

INTRODUCTION

My REVEL experience has presented me with an opportunity to continue building physical education lessons that are taught in the theme of marine science. The cruise I attended in 2004 was called "Sea Breeze". The hypothesis was developed that hot water streaming from an active vent rises and cold water is entrained in the rising plume. This is similar to what happens over the land on a coast line, as the air heats up over the land it rises and cool air from over the water moves in to take its place. The idea is that the same thing happens over a hydrothermal vent. The mission of the cruise was to gather data and begin to develop a proxy measurement for the heat flux from a hydrothermal vent. We studied deep water currents and their effect on the neutrally buoyant plume from a hydrothermal vent. This is certainly a challenge for a physical education teacher but I feel I have been successful in demonstrating this hypothesis to my physical education classes.

PROCEDURE

The students participate in a divergent problem solving lesson in which they use a parachute to demonstrate both the rising and neutrally buoyant plume. The problem presented to the students is that they must get the parachute from one end of the gym to the other. The rules are that the students may not move their feet while touching the parachute. After debating the best way a period of trial and error the students find they have the most success when raise the parachute as a group and let go simultaneously. If the wind currents are strong enough in the gymnasium they will move the parachute. If the currents are not that strong the students experiment with some people holding the parachute a little longer than others which creates a wave effect. Once the parachute comes to rest the group moves to the new location and repeats the process until they have moved across the gymnasium.



ASSESSMENT

When the students find success we discuss the procedure and why it was effective. This can be used to introduce the concept of underwater currents or it can be used as an assessment piece if the students have a prior knowledge of vent systems. I have used this lesson with a group of teachers attending a professional development institute in marine science and they gave some very positive feedback for the lesson.