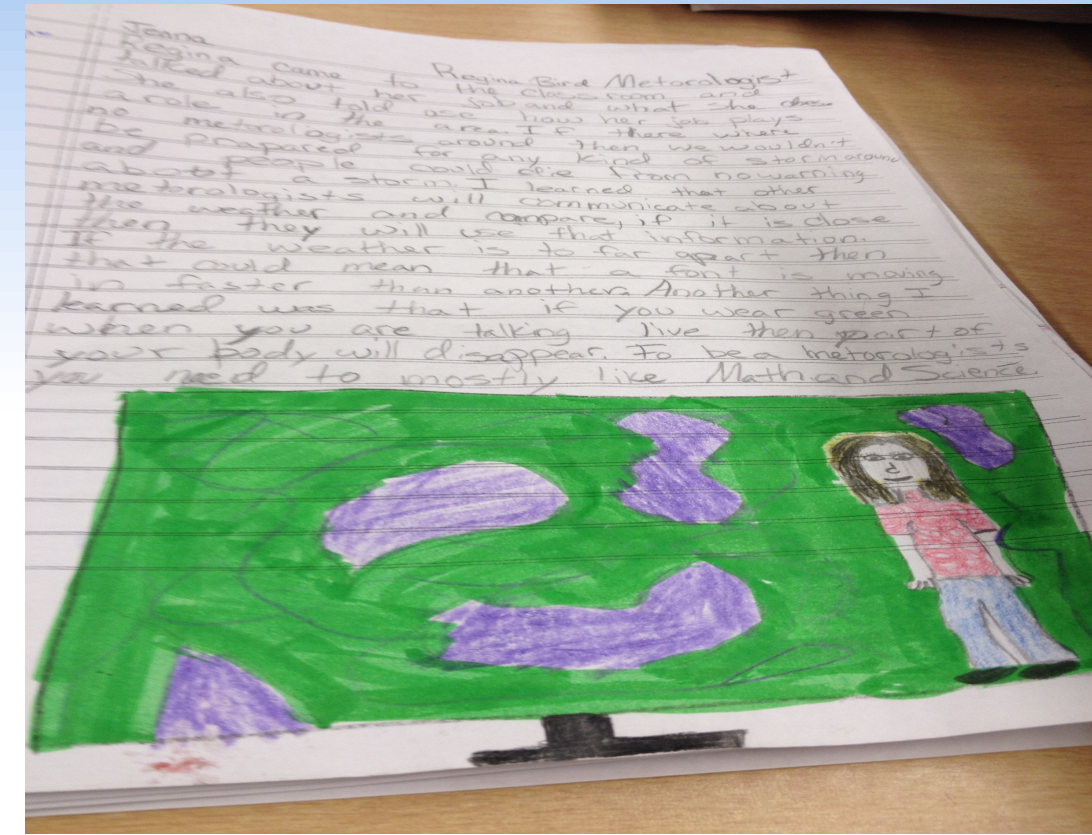


Engineering and Mathematics (STEM)

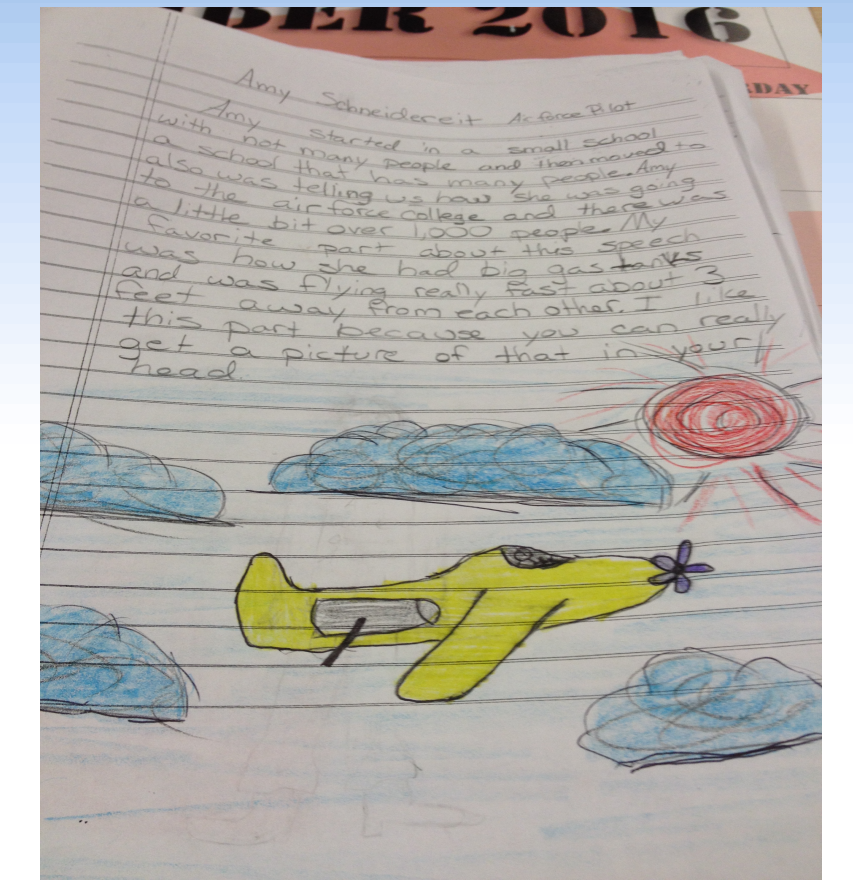
Lea Essman, Science Teacher
Sandhills High School Dunning, NE



Focus Question: How are the science, technology, engineering, and mathematics (STEM) initiatives available to adolescent girls at the Sandhills School District successfully motivating girls' interests in STEM topics and careers?

Sub-questions:

1. What types of initiatives exist to motivate adolescent females into STEM?
2. How well do the STEM classes currently being offered match with the types of careers that interest our female students?
3. How have experiences within the school's classrooms impacted the thoughts and feelings of our female students regarding STEM?



Background

Due to the lack of job opportunities in Dunning and the surrounding area, it was imperative that female students were exposed to a variety of science, technology, engineering and mathematics (STEM) opportunities, classes, and career choices. These students have stated that they will not be able to stay in the area to find employment nor will they even want to come back to this area following college graduation. They do not believe there is a future for them in this area in regards to a career related to the STEM field. The goal of this Capstone Project was to find out how the female students view STEM and what motivating initiatives the school provides for these students, as well as what plans the school may be able to develop in the future to help motivate these students in the area of STEM courses and careers.

Treatment

1. Pre- and Post-Treatment STEM Information Surveys
2. Presenters
3. Students' Notebooks
4. Virtual Posters
5. Minute Paper
6. Misconception Probes
7. Engineering Labs
8. Muddiest Points
9. Interview Questions
10. Recall, Summarize, Question, Connect and Comment (RSQC2)

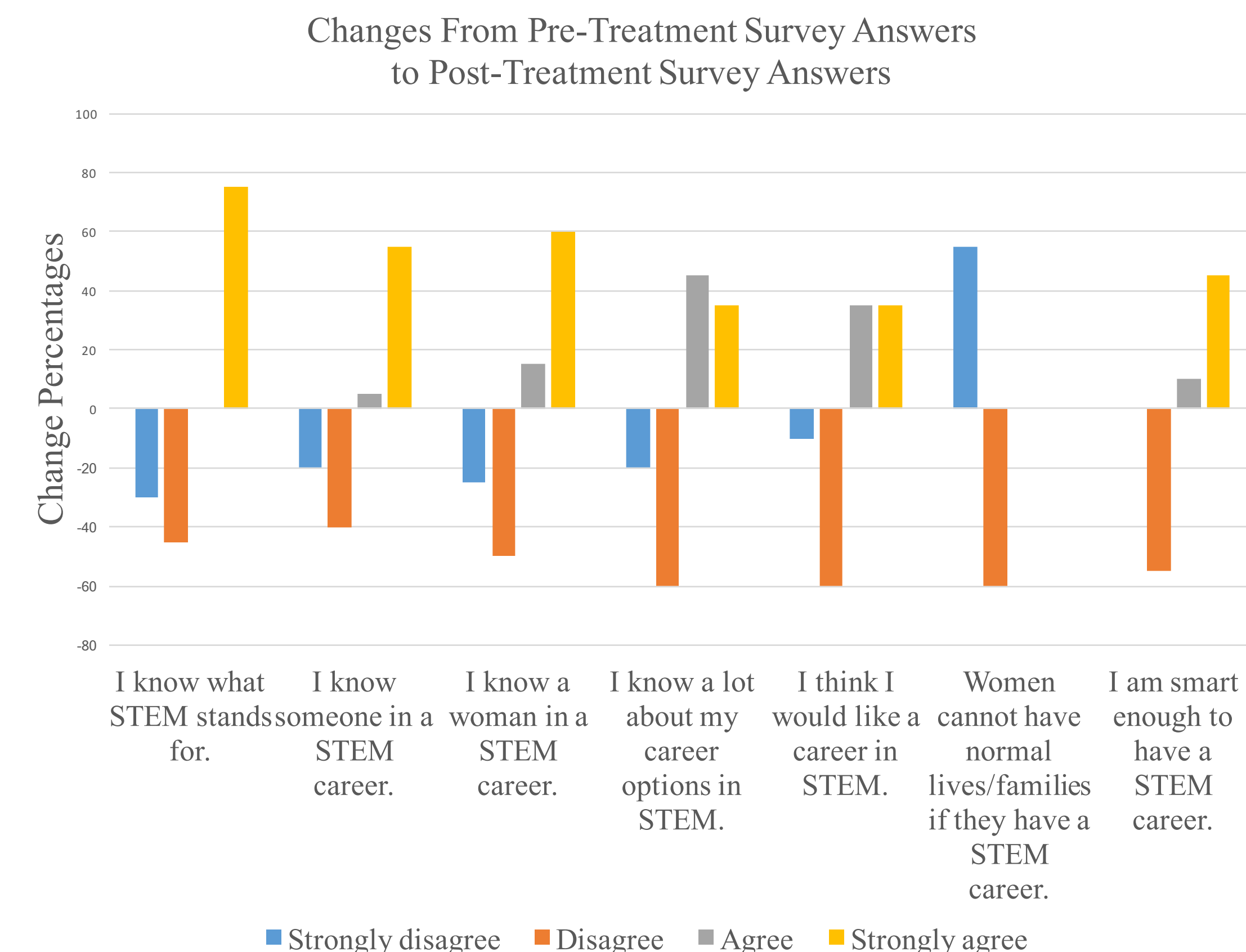


Figure 1. Significant changes in students' answers from the pre-treatment survey to the post-treatment survey, (N=20).

Conclusion

The students' Post-Treatment Survey answers revealed a significant increase in the students' STEM knowledge and positive attitudes towards obtaining STEM courses and careers. Many students stated they would definitely be taking more STEM courses and would work towards obtaining a career in STEM, while those who had been so adamantly against STEM courses and careers were thinking strongly about pursuing these two areas. The students stated again that it was the presenters' information that made the most impact on changing their thoughts towards STEM. The students' attitudes were also more positive towards women having STEM careers with families and normal lives. All of these positive changes resulted in many of the female students stating they wanted STEM careers which was a marked improvement over their Pre-Treatment thoughts of a male dominated STEM workforce (Figure 1).