



SCIENCE FICTION VIDEO SUPPLEMENTING EARTH SCIENCE INSTRUCTION

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Background

The ideas and concepts that we discuss are usually so large and abstract that it is hard for students to comprehend the scale of it. For this reason, we usually try to make models that help my students visualize things that we cannot physically bring into the classroom. This is an excellent practice, but it has its limitations. Generally, when these ideas and concepts become too large or abstract a teacher can only try to make it come to life with words. These words can be stories or they can be produced by textbooks, but the magic is seemingly taken out of the subject, especially when resorting to textbooks. Therefore, I decided to implement the use of science fiction media to help aid in teaching this incredible story of the Universe.

Methodology

- The study was conducted on 43 sixth-grade students in two separate sections of Earth science.
- Both classes received alternating non-treatment then treatment phases for two rotations.
- Both classes were cycled together and compared
- The study lasted 2 months
- During treatment phases science fiction clips and discussion of scientific errors supplemented the regular instruction.
- During non-treatment phases normal classroom instruction occurred.

Research Questions

Research Question	Data Source 1	Data Source 2	Data Source 3
How will using popular science fiction media with discussion affect my teaching as well as my student's understanding of Earth science content knowledge in my sixth-grade classroom?	Teacher Journaling	Student weekly favorites	Minute papers following discussion
Will student enthusiasm for learning science change?	Pre-Treatment Likert survey on attitudes towards science.	Interviews and formative assessment.	Post-Treatment Likert survey on attitudes towards science.
Will students be able to remember scientific fact after a discussion and second viewing of a similar video clip?	Pre-Treatment Science Misconception Probe	Minute papers after discussion	Post-Treatment Science Misconception Probe
Will content knowledge of topics change with inclusion of video clips?	Pre-Treatment Average scores	Unit Tests	Post-Treatment Unit Average Scores

Data and Analysis

- Students showed significant change in regards to three Likert questions shown on the right, with Wilcoxon Rank Sum results ranging from .008-.0257 (N=42).
- Chapter test results showed little to no change from treatment to non-treatment sections.
- Responses from the Weekly Favorite formative assessment relayed that Sci-Fi Friday was a favorite activity of the week with percentages ranging from 46-75% during treatment weeks (N=41).
- Results from the pre- and post-treatment What Would Really Happen? misconception probe showed an increase of 17% of correct responses from the entire group (N=42)

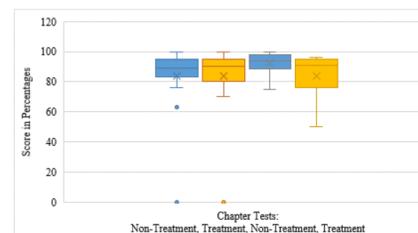


Figure 1. Group 1 Content assessments Ch. 22, 23, 24, 25 (N=20).

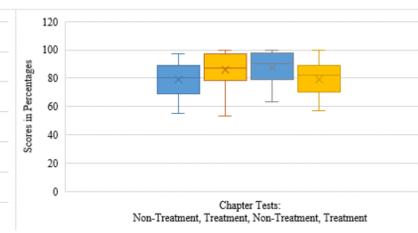


Figure 2. Group 2 content assessments Ch. 22, 23, 24, 25 (N=21).

Figure 3. I enjoy science fiction movies and books. Likert question, (N=41).

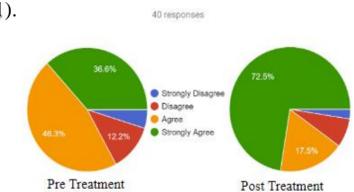


Figure 4. Sometimes I read ahead in our science book. Likert question, (N=40).

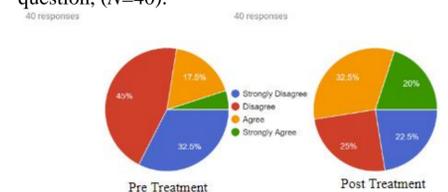
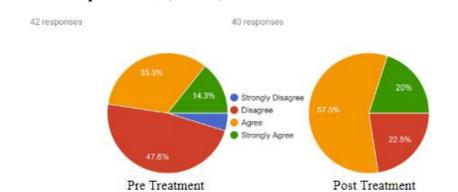


Figure 5. I think science fiction helps me learn science facts. Likert question, (N=42).



Conclusion

This study supports the inclusion of science fiction media clips and discussion to help increase student enthusiasm in the science classroom. The results indicated students were more likely to participate in science-based discussion with the aid of movie clips. I was able to discuss scientific topics and observe normally hesitant students participate with enthusiasm. While enthusiasm for the topics covered seemed to increase during treatment sections, there was no evidence that suggested the media clips aided in test performance. Student perceptions positively changed during the treatment period in regard to their attitudes towards science fiction, and its usefulness in teaching science.

