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Wednesday, 20 February 2013 09:00

The following is a contribution to the JREFís ongoing blog series on skepticism and education. If you are an educator and would like to contribute to this series, please contact Bob Blaskiewicz.

In the Fall of 2012 I taught an Honors colloquium on Science & Pseudoscience. This class was discussed in my previous two posts to the JREF teaching series, "Science versus Pseudoscience: Do You Know What You Think You Know?" and "Is It Quackery?: Searching Primary Literature And Popular Evidence For Signs Of Pseudoscience". In this last post I will take a look back at the most recent semester.

The Honors colloquium met twice a week, for an hour at a time. The topics covered were a mix of those suggested by the students and those I chose. For each topic, the students were given 2 – 4 handouts, which they were expected to read before the next meeting. In the previous iteration of this course, I required weekly summaries which were graded. Some of the students felt it was an unnecessary burden, so this semester the participation was based solely on in-class discussion. If I felt the topic required some background, I gave a short PowerPoint presentation (for example, explaining audio or visual pareidolia with examples). Otherwise I guided the students through a discussion. This often meant referring to a quote from one of the readings and asking what they thought. At first it was difficult to get the students to talk, but over time they became more comfortable and were able to come up with discussion points without prompting.

We started with a general discussion of science and pseudoscience. I gave a short lecture of basic types of logical fallacies, and the students discussed the signs of pseudoscience, using Dunning's *How to Spot Pseudoscience* (2007). For the next meeting, students were given two handouts – one was information from homeopathy websites and copy of Greenberg *et al.*'s *Rainy Days for the Society of Pediatric Anesthesia* (2012). During the next class, the students had to determine whether each topic was scientific or not. They were able to see the pseudoscientific nature of homeopathy, but the Greenberg paper confused them. It was peer-reviewed, in a high-quality journal, with proper statistics. This led to a productive discussion of what being statistically significant means, and the relationship (or lack thereof) between correlation and causation.

For the next few weeks we covered the really fun topics: UFOs, psychics, ghosts, and cryptozoology. The students parsed out the scientific versus pseudoscientific aspects of each area – UFOlogy versus SETI and cryptozoology versus zoology, for example. Most of those topics were linked back to pareidolia. We looked at ghost, Bigfoot, Nessie and UFO images and videos. The students learned how the effect of lack of scale, de-focusing the camera and editing can drastically alter the perception of a sighting. Bigfoot cries and EVP recordings were used to demonstrate audio pareidolia. I played some recordings that showcased the verbal transformation effect, from the study by Remez *et al*. 1981. When the students didn't know what they were supposed to be hearing, their interpretations of a sound were all over the place. After the students were told what they were supposed to be hearing, they were able to hear everything quite clearly. The students made the connection back to blobsquatches – when given a photo with no prompting, they couldn't find the Bigfoot, but when it was pointed out beforehand, Bigfoot became easy to find.

This fun section set up the students' final project – creating their own paranormal evidence to post online. Three videos were created by the students: a UFO sighting, a Paranormal Evidence-style ghost investigation video, and a "blobsquatch" in the woods. The videos were all posted to a YouTube channel created for the class. For their final presentation, the students had to detail how the video was made, when they posted it, how it was advertised, and analyze the public response. The UFO video was filmed with a cell phone. The UFO was created with a cut-out of a UFO shape held in front of a TV tuned to white noise. The bright flashing light was a cell phone flashlight application. The movement of the UFO was created by moving the camera while recording. The ghost investigation was filmed using multiple cameras, some hand-held, some set in place. The student used editing to cut out portions of the video where the actors left or changed places. The blobsquatch video was filmed on campus, using an area of nature trails. The camera was positioned and moved so that it was unclear where the video was filmed on campus. This made it look as though the alien/cryptid was in the middle of the woods.

The blobsquatch video had the most views and comments, in part because of advertising. Our University mascot has his own twitter feed, and the creator tweeted the video link to the mascot. Anyone visiting the mascot's twitter would have seen the link. Overall the responses to the videos were not very strong – there were no believing comments, but plenty of disbelieving or snarky comments. If the videos had reached a wider audience, there may have been a better representation of believing comments.

Overall, the students seem to have benefitted from the class. The students expressed

appreciation for the class's discussion style. On evaluations, student comments included, " I liked that this was a discussion based class, I felt that I learned more that way," and "This class makes me really think about some of the stuff in the world." A downside to this design was that students were unclear about how their participation in the course would be graded. The syllabus needs to be updated to clarify the participation portion of their grade. I think the class went very well, and I will teach this class again in the future.

References:

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