

Pre-College STEM Entrepreneurial Thinking – Jackson, et al.

Appendix A. Pre-Program Survey

NCCU - Summer Experiences in Scientific Research, Engineering Design, and/or other Professional Training in STEM (Start of Summer-PRE)

STUDENT SURVEY - Contact Information

The information on this page is only being gathered for tracking purposes. Your individual responses on the rest of the survey will not be shared publicly, in connection with your name.

1. Contact Info:

Today's Date:

Full Name:

Birthdate: (e.g., June 1, 1993)

Email Address:

2. Which program(s) are you participating in this summer?

Research, Discovery, and Innovation (RDI) Summer Institute

Research Experiences for Undergraduates (REU)

Minority Science and Engineering Improvement Program (MSEIP) - Jefferson Lab

Other

3. Current/Intended Major

4. How many times have you participated in ACADEMIC YEAR research?

Never participated

1 semester

2 semesters

3 semesters

4 or more semester

5. How many times have you participated in SUMMER research?

Never participated

1 summer

2 summers

3 summers

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STUDENT SURVEY - Career Interests

6. To what extent have you participated in a program focused on building your entrepreneurial skills? (Please count entire summers as one semester.)

- Never participated
- One semester
- Two semesters
- Three semesters
- More than three semesters

7. How would you describe your interest in each of the following areas?

- | | Not at all
interested
(1) | (2) | Sort of
interested
(3) | (4) | Very
interested
(5) |
|---------------------------|---------------------------------|-----|------------------------------|-----|---------------------------|
| a. being a scientist | | | | | |
| b. being a business owner | | | | | |
| c. being an inventor | | | | | |
| d. being an engineer | | | | | |

8. As of today, please briefly describe your career plans in the space below.

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STUDENT SURVEY - STEM Focus

9. Please choose the number that best describes your level of confidence in your knowledge across each content areas below.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. Chemistry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Mathematics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Physics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Engineering (Electrical, Mechanical, or Other)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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STUDENT SURVEY - Co-Curricular Activities

10. Please indicate whether you were involved in any of the activities BEFORE being selected for this summer program.

	No	Yes
a. Attended a regional or local scientific research conference or societal meeting (e.g., NCCU, DUKE, NC A&T, UNC-Chapel Hill)	<input type="radio"/>	<input type="radio"/>
b. Presented a poster at a regional or local scientific research conference or societal meeting (e.g., NCCU DUKE, NC A&T, UNC-Chapel Hill)	<input type="radio"/>	<input type="radio"/>
c. Attended a national scientific research conference or societal meeting (e.g., Emerging Researchers National (ERN) Conference)	<input type="radio"/>	<input type="radio"/>
d. Presented a poster at a national scientific research conference or societal meeting (e.g., Emerging Researchers National (ERN) Conference)	<input type="radio"/>	<input type="radio"/>
e. Participated in a field trip specially designed for science students	<input type="radio"/>	<input type="radio"/>
f. Participated in sessions focused on graduate school planning and preparation for the science fields	<input type="radio"/>	<input type="radio"/>
g. Participated in an on-campus research internship in a science field	<input type="radio"/>	<input type="radio"/>
h. Participated in an off-campus research internship in a science field	<input type="radio"/>	<input type="radio"/>
i. Served as a mentor/tutor to other undergraduates majoring in science areas	<input type="radio"/>	<input type="radio"/>
j. Developed a resume/CV	<input type="radio"/>	<input type="radio"/>
l. Prepared a personal statement	<input type="radio"/>	<input type="radio"/>
m. Written a science abstract	<input type="radio"/>	<input type="radio"/>
n. Co-authored a science research publication	<input type="radio"/>	<input type="radio"/>
o. Participated in a GRE/GMAT preparation course or workshop	<input type="radio"/>	<input type="radio"/>

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STUDENT SURVEY - Entrepreneur Skills

11. Please choose the number that best describes your level of confidence in the following *entrepreneur skills*.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. Identifying market opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Developing a product plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Coming up with ideas for new products or services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Seeking new opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Recognizing opportunities in different situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Turning ideas into feasible business opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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STUDENT SURVEY - Managerial Skills

12. Please choose the number that best describes your level of confidence in the following business and management skills.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. Setting standards and performance criteria for success	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Developing a business plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Performing a gap analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Appraising and learning from competitors in the market	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Conducting a market analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Developing sales strategies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Completing the legal process of setting up a new business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Developing financial and accounting plans	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Please choose the number that best describes your level of confidence in the following business relationship skills.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. Identifying customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Approaching customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Negotiating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Working with small groups	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Please indicate your level of confidence with the following **project management skills**.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. Recognizing need	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Defining the problem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Gathering relevant information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Organizing information to be used effectively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Planning the project and developing procedures	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Working in a group with other technical professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Managing the project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. Please indicate your level of confidence with the following **design skills**.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. Define characteristics and operations for system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Generating and evaluating alternative concepts to satisfy design requirements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Selecting the most promising concept	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Calculating parameters of a system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Communicating the design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Implementing the design	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Measuring properties of a system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. Troubleshooting a system	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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STUDENT SURVEY - Beyond Entrepreneurial Thinking

16. Please indicate your level of confidence across the following statements that look a bit beyond entrepreneurial thinking.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. Starting and running a business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Networking with other people who could help you start and/or run a business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Managing financial matters of a business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Taking charge and leading others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Understanding of intellectual property (IP) laws and regulations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Raising money to start or grow a business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Marketing a business	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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17. Please rate the extent to which you agree with the statements below as they reflect your views of yourself as an entrepreneur.

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
a. I believe in myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. I have a willingness to take risks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. I believe that rewards come from my own effort/hard-work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. I am action-oriented.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. I know how to manage my emotions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. I persevere through difficult situations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. I am motivated and driven.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. I like to take initiative.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. I accept responsibility for tasks I'm expected to complete.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. I hold myself accountable for decisions that I make.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. Please indicate your level of confidence across the following **analytical skills**.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. applying your science knowledge to solve problems in familiar and unfamiliar situations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. conceptualizing an idea	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. analyzing a problem and formulating a solution	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. using a variety of problem-solving techniques	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. making a decision intuitively	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Please indicate your level of confidence across the following **scientific literacy skills**.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. Reading and interpreting scientific literature/journal articles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Critiquing science/technology work of others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Participating in science/technology discussion and Q&A with the public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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STUDENT SURVEY - Communication Skills

20. Please indicate your level of confidence across the following communication skills.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. Prepare an abstract for a science/technology oral/poster conference presentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Give an oral presentation on science/technology to a public audience	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Scholarly writing on science/technology (e.g., technical reports, theses, journal articles)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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STUDENT SURVEY - Technical Research Skills

21. Please indicate your level of confidence across the following elements of research.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. Conducting an effective literature search	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Formulating a research hypothesis based on a specific question	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Designing an experiment or theoretical test of a research hypothesis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Identifying and controlling variables within an experiment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Working in a group with other science professionals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Managing the research project	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Please indicate your level of confidence across the following data skills.

	Not at all Confident (1)	Slightly Confident (2)	Somewhat Confident (3)	Moderately Confident (4)	Highly Confident (5)
a. Collecting data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Organizing data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Analyzing data using statistics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Interpreting data	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	

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STUDENT SURVEY - EXPECTATIONS

23. Below are several statements related to your expectations for your upcoming summer experience. Please indicate the extent to which you agree with each statement.(Select one rating on each line)

	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
a. My experience will be enjoyable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. My experience will help me in my coursework to boost my GPA.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. My experience will boost my critical thinking skills.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. This experience will increase my overall confidence in my ability to do STEM work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. I will have a stronger set of writing skills as a result of this experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. This experience will help me clarify my career goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. My identity as a STEM professional will increase as a result of this experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. I will make peer connections through this experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. I will make faculty connections through this experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
j. I expect to orally present the outcomes of my experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. I will publish the outcomes of my experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
l. I will receive a good recommendation letter as a result of this experience.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
m. This experience will help me in applying for graduate or professional schools.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
n. This experience will help me in applying for STEM career opportunities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
o. This experience will help me consider starting a business and/or developing an idea I have.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

24. Are there any additional comments you'd like to make about your upcoming summer program? (Again, any comments entered here will be reported confidentially and without any identifiers.)