I wanted to get into architecture, construction, or some kind of engineering prior to enrolling in the program. His insight on each of the different fields solidified my decision to go into some branch of engineering.

I excelled in math and realized I had potential to achieve many goals. I can't think of a specific experience. But I started to believe that I was capable when unique opportunities for enrichment were offered.

?

I had several excellent math and science teachers throughout my middle and high school courses. To a lesser extent, I also had great teachers in elementary school.

My 7th - 8th Grade science teacher was instrumental in fostering my interest in science. We are good friends to this day and still stay in touch. Additionally, my undergraduate advisor (to whom I was assigned by the college) showed me that pursuing an advanced degree in my field was possible.

i enjoyed my highschool science and physics classes

I was involved in an Engineering, Science, and Technology magnet program at my high school.

Started with a group project on Pesticides I had to do in my 8th grade science class. I then took an Ecology class in 9th grade and after reading Silent Spring by Rachel Carson, I knew I wanted to be an ecologist. I then had the opportunity to take an extracurricular course called Ohio Wildlife Field Studies that my high school offered where we did research on local flora and fauna. I also participated in a Marine Biology class that went to the Bahamas my senior year in high school. The wide range of life science classes offered at my school (and amazing science teachers) I left high school knowing there was nothing else I wanted to do but be an ecologist.

share what experience...?

I had a very good biology teacher in high school who encouraged me to pursue research. He sparked my interest in the subject through his own enthusiasm.

I want to help people. That's all.

Nell Freeman, Chemistry Professor at SJRCC in St. Augustine influenced me and inspired me in ways that no one else ever has.

Growing up, I always enjoyed science. But, Anatomy/Physiology and AP Biology solidified my interest and skill in biological science.

I became interested in biology taking AP Biology in high school

My physics teacher helped me choose a major by combining my fondness for both marine science and physics

During my sophomore and junior years of high school, I had two teachers; one for pre-calc, and one for calc AB, and the way they taught their classes and their enthusiasm for math made me realize how great math was and how i wanted to pursue the field.

As a child, I had the opportunity to be surrounded by various wildlife and animals in my family environment

my mother has always been into plants and nature, so i just grew up with it and have always enjoyed being out in nature.

I volunteered in a fossil preparation lab

What experience? Your question is vague and difficult to understand what in particular you are referring to.

My highschool AP Biology teacher was amazing. He challenged me for the first time, like no other teacher had done previously. Everything we did in that class had a purpose and it is probably the only class from highschool that I can still recall a ton of information.

Birth

My fifth grade teacher inspired me to look at science in a different light. It made me realize i really enjoy science and helping people.

In High School I was in a group that designed, built, and flew model rockets. From that experience I knew I wanted to design and build.

My grandparent's dog grew up with me and we were both the same age. He was gentle as could be and very attached to me. I loved animals already, but when died at 11 yrs old from cancer I decided to try and enter the Veterinary medical field.

I enrolled in a lot of Advanced Placement courses in high school and took the hardest sciences classes, which furthered my interest in science

My highschool environmental science teacher inspired me and made me believe that I could improve the field.

Encouraged to high school join magnet program

When I was about 15, my favorite horse at the place I rode died.

Had the most inspiring and funny calculus teacher in high school and the first semester of college. A specific type of math convinced me- namely probability.

Statistic	Value
Total Responses	413

10. If not a specific teacher, class or experience, please specify other.

Text Response

Other

general interest

My father and an Army Recruiter

Not so much an experience, but while I was a Sophomore in community college I would think about the future and how it is portrayed in movies like Star Trek (not a trekkie, just the new one). Thinking about how awesome the future will be just makes me want to be a part of helping it get here a little bit quicker.

friend who got me into it. plus good science classes. the science competition helped. mainly chose it for the career oportunities and money. good job, etc.

My dad and grandfather are both engineers and they inspired me to go into the field.

I like to solve problems.

I wanted to be able to work on my Jeep better.

potential job market

Just wanted to make videogames in the beginning, then found out about more about the different engineerings in high school.

The realization that I would actually be doing something that was beneficial for society. That I would have a real world impact.

other

Nothing

A means of standing-out when applying to medical school.

science fair

Willingness to help others

I just like math and solving problems

Mathematical reasoning is enjoyable.

my own interest and desire to challenge myself
lay/scientific literature such as nat geo
My desire to create and build stemming from my use of LEGOs led me to pursue civil engineering
The STEM fields have always seemed to most challenging and rewarding to me. Pursuing another career path would seem like a waste of my time.
proximity to math and science related professionals over much of my childhood.
other
Fascination with the automobile industry
I have wanted to be a physician since I was young and this was the easiest path towards my goals.
none
n/a
I just had an interest in math
The beauty of the in which all the sciences serve to fuel the advancement of one another.
other
Self interest in math. Loved the subject, wanted to learn more than the things in the books
My parents
I'm a fan of science fiction, being an engineer allows me to make what I've seen in movies science fact.
Everything else seemed boring
Mother
My love for computers made me want to help design newer and better ones
I've always been fascinated with how the world works, always felt the need to figure it out and make it better
Other
other
Highschool cad/cam class
I just wanted to push myself, and I thought a hard major would take up most of my time and make college worth while.
Science Fiction
My Mother works in healthcare (nurse practitioner) and I want to be able to help people just like her.
Backup Plan
I have just always been good at math
Parents
I didn't have one thing inspire me, I just never thought of doing anything else

Other STEM majors being successful in life
No one did
I always like computers, so computer engineering is perfect for me.
I come from a family of engineers.
My dad is director of engineering for the company that he works for.
My uncle was an engineer and before I even knew what it meant, I wanted to be one.
My aunts and uncles are doctors and since I was little i have always found it an interesting career
I am majoring in Computer Engineering, but doing InfoSec work. The Whitehatters Computer Security Club here at USF was almost single-handedly the largest influence in my decision to choose that major. It showed me that InfoSec professionals were in high demand, paid very well, and above all - they are tasked with very intellectually challenging problems on a regular basis. On top of that, it turns out I'm a pretty good hacker anyway, which is another plus.
enjoy the subject
Always been interested in finding the reason why behind everything and trying to find a way to desing better buildings, roads, houses, etc
Parents
A sense of wonder at the world around me.
I knew I wanted to go into STEM in high school; I decided to go into engineering while in the military.
N/A
I love mathematics and I wanted to use what I was good at to help people.
nothing specific
nothing specific
Other
None
Bibliography of famous guys in STEM
Choosing the path less taken
My brother- he has a degree in my major
animals
working with a civil engineer in high school
Older friends who were pursuing this area
other
I dont really know i just wanted to be one.
Overall education process led me to a STEM Major
being outside

Uncle

I always like mechanics

none

It seemed like the most practical field that I could go in to and it had the widest variety of career opportunities

N/A

Parents

Always loved technology

Self interests

Self-driven interest

job

The Teacher contributed into my thinking of pursuing this major by explaining the high demand

I want to make traveling to space a reality

Job opportunity

airplanes

nothing in particular

No event inspired me to pursue a STEM field.

Realized I had a love for computers

Found the hands on experience really fun.

Legos and ability to be my own boss

I was really bad at language arts and history didn't interest me at all. This was the best option for me.

Counselor

General experience in the work force (ie: retail, machinshops). Needed a sense of accomplishment.






In my case, I have just had an interest in helping my community and country. My family has a military background, so in my own way, instead of joining the military, I decided to help my country in another way, through the engineering that helps keep our country going.

none

Statistic	Value
Total Responses	140






11. How significant of a role has this other inspiration played in you pursuing your STEM interests.

#	Answer	Response	%
---	--------	----------	---

1	1		30	21%
2	2		7	5%
3	3		20	14%
4	4		16	11%
5	5		67	48%
	Total		140	100%

Statistic	Value
Mean	3.59
Variance	2.60
Standard Deviation	1.61
Total Responses	140

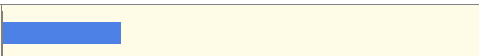
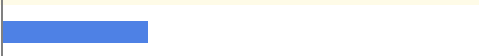
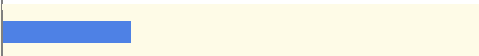
12. Please indicate at what level each of the following factors excites and motivates you to stick with the challenging class work required for your major. 1 being that it plays no role at all and 5 being that it plays a significant role. The ability to make a large amount of money in your field.

#	Answer	Response	%	
1	1		45	9%
2	2		80	15%
3	3		105	20%
4	4		180	34%
5	5		117	22%
	Total	527	100%	

Statistic	Value
Mean	3.46
Variance	1.51
Standard Deviation	1.23
Total Responses	527


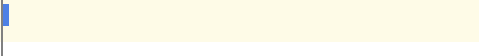
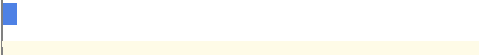
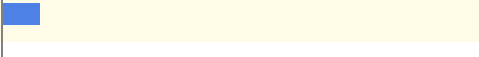
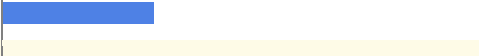
13. The ability to help people in your field.

#	Answer	Response	%	
1	1		37	7%
2	2		56	11%

3	3		131	25%
4	4		161	31%
5	5		142	27%
	Total		527	100%


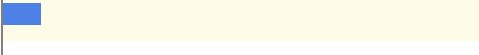
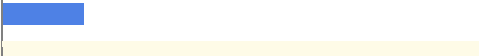

Statistic	Value
Mean	3.60
Variance	1.42
Standard Deviation	1.19
Total Responses	527


14. The fact that you enjoy the work required for your field.

#	Answer	Response	%	
1	1		7	1%
2	2		16	3%
3	3		42	8%
4	4		167	32%
5	5		295	56%
	Total	527	100%	

Statistic	Value
Mean	4.38
Variance	0.74
Standard Deviation	0.86
Total Responses	527



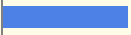

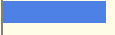
15. The "status" that you will achieve when you enter your field.

#	Answer	Response	%	
1	1		43	8%
2	2		90	17%
3	3		137	26%
4	4		159	30%

5	5		98	19%
	Total		527	100%

Statistic	Value
Mean	3.34
Variance	1.43
Standard Deviation	1.20
Total Responses	527

16. It will make your parents/family proud of you.

#	Answer	Response	%
1	1		58 11%
2	2		73 14%
3	3		139 26%
4	4		142 27%
5	5		115 22%
	Total		527 100%

Statistic	Value
Mean	3.35
Variance	1.60
Standard Deviation	1.27
Total Responses	527

17. Other (please indicate):

Text Response
live-long learning and challenges
I can hopefully help people somehow
I'm an PEARList. I believe in using an approach of Physical Evidence And Reasoned Logic with everything I do. Engineering is the embodiment of these ideas.
Intellectually satisfying, as in I will feel I achieved my potential
Just the thought that I will be at the front of scientific discovery and get to discover and invent things that will change peoples lives.
Investment in my life goals

I chose to specialize in technology because it motivates kids to learn in a way that appeals to their own interest.
Good at it
I'll easily be able to support myself comfortably when I graduate.
The fact that I have already put a year of my time into this major
The competitive nature of classes helps me stay motivated.
NA
Knowing that Engineers will always be in demand
I like challenging classes and I mostly just am driven to succeed at whatever I do.
What's fun about doing what is easy?
solving environmental problems
Ability to work with state of the art technology
The ability to contribute to the creation of new scientific knowledge.
Engineering is a prestigious, but misunderstood profession by laypersons.
the ability to make my mark on the world
Not only will I be helping people, but I'll be helping restore the environment for all organisms benefit.
Other people expect me to finish/succeed in this role (as an engineer)
Understanding of the world
I want to be a factor in the racing world one day
Once I start something I believe I ought to finish it.
It's my childhood dream, and my passion
I have come too far to quit now.
Friends
the ability to make a difference
...
The class work was not challenging.
Responsibility to help others in a way best suited to my skills.
it will make me prod of my achievements and satisfy my intellectual goals
n/a
Personal ambition and pride
The course material is challenging enough to hold my interest.

I enjoy the rigor of my field and am proud of the future ahead of me.
Intrest in the changing world around me.
na
N/A
n/a
i want to see what im capable of
The desire to protect the environment
I do it just to do it. Unconditional self discipline that applies to whatever activity I'm doing at the moment.
Intrinsic motivation to be the best I can be.
fiancee
Promotion requirement
I can't think of any other career field that I would enjoy and be skilled in.
Knowledge of math and science is fundamental to understanding any part of modern society
It is also really helpful that I am funded to obtain my graduate degree.
I wanted a challenge!
I enjoy teaching and tutoring students
n/a
I wasn't going to let the engineering program defeat me. I started it, I was going to finish it.
It will make myself proud
none
My policy to never give up on your dreams
none
I have a desire to learn more about the things in my field of wildlife ecology.
The interesting affect that learning makes something that seemed impossible, possible.
I like math and science
The challenge of doing it was also fun
I'm stubborn.
Love of science, and a desire to help animals
I enjoy the challenge.
Although most fields of science are not favorite subjects to study, my passion to do something challenging that will put me to the test motivates me.

intellectual interest
Wanted to be above ordinary in something. Since I loved math, I had hope of excelling in it.
Prospect of my future work changing the world.
I want to help the environment
Physics is awesome.
I hated differential equations, but somehow knew that passing it would one day lead me to making lives better across the world. Helping people is my motivation.
go cool places and do cool new things
If, by family, you mean my son, then yes, I want him to be proud of me.
It's always changing, because unlike many other fields science isn't as "exact" as it seems. There's new info being added to the field everyday.
Inspiring others to major in a STEM field
other
Seeking out my niche - figuring out how I can contribute to society in a meaningful way and finding the right match for what I've got
Make my family proud of me
My personality trait to excel in all of my undertakings.
Find the theoretical field itself interesting, moreso than the work
None
Already committed.
Providing for my family and ability to live comfortably.
I'm almost done... why switch now
Navy Rotc Scholarship and future plans as a Nuclear Powered Sub Officer
I will make liars of numeruos people
Pursuit of happiness and self-fullfillment.
I been in school too long to turn back.
The longevity of this career. I will not have to worry about career changes and things of that nature as much as in other fields in my future.
The lack of something else I have found that interests me more.
Money and the fact that I will be proud of doing something that requires intellect to be successful, not just time.
Being able to help people
It feels like I'm part of a larger movement towards better computer security, which is pretty cool. This kinda goes along with the "ability to help other people in your field", but it goes beyond that - my work actually can help people in nearly all fields. After all, computers are everywhere and they all should be secured.
It will allow me to pursue my goals to create good manufacturing jobs in Africa and possibly run my own manufacturing company.

I look forward to the day in which I will be able to make a change. Finding better and not so expensive ways to design better structures. Also, I think about all the time I have invested in classes and I think: "I can not give up! I'm almost there! Keep going!"

n/a

I have a wide range of aptitudes and interests, I can develop many of them on my own, but STEM can be quite challenging to me and is, in general, more difficult for me to study without the rigor and pressure of an academic environment. Also an engineering degree offers much better job security and opportunity than most liberal-arts degrees. Also it allows me to understand the world, and gives me an opportunity to interact with people who I might not otherwise encounter.

Feels like a calling

None

N/A

Statistic	Value
Total Responses	157



18. How significant of a role has this other played in you pursuing your STEM interests.

#	Answer	Response	%
1	1	71	25%
2	2	12	4%
3	3	54	19%
4	4	53	19%
5	5	93	33%
	Total	283	100%

Statistic	Value
Mean	3.30
Variance	2.47
Standard Deviation	1.57
Total Responses	283


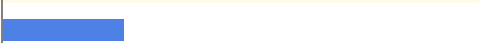



19. Although you chose to pursue a STEM major, indicate the level at which each of the following factors discouraged you from entering your field. 1 being that it did not discourage you at all and 5 being it was a major discouragement. You thought you would be seen as a math or science "geek."

#	Answer	Response	%
1	1	424	81%
2	2	61	12%
3	3	15	3%

4	4		19	4%
5	5		3	1%
Total			522	100%


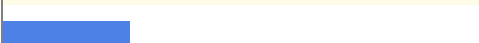



Statistic	Value
Mean	1.31
Variance	0.56
Standard Deviation	0.75
Total Responses	522

20. You thought the coursework would be too challenging.

#	Answer	Response	%	
1	1		154	30%
2	2		133	25%
3	3		140	27%
4	4		73	14%
5	5		22	4%
Total			522	100%

Statistic	Value
Mean	2.38
Variance	1.36
Standard Deviation	1.17
Total Responses	522

21. You thought that the coursework would require too much time.

#	Answer	Response	%	
1	1		165	32%
2	2		139	27%
3	3		114	22%
4	4		82	16%
5	5		22	4%

Total	522	100%
-------	-----	------

Statistic	Value
Mean	2.34
Variance	1.43
Standard Deviation	1.19
Total Responses	522

22. You do not enjoy the math or science required for your field.

#	Answer	Response	%
1	1	323	62%
2	2	106	20%
3	3	67	13%
4	4	18	3%
5	5	8	2%
Total		522	100%

Statistic	Value
Mean	1.62
Variance	0.88
Standard Deviation	0.94
Total Responses	522

23. Other (please indicate):

Text Response
I don't feel as if I have the engineering potential that I see in other engineering students
The only thing that even remotely discourages me is the thought that I might one day have to be involved with politics, or that politics will take a roll in science (which shouldn't happen).
People who said that I wasn't cut out to do it!
The loans required to pay for my tuition
I'll be in school longer than most of my friends I graduated high school with.
Knowing that there are so many other possibilities out there that I could also enjoy and may even have better jobs available
I'm a woman, some people feel I don't belong in this field.

NA
Low cost (effort) to benefit (salary) ratio for highly educated STEM graduates. Few career opportunities in engineering and science fields supporting manufacturing.
I was never discouraged, some classes are difficult, but they shape who you are and what you want to be.
I wasn't discouraged, but if you don't know what you're getting into ahead of time; you'll wash out
I have mental health issues that make the workload for this field, especially at higher levels, challenging for me.
There are VERY few management, business, or ethical/social classes in the curriculum - very important factors when meeting clients, advancing to a supervisory role, or working in a competitive [sic] environment.
other degrees are a lot easier to obtain
Parents did not want me to join the field
I don't really let things discourage me. I figure if I see someone else do it, I know it can be done.
It is an expensive curriculum
job availability
I am a female engineering student.
I was torn between history and economics as well, since I greatly enjoyed these fields of study too.
None
Uhh, I was never really discouraged the fact people claimed it would be hard only made me want to prove it wasn't
Professors that do not speak English fluently.
Nothing discouraged me from entering the field, but now that I am in the field I am somewhat discouraged because I do not feel that the large school of UF adequately teaches us students and therefore I am beginning to worry that I will not possess intellect I'd hoped for necessary to achieve my (very high) goals.
n/a
I had strong interests in a business degree
Others respect me because I am a math geek. In high school, I was not just "a math geek", but "the math geek". I took great pride in this status.
I started off at the very lowest math and science courses in community college
na
I was worried that I made an unbalanced career choice with personal, unforeseen consequences.
It would take too many years of schooling to get a PhD
its hard to imagine using a lot of physics or calculus in env. science
n/a
I was afraid that I would be the only girl in my classes.
I thought that the information provided by my major would not be enough to pursue what I wanted.
none

There are so many options in college sometimes it's hard to stick with a STEM major even though it's you enjoy it

none

I have other interests besides math or science.

Not having enough money to really focus on my studies and family emergencies. (If your family does not do their taxes, you don't get any government money)

Financial difficulty

Unfortunately, I have had to take a number of classes in organic chemistry, biology, and general chemistry in which many of the professors are not there to teach or to help students learn. They are simply there to do a job that is asked of them so they can continue their research. These professors in mind often proctored tests that poorly reflected the interesting material that could have been presented. Science has so many fascinating topics and these were easily clouded with difficult test questions on minute details. The handful of professors that did teach beautifully did help to maintain my focus.

not enough women in the field

pay might be low as a teacher

I do not want to be stuck in Academia after getting my PhD. Many people with PhDs tell me to be in Academia. But I know that this is not for me. I want to get a 'real' job in the fast paced industry which will also pay me a good salary.

I would go as far as to say all of those previous factors not only were NOT discouragers but rather encouragers actually. The fact that the coursework was long and challenging only added to the appeal of the major.

low grades compared to easier classes

Potential Earnings may not be very high for my particular field

There are not many females in these fields, and we often do not get the respect we deserve from profs or peers

Although the two are often related I love science and hate math. But, not enough to abandon science.

other

People in my field make very little money. I come from a working class background, and it is very hard for me to take on debt for school and rely on my parents for support through many years of coursework with little promise of financial return.

Lack of counseling to sort through all options for people interested in science and math

I enjoy doing math Homework

There were no women professors in my math department and women were not treated well by some of the math professors.

please see previous comment - it applies here as well

possibility to juggle work and family

I have a learning disability.

None

Being apart of a minority.

I find my courses very boring

That the field is too competitive and so many people change their major to something less challenging.
No worries of being called a geek, since I'm so damn good looking/athletic anyways.
Not too much time to socialize
I didn't think that the math/science stuff would be creative enough. I love creativity and math typically bores me to tears... It seems too confining and there's not enough room to "think outside the box".
Time was the main thing, I am unable to spend time with a lot of my non "STEM" friends and it strains our relationships.
Is not a female's field
n/a
Pressure
none
I am not discouraged by others.
High course load.
I later found that STEM plays less role in the real life, compared with Business and Law
No practical value
none
An average of 5 years spent on the degree program.
Not knowing enough about my field before applying for college
The payoff for the amount of work may not be worth it
Math, specifically calculus II
Other options as a major
I never had anything that discouraged me from my choice of major.
Not challenging enough
NA
none
not the typical engineering type of student (most lack social skills)
teachers do not teach and schools do not tell the entire truth about positions and degrees as well as their requirements.
the fear of being stuck in one job and not being able to progress
The potential that I may have to perform work that runs counter to my personal ethical and political views for the profit of my employer.
Fear of getting stuck in a dead end job working in a small cubicle in corporate America for the rest of my life while hating my job and being dissatisfied with my life.
high standards/competition

Math teachers suck and play games

I wasn't exactly a math whiz in high school. I have since greatly improved.

Inept teachers.

I'm not sure if it's really the field for me or if I'd enjoy it instead of political science.

You thought the post-college workload would not allow for extra-occupational activity

Learning irrelevant material

The sheer amount of responsibility placed on engineers.

Unsure if selecting the correct major

Textbooks

Time and effort put into this field

i almost failed physics 1

Statistic	Value
Total Responses	123

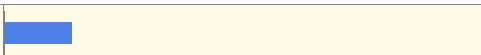
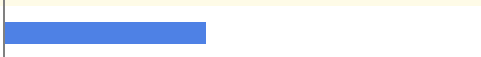
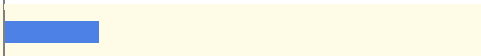
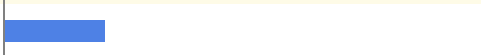
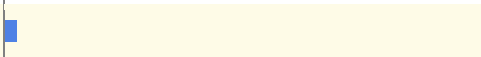
24. How significant of a role has this other played in you pursuing your STEM interests.

#	Answer	Response	%
1	1	83	36%
2	2	32	14%
3	3	42	18%
4	4	31	13%
5	5	42	18%
	Total	230	100%

Statistic	Value
Mean	2.64
Variance	2.33
Standard Deviation	1.53
Total Responses	230



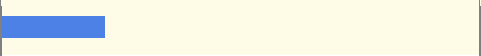
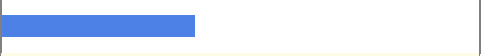

25. Miscellaneous Middle and high school students are aware of job possibilities in STEM fields and a future need for employees in those fields.

#	Answer	Response	%
---	--------	----------	---

1	Strongly Disagree		74	14%
2	Disagree		219	42%
3	Neither Agree nor Disagree		103	20%
4	Agree		110	21%
5	Strongly Agree		14	3%
Total			520	100%

Statistic	Value
Mean	2.56
Variance	1.12
Standard Deviation	1.06
Total Responses	520

26. If STEM Florida were going to target one age group of students as their primary audience for a multimedia campaign encouraging students to enter STEM fields, which age group would you select?

#	Answer	Response	%	
1	PreK-3rd grade		15	3%
2	4th-6th grade		69	13%
3	7th-8th grade		113	22%
4	9th-10th grade		210	40%
5	11th-12th grade		113	22%
Total		520	100%	

Statistic	Value
Mean	3.65
Variance	1.10
Standard Deviation	1.05
Total Responses	520

27. To better influence students, who should be more informed about the need for students to pursue STEM studies? Numerically list in order of importance with 1 being most important, 2 being important and so on.

#	Answer	1	2	3	4	Responses
1	Teachers	43.71%	42.17%	12.19%	1.93%	517

2	Parents	38.10%	37.52%	20.70%	3.68%	517
3	Guidance Counselor	7.36%	18.02%	61.43%	13.18%	516
4	Other (specify):	39.72%	8.51%	21.28%	30.50%	141
	Total	517	517	517	140	

Other (specify):	
friends	
older students who could be mentors for younger ones	
general public	
friends	
Exposure to STEM professionals	
Students	
students	
Friends of Family	
STEM professionals	
Science Public Outreach Programs	
Mentors, siblings, pastors	
High/ Jr. School ROTC advisors	
students	
employers should speak to primary schools	
Older Peers (College Aged) That influence	
friends	
guest speakers	
students	
students	
The students	
Bus Drivers???	
Media sources	
Students	
students	
peers; casual citizens	

School board/administrators
Students
Friends
students' peers
Employers...volunteers coming into the schools to talk about their career. AKA Career Day
peers/friends
The School
friends
church
Friends
Students
other Family Members/Neighbors
The students themselves.
Peers - kids listen to each other best
School guest speakers who are employed in areas of science
religious leader
no
Youth Sports
The students
the media
students themselves
students
curriculum and test planners
Our culture (media)
peer groups
The kids themselves
Mass media (movies, commercials, radio, websites, etc)
Students themselves
Student
other

People in the state who set curriculum requirements
good role model friends
General public
Students
Will Power
Students
Students
friends
Peers actively studying in the fields (college students as mentors)
Friends
students
Peers
students
Students
Any one other than guidance counselors
Friends and relatives
students
other mentors (scouts,church groups,etc)
students
students
Siblings
media has a very influence on teenagers, so i think that media should show these young students how important school is
the kids
Students
Sports Coaches
oneself
The Students
school admin
Coaches/Other heads of extracurricular activities
the students themselves

the students themselves
students
Students
na
Students themselves
other
society/life
the kids
Principal
Let the children experience for themselves, let them build and tinker, its how I got into my major.
STUDENTS
friends
A badass scientist or enginneer like Stephan hawking
School Clubs
Students
Students

Statistic	Teachers	Parents	Guidance Counselor	Other (specify):
Mean	1.72	1.90	2.80	2.43
Variance	0.56	0.73	0.57	1.66
Standard Deviation	0.75	0.85	0.75	1.29
Total Responses	517	517	516	141

28. The following questions are qualitative in nature. We highly encourage you to honestly and openly answer these questions as they can provide valuable, insightful information. How can educators make STEM studies more appealing?

Text Response
have to science teachers do engineering exeriments
Teaching by experiment and hands-on activities rather than rote memorization and computation.
Perhaps, use public figures who inspire students to help promote STEM majors and studies.
Informing students about great job possibilities and how they can actually use knowledge learned from school in real life.
.
They can show what STEM studies have accomplished in the past, are doing right now, and what they plan to accomplish in the future.

Include more hands-on activities that relate to STEM studies

Make it fun. These courses are practical. Demo them more in class. Involve the students a lot. Make sure you let them know how important STEM professionals are and how much they are respected. They are the backbone of the economy because they make and invent new things. The fact that they make a lot of money doesn't hurt. I know someone, BS Chem Engr making \$125,000 with ExxonMobil

Stop emphasizing that the student should always get the 'right answer'. If the student clearly works a problem with a solid approach, don't punish the student. Encourage the student to improve their method. Encourage students to make more mistakes, and learn from the mistakes. Mistakes are great. We should emphasize the importance of knowing when you've made a mistake. Don't just beat the students to death with math tests and rote memorization of material. That is boring. Here's a personal observation of mine. I enjoy working on problems on a whiteboard because mistakes are easy to see and fix. Sitting in a desk all day kills brain activity. Pacing in front of a board while trying to think of an answer does wonders for the brain's activity level.

bring applicable stuff into class room and less theory.

na

Highlight the benefits of STEM over other careers. Emphasize that a STEM career isn't as scary and doesn't have to be as intellectually brutal as they might think. To help with that part, educators should give examples of the wide swath of careers STEM covers.

There need to be more intriguing teachers available for STEM classes. More technology, better teaching, and more interesting classes means more interest in the subject matter.

They should tell the students/kids that STEM fields are exactly what they sound like. Most people like technology and science, they just fear they aren't smart enough for them. STEM studies also offer a great deal of satisfaction. For example when an engineer finishes a project or a theoretical physicist finally sees what he's been missing. Most STEM fields also require a very strong grasp of the physical world, so knowledge about the world and how things work come with the territory. Also, STEM studies are so much more interesting than many other jobs. For example, someone might go to college to get a BA in english, but when they graduate they might end up as a personal secretary for many years.

Find the exciting STEM projects and share these experiences with the future generation and allow them to get involved in some capacity

Introduce job opportunities that appeal to kids' interests. For example, a video game designer requires knowledge of math, science, and technology.

show them the cool stuff. things exploding, etc. for metals (what i do)- show them casting and shape memory alloys

Bring in a variety of people in various fields. Show the depth & variety in STEM programs

Teach higher mathematics in kindergarten and middle school, because a lot of students get discouraged because of the rising difficulty in math when they get to trig and calc.

More hands on, team activities like practical application of theory. Give them a project and let them research/make it. Teach them critical thinking skills and how to research rather than memorization of formulas that they can look up online.

The teachers I had in high school who were able to really make stem studies more appealing were the teachers who had worked in those fields. Those teachers were able to give real life examples where the topic was applicable.

Show students all of the vast areas of study involved with STEM. Also emphasize how many jobs are available in these fields.

Show real world applications.

They can use fun, real life examples of what STEM can do, such as theme park design, automotive testing, video game design, etc. When students hear that math and

science are the way into these fields, they become interested.

Just be a good math or science teacher so that students can understand the concepts and then they will like math or science.

Field trips.

Put more emphasis on the applications of math, physics etc while teaching the subject in the real world with demonstrations

If my high school teachers tried to sell STEM, it would have pushed me away.

Hands on experiments

The educators themselves love STEM.

* Do a better job of fostering student's curiosity about the world as it relates to science, math and engineering. * Present science and math as fields in which creativity is a primary skill required in both learning and practice.

If you would like to make it more appealing from middle school, I would suggest starting to educate students about the fun side of different STEM studies, then as they get older start integrating more and more of the work required into the lessons.

The way the curriculum is taught, less head in the book and more hands-on.

Tell stories of importance

Be patient with students. Take time to answer questions. Show relevance of principles being taught. Provide lots of hand-on experience. FIELD TRIPS.

By showing the students applications of these fields. Give the students an good idea of what they can do. Field trips are good and any in class experiments or demonstrations so that things are more tangible.

Show the application of the subject, things you can do with it in the field. No one likes pure math, but you can use math to build a rocket. That's a significant difference.

Sadly, I am not sure that you can make it more appealing, it's not like the subjects are interesting intrinsically. There is too much of a trend in education for students to try and get the most out of the least effort. It is important to make kids enjoy learning instead of just wanting to earn a grade. Once that is instilled, then encouragement into the STEM majors can be successfully achieved, and then the fields become not only appealing but fascinating. Most often students go into the field for the money or the status, or whatever, and end up failing out because they just don't have the proper motivation or educational curiosity.

Develop experiments and labs for the students that reflect things they may be interested in as well as demonstrating good science.

Start higher maths in high school

Giving great examples of the industry (blackberry, iphone, intel, etc), or promoting courses that give the student the ability to learn some of the skills

Focus on what is done, in a broad way, with STEM majors/jobs. Focus on the role that STEM plays as a foundation for all the wonders of the modern world.

facilitate the learning habits of the students. One-size-fit-all objective teaching is not compatible to subject oriented kids.

Simply by making students aware of the myriad STEM fields. In high school, I showed an aptitude in complex problem solving and 3D spatial relations. I was only informed of Civil, Mechanical, & Electrical engineering at the time; and I liked being outside periodically, so I picked Civil. In later years, I found I have an aptitude for Geomatics intelligence and Geoengineering... but I "wasted" a decade in another field when I could have been advancing in areas I enjoy and excel.

In college we take courses introducing us to the different engineering fields, and then courses introducing us to the different branches within that field. High school students should be exposed to the same sort of introductions.

Through games, exploration, concrete activities and less use of theoretical books.

Highlighting the perks of the studies like good profession, salary and settled life

Focus activities on how science relates to the students everyday lives. Make the learning environment more open for discussion, hands on, engaging, and interesting.

Talk about how rewarding the job can be when it is so difficult to be apart of

During formative years, more emphasis on physical sciences, and relate them to music and art rather than math. Introduce math later and as a pure science, not as a way of quantifying the world.

Show younger students what it is all about. Show how hands-on the field is and what kind of work they do. Have them actually experience it.

Apply real world examples into teaching. Give a group assignment to design and build a simple robot.

Show the practical applications for the concepts and the theory. Have field trips so the students can go and witness the practical applications of the concepts in settings that impact every day life. Make sure the students have time to assimilate the material.

Life examples, such as an informative and interactive session dealing with a real life project

Use real world applications to emphasize points, instead of only theoretical study.

Hands on experiences, field trips, and guest speakers from the fields

Not everything has to be fun and easy- if students want to enter this field they should be prepared to work and not be looking for an "appealing" experience.

For some students the amount of money that can be made through a STEM major is the most appealing but for others the progress that can be contributed to helping the world is the most appealing. You have to understand your audience to show them what would be the most appealing to them.

fun projects

N/A

PAY HIGH SCHOOL TEACHERS MORE!!! Better math/science teachers means more students in STEM. It is most important to teach the subject matter well. The reason most students shy away from the field is because they had a bad teacher at a foundational level course (like algebra), and thus they are no longer able to perform the coursework. I know many people who love design and engineering who left the field (mechanical engineering), calling it "too academic", which really meant they wanted an easy major. If the classes are taught well and the subject matter is presented in a practical and interesting way, I think the subjects would retain more students.

Offer money

Challenge students. I mean really challenge them. I went through high school in the 90s and even back then the tides were turning. Standards are being lowered at too many schools to make incompetent students 'feel better' about themselves. To hell with them. If you can't cut it, get your ass to mcdonalds and cook my cheeseburgers.

Tweak the supposed salaries earned by people pursuing fields in the STEM studies upon graduating.

Hands on science activities. Rewarding kids with science rather than recess... such as if they behave, they can partake in a science experiment where you can launch a rocket.

Interactive learning, such as doing experiments. Field trips.

To make sure students know the opportunities in this field

Show some of the real life applications of the theories in the classroom- hands on projects are really cool.

Emphasizing the experiments and in the field work you get to do.

Making the course work interesting and personal, not just another math or science class. Show how the math and science effect the real world and do activities that the students think are fun and will remember later.

make it more fun - projects, science exhibits

Talk about it more; make math and science more enjoyable and not the subject that is "hands-off". It will make it seem more "do-able", especially to minority students.

By showing the opportunities available to them after such rigorous coursework

N/A

No idea I always enjoyed them but they came easy to me soo ya...

By learning them. Most people involved in K-12 education are extremely poor at analytical thinking skills. As a result, they teach math and science as steps and vocabulary to be memorized. Analysis is not emphasized. This pushes students away, and denies them the skills they need to be successful.

Honestly, the better the teacher the greater the understanding of the student being taught. The better the students understanding of his/her studies, the more likely the student is to continue pursuing higher levels of these studies. A very experienced teacher who can truly communicate theories and concepts in scientific area is the best remedy, in my opinion.

By encouraging students to try and avoid making it seem like learning the material is impossible or harder than it is. Sometimes educators are the reason why students decide to study something "easier". Letting students know that ANYONE is capable of learning and applying these principles is the important point to get across, even when more than one attempt is necessary to succeed.

Teach theory through application. If a kid can't see how a concept can be used in the real world, why should they care.

Doing a lot of exercises

They should show their students interesting problems in the STEM fields that professionals in those fields were able to overcome by some creative and new invention or method.

Tell students the reasons they are learning these required technical subjects. The ubiquitous complaint from high school and middle school students is "I am never going to use [insert technical material] in my life, why are we learning this?" If biology courses included a segment on what biologists actually do with their careers, for example, students may take an interest in biology. In middle school and high school, math and science are often just an abstraction for students; educators need to connect students with the meaning behind the science and mathematics, using concrete examples

High school organizations relating to STEM fields greatly encourage students to pursue STEM degrees in college. In Florida, we are lucky enough to have a very strong Mu Alpha Theta (MAO) (math honor society) which hosts seven math competitions a year. These competitions push students to their mathematical limits (no pun intended) and being a "geek" becomes more of a social status than a social burden. I would say about 90% of students in MAO major in STEM career paths after graduating from high school. So, a very effective way to promote math and science would be to partially fund STEM-related after school activities for high school students. If every state had a MAO as strong and well-organized as Florida, I am sure that the number of STEM students would increase considerably.

By developing math and science skills early in school such as elementary school, students will feel more comfortable with their own math skills and would be more willing to explore fields in those areas. Young students with little confidence in math and science seem to "give up" on math and claim literature and/or sports, for example, may be their strong subject.

More hands on, practical application projects. Things like programming classes, robots classes/demonstrations, chemistry projects geared towards that age group. Also more teachers that actually have an interest themselves and aren't just teaching them the information because they are required to.

Expose students in high/middle school to teaching strategies that will be used in higher education to prepare students pursuing a STEM major. For example, help students

learn to read their texts effectively and help them become independent learners.

Focus on application, not theory. Since most students don't understand the global benefits of STEM programs, hold fairs to show how STEM programs benefit them and the world.

More labs (and labs that definitely work). Fire, things changing colors, or other flashy kinds of things are most invigorating for older students.

make classes seem passable and introduce math & science earlier. pose a challenge not a wall.

Show real life relevance of the field. E.g., where does gasoline come from - how is it made? How are bridges designed/built? What makes airplanes so safe? etc.

Explain the high pace work in an appealing way to students.

I think any kind of studies become more appealing when there isn't a focus on grading. The focus should be on getting kids to WANT to do the assignments not how to make the assignments themselves better. The truth is if kids don't have a personal desire to do something then it's only going to get done for the grade, and nothing is learned.

What is a stem study? This one?

?

Spend more time helping elementary schoolers with math and science. By the time students reach middle school, most of them already loath math. Make sure that students actually learn the math skills that are taught to them each year so that they do not fall behind and feel that it is impossible to catch up.

Teaching and showing students the practical uses of STEM studies should be encouraged. For example, teaching students chemistry might seem abstract to children. However, teaching them how chemistry is used in everyday and business would show students the importance of learning the basics.

Teach the interesting aspects of science and physics early to get students interested. Some high school and middle school classes are so boring that they turn students off to the subject before the student gives it a chance.

Provide new, creative ways to learn the material, i.e. hands-on examples in class.

"Real World" application (show students how the information is relevant to their every day lives and how important it is for specific professions) Bring professionals into the classroom so students can interact with them...for some students the only people they will ever encounter in the STEM professions are teachers especially if their parents are not in a STEM field. Teachers need to stay up-to-date and stop relying on lesson plans they developed years ago. Expect more from your students and don't "dumb down" the lessons. Challenge the students, if the basic level math and biology classes in college are too hard from them as Freshman (because they weren't adequately prepared in high school) they will immediately find an easier major.

Statistic	Value
Total Responses	457

29. What would you say to students to get them interested in pursuing a STEM career?

Text Response

what some engineering documentaries

The fascinating nature of STEM fields - the dynamic, changing interface of STEM fields and society.

The rewards from having a STEM career.

I would talk about my experience. I would encourage them to give STEM a try. At the end of middle school I was still convinced that science is not for me and I tried to avoid

it. Now, I am in a medical school. Everything is possible.

I'm not the type of person who tries to influence peoples' choices of this nature so I don't think I would say anything.

Tell them about all the possibilities, flexibility and openings

All of the above

The science and math that you learn in school are tools. Tools to create anything that you can imagine. If you can dream it, you can make it. So don't be discouraged by teachers that can't see what math and science are used for. Try to learn the material for yourself. There are many fields that use science and math, and what they need are people who can imagine great things. We have computers to crunch numbers.

to understand things that happen around you u gotta love science

na

I would look them straight in the eye and be completely honest. I would say "Man STEM is the only study worth studying, it makes the world go round. Everything else is a waste of time, be it english or interior design. STEM makes the world possible, from your ipod to your corolla to that can of soda. STEM is about progress, its about having that satisfaction that you have created something or contributed to it. Don't be a sissy and say oh its too difficult because there is too much that STEM covers for it to be too challenging to all. You make good money, you will always be needed in the workplace. "Yo tell me what would you rather say to that special someone, "hey girl, my name is so and so and I sue hospitals for a living", or "hey girl, my name is so and so and i built that bridge you crossed that got u from your house to here with me"

I would describe the different opportunities available. Many see doctor and engineer (usually civil or mechanical) as the only STEM careers.

I would tell them that anything they are using, touching, reading, sitting on, etc. was made possible by a STEM field. Historians didn't invent the car, politicians didn't invent the airplane, and business majors didn't invent the cellphone. If you want to be a part of making the future a better place for ourselves and our descendants, a STEM field is where you need to be.

Math and science are all around us in our daily lives and there is an illusion that they are only for the select few

A mathematician or accountant is not the only profession that requires a math degree. And scientist are not the only ones to major in science. A wide variety of jobs require this sort of specialization.

when it comes down to it, you need to find a job, you need to make money, you need to have insurance, etc. any old degree (ei. liberal arts) will NOT get you a job nowadays. a degree in engineering will. art may be fun but it doesnt pay the bills. also helping society, not being a drain, etc.

Would explain what I do

Show them how something works everyday or a random interesting science fact.

Remind them that new inventions are being created every day; that there are new discoveries to be made and are made daily.

They should give emphasis to all the possibilities in the STEM fields.

Go for it and give it your all and i promise you that you won't regret it later.

You get to solve real world problems and use/develop the latest technology.

I would tell them that I got to work behind the scenes at a popular theme park and was paid to essentially play. Not many fields can boast that kind of opportunity.

Not sure.

The job security, good pay, and high demand in STEM related jobs.

you'll have an exciting and secure future

I'd demonstrate some phenomenon.

If you stick with it it's very exciting and the money is good. I have a job and none of my friends do!

Enjoy the wonderful field

* Interesting, stimulating and challenging work is done only by those who are competent in the fundamentals of science and mathematics, whether they work in a STEM field or not.

In the current economy I would say that the money is almost twice as much as you might be earning in other subject areas and depending on what you want to do will almost always have a job. In a normal economy I would say that you get paid to be creative and to design objects that no-one else has made in the entire world.

I would show them the neat things that they'll be able to do as they pursue a STEM career.

Money and job satisfaction

I wouldn't know what to say. I would just show them why it's interesting. I'd take them to a lab, plant, facility, or classroom and show them why I enjoy it.

These areas are used all around us in everyday life and that is why they are so important. Just consider some of the major problems in the world. STEM fields are what will help us solve the energy crisis and find ways to help third world countries. This is a way to make a direct impact on the world.

Again, application application application. No one wants to do just physics, but if you tell them you can build cars, you'll get some attention.

You can have a significant impact not just in your community but in the country, and even the world. You will gain a deeper understanding of many of the things you take for granted now. It will open a new view of the world to you that reveals how truly special this planet is.

Not only are do the job opportunities tend to be greater than other fields, STEM gives you the best opportunities for graduate school.

Examples of interesting problems and solutions. For instance, the Tacoma Narrows bridge WITH proper explanation.

Ability to work with state of the art technology and have the skills to come up with new ideas that may change how people do things (paradigms) (e.g. Facebook, chat roulette, Pandora, etc)

See previous question.

Tell them to get involved in list of STEM activities and experiment with the possible interest.

Knowing STEM means knowing EVERYTHING.

All we can do is present them with the possibilities. They have to make the decisions on their own.

i will show them the applications of what they will learn,

.

Good salary means more money to spend on your interests New challenges make it interesting

That life should be a continuous learning process in order to keep everything interesting, and a background in science and math can lead to jobs that are thoroughly enjoyable because there is always something new to learn.

That because of my hard coursework I get to do exciting research that can impact the future (the way we clean our drinking water)

If you study for a degree in STEM, you can apply it anywhere. If you get a degree in anything else, you cant use it nearly as much.

It's a challenging career where you get to do fun things with your hands and there is a lot of math and no english papers!

I would say there are many fun majors out there, but what major allows you to look around you and know exactly what is going on. For instance, when a car is going around a turn and you feel the force from the angular acceleration.

You will get a greater understanding of how your environment functions and is held together. You will acquire problem solving skills and a methodical approach that you will be able to use in almost any situation. These fields are universal, so you can easily go work anywhere in the world.

I'd show them the great accomplishments achieved through a STEM career. Such as the recent oil spill in which millions of people are coming together to come up with an idea to stop the leakage.

Show them something that I've created using my knowledge gained through STEM studies.

I would tell them my story, and explain how I got into the field, and explain how much I love what I'm going to do one day.

There are a lot of opportunities that you may not be aware of - take some time to explore.

I would tell them about all the different ways they can help the world and how much money they can make doing it.

money

Show students the rewards that can be gained from pursuing a STEM career path-the monetary/lucrative rewards, opportunity for new experiences and discoveries, ability to learn a new thought-process, etc.

There really isn't much to say. I haven't met many people that are on the fence and could be pushed into this field. I suppose I would say that the work I do in the field is mentally engaging, its a lot like solving puzzles. If you enter another field it is likely that your job is going to be monotonous, for instance I know a girl who was a history major who now proof-reads papers for a living. Though I may just have been lucky to get such a good job.

It's boring

Do what you like. If you have an interest in math/science go with it. Too many kids were unwilling to do the work in math/science for a fear that it would make them look like a 'nerd,' and these choices have further reaching ramifications than the kids know. I came to the conclusion earlier on that that is just a way for incompetent people to be condescending to smarter people in order to feel some sense of superiority and asked them why I should feel bad about my success because they were total failures.

I would tell students the importance of pursuing a STEM career if they want to actually have meaningful and well-paid career.

How it's like being an explorer of how things work.

Tell them about the various oportunities.

tell him/her the wide applicability range of STEM. Engineer, for example, can be a scientist, a tech, a teacher, a writer, a consultant, a researcher, a builder, and more.

Twchnical and scientific knowledge can, in other words, be applied in many fields, give flexibility in choosing a career path.

You can do so much with a degree in science and technology. There are a ton of amazing new practices out there and ways for you to really change the world!

Do you like math and science? well then this is for you.

It may be challenging but it is worth it. STEM careers will always be important in the community and you can do almost anything you want with a STEM degree/career. Find friends in your degree area, they will help make the tough and challenging times better, and do not get discouraged.

the research you do, their benefits

Talk about money and job stability and then show them how others, just like them, achieve these goals and that they are possible.

That with a major in any STEM field they can pretty much do anything

N/A

no idea the thing is I think it has to be self motivated but most people find math difficult either because they are not taught properly or dont want to have to try at it once it gets past whatever they can easily understand

If you are reasonably smart, and approach math/science analytically, your college degree will require less than 2 hours per week of studying.

I would send them to thevenusproject.com and explain the basic ideas of The Venus Project and how important scientifically educated individuals are to bettering humanity. I'd explain to them the outcomes possible due to scientific and technological development and show how it is an individuals responsibility to work to improve technology and an understanding of the universe for future generations, as those who came before us did. Explain that without those hard working individuals from the past, much of what we have today would not be possible.

Job opportunities are significantly better, not to mention the status that they give you of self accomplishment. When you pursue a career in these fields the results exceed the effort put into them, both intellectually and monetarily.

It's a personal choice and not for everyone. If you want to be challenged with your work in a fulfilling way, STEM is a great opportunity.

It's interesting how numbers solve so many problems.

I would tell students that if they are creative and actually enjoy any or all of their math and science classes, then pursuing a degree in the STEM fields would get them a well paying job that they will enjoy.

Give examples of different things that people in STEM fields do. Ask students if they'd like to design an airplane, write a computer game, figure out how viruses work in the body, help solve the global energy crisis, or do any number of fascinating and diverse tasks. I would give them an idea of what a STEM career might entail, and then tell those that are interested how to pursue those types of occupations. For those students that didn't find any of those options appealing, they now have a better idea of what they are not interested in, so that they can find what truly drives them.

Students need to understand that rigorous studying does not mean that the a fun college life is impossible. With a balanced schedule and good time management skills, STEM fields are not a challenging as they are perceived by most high school students. I think by starting with middle school students through their high school years and telling them that a STEM career would be both exciting and rewarding; student interest would increase. Promoting a good work ethic and passion for math and science would be good target for any campaign. For most students, they choose an "easy" major (arts, business, social studies, etc.) because they are led to believe that STEM majors are too time consuming and difficult. While some of these students actually would do poorly due to their sheer laziness, others are only misinformed. Correcting this social perception of the STEM fields would be another important consideration.

??

I would talk about subjects that would appeal to both that specific student and that age group. Talk about all the different realistic options in the fields as well as salary and demand. Also make it less nerdy or maybe show it isn't as difficult as some believe.

There are many opportunities to make a positive impact in the world by pursuing a STEM career.

I would ask them if they want a meaningful career in which they can make a difference.

"you get to blow things up" and or something else that emphasizes things they get to "do" rather things they have to "study". They'll study, but it helps to know why.

pursue what you love regardless of money & status

Service value to humanity - engineers and scientists have saved and protected more lives than any other profession. Long term job growth, respectable career, etc

I would tell them that their work in STEM studies would influence the world like no other major could.

I really don't know.

You are an expert.

Rewarding and numerous opportunities after graduation.

Math is possible. Look at all of the cool things you can do with some basic (and then more complex) math.

It is a lot of hard work and a large time investment. But, it will pay off and your happiness and sense of achievement should be more important than just getting out of school.

show them all the possibilities of science and scientific careers

Try to learn early on what you are interested in and focus your studies.

Show them the wide range of possible career choice, the demand for professionals in those field, and get rid of the perception that you have to be a genius to success in those fields...

Statistic	Value
Total Responses	457

30. What suggestions do you have for making students aware of the job possibilities in STEM fields and a future need for employees in those fields?

Text Response

use google

Show starting salaries for STEM majors - higher salary shows high demand for STEM graduates and the valuation of knowledge in STEM fields.

Fairs.

Give them info about the job possibilities during Preview and reinforce the info (by email) later on, since they will probably forget about it quickly.

.

Maybe make a short (30 minutes at the longest) movie or powerpoint presentation with video incorporated in it on the subject and/or get people in STEM professions to come speak to students about the work they do.

Give them real world examples of the possibly tasks or problems they could be finding the solutions to

Read journals , talk to friends family and teachers about these fields. They should do their own personL research.

A website it a fantastic tool for dispersing information. Teachers often do not know about STEM fields, and so they can not effectively inform students about how interesting the STEM fields are. Having a site where students can go to learn about STEM fields would be great. Nothing too complicated though; keep it fun and interesting. I am interesting in this movement and I would like to be more informed about it. My email is chrisneal@ufl.edu

Bring in people in the field to talk to them

na

Have informational speakers in middle and high school. Let them know that they will be needed for the rest of their lives in a STEM field. Have competitions to spin STEM more as a satisfying challenge than a burden

A day dedicated to STEM careers would be a huge benefit.

The job possibilities are great. As technology improves, we will only need more and more STEM field employees. You can do really almost anything you want if your in a STEM field. With the new technology, more and more ideas everyday are being proposed, analyzed, and engineered. If you have a dream, a STEM field is a sure-fire way to try and make it a reality.

Search for a mentor and get perspectives to help form your consensus

Introduce interesting jobs that are age appropriate concerning the desire of students.

science and engineering is what america is about. its what we have over the competition (china). america will always need engineers and engineering can also lead you to a lot of other things (such as management, etc). actually want to be an artist? get an engineering degree with a minor in art. that way you can do art with your free time, and actually still have the opertunity to make money.

More exposure

I think they are quite aware of that already

Encourage employers to hold more career days onsite and let the students see work being done. Make a big deal about Engineer's week or Science week by inviting local business to participate. Events on college campus like SCEME are also great.

Do more science and engineering fairs.

I believe that in 9th through 11th grade that it would be a good idea to periodically have carreeer showcases that expose students to a wide variety of options.

Hold career days featuring these jobs.

Bring in guest speakers who are in the field. The best way of advertising is to bring in the expert.

Show them some of the really cool things that they could possibly be working on.

Career Fairs in highschool

technology is everywhere

None.

STUDY EARLY!

The market changes

I do not have any suggestions. I'm not optimistic on future needs in STEM fields. The reality is that the vast majority of jobs in the economy do not require a high level of education and training in STEM subjects. My opinion is that students should be motivated by an intrinsic interest in STEM fields rather than by the expectation of future job possibilities. However, I do believe that more students pursuing STEM fields would result in more job opportunities in the future.

Bring in representatives from different STEM companies and have them explain what an average person does in that day and how the contribute to bettering the world, etc.

Bring statistics and real people with stories of how easy it is to get hired even with a current recession in place.

Short videos about interesting job opportunities

Host career fairs in high school. FIELD TRIPS.

Simply inform them. No one ever spoke to me about employment in the sciences. In fact, I was constantly told that getting a degree in physics was useless!

There's not much you can do outside of telling them how much need for the professions exists, and sometimes you have to be straightforward with the students and say that there are and will be jobs for them.

I don't have any. I know money is a great incentive; however, if that is the main reason students enter the field, failure is more likely than not to prevail. I see it happen too often that in freshman year they think that they are going to get an engineering degree, and by the end of sophomore year they have switched to business, psychology, or something else. Doing a STEM field because of the job possibilities simply doesn't provide enough motivation to stick with it.

Field trips to places like national laboratories, industry, or even a local college.

A list?

start early and not be afraid of following your dreams

Use current media (Facebook, YouTube, Twitter, etc) to get the word out to current students.

Keep informed with new developments, latest studies and do some self discovery and ingenuity.

Guidance Counselors, Teachers, and Parents should introduce them to a wide range of subdisciplines within STEM fields. Also, get Military advisers involved EARLY. The seven uniformed branches of federal service, the intelligence community, and the DHS offer careers and advanced technical training in the vast majority of STEM fields while providing opportunities of college tuition reimbursement virtually to ANY university or military academy.

The statistics alone would be enough to sell me on it.

take them to the actual companies and show them how they are needed.

.

Tell the market salaries for various professions Tell them what the need to study to get their desired jobs

Get experienced professionals to come in and tell the students about their jobs.

I got a research opportunity as a sophomore and internship as a freshman(in college).

Field trips, especially in engineering fields.

You get to do research and explore new possibilities. You get paid real well and have fun doing it.

There are endless opportunities for engineers out there.

Show them early on, since middle school or high school, the panoply of careers that can be pursued with a STEM field education: - Make brochures, magazines, and videos available in the school orientation center. - Allot one or two lectures in the science or math classes about the job opportunities so the students can see the motivation for these courses. - Take the students on field trips in industry so they can see for themselves the work environment. - Show them meaningful statistics about the future need for employees in those fields. - During/after the field trips, call attention to the demographics of STEM employees and whether or not they are likely to retire soon.

Bring guest speakers, from the industry, to speak about their experience and outlook in those fields.

Use an interactive chart on a website that can show how majors can turn into actual jobs (not just a Chemist, but an actual position being hired from a company) and relate the salaries.

Tell them how much money they can make :)

High school seminars
I suggest talking to high school students because they are the next ones coming in that need to pick a major.
guests from different professions
Give them examples of jobs and projects that people in STEM fields work on-things that they wouldn't normally be exposed to on a daily basis. For example, in high school I thought all engineers were rocket scientists and that there weren't that many out there. I wasn't aware of the multiple facets of engineering and many disciplines and the numerous amount of students in the College of Engineering at the University of Florida. Simple facts and figures might help educate younger people on the possibilities ahead for them.
Students are aware of the jobs in these fields, what they are unaware of is how few jobs exist in other fields (like Psychology). I comparison of fields is most effective in my opinion.
Nothing
Enlightening kids to the problems that need to be solved and the fact that they can really make a difference for the world, humanity, themselves and their children by contributing to the fields.
I do not know.
Have speakers come into the classroom that are in the STEM fields and talk about how exciting their work is.
Mention that there is a need for employees in STEM fields.
not sure, (field trips to different companies???, guest speaker in the classrooms from diggerent companies/organizations)
Career fairs in high school
Have people that work in these fields come in and talk about what they do.
Show that STEM jobs are literally everywhere, and give then examples of how much math and science impact there daily lives. And how they will be given the ability to change their and others, and directly impact people.
advertise
Go to schools and have an ambassador of sorts get students interested in stem fields.
Speaker presentations from employers in STEM fields at highschools
N/A
none sorry I'm worthless :D
Students are already aware. They avoid STEM because they think it is too hard, and too time consuming. You'd be better off surveying the students who didn't choose STEM rather than those who did.
Regardless of "job" possibilities, explain to the students that business and politics do not forward humanity; science and technology do. Therefore, there will always be a need (and a "job" opportunity) for well educated scientists, engineers, and medical doctors.
looking at available data comparing stem feels opprtunities with those that are not
Give them the numbers.
Make them talk to employers.

Encourage professionals in the STEM fields to help educators in middle and high schools by either giving the lesson for one day or just by coming in to talk about their career.

Give examples. Take the needs of these fields and connect students with them. It's simple. For example, the field of nuclear engineering is in desperate need of new students because a vast majority of the workforce in this field is approaching the retirement stage of their career. This provides a lot of opportunities for students to find a good, secure job. Just share what the industry is in need of, and how that need benefits these young students. They're bright; they'll make the connection.

It is always a good idea to promote career paths in certain ways to specific age groups of people. For example: most elementary school students want to become doctors, policemen, or vets because of the desire to help others (including animals and the environments. If targeting this age group, then the STEM fields should be portrayed as a way to help others and ultimately society. Other time, the elementary students go through middle school and then end up in high school; where many make up their minds on the field they want to enter (arts, sciences, etc.). At this point, the STEM fields need to appeal to high school students as a rewarding path that is full of opportunity. While they might not have a specific major in mind; college students who start in the sciences usual graduate with a degree in the sciences. Their interests and majors may change, but college students usually remain in the same area where they start.

I personally wish I had a better understanding of what exactly was out there in the real world. More speakers/presenters to high schools would really help students get a grasp of the real world and reality itself. Speakers from the field explaining how the backbone of companies, production of goods, and the economy all work.

Talk about growth numbers as well as show them the direct relation between what engineers and scientists are needed for. A student can realize that as populations grow and disease prevention gets better, we will need for research scientists, or as technology becomes more important in our lives and culture that we will need more engineers.

Pair up students with a professional in the field they are interested in or make "career days" available to all students.

- Field trips to STEM sites - School visitation from people in STEM careers.

Career showcases and fairs, early internship or research programs. Summer programs that can take the place of having to spend the summer flipping burgers.

there is always something you dont know about. introducing students to less mainstream jobs.. they already know what doctors and nurses do.. but there is a VAST number of obscure jobs that theyve never even heard of.

Bring in engineers/scientists 1x month to classes - different fields - have a STEM month

Good, exciting, hands on presentations in schools.

More informative and personal career fairs (or something similar) in high school and even college.

Hands on STEM experiences that link to job opportunities in the future.

?

Present this information to a class in a fun and interactive way to stimulate students' interest in the area.

Inviting graduate students and professionals into classrooms to talk to children and teachers. I think one of the biggest problems is the disconnect between middle/high school teachers and college professors. I have spoken and interacted with many teachers (both my sister and brother-in-law are high school teachers) and most of them do not even know of the opportunities out there for students. We need to bridge this gap.

tell and encourage them

Talk to your guidance counselor about career opportunities.

They need to get this young...around 8th, 9th grade with students are really starting to think about what they want to do...not to mention they need to get it early enough to get the most out of their high school course offerings.

Statistic	Value
Total Responses	457

31. DemographicsWhat is your gender?

#	Answer	Response	%
1	Male	271	60%
2	Female	180	40%
	Total	451	100%

Statistic	Value
Mean	1.40
Variance	0.24
Standard Deviation	0.49
Total Responses	451

32. What is your age?

Text Response
20
20
20
24
19
20
18
26
21
22
20
20
18
20
27

21
23
32
20
45
21
21
18
21
25
21
20
25
27
21
25
36
20
19
21
23
26
22
21
25
22
24
33
22
34

27
38
30
23
27
20
26
20
20
26
27
22
19
27
20
24
21
23
24
31
19
23
24
21
19
19
22
21
22
29

23
24
19
22
21
25
21
20
18
19
26
19
34
20
20
19
20
28
19
20
30
20
20
31
25
21

Statistic	Value
Total Responses	441

33. What year are you?

#	Answer	Response	%
1	Freshman	32	7%
2	Sophomore	60	13%
3	Junior	132	29%
4	Senior	227	50%
	Total	451	100%

Statistic	Value
Mean	3.23
Variance	0.87
Standard Deviation	0.93
Total Responses	451

34. What is your major(s)?

Text Response
chemical enngeer
Mathematics, Computer Science
Nursing
I am freshman at a medical school, did microbiology as undergrad
math and computer science
Aerospace Engineering
Computer Engineering
I'm in grad school. Master of Sc in Management. Undergrad: Comp Engr & Elec Engr
Mechanical Engineering
Biochem
Microbiology
Mathematics
Chemistry, biology
Aerospace Engineering
Aerospace Engineering
Elementary Education specializing in Technology
metals

MS Environmental Engineering
Computer science
BS Environmental Engineering; MS Industrial Engineering
Computer Science
Civil Engineering
Materials Science and Engineering
Civil Engineering
I'm a PhD candidate in mechanical engineering
Mechanical Engineering
Mechanical Engineering, Aerospace Engineering, minor in Sales Engineering
ECE
mechanical engineering
Electrical engineering
Electrical Engineering
Materials Science & Engineering - Graduate School
Aerospace Engineering, Mechanical Engineering
Computer Engineering - Software/ Mathematics
Nuclear engineering
Chemical engineering
Medical Physics
Civil Engineering
Mechanical Engineering and Nuclear Engineering
i'm a grad student in EES
Aerospace/Mechanical
M.S Computer Engineer
Astronomy
ee
Civil and Coastal Engineering
Civil (Structural) Engineering
civil engineering





Mechanical Engineering
Biomedical Engineering
Environmental Engineering Sciences
Environmental Engineering
Aerospace Engineering
Civil Engineering
Mechanical Engineering
Electrical engineering
Civil Engineering
Electrical Engineering
Aerospace Engineering
BS- Physics, MS - Medical Physics, PhD (projected) - Nuclear/Radiological Engineering
mechanical engineering
civil engineering
Mechanical Engineering, Business Administration
2nd year PhD Mechanical Engineering
ISE
EE
Chemical Engineering
Environmental Engineering
Mechanical Engineering (graduate student)
Environmental Engineer
Civil Engineering
Material Science and Engineering
material science engineering
EE
Environmental Engineering
Electrical Engineering
aerospace engineering (graduate)
Mechanical Engineering with mathh and physics minor

Pursuing PhD in Computer Software Engineering. Majored in Comp Engineering & Mathematics.
Mechanical Engineering
Civil engineering
Materials Science and Engineering
Civil Eng - Graduate Student
Civil Engineering
Chemical Engineering
Nuclear Engineering
Mechanical Engineering
Electrical Engineering
civil engineering
BS Nuclear Engineering, MS Engineering Management, MBA
Chemical Engineering
Mechanical Engineering & Biology
Env Engineering
Electrical Engineering
Nuclear Engineering
ABE -- Ph.D.
Industrial Engineering
Chemical Engineering
Ph. D. Student in Interdisciplinary Ecology
materials science and engineering
Materials Science Engineering
I'm not actually a senior, I'm a graduate student. Ecology

Statistic	Value
Total Responses	451

35. What is your ethnicity?

#	Answer	Response	%
1	Caucasian	303	67%

2	African American		27	6%
3	Hispanic		74	16%
4	Asian		39	9%
5	Other (please specify):		35	8%

Other (please specify):
American Indian
American
black
irish polish american
unspecified, thanks.
Special!
American
human
Native American
Decline to respond
Caribbean Islander
American
Caucasian and Asian
American
Human
American
martian
Haitian
Indian/Italian
mid Eastern
Pacific Islander
no comment
Iranian
Native American
Indian

Hispanic/Caucasian
Homo sapiens
Black
American
mutt
Coptic, Egyptian. (Middle East)
black and mexican
Please specify

Statistic	Value
Total Responses	451

36. Where are you currently enrolled in college?

Text Response
University of Florida
Yale University
University of Florida
Florida
university of florida
University of Florida
University of Florida
UF
University of Florida
CLAS (UF)
UF
University of Florida
UF
University of Florida
University of Florida
University of Florida
u of florida (im a grad student). went to michigan tech for undergrad

UF
University of Florida
University of Florida
University of Florida
University of Florida
University of Florida
University of Florida
yes
University of Florida
University of Florida
UF
university of florida
University of Florida
University of Florida
University of Florida - Electronic Delivery of Graduate Education
University Of Florida
University of Florida
University of florida
University of Florida
University of Florida
University of Florida
University of Florida
University of Florida
Yes
UF College of Engineer
University of Florida
University of Florida
University of Florida
University of Florida
UF

University of Florida
University of Florida
University of Florida
University of Florida
UF
University of Florida
University of Florida
University of Florida
University of Florida
University of Florida
University of Florida
University of Florida
University of Florida
University of Florida
University of Florida
University of Florida
University of Florida
UF
THE University of Florida
University of Florida
University of Florida
University of Florida
UF
University of Florida
UF
University of Florida
UF
University of Florida
University of Florida
engineering
University of Florida

Yes, PhD program for Computer Software Engineering.
University of Florida
Universit of Florida
UF
Grad school
Universtiy of Florida
University of Florida
The University of Florida
University of Florida
University of Florida
University of Florida
Univ of FL - Outreach Engineering Management Program and 1-Yr Professional MBA Program
University of Florida
University of Florida
Stanford
University of Florida
UF
Univ. Florida
University of Florida
University of Florida
University of Florida
the university of florida
University of Florida
University of Florida

Statistic	Value
Total Responses	451