Student Interest In Science

During the transition from K-12 to college and after taking a single science course.
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Methods

For the next two questions, please use a scale from 1 – 5 where 1 means you had no interest in or were not actively engaged at all with science, and 5 means you had total interest in or were very actively engaged with science.

Rate your interest in science as a process (doing experiments and lab work, being actively engaged with science) during...

<table>
<thead>
<tr>
<th>Elementary</th>
<th>Middle School</th>
<th>Early High School</th>
<th>Late High School</th>
<th>College</th>
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Rate your interest in science content (facts and understanding, learning new things) during...

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If you were interested in science in the past, but not currently interested in science now, please briefly explain what happened to cause the change.

• Student surveys administered to ~350 college students at three different schools in the Oklahoma City Metro Area

• Simple yes/no, ranking and Likert scale questions
Part One

Before college, what are students like?
Before starting college, did you?

- Every student has taken a science course
Before starting college, did you?

- Every student has taken a science course.
- Fewer students interact with science outside of the classroom.
Before starting college, did you?

- Every student has taken a science course
- Fewer students interact with science outside of the classroom
- Females interact with science socially
Before starting college, did you enjoy?

- Overall, students enjoy science classes
Before starting college, did you enjoy?

• Overall, students enjoy science classes
• Females enjoy science socially, males enjoy science alone
Before starting college, did you enjoy?

- Overall, students enjoy science classes
- Females enjoy science socially, males enjoy science alone
- Future STEM majors enjoy science more than future non-STEM majors
Before starting college, what percent of the time did you have positive experiences?

- Normal distribution of responses
- Females and STEM majors like science slightly more than Males and non-STEM majors
Before starting college, what percent of the time did you have positive experiences?

• Bi-modal responses when asked about liking science outside of the classroom

• Females like science more socially, males like science more alone
Part One

• Female students enjoy science socially more than males

• Male students enjoy science alone more than females

• Future STEM vs non-STEM students show divergent views early.
Part Two

During the K12-to-college transition, what are students like?
Before starting College, did you enjoy?

- Interest in science increases as students age

Student Interest In Science Content

Student Interest In Science As A Process
Before starting College, did you enjoy?

- Interest in science increases as students age
- Females are more interested in science at a younger age
Before starting College, did you enjoy?

- Interest in science increases as students age
- Females are more interested in science at a younger age
- Male interest in science increases at a faster rate
Part Two

• The traditional “gender gap” idea is reversed at young ages and at the same time, future non-STEM students have higher interest in science than future STEM students.
Part Three

After taking science classes at college, what are students like?
Current interest in science?

• Students are interested in science!
Current student interest in aspects of science

- Overall, large negative interest in quantifiable aspects of science (Math and Stats)
Current student interest in aspects of science

- Overall, large negative interest in quantifiable aspects of science (Math and Stats)

- Females are less interested in Math and Stats
Current student interest in aspects of science

- Overall, large negative interest in quantifiable aspects of science (Math and Stats)
- Females are less interested in Math and Stats
- Females are more interested in interacting with scientists
Current student interest in aspects of science

• Nearly every aspect of science shows a difference between STEM and non-STEM majors
Current student interest in aspects of science

• Nearly every aspect of science shows a difference between STEM and non-STEM majors

• Particularly large difference in lab work
After taking one science course for non-majors:

- After taking just one science class, non-STEM majors show an increase in their interest in science.

Note: Results from a different study

Science Courses for Nonscience Majors: How Much Impact Can One Class Make? David Reed and Mark Lyford, Bulletin of the American Meteorological Society 2014 95:8, 1209-1212
Part Three

• The math and science components of science are not enjoyable for students

• But, one science class makes a difference in their opinions of science
Take Home Points

• Science is collaborative in nature and teaching thusly would help keep females interested in science

• Everyone struggles with math and stats

• Our collective efforts in teaching non-STEM students is meaningful!