

Utilizing Interactive Pedagogy to Overcome the COVID-19 Pandemic Influence

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1. Introduction

Educators have realized the negative impact of Covid 19 pandemic on students' education. Remote teaching forced students into a passive and isolated learning environment, causing them to lose interest in their education. Students have fewer questions and reactions in online class discussions, resulting in shyness, anxiety, and sometimes depression. Although teaching has returned to being in-person, the Covid-19 impact still affects students.

As a professor teaching senior undergraduate courses, the author implemented interactive pedagogy in her class on sustainability in postfire debris flow impact areas in Boulder County, Colorado. She designed the project to encourage students to return to nature to learn and explore independently. She shares her research findings and her method for the study, inspiring students' critical thinking with experimental learning.

2. Method

The method of this interactive teaching and learning includes the following components:

- 1) **Outdoor Tai Chi exercises** are led by the professor during class breaks to inhale the fresh air, strengthen the body, and relax the mind;
- 2) **Lectures on landform patterns** of areas prone to postfire debris flow and a vernacular sitting method of *feng-shui*. *Feng-shui* is an ancient Chinese practice used to harmonize people with their environment;
- 3) **Field investigations.** Visiting sites impacted by postfire debris is integral to interactive education. The professor demonstrates to students the landform patterns of the areas impacted by postfire debris. Then, student teams investigate three sites. These field trips encourage students' independence and team cooperation;
- 4) **Class debates.** Debates help students develop their ability to articulate and evaluate arguments. These debates increase communication among classmates and enhance students' critical thinking; and
- 5) **Final presentation.** Students write individual essays and share their team's findings and learning experiences with the class.

- **3. Interactive pedagogy**

- **3.1. *Tai Chi* exercise**

Tai Chi is a Taoist, slow-moving martial art that is a form of meditative exercise [3]. Coached by the professor, the class practiced *Tai Chi* for 10 minutes during each class break. Students were enthusiastic about the meditative practice of *Tai Chi*, becoming more focused and engaged in class.



- **3.2. Field investigations**

- To enhance experiential learning, field investigations are the highlight of this course and cultivate eagerness and curiosity among students during their field observations. Students love field investigations.



- In the class field trip in Jamestown, Boulder, CO., the professor showed students evidence of the 2013 debris flow damages and analyzed the surrounding landscape patterns that triggered this debris flow event. Students were surprised that a portion of a house destroyed during the 2013 debris flow was now restored in the same location. When heavy rainfall occurs again, a similar disaster would be repeated.



- To learn the large-scale hazard impacts on site selection, student teams visited Chapel on the Rock in Allenspark, CO. During the 2013 flood, the Chapel saw the effects of massive debris flow coming from Mt. Meeker five miles away. This debris flow initiates at the top of a large concave basin full of rocks and sand. When the slope drops, the debris flow dumps tremendous amounts of debris, destroying anything in its path. Fortunately, the Chapel survived the debris flow attack because of its location off the track and sitting at a higher elevation.



- The last site student teams investigated was 100 Arapahoe Ave, located on the north hillside of Flagstaff Mountain in Boulder, CO. Students' first impression of the site was peaceful and lovely, especially after they heard this site had the occasional mountain lion cubs come to visit. Unfortunately, this site contains landforms, posing a threat to the residents. A dry wash from Flagstaff peak down to the site, through which the 2013 debris flow split a building at this site into two parts. Such factors could be ignored by developers, who have never hiked this trail from Flagstaff Peak down to the site as the students did, nor studied the recurring nature of debris flow. The structure has since been rebuilt in its original, high-risk location. Students learn that ignoring large-scale hazard impacts could lead to buildings being destroyed in the next debris flow attack.



- **3.3. Class debates**

- Class debates increase the interactive communication among peers, sharing and inspiring new thoughts. Students participated with great interest in the class debates guided by the professor. As a result, students understand that this cycle of rebuilding and re-destruction at high-impact sites does not benefit the community's sustainability.

- The class debates further discussed human responsibilities for the Colorado wildfire, an initial reason for causing postfire debris flow. Students learned that fire strikes are often called "wildfires." However, over sixty percent of Colorado "wildfires" are caused by human ignition [11], particularly campfires. Students recognized that asserting freedom and independence regardless of risks associated with hazard-prone zones harms society. Humans are responsible for causing or enlarging the effects of natural hazards, and people should learn from their mistakes.

• 4. Conclusion

- Implementing the interactive pedagogy enhances students' physical and mental health and increases their interest in education. As a result, students have maintained a high attendance rate. Their presentations and essays have demonstrated successful educational outcomes and critical thinking.
- Field investigations encourage students to go to the physical world to find problems and seek solutions. Using first-hand experience to examine a theory, students to hike, see, feel, observe, and discover in field investigations is essential to learn environmental design.
- *Tai Chi* exercises and field investigations have been integral to education, boosting physical and mental health and unleashing joy for students. Class debates have helped students develop their ability to articulate and evaluate arguments, increasing communication among classmates.
- Implementing Interactive pedagogy can improve educational quality, boost students' interest in education and guide their independent learning activities, allowing them to engage in their education. This interactive approach can be an effective tool to heal educational wounds caused by Covid-19. In this approach, the professor is not only a knowledge deliverer but also a learning facilitator.
- Thank you.