**Using Virtual Reality to Learn about Place**

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**Abstract**

While being able to read data correctly is a vital skill, many sociology classes rely heavily on charts, graphs and tables that can be overwhelming and disengaging for students. One way to overcome this is for students to see firsthand the concept that they are learning about. Because it is not always possible for students to physically travel to the place that they are learning about, virtual reality can provide a simulation of these places.

The virtual reality activity described here was used in a 200 level poverty studies course to teach students about geographic variations in poverty. It can easily be adapted to other sociology courses where geographic concepts are taught, such as globalization. Through this experiential learning activity, students can view poverty “firsthand” with the use of virtual reality technology. Students work in small groups to explore areas that experience high rates of poverty via Google Earth. As students engage in the activity, they take notes on their ideas and findings for each location they view. Once all of the students have completed the activity, the class ends with a group discussion of what they learned about geographic variations in poverty. This activity challenges students to use information learned in previous weeks of class to analyze places facing poverty around the world.

**Learning Goals**

1. By completing this activity, students will demonstrate an understanding of how poverty can appear different around the world.
2. By completing this activity with the aid of virtual reality tools, students will be able to discuss conditions of poverty and how they may impact the individuals living in the area.
3. By completing this activity with the aid of virtual reality tools, students will be able to demonstrate reflection skills and apply previously discussed materials to new activities.
4. With the aid of virtual reality tools, students will be able to visualize the conditions of poverty and how poverty can vary from location to location, providing a visual representation of what is discussed orally in class.

**Goals Assessment**

1. Students will fill out a worksheet that requires them to critically think and describe the variations or similarities they find from each location they view through the virtual reality simulation.
2. Students will be required to discuss with the class their findings from the virtual reality activity and critically describe how these conditions could be impacting those living in the area.
3. Students will explain in class discussion how previously discussed materials from class apply to the areas they viewed in the virtual reality simulation.
4. Students will be required to discuss with the class how the conditions viewed through the virtual reality activity depict the material learned in class such as statistics, ideas and facts related to poverty.

**Usage Notes**

*Instructions*

We conducted this activity in a 200-level course called poverty studies, which is an elective for sociology majors but also fulfills two general education requirements, so most of the students were not sociology majors. While poverty itself might be well known to the students, it is possible that this is the first time they have considered poverty from a sociological perspective. Thus, it is important to teach students about poverty in a way that looks beyond preconceived ideas and from a sociological point of view.

This activity was designed to be interactive for students and also allow them to visualize some of the topics they have learned about in class. Some of these topics might include food deserts, lack of public transportation such as bus stops, or poor neighborhood upkeep. This activity also allows student to interact with each other through viewing different locations and sharing their thoughts on what they see through the virtual reality technology.

In the class before the virtual reality activity, students should start thinking about spatial inequalities. Lead a discussion on how students think poverty may vary by location, or whatever the place based topic is that you will be exploring.

In the class where they will be completing the activity, begin by dividing students into groups based on the size of your class and the amount of virtual reality equipment available. In our situation, the virtual reality equipment was provided by the university’s library in the library’s digital makerspace. We had enough equipment that four pairs of students could participate in the virtual reality experience at the same time.

Once the students are divided into groups, explain the activity and how to use the virtual reality materials. This technology may be slightly disorienting at first to those that have never used it before. Our class was taught to use the virtual reality technology by one of the university’s librarians. The instructor and the teaching assistant both learned to use the technology before class in order to help students that needed more guidance.

After all of the instructions are explained to the students regarding the assignment and the technology, they can begin the activity. The length of time this will take will vary based on materials available and overall class size. Once all of the students had completed viewing the locations we preselected for them we brought the class back into one large group to discuss what they discovered and how it related to material they had learned in previous weeks of class.

*Materials*

Each group of students should be given a worksheet (included with these materials). This worksheet should include predetermined locations for students to view. We used four different locations, but depending on class time, the instructor can adjust the number of locations accordingly.

This worksheet also includes questions for the students to consider while engaging in the activity. These questions should guide the students in what to look for when viewing the locations in virtual reality. Additionally on the worksheet are the discussion questions we used at the end of the activity. The questions that we included for each location were:

1. How does poverty look in this area? Is it similar to or different from what you were expecting?
2. What are your observations about the location? Think about buildings, road conditions, area upkeep, etc.
3. Consider what it might be like to live in this area. What are some challenges you might face based on what you can see around you?

*Selecting Locations*

Locations for this activity were selected based on two major criteria: poverty rates or indicators of poverty and “street view” capabilities. This can be altered to suit the instructor and the class topic. As noted in the limitations below, some locations did not allow for “street view” which provides students with the virtual reality tools to “walk around” a specific location. With this in mind, certain areas were not eligible to be viewed by students using the virtual reality tools thus locations had to be selected partly based on their virtual reality “walkability.”

The locations we selected for this activity included Lumberton, NC; Tioga-Nicetown, Philadelphia, PA; Triangle North, Milwaukee, WI; and Grigny, France. We selected Lumberton, NC as it was an area that students would be familiar with given that our university is located in North Carolina and it is a rural area. Lumberton, NC has a poverty rate of 33.5% (United States Census 2019). We selected Tioga-Nicetown, Philadelphia, PA due to it being a more urban area to illustrate urban poverty. Tioga-Nicetown, Philadelphia, PA has an unemployment rate of 17.7% and 40.4% of children living in poverty, both indicators of an impoverished neighborhood (Drexel University Urban Health Collaborative and Department of Public Health: City of Philadelphia 2019). Milwaukee, WI has a poverty rate of 26.6% (United States Census 2019). Despite this area having a lower poverty rate than other locations, we chose this area because it was the setting for Matthew Desmond’s ethnographic book *Evicted: Poverty and Profit in the American City* which our students had read prior to this activity. Finally, we chose to have students view Grigny, France as it has an unemployment rate of roughly 40%, an indicator of poverty (Kimmelman 2015). We also selected this location so students could compare poverty in the United States to poverty abroad. Instructors can select different locations that better suit their needs and their class materials.

*Timing*

An estimated ten to fifteen minutes was needed to explain to students how to use the technology, along with about five minutes to explain the activity. The students took about 30 minutes to complete the virtual reality portion. The remaining portion of class, an estimated fifteen to twenty minutes, was dedicated to class discussion of the activity. This timing can be adjusted based on the length of the class as well as the class size and how long it takes students to complete the virtual reality portion of the activity.

This activity was performed roughly halfway through the semester, as students by this point have been exposed to a number of different topics, statistics and figures that relate to poverty. This activity allows students to consider topics related to poverty in a “real life” environment. In order for that to be possible, students must have some preexisting knowledge about poverty, thus it is recommended that this activity be done after several lectures discussing topics such as (but not limited to) housing, rural and urban poverty, and food insecurity and food deserts.

*Class Setup*

Overall, this activity is best suited for a smaller class (we had 18 students) due to the materials needed to perform the activity. The class should be divided into small groups and each group assigned a virtual reality station with the materials they need to complete the assignment. It is helpful to have students in small groups so they can help each other with the activity and the virtual reality materials if there was any confusion.

*Leading Discussion*

As noted, this activity is evaluated on the basis of in class discussion and relating the virtual reality exercise to materials previously learned during class. Given the timing of this activity within the semester, the questions were designed to have students think critically and apply their lessons about housing, public transportation, food insecurity and rural verses urban poverty. The following discussion questions (also included on the worksheet) were used to lead discussion at the conclusion of the activity.

*Example Discussion Questions*

1. What are some features of these locations that you noticed? How did those features relate to our knowledge about areas facing poverty?
2. For this activity, you viewed four different locations. Share some features of these places that were similar and also some features that made them different.
3. Was it easy to tell that these locations had high rates of poverty? Why or why not?
4. Do you think you can determine if an area is impoverished just by looking at it? Why or why not?
5. Discuss what was different about rural areas and urban areas in terms of how poverty looked. Was poverty more evident to you in one place or the other?
6. How does Location 4, which is international, compare to the locations in the United States?

*Example Responses to Above Discussion Questions*

1. I noticed that many of these places had run down streets and buildings. I also observed that you could find bus stops near the area but they were spread over several blocks. You can also see that many places had litter and graffiti on public buildings. This relates to my knowledge about areas facing poverty because many of these areas clearly had fewer resources to better their communities. I did not see a lot of businesses which means that it is likely many people are not able to work in their neighborhoods or have to travel for work which for some could be hard.
2. The most similar features I noticed was the overall structure of the neighborhoods. Many were run down, even the one in Europe. Some places looked more urban than others. One of the locations was very rural compared to some of the other communities. This shows that poverty can exist in both rural and urban places.
3. I think that for some places it was very evident that poverty was a feature of the community. Other places it seemed less clear. The European example looked like a less well-off neighborhood but was not nearly as run down as places in the United States. I don’t think I would have guessed all of these places faced poverty by just driving through them.
4. I do not think you can always determine if a place deals with poverty just by looking at it. This is like asking if you can look at a person and know they deal with poverty. Sometimes, you can look at places and people and make assumptions about poverty. But, from class we discussed that poverty can look different in different places with different people. Thus, I argue you can’t always look at a place and claim it is impoverished.
5. I felt like poverty was more evident to me in urban areas because you can see the rundown buildings and the condition of the neighborhood a little more clearly. Rural areas were more spread out and had fewer businesses or other services but did not necessarily look like they were impoverished. But as we know from class, poverty in rural areas might be different like a lack of access to grocery stores or having limited job opportunities.
6. Even though location 4 has a relatively high poverty rate, it doesn’t look as impoverished as some of the areas in the United States. As we learned in class, this is because the US has much higher poverty rates than our European peer nations.

*Grading*

Students were graded based on their participation in the activity and the class discussion at the conclusion of class. As long as students were actively participating and interacting with the software, and engaging thoughtfully in discussion at the end of class, they were given participation credit. The worksheet itself serves as a tool for students to compose their thoughts and observations during the activity. This activity allows students to experiment with technology and use the university’s technology to further explore topics discussed in lecture. While we did not grade the students on the quality of their participation, the discussion questions could be used to provide students with a grade based on their responses. Students could complete the worksheet and turn it in for the instructor to grade after class. These worksheets could be graded for each question based on completeness, thoughtful responses, and incorporating material from previous classes.

**Adaptations**

*Without Virtual Reality*

This activity relies on the use of virtual reality technology and Google Earth. Some universities and colleges may not have access to the virtual reality equipment needed for this activity. If that is the case, the activity can be adapted to illustrate the same point as the original lesson plan by visiting Google Earth in a traditional browser. Google Earth has “street view” capabilities for many areas of the world, allowing students to “walk” around the area as if they were there in person. Google Earth is free for public use and students should have no issue accessing the website.

This is incredibly similar to the virtual reality version of this activity however students will not be completely immersed into the digital environment as they would with virtual reality materials. Nevertheless, the activity would still achieve the same learning goals as well as illustrate many of the same points to students even without virtual reality technology.

*For other courses and topics*

This activity would also be useful for a variety of other sociology courses. Sociology courses discussing immigration could view places that have experienced high levels of immigration. Sociology courses that discuss race and ethnicity could view places that are significant to the study of racial inequality such as Selma, Alabama. This activity could also be helpful for instructors teaching criminology or criminal justice courses. Students could use the virtual reality materials to view areas with high crime rates or places that have experienced historically significant crimes. For courses with a globalization component, different locations can be compared across the world. This activity can be altered to be used in a number of different sociology courses with the instructors altering the discussion questions to be relevant to their class and the course curriculum. This activity is unique in that it can be adapted to serve many classes and many topics. This activity also allows for ideas and concepts to be represented visually which can benefit students that learn in a more visual fashion. This also allows for students to actively engage in the process of learning beyond just listening and note taking which could be an advantage that could benefit instructors and students in a variety of courses.

**Limitations**

The major limitation that was discovered when designing this activity is related to Google Earth. Many areas that have “street view” capabilities do not always have virtual reality footage. As a result, some places display themselves as “flat” instead of 3D areas that can be explored as if the person is actually standing in the location. Thus, locations that were selected for this activity were based on what virtual reality footage was available via Google Earth. This could be limiting for instructors looking to examine specific areas where footage was not available.

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