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INFORMATION SYSTEMS EDUCATION JOURNAL

Differences in Males and Females in When and Why They Become Interested in Information Systems Majors

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Abstract

Determining when and why students become interested in careers in information systems is a critical step in filling the pipeline of majors to become information systems workers. Although students who have chosen a particular major may find it difficult to indicate or even understand all of the reasons for their choice, it is possible to tease out several criteria that seem to significantly affect such choices. For computing and STEM (Science, Technology, Engineering and Math) majors in particular, a person's comfort level with STEM coursework perhaps as early as in elementary school seems to play a role. Also, their perceptions of how intellectually stimulating STEM courses were for them throughout their school years seems to affect their choice of a major. This paper aims at distinguishing when and why such majors are chosen through a survey instrument geared toward STEM majors and separates the results by gender and major, identifying when and why each group selected the major they did. The potential value of this research is in determining where efforts could be more specifically focused to recruit into STEM majors.

Keywords: STEM interest, STEM majors, computing majors, information systems.

1. INTRODUCTION

Assurance of STEM majors and graduates flowing through and from American universities is critical to the success of the US economy. As technology becomes increasingly embedded in society, a technologically literate workforce will be necessary. The shortage of STEM student, and in particular, IS and CS (Information Systems and Computer Science) students, has been well documented in both the research and practitioner literature. The reasons proposed for students not studying information systems include: lack of interest, perceived difficulty of subject, the image of the IS worker, worries about outsourcing/offshoring, poor job prospects, negative experiences with a teacher or class, and financial considerations. Several of these reasons have been exposed as unimportant in the literature. Reasons students have for going into the field of information systems include: personal interest, excelling in classes, prestige of profession, positive job outlook and growth, influence of parent/teacher/counselor, starting salary, and ongoing training.

The authors of this paper take previous studies and results and use them to construct a survey instrument to attempt to discover when and where students become interested in information systems (and, in general, STEM fields). The authors present results about gender differences in interest level (in studying information systems), influences on major field selection, and when (elementary, middle, high school, or college) students became intellectually stimulated to study information systems.

2. LITERATURE REVIEW

The shortage of students studying STEM disciplines has been extensively documented (Feder, 2012; Khazan, 2012; Tabatabaei, & Tehrani, 2010) since the term was coined by Judith Ramaley while serving as a director at the NSF in 2001 (Donahoe, 2013). STEM was actually a rearrangement of SMET, an acronym that dates back to the latter part of the 20th century (Donahoe, 2013). In particular, the shortage of information systems (IS) students is at a critical level (Burns, Gao, Sherman, Vengerov, & Klein, 2014; Downey, McGaughey, & Roach, 2011) and the dearth of females studying for IS careers in the US is of particular concern (Croasdell, McLeod, & Simkin, 2011; Mishra, Kavanaugh, & Cellante, 2013; Mishra, Draus, Caputo, Leone, Kohun, & Repack, 2014).

This shortage in female IS majors comes even as the percentage of female students enrolled at US colleges continues to surpass that of males, and the gap is predicted to widen over the next decade (Kena, Aud, Johnson, Want, Zhang, Rathbun, Wilkinson-Flicker, & Kristapovich, 2014). When and where to best attract students into an IS discipline is an open research question. Various authors have studied gender differences in major selection (Mishra, Cellante, & Kavanaugh, 2014; Croasdell, et al., 2011) and have found that the influence of family members, interest in the subject, job prospects, and having a respected career are motivating factors in IS career selection (Croasdell, et al., 2011). Mishra, Draus, Caputo, Leone, Kohum, and Repack (2014) determined that females need more mentoring (especially by "a person who can influence theory decisions about college majors" p. 45), and that advice from family members or friends who were in the IS field were especially influential in major selection. Mishra, et al. also found that exposure to computing activities when young (K-12) encouraged female students to study computing in a post-secondary setting.

Lack of information about computing disciplines is another reason students are not entering the fields (Computer Science and Computer Information Systems). This is particularly acute in the IS arena as many authors have reported that students are unaware of IS (or only marginally aware) when they enter post-secondary education (Walstrom, Schamback, Jones, & Crampton, 2008; Mishra, Cellante, & Kavanaugh, 2014; Burns, et al., 2014)

There are many influences in a student's life that could impact their decisions to major in a computing discipline. Personal interest in the field ranks first with family influences, career opportunities (salary, job security, job prestige), and ease of subject following closely (Crampton, Walstrom, & Schambach, 2006; Burns et al., 2014). Conversely, Pollicia and Lomerson (2006) found that lack of information on IS careers, the perception of difficulty of the subject, and personal (non) interest led students away from IS as a major. Not surprisingly, personal interest in a subject was found by many authors to drive field of study choices as well (Burns, et al., 2014; Mishra, Cellante, & Kavanaugh, 2014; Snyder & Slauson, 2013; Crampton, et al., 2006).

While there is no clear dividing line between internal and external influences to major selection (Downey, et al., 2009), personal interest along with intellectual stimulation can, arguably, be considered an internal stimulation. Many authors have found that personal interest is a leading factor in selecting a major in a STEM or, in particular, an IS discipline (Downey, et al., 2009; Snyder & Slauson, 2014; Burns, et al., 2014; Beyer, 2008; Walstrom, et al., 2008). The importance of personal interest cannot be overstated, and determining when, where, and how this interest is stimulated is critical to attracting majors to STEM disciplines.

The following statement, made by a 14 year old female sums up her perspective on when students (in particular female students) become interested in computing disciplines.

> I've seen the software industry's efforts to recruit more women in college, and sometimes high school. Let me tell you, that's way too late. We're making up our minds now – in seventh grade or even sixth. My teachers have (too often) expounded that during our middle school years we grow more than any other time of our lives outside of infancy. It is the perfect time to present software as a career, at the moment when we are most malleable. (Platt, 2014, p. 80)

This anecdotal statement reveals that females could be ready for career selection – based on personal interest – as early as middle school.

3. METHODOLOGY

A survey instrument was developed in the fall semester of 2013 then distributed to STEM majors in a mid-sized western university in the spring semester of 2014. One of the main elements of the survey design was to determine the point at which students became interested in STEM disciplines. In addition, the major influences and influencers were listed on the survey in an attempt to discover how students became interested in STEM disciplines. Many of these questions were generated from previous survey work which was mentioned in the literature review. The survey was composed of demographic questions, interest level questions, and a series of Likert scale questions that extract information concerning elementary, middle, high school, and college STEM classes. Finally, a series of Likert scale questions concerning influencing factors for the choice of major were included. See Appendix A for the complete survey instrument.

Students in mathematics, computer science, and information systems courses were surveyed. There were 168 surveys collected, of which three were removed due to missing information. This yielded an n of 165 for the study.

4. RESULTS

There were 132 males and 33 females in the respondents, verifying what other authors have found, that females are underrepresented (20%) in STEM fields (Downey, et al., 2013; Croasdell, et al., 2011). Table 1 lists the survey respondents according to their major field of study and gender.

Field of Study	Female	Male	Total	Percent Female
CISB*	7	21	28	25%
CSCI*	7	72	79	8.9%
Math	12	8	20	60%
ME*	7	29	36	19.4%
Other	0	2	2	0%

Table 1
Field of study and gender
* CISB = Computer Information Systems, CSCI = Computer Science, ME = Mechanical Engineering

Table 1 illustrates what others have discovered, that females are 20% of the STEM population, but only 13.1% of the students studying computing sciences. These statistics are alarming, as Mishra, Draus, Caputo, Leone, Kohun, and Repack (2014) point out, we are losing a significant resource in the information systems workforce, the female contingent. A Chi-square test confirms what Table 1 is illustrating, that females are underrepresented in computing disciplines and overrepresented in mathematics in this sample; χ^2 (4) = 27.07, p < 0.001.

When and where to encourage females (indeed any student) into the computing arena is a topic addressed by this survey. Burns, et al. (2014) report that 88.5% of their survey respondents had decided on a major by the time they were sophomores in college. Table 2, which lists majors by year in school tells a different story, particularly when evaluating the CISB respondents.

Major	Freshman	Sophomore	Junior	Senior	Other
CISB	0	3	8	17	0
CSCI	16	18	16	28	1
Math	2	10	3	5	0
ME	15	12	8	1	0
Other	0	1	1	0	0

Table 2
Year in school and major

Table 2 suggests that even as college students, few enroll in the CISB major or have selected it as a major field of study, especially in the freshman and sophomore years. A chi-square test,
χ^2 (9) = 41.40, p < 0.001, indicates that there are dependencies between year in school and major. There are fewer CISB freshmen and an over-abundance of mechanical engineering freshmen. This points to an “awareness” issue between the disciplines. Students do not know much about CISB (it is a relatively new discipline) and know a great deal about engineering (it is perceived as an interesting, lucrative field).

Table 3 gives information concerning when (elementary, middle, high school, or college) students became interested in STEM disciplines, when they discovered they were good at STEM classes, and when they considered a STEM major.

When	First discovered STEM interest	
	F	M
Elementary	11 (33%)	36 (27%)
Middle	5 (15%)	27 (20%)
High	10 (30%)	49 (37%)
College	5 (15%)	14 (11%)
Work	2 (6%)	3 (2%)
Home		1 (1%)
Blank		2 (2%)
	First discovered good at STEM disciplines	
	F	**M**
Elementary	12 (36%)	26 (20%)
Middle	7 (21%)	27 (20%)
High	6 (18%)	49 (37%)
College	6 (18%)	22 (17%)
Work	2 (6%)	6 (5%)
Home		1 (1%)
Blank		1 (1%)
	First considered STEM discipline as a major	
	F	**M**
Elementary	2 (6%)	5 (4%)
Middle	5 (15%)	13 (10%)
High	14 (42%)	64 (48%)
College	8 (24%)	40 (30%)
Work	4 (12%)	7 (5%)
Blank		3 (2%)

Table 3
Interest level in STEM disciplines

Table 3 indicates that a higher percentage of females seem to have discovered STEM disciplines as elementary school students, and considered it as a major earlier that their male counterparts. This could have been in a mathematics or science class, but the interest seemed to be initiated in the earlier years of their education. Further along, it can be seen that a consideration to major in STEM was primarily cultivated in high school and college, indicating that a continuum of support (elementary school to college) is necessary to begin, maintain, and cultivate an interest in STEM disciplines. This is reinforced by the lack of remediation for students in STEM disciplines. A minority of the students surveyed (19.5%) needed no remediation, indicating sufficient preparation (and sufficient support in schools) for studying STEM disciplines. Females had a 15.2% remediation rate, while males had a 20.6% remediation rate. These students compare favorably to the institution remediation rate of 36.2% and a state-wide remediation rate of 20.3% (CDHE, 2013). Table 4 lists the type of remediation necessary for students in this survey group.

Gender	Math	English	Reading	Math and English	English and Reading	Math and English and Reading	None
Male	12	4	1	7	2	1	105
Female	2	2	0	1	0	0	28

Table 4
Remediation necessary for college level classes

When	First discovered STEM interest	
	F	M
Elementary	2 (14%)	26 (28%)
Middle	1 (7%)	17 (18%)
High	5 (36%)	35 (38%)
College	4 (28%)	10 (11%)
Work	2 (14%)	3 (3%)
Home		1 (1%)
Blank		1 (1%)
	First discovered good at STEM disciplines	
	F	**M**
Elementary	1 (7%)	18 (19%)
Middle	1 (7%)	15 (16%)
High	5 (36%)	36 (39%)
College	5 (36%)	18 (19%)
Work	2 (14%)	5 (5%)
Home		1 (1%)
	First considered STEM discipline as a major	
	F	**M**
Elementary	0 (0%)	3 (3%)
Middle	0 (0%)	8 (9%)
High	4 (29%)	43 (46%)
College	6 (43%)	34 (37%)
Work	4 (29%)	4 (4%)
Blank		1 (1%)

Table 5
Interest level in STEM disciplines by students studying computing disciplines

Table 5 summarizes the responses for survey respondents who are studying computing disciplines from Table 3 (F = 14, M = 93, n = 107)

Table 5 indicates that male computing students parallel male STEM students in when they became interested in computing disciplines, while female computing students differ in that they discovered that they were good at computing disciplines, and considered them as a major later in their educational experience – in high school and college. This could be due to the lack of "formal" computing education in the lower grades, the lack of educators trained in the computational sciences in elementary and middle school, or encouragement/discouragement by teachers or other influencers. It could also signify that computers are penetrating the lower grade levels to a greater extent and the results of this penetration have yet to be seen. It is also interesting to note that while a small number of females reported discovering STEM fields in the workplace, none (zero!) reported discovering their interest, aptitude, or major at home. This indicates that parents (especially parents who are employed in the technology industry) need to do a better job recruiting as well, supporting the findings of Croasdell, et al. (2010).

Parents, teachers, and mentors can influence a student's choice of field of study or occupation (Pollacia & Lomerson, 2006; Croasdell, et al., 2010; Mishra, Cellante, & Kavanaugh, 2014). Table 6 lists the influences on the choice of STEM disciplines from this study group.

Influence	Average*
Personal interest	4.5
Probability of working in field after graduation	4.4
Salary	3.8
Parents	2.1
Friends	1.9
Teacher/Counselor	2.2
Performance in courses in major	3.2
Intellectually stimulating	4.3
Good at computing/math	4.3

Table 6
Influences on selection of STEM major
* 1 = not important, 5 = very important

Table 6 yields both confirmation of previous results as well as some surprises. Personal interest, probability of working in the field, and aptitude for the subject rank at the top of the list for why students study STEM disciplines, confirming what other authors have found (Crampton, et al., 2006; Burns, et al., 2014; Walstrom, et al., 2008). Surprisingly, the influence of parents and friends dropped significantly compared to other studies (Crampton, et al., 2006; Burns, et al., 2014; Pollicia & Lomerson, 2006; Croasdell, et al., 2010). If students reported that teachers, counselors, or performance influenced their choice of major, females seemed to have that experience a bit earlier than males (grade 10 vs. grade 11). Table 7 breaks out the data by gender, and tests the hypothesis that gender ratings will be the same.

Influence	Male	Female	p-value
Personal interest	4.5	4.4	
Probability of working in field after graduation	4.4	4.3	
Salary	3.8	3.6	
Parents	2.1	2.0	
Friends	1.9	1.6	$p < .10$
Teacher/ Counselor	2.1	2.6	$p < .10$
Performance in courses in major	3.0	3.8	$p < .02$
Intellectually stimulating	4.2	4.4	
Good at computing/math	4.3	4.3	

Table 7
Influences on selection of STEM major by gender (p-value listed if significantly different)
1 = not important, 5 = very important

Table 7 illustrates that friends have slightly more influence on males than females, while counselors have slightly more influence on STEM selection by females. Also, females seem to have a greater tendency to major in subjects after performing well in than subject area.

Table 8 tells us that parental influence and teacher/counselor influence is not as important to computing majors as to other STEM disciplines. The influences computing students have in selecting their major appears to be personal interest in the subject, the probability of work in the field, intellectually stimulating content, and being good at the subject. Separating out computing students and performing a gender analysis revealed no difference in the categories listed in Table 8. It did reveal that when teachers, counselors or course performance played a part, males experienced this early in 11^{th} grade, while females experienced it in late 11^{th} to 12^{th} grade.

Influence	Computing Major	Non-computing Major	p-value
Personal interest	4.5	4.5	
Probability of working in field after graduation	4.4	4.3	
Salary	3.7	3.8	
Parents	1.9	2.6	p<0.01
Friends	1.8	2.0	
Teacher/ Counselor	1.9	2.8	p<.01
Performance in courses in major	2.9	3.6	p<.01
Intellectually stimulating	4.3	4.2	
Good at computing/math	4.3	4.4	

Table 8
Influences on selection of STEM major by discipline (computing vs. non-computing)
1 = not important, 5 = very important

The survey contained 105 students whose parents were not in STEM fields and 60 students whose parents were in STEM fields. Table 9 reports the influences for these two demographic groups.

Table 9 points at the parental influence in students' selection of major in college. If the parents are in a STEM field, students are more likely to count that as an influencing factor in their decision to major in a STEM field. Further, if a student has a parent working in a STEM field, they are more likely to self-evaluate as being good at computing or mathematics. Analyzing the students whose parents are in STEM fields by gender yields Table 10.

Table 10 indicates that females, whose parents are employed in STEM fields, are influenced less by friends, and more by their performance in courses germane to their major. Beyond external influences, the survey instrument measured when (elementary, middle, or high school) students became intellectually stimulated by STEM courses, and how difficult students perceived their STEM coursework in school. Table 11 lists the results for the entire sample group.

Influence	Parent in STEM	Parent not in STEM	p-value
Personal interest	4.5	4.5	
Probability of working in field after graduation	4.4	4.3	
Salary	3.7	3.8	
Parents	2.4	1.9	p<.01
Friends	2.0	1.8	
Teacher/ Counselor	2.2	2.2	
Performance in courses in major	3.2	3.1	
Intellectually stimulating	4.4	4.2	
Good at computing/math	4.5	4.2	p<.10

Table 9
Influences on selection of STEM major by parent occupation
1 = not important, 5 = very important

Influence	Male	Female	p-value
Personal interest	4.5	4.4	
Probability of working in field after graduation	4.4	4.4	
Salary	3.7	3.7	
Parents	2.5	2.4	
Friends	2.1	1.5	p<.10
Teacher/ Counselor	2.1	2.6	
Performance in courses in major	3.0	3.9	p<.05
Intellectually stimulating	4.3	4.4	
Good at computing/math	4.4	4.5	

Table 10
Influences on selection of STEM major if parents in STEM discipline by gender
1 = not important, 5 = very important

Table 11 indicates an increasing level of intellectual stimulation as students progress through the grades in a traditional educational setting. It also shows a constant level of difficulty as students transition between elementary, middle, and high school.

Perception of Intellectual Stimulation and Difficulty of Coursework	1 = not intellectually stimulating, 5 = intellectually stimulating
High School STEM intellectual stimulation	3.8
Middle School STEM intellectual stimulation	3.2
Elementary School STEM intellectual stimulation	3.0
	1 = difficult, 5 = easy
High School STEM easiness vs difficulty	3.7
Middle School STEM easiness vs difficulty	3.7
Elementary STEM easiness vs difficulty	3.7

Table 11
Intellectual stimulation and ease of curriculum for STEM classes

Perception of Intellectual Stimulation and Difficulty of Coursework	Females	Males	p-value if statistically significant
	1 = not intellectually stimulating, 5 = intellectually stimulating		
High School STEM intellectual stimulation	3.9	3.7	
Middle School STEM intellectual stimulation	3.5	3.1	$p < 0.10$
Elementary School STEM intellectual stimulation	3.5	2.9	$p < 0.05$
	1 = difficult, 5 = easy		
High School STEM easiness vs difficulty	4.0	3.6	
Middle School STEM easiness vs difficulty	4.1	3.6	$p < 0.05$
Elementary STEM easiness vs difficulty	4.1	3.6	$p < 0.05$

Table 12
Intellectual stimulation and ease of curriculum for STEM classes by gender

Table 12 identifies gender differences in intellectual stimulation and difficulty of STEM courses. These differences appear earlier in the curriculum than in other studies. It can be seen that females perceive more intellectual stimulation in STEM topics in elementary school and middle school than do males. The same is true of easiness, females find STEM topics easier than males in the earlier grades. Again, this indicates that females should be encouraged (mentored, guided, coached) to pursue STEM disciplines earlier in their education. Table 13 separates the data by discipline, computing majors versus non-computing majors.

Perception of Intellectual Stimulation and Difficulty of Coursework	Computing Majors	Non-computing Majors	p-value if statistically significant
	1 = not intellectually stimulating, 5 = intellectually stimulating		
High School STEM intellectual stimulation	3.6	4.1	$p < 0.01$
Middle School STEM intellectual stimulation	3.1	3.5	$p < 0.05$
Elementary School STEM intellectual stimulation	2.8	3.3	$p < 0.05$
	1 = difficult, 5 = easy		
High School STEM easiness vs difficulty	3.7	3.7	
Middle School STEM easiness vs difficulty	3.7	3.8	
Elementary STEM easiness vs difficulty	3.6	3.8	

Table 13
Intellectual stimulation and ease of curriculum for STEM classes by major

Table 13 shows that STEM majors who are not studying computing indicated that they received more intellectual stimulation throughout their mandatory education than computing majors. The perceived easiness of the STEM coursework showed no statistical difference between majors. When the data was analyzed by gender, for majors in the computing fields, while females perceived the STEM topics to be easier and less intellectually stimulating, there were no statistical differences between males and females.

5. DISCUSSION

A shortage of students and graduates in information sciences (in general in STEM disciplines) is upon us. Compounding the problem is the lack of female students in the computing disciplines. Another factor that compounds the issue is the lack of information in society about information sciences. Students do not "appear" as CISB majors until later on in their college career. Many factors could be contributing to this, but when the general public hears "computing", they think of computer science, and not information systems. It is up to the IS community to help change this perception of computing.

Females seem to discover STEM disciplines earlier in their educational experience (see Table 3) than do males, but do not discover computing disciplines until later in their educational experience (see Table 4). In addition, female students in STEM disciplines are more intellectually stimulated in elementary and middle school, indicating the need to encourage females from a younger age than males. This should be an easy task, as females in elementary and middle school also find the STEM disciplines less difficult than male students.

As females progress through school, they have a greater tendency to follow disciplines that they perform well in. This means that high school teachers and college professors have the task of identifying these students and encouraging them to pursue these disciplines.

Finally, it is up to educators at all levels to recognize talent in students and guide them in an appropriate direction for their studies.

Some limitations of this study include a small n for females, in particular females who are studying computing disciplines (which is illustrative of the issue being addressed), and a lack of breadth in the survey deployment (more students from more schools should be surveyed).

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Editor's Note:

This paper was selected for inclusion in the journal as a EDSIGCon 2015 Meritorious Paper. The acceptance rate is typically 15% for this category of paper based on blind reviews from six or more peers including three or more former best papers authors who did not submit a paper in 2015.

Appendix A - STEM Survey Instrument

State University Survey on STEM Interest
(STEM = Science, Technology, Engineering and Mathematics)
Your participation in this study will require completion of this questionnaire. This should take approximately 5 minutes of your time. Your participation will be anonymous and you will not be contacted again in the future. This survey asks questions about your interest in STEM disciplines and so constitutes no risk to you in responding. By completing and returning this questionnaire you are giving your consent to participate in my research. Your responses on the questionnaire are anonymous and you should not put any identifying information on it anywhere. You can stop filling out this survey at any time. I will be happy to answer any questions you have about this study. If you have further questions about this project or if you have a research-related problem, you may contact the researcher. If you have any questions about your rights as a research participant you may contact the Director of Sponsored Programs.

Demographic Information	
Gender: ◻ Male ◻ Female	Year of Birth: ____________
Degree pursuing: ◻ Associates ◻ Bachelors ◻ Other/Non-degree	
Current Status: ◻ Freshman ◻ Sophomore ◻ Junior ◻ Senior ◻ Other	
Your marital status: ◻ Single ◻ Married	
Major: ◻ Mathematics ◻ Computer Science ◻ Computer Information Systems ◻ other (please list your major: ________________________________)	
Are you employed: ◻ full time ◻ part time (number of hours per week _______) ◻ no	
Do you attend school ◻ full time ◻ part time (number of credits _________)	
Did you have computers in your home growing up? ◻ yes ◻ no ◻ part of the time	
Were either of your parents employed in a STEM field? ◻ yes ◻ no	
If either of your parents were employed in a STEM discipline, what was their highest education level? Please list: ____________________	

Interest Information					
When did you first discover your interest in STEM disciplines? ◻ elementary school ◻ middle school ◻ high school ◻ college ◻ at work					
When did you first discover that you were good at STEM disciplines? ◻ elementary school ◻ middle school ◻ high school ◻ college ◻ at work					
When did you first consider a major in a STEM discipline? ◻ elementary school ◻ middle school ◻ high school ◻ college ◻ at work					
When you entered college, did you need remediation (non-credit college coursework) in: ◻ Mathematics? ◻ English? ◻ Reading? ◻ no remediation needed					
School Information					
Please rate the following questions according to the scale: 1 = not intellectually stimulating, 2, 3, 4, 5 = very intellectually stimulating Circle your response					
In high school I found STEM courses:	1	2	3	4	5
In middle school I found STEM courses: :	1	2	3	4	5
In elementary school I found STEM topics: :	1	2	3	4	5
Please rate the following questions according to the scale: 1 = difficult, 2, 3, 4, 5 = easy Circle your response					
In high school I found STEM courses:	1	2	3	4	5
In middle school I found STEM courses: :	1	2	3	4	5

In elementary school I found STEM topics: :	1	2	3	4	5

Influence Information					
Please rate the following influences on your major selection according to the scale: 1 = not important 2, 3, 4, 5 = very important Circle your response					
Personal interest	1	2	3	4	5
Probability of working in the field after graduation	1	2	3	4	5
Salary – starting and long term	1	2	3	4	5
Parents influenced choice of major	1	2	3	4	5
Friends influenced choice of major	1	2	3	4	5
Teacher/counselor influenced choice of major In what grade? _________	1	2	3	4	5
Performance in courses in the major In what grade? _________	1	2	3	4	5
Intellectually stimulating	1	2	3	4	5
Good at computing/science/mathematics	1	2	3	4	5
Other: ____	1	2	3	4	5

Please add any other comments regarding how you ended up as a STEM major at SU.