STEM Career Investigation Program (SCIP) Spring 2014 Final Report

EPSCOR NEXUS, WORKFORCE DEVELOPMENT COMPONENT

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September 2014

This material is based upon work supported by the National Science Foundation under Grant No. IIA-1301726.

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TABLES

The STEM Career Investigation Program (SCIP) completed its first semester of operation in spring 2014. SCIP was funded through the EPSCoR Nexus grant that will run through 2018. The purpose of this document is to report on the spring 2014 operation of SCIP.

OVERVIEW OF THE STEM CAREER INVESTIGATION PROGRAM (SCIP)

The STEM Career Investigation Program (SCIP) is conducted for high school sophomores, juniors, and seniors in Nevada. The goal of SCIP is to provide students with opportunities to observe research and career presentations by STEM professionals in a wide array of specialties in order to understand how the STEM disciplines are integrated. In addition, the presentations outline possibilities for students' future career paths. Speakers from the College of Engineering and the College of Science at University of Nevada- Reno (UNR) and speakers from the Desert Research Institute (DRI) were invited to present their current research projects to the students and discuss future job possibilities and academic preparation for someone with their degree and area of specialization.

Presenters for the spring 2014 SCIP sessions were recruited through email by the Principal Investigator and Graduate Research Assistant. Presenters were recommended by various Nexus and UNR staff. Six possible presenters were contacted, with an additional six people on a waiting list. All original six possible presenters agreed to be a part of the SCIP program. Presenters were given an outline of expected talking points for their presentation. Among these expectations were educational background, current research, and current job responsibilities. Additionally, presenters were asked to be willing to answer any and all questions asked by the participants in the program.

SCIP SPRING 2014 SESSIONS

Participant Recruitment

Recruitment for the spring 2014 SCIP sessions began in October 2013. Recruitment took place through emailing Washoe County School District (WCSD) Department Leaders and educators who were asked to pass the information along to students. Moreover, flyers were printed and mailed to each high school in WCSD to be displayed where students would have access to the information. Additionally, the WCSD STEM Coordinator, Kelly Cannon, distributed flyers and information to science teachers in all WCSD high schools.

Participants

Forty-four WCSD high school students applied to the SCIP Program and all were accepted. Thirty-two of those students attended the program, while twelve students declined acceptance or did not attend.

Twenty-four of the thirty-two high school students that attended were female. Eight of the students were male (Table 1).

Table 1 SCIP Participant Gender

Gender	Number	Percentage
Male	8	25%
Female	24	75%
Total:	**32**	**100%**

Fourteen of the students were 10th graders, thirteen were 11th graders, and five were 12th graders (Table 2).

Table 2 SCIP Participant Grade Levels

Grade Level	Number	Percentage
10th Graders	14	43.75%
11th Graders	13	40.63%
12th Graders	5	15.63%
Total:	**32**	**100.00%**

Of the fourteen 10th graders, ten students were female and four were male. Of the thirteen 11th graders, ten students were female and three were male. Of the five 12th graders, four students were female and one was male. Table 3 shows this distribution and the percentages in each category.

Table 3 SCIP Participant Grade Level and Gender

Grade Level and Gender	Number	Percentage
10th Grade Females	10	31.25%
10th Grade Males	4	12.50%
11th Grade Females	10	31.25%
11th Grade Males	3	9.40%
12th Grade Females	4	12.50%
12th Grade Males	1	3.10%
Total:	**32**	**100.00%**

Participating students were from ten different WCSD high schools, with the most participants coming from Truckee Meadows Community College (TMCC) High School. TMCC High School has the ability to email all of their students with educational information, therefore the reason for the majority of participants coming from this school could be that the SCIP pamphlet was made available to every student associated with that school. The distribution among the high schools are indicated in Table 4.

Table 4 SCIP Participating High Schools

School	Number of Students	Percentage of Students
AACT High School	2	6.25%
Damonte Ranch High School	1	3.13%
Hug High School	2	6.25%
McQueen High School	8	25%
Reno High School	1	3.13%
Spanish Springs High School	2	6.25%
Sparks High School	1	3.13%
The Davidson Academy	2	6.25%
TMCC High School	11	34.38%
Wooster High School	2	6.25%
Total:	**32**	**100.00%**

Table 5 shows the distribution of participants by ethnicity and race, as well as the percentage of the whole group. There was a large representation of underrepresented minorities in this SCIP program.

Table 5 SCIP Participant Ethnicity

Ethnicity		
	Students that answered "Yes"	***Percentage of Students***
Hispanic or Latino	7	**21.88%**
	Number of Students	***Percentage of Students***
American Indian or Alaska Native	2	6.25%
Asian	7	21.87%
Black or African American	2	6.25%
Native Hawaiian or Other Pacific Islander	3	9.38%
White	18	56.25%
Total:	**32**	**100%**

Sessions

At each session, students came to the Raggio Research Center for STEM Education (RRC) in the College of Education at the University of Nevada, Reno. Each session was on a Tuesday evening from 5:30 – 7:30 p.m. The sessions that were conducted in spring 2014 ran for six consecutive weeks from February 11 – March 18, 2014. Students were provided with food (pizza or sub sandwiches) and beverages at the beginning of the sessions. At the first session, students took the STEM Attitudes Survey (Tuan, Chin, & Shieh, 2005). At the end of each individual session, students completed a STEM Session Survey about their experience at that particular session. Finally, at the completion of the final session, students took the STEM Attitudes Survey again.

Session 1- February 11, 2014

The first session was held on Tuesday, February 11, 2014. The students arrived at 5:30 p.m. and took the STEM Attitudes Survey. Then, students grabbed their dinner and sat to watch the first presenter. The presenter at the first session was Dr. Christian Fritsen from the Desert Research Institute (DRI) in Reno, Nevada. Dr. Fritsen is a marine

biologist and discussed his career with the students. Additionally, Dr. Fritsen brought many supplemental materials to share with the students that related to his research conducted on Antarctica.

Session 2- February 18, 2014

The second SCIP session was held on Tuesday, February 18, 2014. The students arrived at 5:30 p.m., grabbed their dinner, and sat down to listen to the second SCIP presenter. The presenter for the second session was Dr. Richard Kelley from the Computer Science and Engineering Department at UNR. Dr. Kelley is part of the EPSCoR Nexus project. Dr. Kelley presented information on his work in robotics, his educational background, and the different career paths he could have taken with his various degrees. Additionally, Dr. Kelley brought different examples of robots and other tools he uses on a daily basis for the students to interact with.

Session 3- February 25, 2014

The third SCIP session was held on Tuesday, February 25, 2014. The students arrived at 5:30 p.m., collected their food, and sat down to listen to the third SCIP presenter. The third SCIP presenter was Dr. Jennifer Hollander from the Biology Department at UNR. Dr. Hollander discussed her job as a professor of human anatomy and physiology and her research in seed dispersal. Additionally, Dr. Hollander brought three of her anatomy lab students along to the presentation. With the help of these students, Dr. Hollander provided a hands-on experience with human organs for the students to explore, if they wanted to. Students were provided with gloves and detailed information from Dr. Hollander and her anatomy students.

Session 4- March 4, 2014

The fourth SCIP session was held on Tuesday, March 4, 2014. The students arrived at 5:30 p.m., grabbed the provided food, and sat down. The fourth SCIP presenter was Dr. Scott Mensing from the Geography Department at UNR. Dr. Mensing discussed his various degrees, his current job, and his research on climate change with mud cores. Dr. Mensing provided the students with three different mud cores that they handled and

explored. Dr. Mensing then provided different pollen samples that students could explore through microscopes provided by the College of Education.

Session 5- March 11, 2014

The fifth SCIP session was held on Tuesday, March 11, 2014. The students arrived at 5:30 p.m., grabbed their food, and sat down to listen to the fifth SCIP presenter. The fifth presenter was Dr. Danny Taylor from the Mining Engineering Department at UNR. Dr. Taylor discussed his degrees, his profession, and his current research. Dr. Taylor brought two of his Mining Engineering students along to assist with his presentation. These students demonstrated some mining equipment, answered the participant's questions, and were an asset to the overall presentation. Dr. Taylor showed videos that piqued the participants' interest in his field. Moreover, Dr. Taylor, his students, and the SCIP Graduate Research Assistant, Brittney Timmons, provided a brief presentation on college life, based on participants' questions from the previous week.

Session 6- March 18, 2014

The sixth and final SCIP session for spring 2014 was held on Tuesday, March 18, 2014. The students arrived at 5:30 p.m., grabbed their food, and sat down to listen to the final presenter. The final presenter was Dr. Michael Leverington from the Computer Science and Engineering Department at UNR. Dr. Leverington has a unique background, starting his career as a mechanic and getting degrees in both Education and Computer Science and Engineering. Dr. Leverington focused his presentation on his varied background and the importance of following one's dream, even if that dream changes throughout life. Additionally, Dr. Leverington discussed problem solving and conducted various problem solving scenarios with the students. At the conclusion of the presentation, students were taken into the adjoining computer lab to take the STEM Attitudes Survey again. This survey was taken before the first session (pre-test) and at the conclusion of the final session (post-test).

SURVEYS

SCIP STEM Session Survey

At the conclusion of each session, the participants took the SCIP STEM Session Survey, which asked students to rate the effectiveness of the session in regard to the content that was delivered, whether or not it related to their classes in high school, how well they perceived the integration of STEM in the presentation, if the content that was presented was new to them, and the worthiness of their time spent at the session. Moreover, the survey had two open-ended questions at the end that asked the participants why the presentation was beneficial to them and whether or not they had any suggestions for the program (Appendix A).

Since this survey rated six questions on a four point, Likert-type scale of Strongly Disagree (1) to Strongly Agree (4), the means were calculated for each question for each session to determine the overall effectiveness of each speaker. The breakdown for each speaker is provided in Table 6.

Table 6 Means for STEM Survey

Means for STEM Survey	
Presenter	**Average (Out of 4)**
Dr. Fritsen	3.43
Dr. Kelley	3.62
Dr. Hollander	3.51
Dr. Mensing	3.39
Dr. Taylor	3.44
Dr. Leverington	3.38

Dr. Kelley was rated the most effective speaker by the participants according to the STEM Session Survey. Overall, all speakers scored a high average for their effectiveness in the SCIP program.

Student Attitudes toward STEM Survey

The Student Attitudes toward STEM Survey was provided to the students at the beginning of the first session and the conclusion of the final session. This survey was

given as a pre/post assessment of the effectiveness of the program. The survey contained 26 questions. The questions spanned items from participants' future education plans to their confidence in STEM classes in high school. Other topics include whether or not the students feel supported in their community and their reasoning behind taking STEM courses. The full questionnaire is provided in Appendix B. Students responded to each question on a five point, Likert-style scale from Strongly Disagree (1) to Strongly Agree (5). The survey was modified from Tuan, Chin, and Shieh (2005).

Thirty students completed both the pre-test and the post-test. Pre-test: *(M= 4.15, SD= 0.40, N=30);* Post-test: *(M= 4.28, SD= 0.35, N=30);* the difference was significant at the .05 level, $t_{(29)} = -2.46$, $p = .02$ *(significance level p=<.05).*

Evaluator Survey

At the conclusion of the final session, the participants were asked to complete an evaluation survey provided by the Nexus evaluation team, Smart Start Educational Consulting Services. A copy of the survey is provided in Appendix C. The evaluation survey contained questions regarding various aspects of the program, from speaker effectiveness, to program organization, to overall satisfaction with the program. The evaluator's report concluded that the SCIP program was successful, receiving high ratings all around. A copy of that report is provided in Appendix D.

EVALUATION

Overall, the feedback from participants, presenters, and the evaluation team was extremely positive for the first year of the SCIP program. Additionally, the results from analyzing the pre and post STEM Attitudes Survey showed a significant increase in positive attitudes toward STEM fields. While we are pleased with the inaugural year of the SCIP program, a few changes will be made for the second year based on feedback from presenters, participants, and the evaluation team.

Recruitment

In year two, recruitment materials will be sent to the guidance counselors at every high school in WCSD. Based on participant feedback, a portion of participants ultimately heard about the program through their guidance counselor, but not all guidance counselors were provided with the information from their school. We believe that recruitment numbers may increase if we initially provide guidance counselors with the SCIP recruitment materials.

A majority of the participants expressed from the beginning that they were already interested in STEM fields. Efforts to recruit more students that are not overtly interested in the STEM fields will be established in year two. Guidance counselors and teachers that receive the recruitment materials will be asked to present the information to all students, including those that are unsure of their future in a STEM field, thus giving the SCIP program and presenters the possibility of recruiting more students into the STEM fields that may not have taken that path otherwise.

Returning participants

A number of participants expressed an interest in returning for the second year of the SCIP program. New participants are important to influencing more high school students to pursue STEM degrees, yet we are honored that the program was beneficial to our first participants. Because of this, we will have limited spots open to return participants in the second year, accepting them on a first come, first served basis. Once those spots are filled, remaining spots will only be open to new participants.

Presentation guidelines

Participants, presenters, and the evaluation team suggested in-depth guidelines be provided to the presenters so that each presentation follows the same path. A more thorough letter will be created for the presenters in year two, outlining the expectations for the presentation.

Hands-on activities

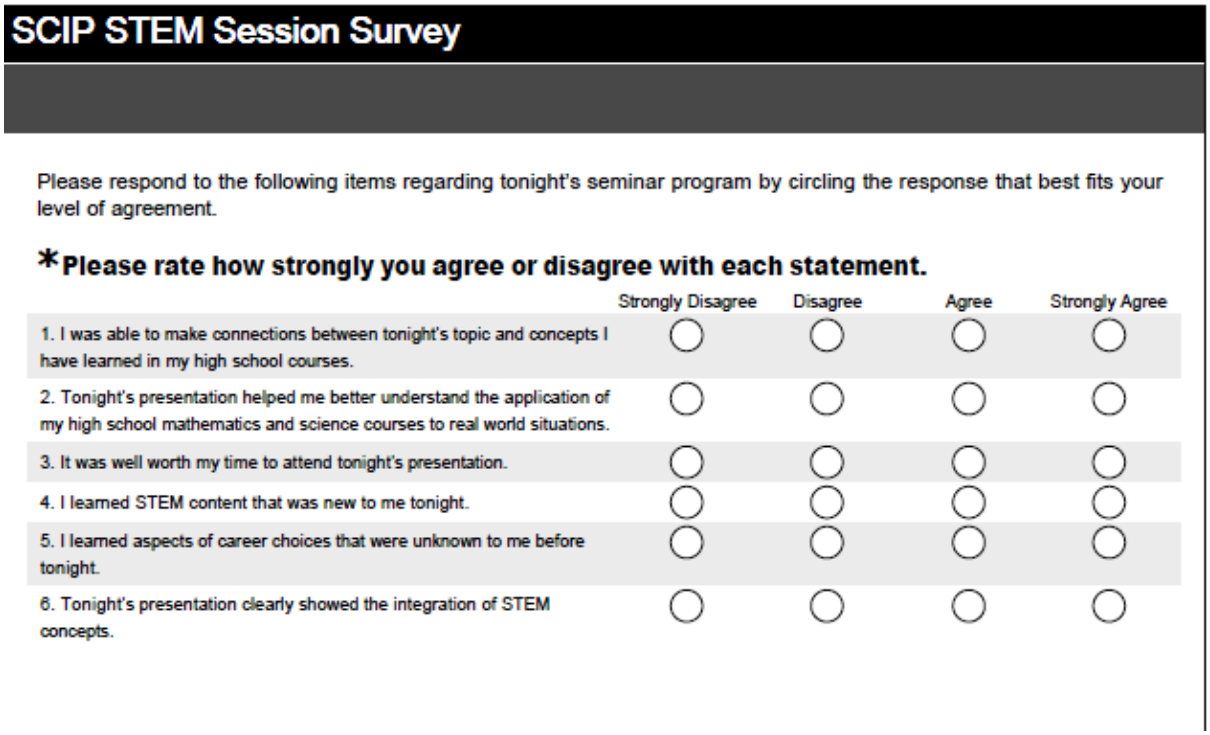
The Project Coordinator suggested that each presenter provide a hands-on activity to further engage the participants during their presentation in year one. Most of the presenters provided a hands-on activity, but some were not as in-depth as others. Participants suggested that all presenters provide a relevant hands-on activity associated with their field and allow all students to participate in the activity. Since the hands-on activities were popular among the participants, they will be part of the presentation guidelines for year two. Presenters will be expected to provide a half-hour hands-on activity following their interactive presentation.

Overall, the SCIP staff was satisfied with the operation of year one and will continue to develop the program during year two to make it more effective for participants and presenters.

APPENDICES

Appendix A

SCIP STEM Session Survey

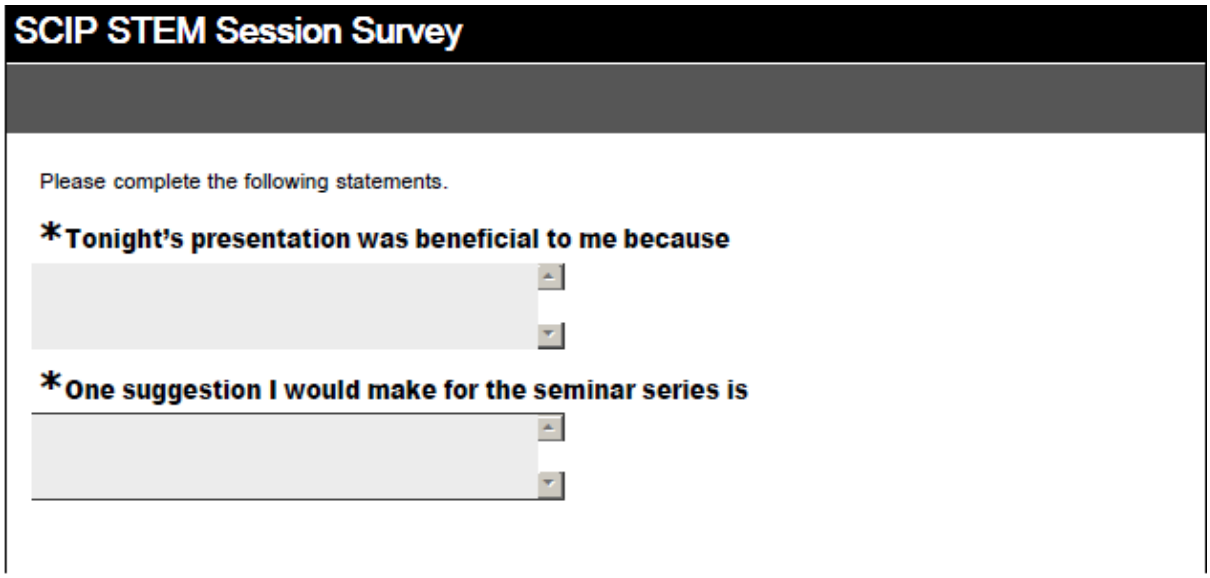


SCIP STEM Session Survey

Please respond to the following items regarding tonight's seminar program by circling the response that best fits your level of agreement.

***Please rate how strongly you agree or disagree with each statement.**

	Strongly Disagree	Disagree	Agree	Strongly Agree
1. I was able to make connections between tonight's topic and concepts I have learned in my high school courses.	◯	◯	◯	◯
2. Tonight's presentation helped me better understand the application of my high school mathematics and science courses to real world situations.	◯	◯	◯	◯
3. It was well worth my time to attend tonight's presentation.	◯	◯	◯	◯
4. I learned STEM content that was new to me tonight.	◯	◯	◯	◯
5. I learned aspects of career choices that were unknown to me before tonight.	◯	◯	◯	◯
6. Tonight's presentation clearly showed the integration of STEM concepts.	◯	◯	◯	◯



SCIP STEM Session Survey

Please complete the following statements.

***Tonight's presentation was beneficial to me because**

***One suggestion I would make for the seminar series is**

Appendix B

SCIP Student Attitudes toward STEM Survey (modified from Tuan, H., Chin, C., & Shieh, S., (2005).)

SCIP STEM Student Attitude Survey

***Please rate how strongly you agree or disagree with each statement.**

	Strongly Disagree	Disagree	No Opinion	Agree	Strongly Agree
1. I am planning to attend a college/university or tech school in the future.	◯	◯	◯	◯	◯
2. I am planning on taking STEM courses as part of my college/university/tech program of study.	◯	◯	◯	◯	◯
3. I am planning on majoring in a STEM field at a college/university/tech school.	◯	◯	◯	◯	◯
4. I am planning on a career in a STEM field.	◯	◯	◯	◯	◯
5. I find the STEM fields to be interesting.	◯	◯	◯	◯	◯
6. I believe I have the ability to complete a STEM major in college/university/tech school.	◯	◯	◯	◯	◯
7. I believe attaining a STEM degree is worth the effort.	◯	◯	◯	◯	◯
8. I think that learning STEM is important.	◯	◯	◯	◯	◯
9. When STEM activities are too difficult, I give up or only do the easy parts.	◯	◯	◯	◯	◯
10. When learning new STEM concepts, I attempt to understand them.	◯	◯	◯	◯	◯
11. I understand how STEM concepts can be used to solve community problems.	◯	◯	◯	◯	◯
12. When I make mistakes in STEM classes, I try to find out why.	◯	◯	◯	◯	◯
13. I think STEM is needed to solve the problems of today.	◯	◯	◯	◯	◯
14. I take STEM classes because the content is exciting and fun.	◯	◯	◯	◯	◯
15. I take STEM classes to get a higher paying job in the future.	◯	◯	◯	◯	◯
16. I take STEM classes to get a job with many opportunities.	◯	◯	◯	◯	◯
17. I take STEM classes to get an important job.	◯	◯	◯	◯	◯
18. I take STEM classes because I want to learn to help people.	◯	◯	◯	◯	◯
19. I only take STEM classes to fulfill a requirement.	◯	◯	◯	◯	◯
20. I feel safe and comfortable in STEM classes and in labs.	◯	◯	◯	◯	◯
21. I feel supported and encouraged to take STEM classes.	◯	◯	◯	◯	◯
22. I feel supported and encouraged by my community at large.	◯	◯	◯	◯	◯
23. I feel confident about succeeding in STEM classes this year.	◯	◯	◯	◯	◯
24. I feel confident that I will attain a degree in STEM when I go to college/university.	◯	◯	◯	◯	◯
25. I know how to handle classroom situations in which I feel a lack of support.	◯	◯	◯	◯	◯
26. I am comfortable working with people different from me.	◯	◯	◯	◯	◯

Thank you for completeing this survey!

Appendix C

Evaluator Survey

Nevada EPSCoR Track 1
STEM Career Investigation Program
March 18, 2014

Thank you for participating in the evaluation of this program. Your responses are very important. The information you provide will help improve to improve future workshops. Please answer each question honestly and thoroughly. All responses are anonymous. If you have questions about this survey please contact: Sara Newkirk, Project Evaluator, *snewkirk@smartstartecs.com*

1) With which gender do you identify?
( ) Male ( ) Female

2) Select the ethnicity with which you most closely identify.
( ) Asian ( ) Hispanic or Latino ( ) Do not wish to specify
( ) African-American ( ) Pacific Islander/Native Hawaiian ( ) Other, please specify:
( ) Caucasian/white (non-Hispanic) _____

3) What grade are you currently in?
( ) 10th Grade ( ) 11th Grade ( ) 12th Grade

4) Please rate the following aspects of this program on a scale from *not useful at all* to *extremely useful*.

	Not useful at all	Slightly useful	Somewhat useful	Very useful	Extremely useful	I did not attend this session
Session 1 on February 11: Presentation by Dr. Christian Fritsen						
Session 2 on February 18: Presentation by Dr. Richard Kelley						
Session 3 on February 25: Presentation by Dr. Jennifer Hollander						
Session 4 on March 4: Presentation by Dr. Scott Mensing						
Session 5 on March 11: Presentation by Dr. Danny Taylor						
Session 6 on March 18: Presentation by Dr. Michael Leverington						

5) Please comment on what was or was not useful and why.
_____
_____

6) Please comment on how to improve the presentations.
_____
_____

7) What other concepts, topics or activities would you like to have seen covered?
_____
_____

8) Please rate your satisfaction with the logistical aspects of this program from not at all satisfied to completely satisfied.

RATING SCALE: 1= NOT AT ALL SATISFIED 3 = SOMEWHAT SATISFIED 5 = COMPLETELY SATISFIED

Registration process (pre-program information, ease of registration)	1	2	3	4	5
Program agenda (clear purpose, balanced, meaningful, useful)	1	2	3	4	5
Program Information (focused, well-prepared, coordinated themes)	1	2	3	4	5
Overall organization (followed program agenda, equipment was ready)	1	2	3	4	5
Time (overall program and presentation started/ended on time)	1	2	3	4	5
Atmosphere (friendly, supportive, promoted networking)	1	2	3	4	5
Student involvement (presentation at appropriate level, sufficient involvement)	1	2	3	4	5

9) Do you have any suggestions to improve the logistical aspects of this program?

_____

_____

10) Achievement of Program Objectives—Select the number that best represents your knowledge and understanding in each of the following areas before and after this training.

RATING SCALE: 1= MINIMAL 3 = LOW 5 = EXTENSIVE

Before Program						After Program				
1	2	3	4	5	Awareness of STEM opportunities and careers for K-12 students	1	2	3	4	5
1	2	3	4	5	Knowledge of opportunities for students to pursue a career in a STEM field	1	2	3	4	5
1	2	3	4	5	Knowledge of opportunities for students to pursue a Ph.D. in a STEM field	1	2	3	4	5
1	2	3	4	5	Knowledge of how to increase pre-employment skills as related to STEM careers	1	2	3	4	5
1	2	3	4	5	Knowledge of online learning opportunities for students, teachers, and the general public	1	2	3	4	5
1	2	3	4	5	Knowledge of STEM topics	1	2	3	4	5

11) Is there anything else you would like to share with program facilitators?

_____

_____

12) Select the number that best represents your interest in each of the following areas before and after this program.

RATING SCALE: 1= MINIMAL 3 = LOW 5 = EXTENSIVE

Before Program						After Program				
1	2	3	4	5	My interest in working on STEM projects in the future	1	2	3	4	5
1	2	3	4	5	My commitment to continue studies and/or professional development in a STEM area	1	2	3	4	5

13) What do you think are the two most important things you have gained by participating in this program? Explain why.

_____

_____

14) How will you use or implement what you have learned?

_____

_____

15) How did you find out about this event?

___Flyer
___E-mail
___Teacher
___Friend
___Social media (Facebook, Twitter, etc.)
___Other (Please explain):_____

16) What are your next steps after attending this program?

_____

_____

THANK YOU!

Appendix D

Evaluator Report

High School students were invited to attend the presentations of the STEM Career Investigation Program (SCIP) on February 11-March 18, 2014 at the Raggio Research Center (RRC) within the William Raggio College of Education Building (WRB) on the University of Nevada, Reno campus. Dr. Jacque Ewing Taylor, Raggio STEM Education Associate Director at The University of Nevada, Reno and project lead of the Workforce Development component organized the SCIP program with the assistance of Brittney Timmons, Graduate Assistant. The demographic description of the participants, in Figure 21, shows that the majority attending were Caucasian females in the 10th and 11th grades. The majority of participants (62%) found out about the event through a teacher.

Figure 1. Demographic description of SCIP participants

	March 2014 SCIP Participants (*n*=29)	
	#	%
Gender		
Female	22	76%
Male	7	24%
Ethnicity		
Not Hispanic or Latino	14	48%
Other	9	31%
Hispanic or Latino	6	21%
Race		
Caucasian/white (non-Hispanic)	14	48%
Asian	6	21%
Hispanic or Latino	4	14%
Pacific Islander/Native Hawaiian	3	10%
African-American	1	3%
Do not wish to specify	1	3%
Grade		
10th Grade	13	45%
11th Grade	13	45%
12th Grade	3	10%

	March 2014 SCIP Participants (*n*=29)	
	#	%
Found out about event		
Teacher	18	62%
E-Mail	4	14%
Flyer	3	10%
Parent(s)	2	7%
Friend	1	3%
School Counselor Assistant	1	3%

Ratings of Sessions

Participants' ratings were done on a scale of 1-5, 1=*not useful at all* to 5=*extremely useful*. As shown in Figure 22, all meeting sessions were rated *extremely* or *very useful*. The sessions were rated *very* or *extremely useful*. The presentation by Dr. Jennifer Hollander on February 25 was the highest-rated session while the presentation by Dr. Christian Fritsen on February 11 was rated the lowest. Open-response suggestions for improving the presentations are provided following the figure. Ratings can be considered to trend towards positive or negative based on the following scale:

Extremely useful	4.21 – 5.00
Very useful	3.41 – 4.20
Somewhat useful	2.61 – 3.40
Slightly useful	1.81 – 2.60
Not useful at all	1.00 – 1.80

Figure 2. Mean ratings of SCIP Sessions

Activity	Rating
Session 1 on February 11: Presentation by Dr. Christian Fritsen	3.79
Session 2 on February 18: Presentation by Dr. Richard Kelley	4.21
Session 3 on February 25: Presentation by Dr. Jennifer Hollander	4.54
Session 4 on March 4: Presentation by Dr. Scott Mensing	3.96
Session 5 on March 11: Presentation by Dr. Danny Taylor	4.04
Session 6 on March 18: Presentation by Dr. Michael Leverington	4.19

Participants were asked to comment on what was useful in the presentations and why. They found presentations that helped their career plans or related to a personal area of interest to be the most useful.

Helpful for career outlook

- *I found Dr. Hollander's presentation particularly useful as I plan on going to the U of U and want to go into medicine, which she nearly did, and as such she was able to provide me helpful insight into that career path*
- *The most useful parts of presentations included applications of his/her career for the benefit of the world. Another useful part was going over college questions and concerns.*
- *I thought every single presentation. Any opportunity for me to learn about new possibilities that I could commit my life to is entirely welcomed.*
- *All the sessions were useful because I saw the different types of jobs I can get if I ever go into the career paths presented.*
- *I found hearing about the presenters' paths useful because they made me realize different options and choices I can make.*
- *Learning about the various opportunities to travel in STEM careers piqued my interest in them.*
- *Was useful... Hands on activities. Relating it to our lives and careers.*
- *It was helpful because it broadened my horizons in the STEM Fields.*

Specific session(s)

- *Kelley's presentation was cool and opened up an option of what I want to do. Hollander's presentation was extremely useful because I highly thought about getting involved in anatomy and got a feel of it. Taylor's presentation was interesting but not very useful. Leverington's presentation was a presentation that made you think deeply and realized some cool things.*
- *The mining engineering presentation was extremely useful because it is something that is important and can be used in Nevada. I do not believe that any of these presentations could not be completely useful, they apply to our lives in one way or another.*
- *I enjoyed the health sciences and real live organs that were brought in to class because it gave me a little taste of how med school is gonna be.*
- *It was very useful learning about college because that it approaching us very quickly*

Session topics aligned with participant's interest

- *The fields that I am not interested in getting a degree in, such as marine biology or geography made it hard for me to truly get into the topic the speakers were talking about. However, I really thought having an anatomy teacher come in (not to mention bring in actual organs) was very useful for me because that is the area of education I want to go into.*
- *I really think Dr. Kelley's and Dr. Leverington's presentations were extremely helpful as they both revolved around my field of interest.*

General commendations for the sessions

- *First presenter; showed all the opportunities that upcoming marine biologists can take. Second presenter; I believe this presenter was definitely one of the most exciting and engaging presentation- the robotics was something interesting to learn Third presenter; The biology was just incredible all around, it was amazing to see how the human body works. Fourth presenter; I wasn't too engaged with this field. It was beneficial to learn about the history of the world through dirt, but it just didn't inspire me. Fifth presenter; I found this presenter to be a great influence. He really demonstrated how everything we have around us, come from the dirt that we all walk on. Sixth presenter; This was a great presentation as well, he was really able to get all of our minds to think more specifically and precise.*
- *It was all useful to me, I came here to learn about new career opportunities and certainly got that. I am more than pleased with what I have learned in just these few short weeks. I can take things from mining to biology to just simple problem solving and use them in my everyday life.*
- *It is a bit hard to remember each and every session but I remember that the mud cores session was cool and so was Jennifer Hollander's session*
- *Even though I thought that some of the presentations would not be useful all of them were intriguing and useful!*
- *Some of the presentations were more helpful or even entertaining.*

Participants also expressed what they did not find useful in the sessions. Some participants were not interested in the session topics or jobs presented or felt they didn't learn anything new.

Participants not interested in session topic

- *There were some aspects of the presenters and the aspect of STEM that they were taking about that didn't really get me thinking of how they could potentially relate to what I want to do. Also some of them had a hard way of getting into why or how come they liked what they did thus not very helpful to their session.*
- *I didn't connect STEM programs as strongly with the last session and the fifth session was a tad boring. The others were interesting and really connected with STEM subjects.*
- *Dr. Scott Mensing's presentation was something outside my interest and so I found it to be something not useful to me personally*
- *The biology presentation was not useful because I am personally not interested in Biology, even though I respect those who are.*
- *Fritsen's presentation was somewhat useful because it wasn't really something I was interested in.*
- *Wasn't useful... Information that was not relevant.*
- *They were all able to show me many things that I did not know about before but some of the topic and field I did not find interesting like the one with pollen.*
- *I'm not entirely sure. It depended on how long people talked about themselves before really focusing on the job they had and were trying to tell us about.*

Expectations for more or higher level learning

- *I actually was very surprised by how much I enjoyed Dr. Richard Kelly's presentation. It sounded very dry, but I learned new things. With the other presenters, some did a good job, but it felt very low-level. Most students signing up for such a program are quite "into" STEM, so I didn't feel like I learned anything new or interesting in many of them.*
- *I thought the history of mud lesson wasn't really useful as it didn't really teach anything of value for me.*

Uninterested in career descriptions

- *The jobs the presenters told us about that I did not find useful were things that didn't interest me even after they explained what they did.*

Other

- *The only problem with the first session was not on the presentation, it was on my part for being late so I did not have the ability to catch all of the information.*
- *Related to what I was doing in class.*

Participants were asked how the presentations could be improved. Suggestions included more discussions about their jobs and fields and incorporating a more interactive presentation style or hands-on activities.

Overall commendations

- *They couldn't have done it better. Honestly :) Everyone talks/teaches differently so you couldn't really ask them to change anything. But all of them were very nice and taught me something new.*
- *The presentations, overall, were good.*
- *They were all great!*

Having presenters talk more about their work

- *The only thing I would suggest on the presentations, is to have a little bit more time; just as the professor was explaining themselves, I felt it was time to go already. Other than that, everything is amazing, what I loved the most is no matter what, every person loved what they do, they were excited to share the news of what they study or teach.*
- *These presentations can be improved by teaching more about their fields and spending less time on themselves (though it is nice to know a little about them). Also, maybe even teaching something to us that would be taught in one of their classes.*
- *I would say that they need to shorten their presentations when it comes to introducing about their lives when they were younger and focus on the job that they do and possible jobs that relate to what they do.*
- *I loved the ones that the instructor really connected with the audience and really connected STEM subjects to their job and how their job impacts the world.*
- *The only comment I have would be to talk more about your job and how you like.*

More interactive presentation style

- *I think more engaging and exciting presentations will get more students excited about going to this program. Maybe more hands on activities? But even that wasn't much of an issue, we had a lot of hand on opportunities in each session.*
- *It may help to be in more of an enclosed environment, where all of us kids can really come together and converse more like a class. I think more group discussion and learning from each other would also be beneficial.*
- *The presenters could have a more interactive presentation, such as Dr. Leverington did, instead of waiting until the presentation is completely over.*
- *More oomph. Perhaps speakers who have worked with teenagers so the way the information is presented is age appropriate.*
- *Include more hands on activities, and force participants to interact with each other, as I saw frequent distractions.*
- *Presentations can be improved if required courses on each field are listed and if there are more hands on activities.*
- *The hands on activities really keep you interested and keep you wanting more.*
- *Be more interactive with the kid so it won't always be just talking nonstop.*

Hands-on activities

- *The presentations, for me, could've been more entertaining if the presenters brought in some things for us to check out and touch. Dr. Hollander did a fantastic job with bringing some organs in.*
- *I think it would help if we could actually do hands on experiments with the presenters in their fields*
- *Have the presenters bring in some of their students or ask them to do a small activity with the students to engage them.*
- *I think that there should be microphones on every table so that students are clearly heard and understood when asking questions.*
- *The Biology presentation for example, was my absolute favorite because of the hands on activities.*
- *More activities.*
- *Continue with hands on activities.*

Miscellaneous

- *Food. I love food.*

None

- *None that I can think of.*

Participants were asked to list other concepts, topics, or activities they would like to have seen covered. A variety of topics were suggested, as well as a request to focus

on more diverse industries and their real-life applications.

Specific topic suggestions

- *Acoustics/Sound Engineering (very fun to learn about), Chemical Engineers, Geothermal Engineering (I mean, it IS Nevada). Activities like icebreakers in the first session could push past any discomforts in sitting by strangers.*
- *More in depth of sciences that have to do with humans. For example forensic science or more of a variety within the presenters, …like Dr. Hollander did with her area and then bringing in the organs.*
- *I would have liked to have seen more of astronomy or just stuff about space to be brought up because that is something that really intrigues me.*
- *There were a lot of presentations on the same subject (Biology), and I would have liked to see some other subjects such as physics.*
- *We barely touched on biological engineering or any form of biology*
- *Chemical Engineering, Biochemical Engineering*
- *Architectural engineering chemical engineering.*
- *Environmental sciences and pollution*
- *Something in Aeronautics!*
- *Paleontology or Geology*
- *Psychology, astrophysics*
- *Dentistry or optometry.*
- *Business*
- *Physics!*
- *Math*

Topic with real-world applications

- *MORE ENGINEERING. I really liked the Computer Sciences, but as a striving engineer, I'd like to see more engineering. Specifically in perhaps more outer space related topics.*
- *Forensic science. How to do autopsies, analyze blood.*
- *More along the lines of robotics. Or how life is constantly being influenced by different things each day. More studies on things that people typically don't think of.*
- *Perhaps have them more focused on the STEM concepts themselves, rather than "life stories" and discussion of degrees. It's important to know what you can do with a degree, but that's more admission counselor and general advice than it is STEM.*

Bringing in industry professionals

- *Though I liked all of what I saw, I probably would've wanted to see more on the different types of doctors? More about types of engineering, and some about paramedics and EMTs. Also, maybe something about medical researchers?*
- *I would have like to (have) seen someone from the medical field and would have liked to be introduced to as many possible career fields as possible to get a feeling of all the possibilities I had before going to college.*
- *Since there is a lot of people (not including me) that want to go into the field of medicine or medical research, there should be more speakers who are knowledgeable about those subjects.*
- *I would like to see Infectious diseases, and more science researchers in general that have to do with the four major science paths: Biology, Chemistry, Biochemistry and Physics*
- *I would really have liked to have had an actual doctor come in and speak about their journey through college, medical school, and their residency.*
- *Animal stuff .More things like medical examiners. Not like doctors or nurses but people who deal head on with dead stuff I don't mean that to sound creepy*
- *Maybe someone who work(s) with the government in a STEM career and people who are able to travel a lot.*
- *Generally just not speakers from the commonly sought after jobs.*
- *More variations of careers and complete information about it.*
- *Perhaps more biomed.*

Miscellaneous

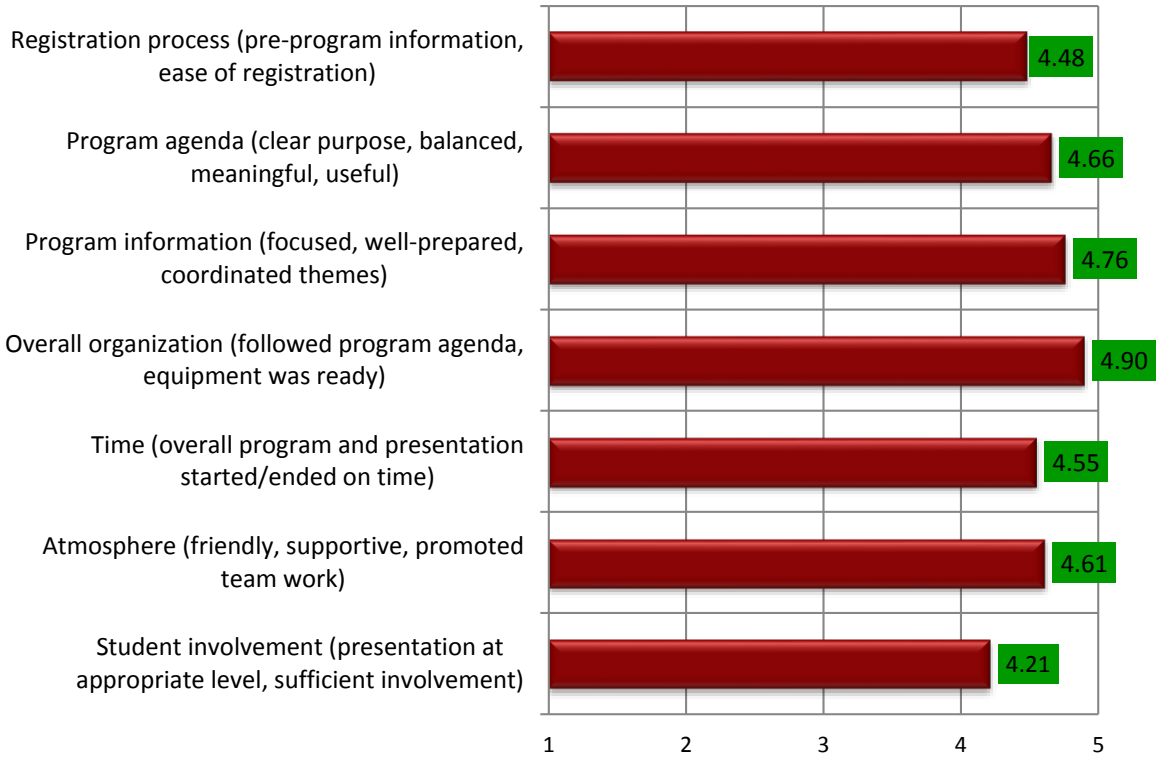
- *Just the materials that were used in their everyday jobs, that would've of been nice. The verbal presentation was full of laughter, gave out great information and presented new concepts/information that I was not aware of/ knew about.*
- *New ones! Things I don't already know about.*

Logistics

Participants rated logistical aspects of the meeting on a scale of 1-5, 1=*not at all satisfied* to 5=*completely satisfied* as shown in Figure 23. Overall, participants were *completely satisfied* with all logistical aspects of the meeting. Open-response suggestions for improving the logistics are provided following the figure. Ratings can be considered to trend towards positive or negative based on the following scale:

Completely satisfied	4.21 – 5.00
Very satisfied	3.41 – 4.20
Somewhat satisfied	2.61 – 3.40
Slightly satisfied	1.81 – 2.60
Not at all satisfied	1.00 – 1.80

Figure 3. Participants' ratings of the logistical aspects of the SCIP program



Suggestions were made to improve the logistics, including greater student involvement and interaction, incorporating hands-on activities into the agenda, and taking students' schedules into account when establishing program start times.

Student involvement/interaction

- *Force interaction between students of different schools.*
- *There needs to be more student involvement.*
- *More icebreakers between the students and instructors.*
- *Having the students being more engaged and being able to speak without getting nervous.*
- *Get the students to interact more. I felt like I only got to talk to four people, and one I see at school everyday.*

Hands-on activities

- *Small activities, maybe?*
- *More hands-on activities.*

Schedule

- *I loved this program, I would like to have more time to learn about each subject or have this program last longer than 6 weeks but other than that everything was great.*
- *The time of Tuesdays are kind of a hassle at times due to homework and all that jazz, however that's really all I have to say about it. It was really well done!*
- *I would like the program to start at 5:45 or 6:00 so that people like me aren't late because of class schedule.*
- *Considering a different time so that the most people could attend.*
- *Have more of a set time for ending, sometimes we got out 30 minutes early.*

Advertise

- *Make it easier to obtain information about the program? I learned of it from my Trig teacher, but maybe you should have a little more advertisement? I dunno. Also, I don't really think it was necessary to have all that like application stuff in the beginning...*

Commendations

- *Loved it all! This was well thought out.*

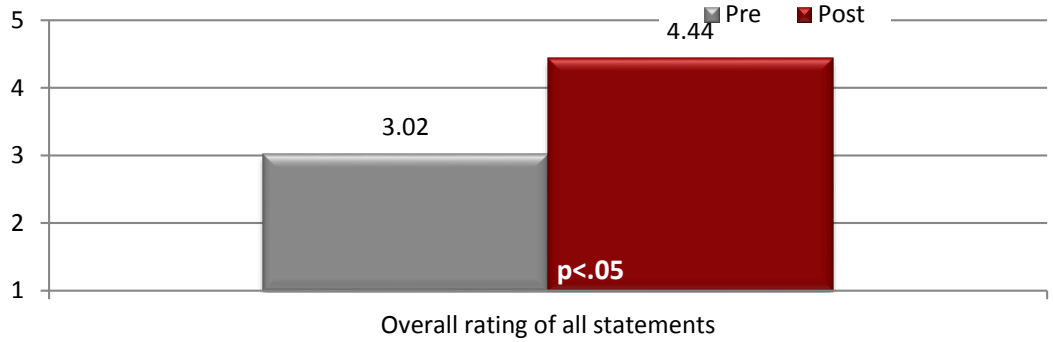
None

- *I don't have any suggestions to improve the logistical aspects of the program.*
- *Nope! You guys did a wonderful job!*
- *None (3)*
- *N/A (3)*
- *No. (3)*

Achievement of program objectives

At the end of the meeting, participants rated statements to assess their knowledge and understanding of future STEM learning and career opportunities. They rated these on a Likert scale from 1-5, 1=*minimal* to 5=*extensive* from a reflective pre- and post-program perspective. The evaluator conducted an inter-item reliability test to ensure all items within each outcome area were positively related. A Cronbach's alpha score greater than 0.7 is valid. The alpha score for the statements (α=.863) is above the valid cut-off point. A p-value less than .05 is considered statistically significant. Overall, program participants demonstrated statistically significant gains in their knowledge and understanding of the program's objectives. Results are shown in Figure 24.

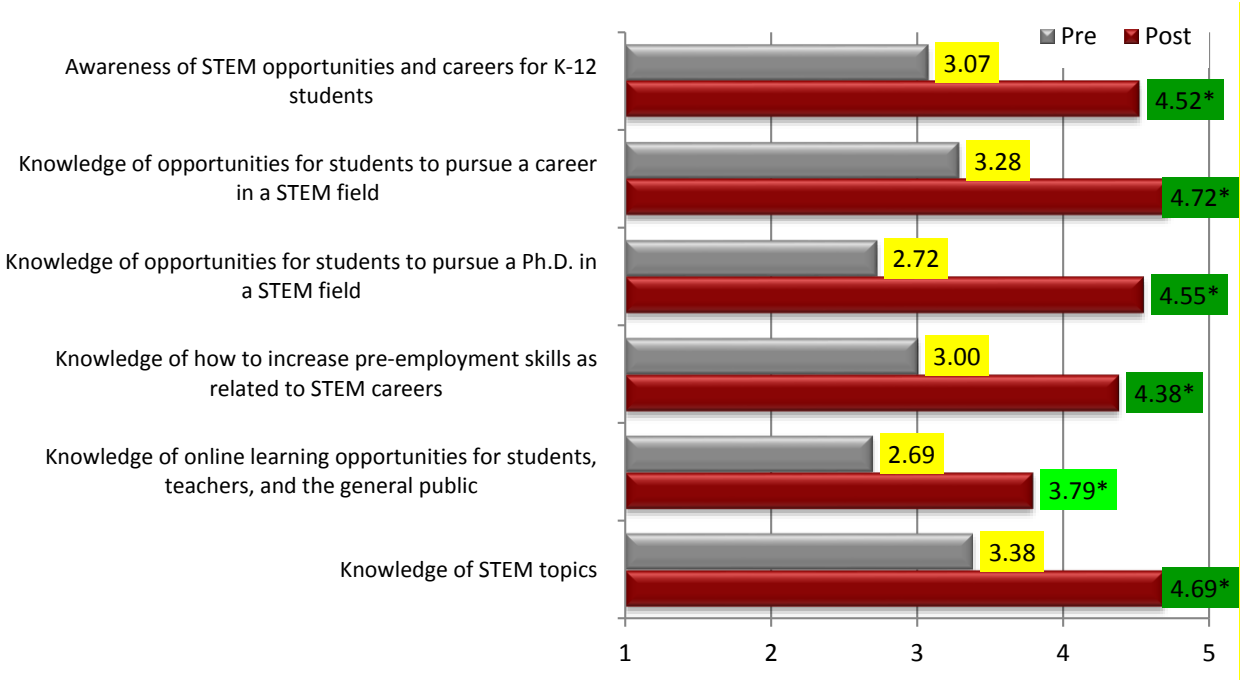
Figure 4. Participants' overall perceived impact of SCIP program



Next, the six objective statements were analyzed individually to identify areas of strength and weakness. The participants' mean ratings showed a statistically significant ($p < .05$) increase on the reflective pre- and post-survey for all six objective statements. They expressed the greatest gain in knowledge about *opportunities for students to pursue a Ph.D. in a STEM field*. Results are displayed in Figure 25. Open-response suggestions for improving the program can be found after the figure. Ratings can be considered to trend towards positive or negative based on the following scale:

Extensive	4.21 – 5.00
Medium	3.41 – 4.20
Low	2.61 – 3.40
Some	1.81 – 2.60
Minimal	1.00 – 1.80

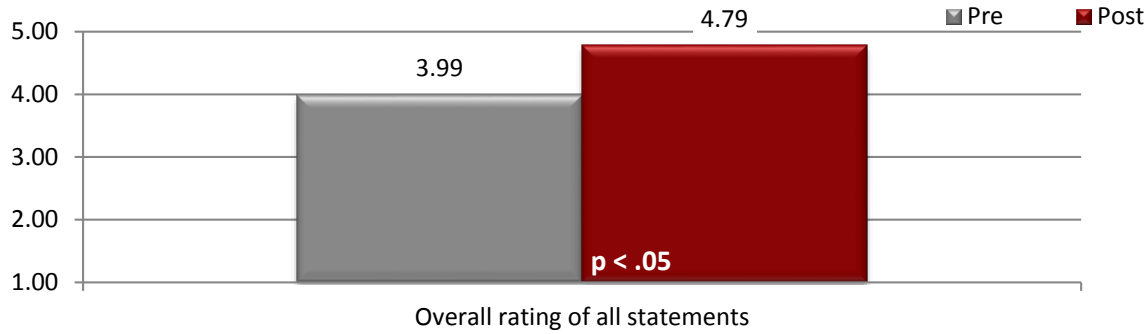
Figure 5. Participants' ratings of SCIP Program's objectives



Participants' interest in and commitment to STEM majors

At the end of the program, participants rated statements to assess their interest in and commitment to STEM projects and careers on a Likert scale from 1-5, 1=*minimal* to 5=*extensive*, from a reflective pre- and post-program perspective. Overall, program participants demonstrated statistically significant gains in their interest in and commitment to STEM projects and careers. Results are shown in Figure 26.

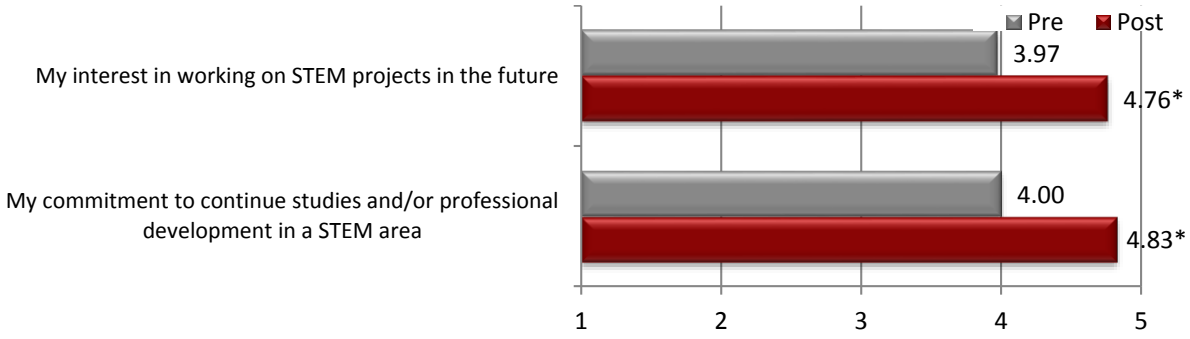
Figure 6. Participants' overall interest in and commitment to STEM majors



Next, the two STEM career interest statements were analyzed individually to identify areas of strength and weakness. Attendees' mean ratings showed a statistically significant increase from pre- to post-survey statements for expressing interest working on STEM projects in the future and for their commitment to continue their studies in a STEM area. Results are displayed in Figure 27. Ratings can be considered to trend towards positive or negative based on the following scale:

Extensive	4.21 – 5.00
Medium	3.41 – 4.20
Low	2.61 – 3.40
Some	1.81 – 2.60
Minimal	1.00 – 1.80

Figure 7. SCIP program participants' interest in and commitment to STEM majors



Overall learning

Participants were asked to identify and explain the two most important things they gained from their program participation. Responses included valuable information for college and career planning as well as exposure to new STEM fields.

Insight for career planning and conceptualization

- *In this program, I learned both college options for myself and career paths I may be able to take. Before, I never knew what a PhD was or anything like that, but now I have a clear understanding of the different levels of degrees (along with other concepts about college). Also, through this program I was introduced to future jobs I had never even thought of before, and key insight on how to become this different things.*
- *I think I have gained confidence in the fact that I will be able to do what I love and find interesting and still have a job. Also that I will get through my education through my motivation of the getting the job I would like to have. Because I learned of some of the jobs that I didn't even know could exists and how the people came to have them by perusing what they liked.*
- *I think that I have gained a better view on some jobs that I had never considered and also been able to decipher a possible career that may be right for me by seeing what these professors do and the experiences they have gained through their work.*
- *I learned about all of the options I have in deciding my career and that it's not vital to figure out what I want to do right now. I figured out that I don't want to be a chemical engineer thanks to this program.*
- *I learned that even after you have gotten your degree you still don't know what you want to do as a career because there are so many opportunities to change the world that you want to do all of them.*
- *Understanding that there are more opportunities for me than I had previously believed. Understanding that there are many different, but no one right way to get where I want to go.*
- *There are more career opportunities. It is a eye opener and has your mind explore everything and gives you many options so you're not pressured on picking a certain job that is common.*
- *I think this gave me more of a variety of job careers to look into as well as a time to hear about job careers I was kind of considering, but didn't know enough to really consider it.*
- *I learned about career paths in fields I want to go into. This is important because I love STEM subjects but didn't know of what I could do in the future with them.*
- *Learned more about my tentative career choice as I enjoy learning about my choice and other possibilities that can come from it*
- *More awareness; I was not aware of all the different types of careers in the STEM field.*
- *A greater view of career paths.*
- *Knowledge of the applications of computer science mostly. I'm not sure what else honestly...*

Developing a peer/mentor network

- *Contact with people who are already in the STEM field that I can talk to now and will be able to help me and what not with the question I have.*
- *And meeting new people. It's good to get involved into things like these to get use to your surroundings and the real world.*
- *I have learned a many contacts for further information and/or questioning in the future.*

Knowledge about colleges and other college-related information

- *I learned about what things UNR really has to offer and what exactly STEM is and I think those are super important because it was so much knowledge that I didn't have before and it opened up options for me and I feel like I have a bigger variety of things I can do.*
- *Knowledge on college life from some of the instructors. Also how extensive opportunities are for STEM careers.*
- *Marginally better knowledge of how college works, and how Dr Pepper tastes.*
- *I can work on getting different degrees that I didn't even know existed. There are many different opportunities to find out what you want to do in life after you have started college.*

- *Then I learned all about college and things I wanted to know but didn't know who to ask. This will greatly help me in the long run.*
- *A greater understanding of the different opportunities and how it is very likely that my major will change, and when that time comes, to be very open to change.*
- *I also learned a lot about college and how it works. This is of extreme importance because I plan on going to college.*
- *I have also learned a lot of information regarding colleges, scholarships, and the computer science field.*
- *I have learned more about college entrance self-explanatory.*

More interested in a particular field

- *I learned (about) a new field in which I would like to gain more knowledge of; it was the field of learning the basics of language from nothing, and teaching it to robots and other programs I don't remember the specific name.*
- *I learned about new various subjects I could study.*
- *Robotics. I found this a very interesting career opportunity that was unknown before.*
- *I have begun to consider botany as a career, and I have learned that multiple degrees can be beneficial.*

Miscellaneous

- *The two most important things I have gained is knowing that I have no limits on what I want to learn, in high school they don't teach us that there are this many options out there; also I have taken that it's okay to embraced and be excited about what you love and if you love it, do it because in the end, you're always learning in life.*
- *The two most important things I have learned are about perseverance and passion for a subject. If those two things are not present in your career path, you probably aren't suited for that career.*
- *There are always options for you. We can always go back to school and it won't always be a burden.*
- *More appreciation; I learned more about how life basically revolves around STEM*
- *A sense of calm in not knowing exactly what career I wanted.*
- *Problem solving. It will help with any job that I decide to do.*
- *Resources - For my future.*
- *Information - For my future.*
- *Open up more options.*

After learning about the SCIP program, participants were asked how they would use or implement what they learned. Many felt they would make college major and career choices as well as other future decisions based on the information they learned in the SCIP program.

Selecting a major

- *I will have a more open mind on what type of fields I would enjoy to major in.*
- *I will begin to look at my options when I look for major options at colleges*
- *What studies I would like to take in college.*
- *In deciding my college major/minor.*

When searching for co-curricular opportunities

- *I will use what I learn for the future of searching job opportunities and college opportunities available to me.*
- *Going out and finding out more on how I can get myself there. Finishing school!*
- *I will use my info to pursue more learning opportunities.*
- *I will keep it in mind as I look for college opportunities.*

Incorporation into career choice

- *I will use what I have learned to explore my choices wisely when entering STEM fields in college. My career choice will have to be something I am dedicated towards doing even up to the PhD level*
- *I will use this knowledge to keep an open mind when figuring out my career and having the fields that were presented in mind when doing so.*
- *I will try to research the different career paths that the different degrees at UNR can bring me (rather, I can apply for).*
- *The speakers have shown how career directions change throughout your education. I will keep all doors open.*
- *I will used what I have learned here to help have a better understanding of what I filed I want to go into.*

Using information throughout college experience

- *I will try to take more classes with stem and try to use what the program has given me to get into college and hopefully pursue what I really what to do later in life.*
- *I will now be able to properly get as many scholarships as I can, apply to the right colleges, and acquire a job that I will be beneficial for me (both monetarily and enjoyingly).*
- *I can learn more about the English and how they are teaching it to certain programs. Then I can use the college information to better expand my experience at college*
- *The most useful information I received was the tips about getting through college and stuff, so I'll definitely be using those when I graduate in a few years.*
- *I can use this for choosing college classes as well as anything I want throughout my academic career.*
- *I will try out different types of classes in College in order to figure out which career path I should follow.*

Future planning

- *I'm planning on doing more research than I already have and seeing if it'll help me make a decision to be on the path I want to be on for my career.*
- *I look more in depth into what I want to do and how I can get there.*
- *I will use the problem-solving advice in my education and life.*
- *After high school I know what I am going to do.*

Being more open-minded towards the future

- *I will use what I've learned here by just thinking more openly about anything that comes my way, to try things out because I never know the outcome.*
- *I can try out different things that never would've crossed my mind*

Miscellaneous

- *I will do further research and put problem solving skills into effect before asking for help*
- *I can share with others how helpful this was.*
- *Apply it to my real world situations.*

When the presentations ended, participants were asked what their next step would be after learning about STEM fields and careers opportunities. As participants are in high school, comments were focused on finishing high school, applying for and attending college, thinking about career options, and considering ongoing participation in STEM education and projects.

Finishing high school duties/tasks

- *I will now be knowledgeable enough to get into a good college and get a good job in the computer science field.*

- *Continue studying and doing well in school so I can get into a good college and get a good job later in life.*
- *Study for my AP exams and finals.*

Starting college admission process

- *Look at colleges that offer what I want to major in and stem classes they offer.*
- *Start working on my college admission papers.*

Attending college

- *School. Possibly look for similar programs that will help me gain access to information that can help me later on in life after college and having a job.*
- *Do well in high school, go to UNR, get a job doing what I love. Also, tell others about the program!*
- *Going off to college to study science!*
- *School most likely.*
- *Go to school.*
- *School!*

Will be continuing project participation

- *Looking for more information and keeping an eye out for when this program opens up again next year*
- *Look at colleges and look at my career options and possibly sign up for the next opportunity to apply*
- *Possibly apply to the SCIP program next year and watch out for opportunities from their programs.*
- *To continue with my path of my interests and to definitely come back and do this program again.*
- *Come again and see if there are any more programs like it that I can go to over the summer.*
- *To really focus more on what I love and to sign up again for next year!*

Continuing STEM education

- *My next steps are to continue in STEM subjects (especially math and engineering), join clubs I'm interested in (such as the engineering club) and (hopefully) attend next year.*
- *I will continue to work hard in all of my STEM classes and will try to pursue a STEM career.*
- *Continue my education in the STEM field.*
- *Continue with school and further my pursuit into a STEM career.*

Examining career options

- *My next steps are to evaluate my choices for a career and pick one that interests me the most. I need to be aware of the possibilities of changing my mind though. This means taking a lot of different types of classes in college to better get an idea of what I like to do.*
- *Doing research about possible career paths that I can take and the resources I can best use to get me there.*
- *Research more about the various careers mentioned and also ones that were not.*

Look for additional development opportunities

- *I will try to stay more involved with all of the outside science fields; such as volunteering at hospitals.*
- *Continuing to explore my options and improving on the ways to incorporate STEM into them.*

Miscellaneous

- *Finish my sophomore year at TMCC. Then start taking classes towards my major.*
- *Go home and do homework fast enough to get some sleep.*

Participants would like to share the following with the program facilitators:

- *I would love for this program to happen again next year and I'd be glad to join. I wish it would last longer but other than that, I enjoy coming here every Tuesday and just learning something new.*
- *I really appreciate the opportunity to be a part of this program because I was able to get a better understanding of the different degrees and STEM careers those degrees can offer. The presenters also helped me realize that one doesn't have to know exactly what one wants to do when one enters college.*
- *This program for me has opened my eyes to the researching aspect of STEM fields. Not all of them have to do with being a doctor at a hospital or an engineer working at a consultancy firm.*
- *Thank you all for doing this and putting in your time and effort for trying to teach kids about the other things that are out there. I greatly appreciate it and really enjoyed this experience.*
- *I feel the public school system does not teach enough about the STEM field. Science and math are taught more as "you have to know it" than "it's super cool and really important".*
- *I love that fact that there were so many different types of fields that were exposed to us. Like mining/oceanography.*
- *I thought this program was very beneficial and I know a lot of people that would have enjoyed these sessions.*
- *Thank you for this opportunity. This is something I would like to be a part of next time.*
- *I do not remember us talking about any programs that we could take online.*
- *I love this program and I hope you carry on with this next year.*
- *I appreciate that this was a free program and it is very beneficial.*
- *I was pleased with this program, please run it again next year! :)*
- *Thank You for doing this and good job.*
- *Nope. Thank you for the opportunity.*
- *I would love to come back next year.*
- *See you next year.*
- *It was good.*

Key Findings and Recommendations for the SCIP program

Demographics:

The demographic description of the participants shows that the majority attending were Caucasian females in the 10th and 11th grades. In fact, there was a high representation of females (76%) overall as well as 27% of program participants being part of an under-represented minority group. Teachers were key in outreaching to students about the SCIP, with 62% of the program participants reporting having found out about the program from a teacher.

While a variety of ethnic groups were represented, try to engage in more focused outreach on under-represented minority groups to increase their attendance at the SCIP program. In addition, consider increasing the use of flyers and school counselors and newsletters to advertise the event to current high school students.

Program components:

Sessions:

Overall, participants were very satisfied with their experience with the SCIP program. They showed statistically significant gains in all program objectives and their interest in

STEM. They appreciated the opportunity to learn about STEM fields and careers and indicated that they would continue their involvement with STEM in college and beyond.

As participants were satisfied with this program, only a few changes are recommended. Consider briefing presenters on using a more interactive presentation style to encourage student engagement. Also, when possible incorporate hands-on activities in the program and link STEM fields with real-world settings and opportunities so students see how it can apply to their life.

Logistics:

Overall, participants were *completely satisfied* with all logistical aspects of the meeting. On average, they rated Overall organization the highest and Program information the second highest.

Some suggestions for improvement included incorporating greater student involvement and interaction and incorporating hands-on activities into the agenda.

Program Objectives:

Program participants demonstrated statistically significant gains in their knowledge and understanding of the program's objectives. The participants' mean ratings showed a statistically significant ($p < .05$) increase on the reflective pre- and post-survey for all six objective statements. Overall, participants were very satisfied with their experience with the SCIP program. They appreciated the opportunity to learn about STEM fields and careers and indicated that they would continue their involvement with STEM in college and beyond. They expressed the greatest gain in knowledge about *opportunities for students to pursue a Ph.D. in a STEM field*.

As participants were satisfied with this program, only a few changes are recommended. Have new opportunities ready for students who would like to participate in more programs like SCIP. Also consider showing participants the various online learning opportunities that are available. Ask for their e-mail address and send out periodic updates with new information and links that may be of interest to them. Consider briefing presenters on using a more interactive presentation style to encourage student engagement. Also, when possible incorporate hands-on activities in the program and link STEM fields with real-world settings and opportunities so students see how it can apply to their life. Lastly, continue to showcase a wide variety of presenters, backgrounds, and STEM fields, so participants have the opportunity to hear about an aspect that is of particular interest to them.

References

Tuan, H., Chin, C., & Shieh, S. (2005). The development of a questionnaire to measure students' motivation towards science learning. *International Journal of Science Education, 27*(6), 639-651.