UNDERSTANDING THE PHOTOVOICE METHOD'S IMPACT ON STUDENT PERCEPTIONS OF GEOGRAPHY

by

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DEDICATION

I dedicate this study to my past, present, and future students. You are the reason I wake up every day.

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LIST OF ABBREVIATIONS

Abbreviation	Description
APHG	Advanced Placement Human Geography
SPSS	Statistical Product and Service Solutions

ABSTRACT

As the number of undergraduate degrees awarded in Geography has recently declined, I wondered: What can be done to change perceptions of geography in order to increase the probability of a student taking a geography course at the postsecondary level? To answer this question, I created a research study to measure the impact of two interventions on student perceptions of geography: a Photovoice project and a "Fishbowl" style class discussion. Photovoice is a form of participatory action research that provides an opportunity for participants to create, share, and exhibit their experiences and viewpoints through photography and narrative storytelling. Fishbowl discussions are student-led and give students the opportunity to collaboratively discuss societal issues to develop new insights, perspectives, and ways of understanding. Students took pre and post surveys that produced quantitative and qualitative data regarding their perceptions of geography and the probability of taking a geography course at the postsecondary level. My hypothesis is that the Photovoice method will increase student perceptions of geography and increase the probability students will take a geography course at the postsecondary level. Results from the study indicate that the Fishbowl discussion led to a statistically significant increase in mean scores for four out of five questions, including probability of taking a geography course at the postsecondary level. The Photovoice project led to a statistically significant increase in student perceptions of the usefulness of geography in solving problems in the community.

I. INTRODUCTION

The number of geography bachelor's degrees has declined from a 2012 high of 5,128 to 4,234 in 2019 (Revell, 2021). Mark Revell (2021) laments, "So here we are. Geographers…are among the most qualified professionals to address the complex problems facing our world…Yet the number of graduates in this field is not only failing to keep pace with workforce demand but is also going in the wrong direction." The introduction of Advanced Placement Human Geography (APHG) in 2001 was intended to expose more students than ever to geography, which would in turn increase the number of students choosing geography as their college major (Scholz, 2014; Bailey, 2003; Lanegran, 2011). In 2015, 159,609 high school students took the Advanced Placement Human Geography exam (Packer, 2015). The disparity between AP Human Geography exam participants (159,609) and geography degrees conferred (4,234) shows that increased APHG exam participation has not led to an increase in geography degrees awarded. It is clear that geography suffers from a low status in the minds of high school students when choosing their postsecondary courses.

With these facts in mind, I sought to learn if the use of an innovative instructional method could change student perceptions about geography and increase the probability of students taking a geography course at the postsecondary level. The Photovoice method was chosen as the instructional method to implement in the study. As of the publication of this study, little research exists on how the Photovoice method impacts student perceptions of geography as a subject or the probability of taking a geography course at the postsecondary level. The Photovoice method is a Participatory Action Research method where participants take photographs centered on a certain theme or community

issue, then add a narrative caption that explains the significance of the photo and how it aligns with the theme of the research (Wang and Burris, 1997). Photos and accompanying narratives are then put on public display for community members as a means of raising awareness about the theme of the project. Photovoice allows participants to create content that can be transformative in nature, especially because the end goal of the project is to take some sort of action on a local problem.

This research project investigated how the use of the Photovoice method in AP Human Geography (APHG) impacts student perceptions of geography as a subject. Walkability in Mesquite, Texas is the theme of the Photovoice project students completed for this research. Mesquite, Texas is a city of 150,108 people (Census Bureau, 2022) without a public transportation system. Students often must walk places without consistent sidewalks, or cross six lanes of heavy traffic to get to school. Students in Garland, the town adjacent to Mesquite, can take Dallas Area Rapid Transit (DART) buses or trains from one part of town to another. Mesquite voted against becoming a DART member in 1983. The election to join DART failed by 21 votes (City of Mesquite, 2010). The effect of this is that students in Mesquite cannot access many parts of the city without having a car. Walkability is specifically mentioned in the APHG course description guide in Unit 6, Topic 8, Urban Sustainability. Therefore, the content of both interventions (class discussion and Photovoice) aligns with required APHG course standards.

I hypothesize that using the Photovoice strategy in class will make students feel more engaged with the subject and will therefore have more positive perceptions of geography. Additionally, I hypothesize that participation in a Photovoice project will

increase the probability students will take a geography course at the postsecondary level. The reason I think students will be more engaged using the Photovoice strategy is that they are able to study and document the local issue of walkability in Mesquite. Students can present our Photovoice exhibit results to their campus community, the Urban Planner for the city of Mesquite, and/or Mesquite City Council members.

II. RESEARCH OBJECTIVES AND QUESTIONS

This research asks the following two research questions: How will participation in a Photovoice project impact student perceptions of geography as a subject? How will participation in a Photovoice project impact the likelihood students will take a geography course at the postsecondary (college or university) level?

Student perceptions of geography was chosen as a focus of the study because of existing literature suggesting that the way students perceive a subject can impact future course choices (Adey and Biddulph, 2001; Fatima, 2016; Opokum et al., 2021; Sack and Petersen, 1998; Swainson 1939; Scholz, 2014). Student perception of a subject is one of several factors influencing future course choices (Adey and Biddulph, 2001). I acknowledge that multiple factors such as advice from teachers and parents, ability in the subject, and graduation requirements can influence future course choices (Adey and Biddulph, 2001).

Probability of students taking a geography course at the postsecondary level was chosen as a focus of the study because of the aforementioned disparity between APHG exam participants (159,609) (Packer, 2015) and geography degrees awarded (4,234) (Revell, 2021). As most of the students are in grades 9 or 10 (ages 14-16), many have not chosen their intended postsecondary major, however, it is possible to ask participants to speculate whether they would consider taking a geography course at the postsecondary level. I assume if participants would consider taking a geography course at the postsecondary level, they would be more likely to consider majoring in geography.

This research will add to the existing body of literature because little to no research exists on how the Photovoice method impacts student perceptions of geography

as a subject or the probability a student will take a geography course at the postsecondary level. Although there are numerous instances of the Photovoice method being used in educational settings, (Cho, et al., 2021; Goodman et al., 2018; Gupta et. al., 2019) there have been very few, if any research studies linking Photovoice with student perceptions of geography. Class discussion was chosen as the instructional strategy for the control group because this is a standard strategy used throughout social studies courses in many educational settings (Fountain, 2009).

III. LITERATURE REVIEW

Student Perceptions and Attitudes about Geography as a Subject

According to Swainson (1939), who studied student attitudes about geography, "...the most profitable and economic expenditure of energy is that which is directed to work that is enjoyed…" (p. 111). Swainson's research (1939) found that among elementary students surveyed in Lincolnshire, England, at least twenty percent of participants disliked geography due to reasons like, "It tires me out," and, "It is dry and there is no fun in it". Scholz (2014) surveyed 2,397 Texas State University students who took a high school geography course in Texas to learn if they majored in geography. Only 150 respondents ended up majoring in Geography after taking a geography course in high school. Dorothy Sack and James Petersen (1998) surveyed fourth, fifth, and sixth graders in San Marcos, Texas about their attitudes about geography. In both 1983 and 1993 surveys, students listed geography as one of their least liked subjects.

Walker (2006) developed the Test of Geography-Related Attitudes (ToGRA) to gauge student attitudes about their leisure interest in geography, enjoyment of geographic education, career interest in geography, and interest in place. Using Likert scale survey items, the ToGRA asks students to indicate their extent of agreement or disagreement with statements such as, "Geography lessons are fun", "Working as a geographer would be an interesting way to earn a living," and "I would like to study geography in college to help me get a job" (Walker, 2006). Fatima (2016) surveyed 106 students in Pakistan at the intermediate and collegiate levels regarding their perceptions of geography as a subject and motivations for choosing geography for future levels of study. Results

showed that students chose to study geography because it was helpful for the future, it was an easy subject to earn high grades, and that it was easier than other courses.

Adey and Biddulph (2001) surveyed 1,406 Year 9 students in Nottingham, England to learn how student perceptions of geography and history influenced the probability of taking either course in the future. When asked how they perceive what schoolwork would be like in a high school geography course, 52.9% of participants indicated that geography would have, "a lot of reading and writing" (Adey and Biddulph, 2001, p. 446). Regarding usefulness of geography, 62.3% of participants indicated that geography would be useful when leaving school. Many students commented that they believed geography was useful for travel, reading a map, or not getting lost. Few students commented on geography at a broader level, with responses such as, "It explains how the world works and how it is changing," and, "Because it would help to solve problems." (Adey and Biddulph, 2001) The implications of Adey and Biddulph's study are that teachers should pay greater attention to student perceptions, attitudes, and understandings about the nature of geography and its utility as a subject.

Opokum, Serbeh, and Amoah (2021) surveyed Ghanaian senior high school students about their positive and negative attitudes towards geography. They found that students were pulled toward geography due to the diverse job opportunities stemming from the subject as well as the ability to use geographic knowledge to solve problems at multiple scales (Opokum et al., 2021). Students were pushed away from geography because the subject was too difficult, there were not enough outdoor experiences, and due to the lack of societal respect geography receives (Opokum et al., 2021). This study

accentuates the need for more outdoor experiential instructional methods, such as Photovoice, in geography courses.

Photovoice Method

The Photovoice method involves participants taking photographs of a given phenomenon and using those photos to tell a story or share their perspective on the subject of the photos. Photovoice is a qualitative, participatory action research method where participants also serve as co-researchers alongside the primary researcher. Wang and Burris (1997) created photovoice as a way for marginalized women in rural areas of Yunnan Province, China to document their lives using photographs and ensuing discussion of the photos. The result of the photovoice project was a public exhibition of the photographs and associated stories to educate community members and stakeholders about the issues impacting women in Yunnan Province. The goal is to start a dialogue that results in tangible changes to policies that adversely impact marginalized populations (Wang and Burris, 1997; Wang, Burris, and Ping, 1996; Wang and Redwood-Jones, 2001).

Goodman, Snyder, and Wilson (2018) utilized photovoice with a group of indigenous students at the Eagle's Nest Youth Resource Program and Recreation Centre in Winnipeg, Manitoba to study the effects of increased mobility on students' ability to develop and maintain social relationships. Participants took photos related to, "types and sources of social support, challenges and opportunities to good health, and community strengths and weaknesses," then wrote and spoke narratives explaining the importance of each image and the alignment with one of the aforementioned themes (Goodman et al., 2018, p. 317). For example, one student photographed several bottles and cans of alcohol,

explaining that substance use was a way to create and maintain social relationships. The results of the research revealed a need for more positive role-models for mobile indigenous youth, culturally safe gathering spaces, and more opportunities for positive relationship building (Goodman et al., 2018). The project culminated in a photovoice exhibition open to community members which presented 55 photos along with written quotes. Goodman et al. (2018, p.324) found that the photovoice method, "demonstrates the importance of youth voice and perspective in informing community and policy decisions."

In a 2011 research study at Quinnipiac University, Van Oss et al. conducted a Photovoice study with children aged 11-14 in an urban, low-income neighborhood of New Haven, Connecticut. The goal of the study was to learn how the environment influences pedestrian perceptions of safe and hazardous areas to walk (Van Oss et al., 2011). Occupational therapy graduate students at Quinnipiac provided children with digital cameras and asked them to photograph hazards in their neighborhood that could lead to pedestrian injuries, then discuss the photos as a group. Findings from study concluded that by utilizing the Photovoice method, children were able to provide their perspectives about their experience as pedestrians. Additionally, the Photovoice method provided the me with valuable data that could be used in future walkability education campaigns (Van Oss et al., 2011).

Photovoice Method and Education

When used as a pedagogical tool, photovoice must be tailored to a specific social or spatial issue within a specific community. Cho, Kim, and Stoltman (2021) conducted a photovoice project with high school students in Daegu, South Korea to study the issue of

feral street cats in the community. Findings from the study indicate that utilizing the photovoice technique helped students become more aware of street cats and pushed them to seek solutions to the problem (Cho et al., 2021, p. 90). Another benefit of the photovoice technique was that students could, "apply their classroom geographical knowledge to reality…by carrying out the authentic task of investigating a social challenge in their area" (Cho et al., 2021, p. 90).

Since the initial publication of the first photovoice project in China, the method has been used in various educational settings as a pedagogical tool (Cho et al., 2021, p. 83). Gupta, Simss, and Dougherty (2019) utilized the photovoice method to teach children aged 7-12 how to use photography to document areas of their neighborhood in the Hilltop South community in Pittsburgh that elicited positive and negative emotions. Each participant selected two photos for use in the photovoice project: one that elicited intense positive emotions and one that elicited intense negative emotions. The researchers then asked students to add an "emotion driven" statement explaining their emotions and the backstory to their selected photos (Gupta et. al., 2019). For photos evoking negative emotions, students were asked to write a specific action step that community members could take to improve the situation in the photo. The photos and accompanying stories were displayed for community members to learn how children viewed the neighborhood. The display was a source of empowerment and validation for the students because their voices were heard, and perspectives considered by community members (Gupta et. al., 2019).

Fusco, Moola, Faulkner, Buliung, and Richichi (2012) conducted a Photovoice study to learn about the experiences of students who use active (walking or bicycling)

versus non-active (car, bus, taxi) modes of transportation to and from school. Participants ranged in age between 9 and 12 and were in grades 4-6 at elementary schools in the Toronto area. Each participant was given a digital camera and asked to take eight photos of their journey from home to school and eight photos of their journey from school to home (Fusco et al., 2012). The study found that the method of transportation affected the way students perceived their surroundings. Fusco et al. (2012) concluded that children who walked or bicycled to school had a more intimate connection to their environment than students who were taken to and from school by car or bus. For example, a student who walked to school chose to photograph individual leaves while a student in a car photographed a forest (Fusco et al., 2012). They concluded that the Photovoice method gave children an opportunity to express important aspects of their school travel experience, which is a topic that is understudied in educational research (Fusco et al., 2012).

Miller and Kurth (2021) conducted a Photovoice study to learn about the experiences of disabled girls of color in middle and high school. Study participants were asked to photograph areas of school where their ideas were most valued, where, and how they most enjoyed learning, and what learning materials they most enjoyed using (Miller and Kurth, 2021). For example, one participant took a photo of markers and explained they were her favorite writing utensil. However, the participant had to ask permission to switch writing utensils (e.g., pencil to marker) while her classmates did not (Miller and Kurth, 2021). Additionally, participants took photos of teacher-controlled technology like projectors and laptops, then explained that they did not have consistent access to laptops or digital tablets (Miller and Kurth, 2021). Student photographs and explanatory

narratives led to the exposure of the inequities and difficulties disabled girls of color experienced at their schools.

Fieldwork

Photovoice is a form of fieldwork. The direct experience students gain during fieldwork cannot be replicated in a controlled classroom setting. Boyle et al. (2007) conducted a research study that concluded that students enjoy fieldwork, which caused an increase in positive affective responses. One participant in the study stated, "Finally being able to visualize my theoretical work in the field. This has helped me understand the work much more" (Boyle et al., 2007, p. 34).

The benefits of fieldwork can lead to deeper connections to course material (Hope, 2009). Hope (2009) concluded, "Fieldwork can deepen and develop our understanding of knowledge gained in the classroom, by providing the opportunity to pursue it further in 'real world' contexts" (p. 180). Therefore, fieldwork is an ideal choice to use as a strategy to potentially change student perceptions of geography as a subject and increase the probability that students will take a geography course at the postsecondary level. Fieldwork was also chosen because it provides students with opportunities to apply course concepts to phenomena outside of the classroom (Boyle et al., 2007).

Summary

Student perceptions and beliefs about geography impact the probability of taking a geography course in future classes (Adey and Biddulph, 2001; Fatima, 2016; Opokum et al., 2021). As Scholz (2014) discovered there is a discrepancy between the number of students who take a geography course in high school and the number of students who

major in geography. The Photovoice method has the potential to empower marginalized populations by providing an opportunity for participants to express their viewpoints through photography and narrative storytelling (Wang and Burris, 1997; Wang, Burris, and Ping, 1996; Wang, 2006; Wang and Redwood-Jones, 2001). The Photovoice method has been used in multiple community based (Goodman et al., 2018) and educational (Cho et al., 2021; Fusco et al., 2012; Gupta et al., 2019; Miller and Kurth, 2021) settings to teach young people how to document, analyze, and express their concerns about problems and issues in their community. Photovoice is a form of fieldwork, which can provide geography students with an opportunity to apply course concepts to real world situations, thus increasing engagement and possibly improving student perceptions of the subject (Boyle et al., 2007; Hope, 2009). This study aims to fill a clear research gap, as there is little research regarding the impact of the Photovoice method on student perceptions of geography as subject and the probability of taking a geography course at the postsecondary level.

IV. METHODS

Participants

This study was conducted as part of a regularly occurring AP Human Geography course at Mesquite High School in Mesquite, Texas during April 2022. Purposeful sampling was utilized, as participants were members of one of five of my AP Human Geography class periods at Mesquite High School. In total, 101 students participated in the research study by taking pre and post surveys about their perceptions of geography as a subject. Participants ranged in age from 14-16 except for one student who was 18 and took APHG as a 12th grader. Recruitment was done during class time by explaining the purpose of the research study and informing students that participation in the pre and post surveys for research purposes was optional. No parents opted students out of pre and post survey participation. The two interventions (class discussion and Photovoice) were considered regular course assignments, so participation in those activities was taken for a grade.

Since the purpose of the study is to understand how Photovoice impacts student perceptions of geography versus a class discussion, this group of students best aligns with the research questions. Parent information letters were sent home to parents, who had the option to return the letter signed if they wanted to opt their child out of participating in the research study. Students were given an assent form prior to taking the pre and post surveys and could opt out by not participating in the pre and post surveys. This project (#8129) was approved by the Texas State University Institutional Review Board (IRB) on March 21, 2022.

Design

The design of this study is based on a pre survey, intervention, post survey model with a control group and an experimental group. Both groups took the same pre and post surveys. The control group (n=51) received a class discussion intervention, and the experimental group (n=50) received the Photovoice project as their intervention. The control group (n=51) was divided amongst three APHG class periods. 42 control group students were 9th graders and 9 were 10th graders. The experimental group (n=50) was divided amongst two APHG class periods. 38 experimental group students were 9th graders, 11 were 10th graders, and one was a 12th grader. Classes were assigned to these groups to ensure sample sizes were as equal as possible.

The control group participated in a class discussion about an article (Newsela, 2016) regarding the effect banning cars from city centers would have on walkability. Both groups took the same pre and post Likert scale surveys to indicate their perceptions of geography as a subject and the probability of taking a geography course at the postsecondary level.

Each Likert scale question contained a range of responses from 1 to 5, with 1 being “Strongly Disagree” and 5 being “Strongly Agree”. For the pre surveys, each question was prefaced with the statement, “Think about your experience in this course up to this point. How much do you agree or disagree with the following statement?” For the control group post surveys, each question was prefaced with, “After participating in our class discussion, how much do you agree or disagree with the following statement?” For the experimental group, each question was prefaced with, “After participating in our Photovoice project, how much do you agree or disagree with the following statement?”

Figure 1 contains all questions from the pre and post surveys. After each Likert scale question, students could choose to respond to the following prompt in a text box, "(Optional) Please explain any thoughts, reasons, or details about your answer choice to Question (X). I highly encourage you to let me know what you think, and it will be really helpful for me to better understand your opinions." This section was added after each question so students could explain their thinking if they wanted to. I decided to make the open-ended response section optional to take pressure off students from having to explain every Likert scale answer choice.

Table 1: Pre and post survey questions (sources: Boehm & Solem, 2018; Walker, 2006)

Question	How much do you agree or disagree with the following statements?
1	Geography is an enjoyable subject.
2	Geography is useful for solving problems in my community.
3	Geography has great value in modern society.
4	I am interested in taking a Geography course at the postsecondary (college or university) level.
5	Geography class is useful for my potential career(s).

Question 1 was chosen because it reflects the idea that the more a student enjoys a subject the more positive perception they may have of that course. Question 2 was chosen to gauge student perceptions of the usefulness of geography in their lives and in their community. Question 3 was taken from the Powerful Geography (Boehm and Solem, 2022) student surveys and gauges student perceptions about the value of geography in our society. Question 4 was chosen to gauge the probability that students will take a geography course at the post-secondary level. Question 5 was chosen to gauge student

perceptions about the utility of geographic knowledge in their future careers. Figure 1 contains a flowchart of study phases.

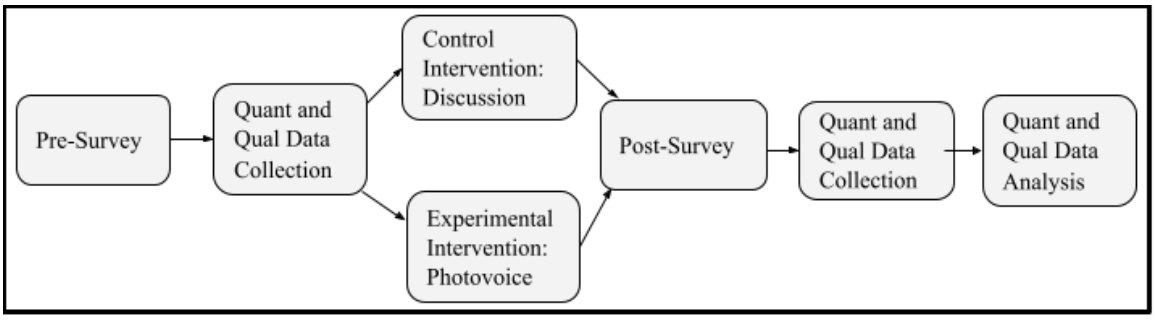

Figure 1: Flowchart of study phases.

Procedures

Day 1: I taught both the control and experimental groups about the origin of cities, how transportation methods changed urban design, how automobiles led to urban sprawl, and how walkability is a problem in car-centric areas such as the Dallas-Fort Worth Metroplex and the Metro Atlanta area. We watched and discussed episode one of "American Makeover: Sprawlanta" (Elisara, 2010) during class so students could better understand how urban sprawl and car dependent cities impact their lives. During the final portion of class, both groups completed the pre surveys. For the control group, I assigned an article debating the merits of banning cars from city centers (Newsela, 2016) and asked each student to highlight three ideas they agree with, three ideas they disagree with, and to annotate each highlighted passage with a short explanation. I instructed the control group to complete the article analysis for homework and come to school next time prepared to discuss the article as a class.

I taught the experimental group about the Photovoice method and how it has been

used in several educational and community-based settings (Gray, 2011; University of South Carolina, 2011) to raise awareness about problems in an area. Next, I instructed students about photography methods to ensure we got quality photos for the Photovoice exhibition. We looked at other Photovoice exhibits and learned that the accompanying narrative can be literal or figurative in nature. I assured students that Photovoice is meant to tell *their* stories, so they know they are in control of what they publish. Finally, we took a group walk outside of the school building so students could see examples of features that are pedestrian-friendly versus features that are not pedestrian friendly. Many students observed that the sidewalks near the new wing of our school are in better condition than the sidewalks across the street from campus, which are much older and damaged in many places. This was done to give students a sense of what to look for when going on their own neighborhood walk. Students were asked to take 3-6 photographs that represent their experience as pedestrians walking in Mesquite and upload them to a Google Slides presentation for printing on days 2-3 of the project.

Day 2: Control group classes came into class, and I checked their homework for completion of highlighting and annotating the article about banning cars from city centers. Next, as a class we discussed the differences between discussion and debate. We discussed how debates have a clear winner and loser, while discussions are about exchanging ideas and seeing an issue from a new perspective. I used the analogy of basketball as a debate and hacky sack as a discussion. In basketball one team wins and one team loses at the end, which is the same outcome as a debate. Hacky sack is a cooperative game where the purpose is to simply keep kicking the ball between the players without letting it hit the ground. I explained to students that discussions are like

playing hacky sack because the purpose is not to win or lose, but to keep the conversation going. Next, students wrote discussion questions using Bloom's Taxonomy question stems if needed.

We arranged the desks into inner and outer circles, as is customary in "fishbowl" (Dugdale, 2020) discussions. For example, in a class of 18 students, 9 students would sit in the inner circle and 9 students sit in the outer circle. Each student in the inner circle is partnered with the person sitting behind them in the outer circle. Only students in the inner circle can speak in the discussion. Students in the outer circle observe and reflect on the inner circle's discussion, then prepare notes and thoughts for when the groups switch, and the outer circle students become inner circle students and can speak in the next round of the discussion. See Appendix A for a copy of the form students used during the discussion. Each discussion round is timed between 7-10 minutes. At the end of each discussion round, inner circle students switch desks with their outer circle partner. A new inner circle of students then discusses the topic for their allotted time period. The formerly inner circle students go to the outer circle, then observe and prepare notes for their next discussion round.

At the start of the discussion, I asked for a student volunteer to lead the discussion. The discussion leader's job is to start each round with their own discussion question or hand over control to the group so someone else can ask a question. Once a question is asked, any student in the inner circle group could provide an answer without asking permission or raising hands. My role in the discussion was as a passive observer and I only intervened to redirect the discussion back to the article if needed or provide clarification if asked by students to do so. Each discussion round was timed between 7

and 10 minutes. When we reached the end of the 90-minute class, we agreed to continue the discussion in the next class period.

When students from the experimental group entered class on day 2, I asked them to get into groups of three to four students. We then watched a report about how photovoice was used in Canadian indigenous communities (Gray, 2011) to study the intergenerational effects of the residential school system in Canada. We also watched a video about a photovoice project conducted by the University of South Carolina (2011) to give residents of the Columbia Housing Authority the opportunity to document and display their concerns about their neighborhood. I then asked students to brainstorm how we could use our photovoice display to raise awareness about the problems of walkability in Mesquite. We then discussed as a class that our project could be shown to city council members, school district leaders, and community members to expose the conditions students experience when walking in the city.

Next, students were instructed to transfer their photos from their phones to their Google Slides presentation. This portion of the project took longer than expected, as some students had connectivity problems that delayed transferring their photos to their Mesquite ISD Google Drive. Once all students had their photos into a Google slide presentation file, each student presented one of their photos at a time to the rest of the group in a round-robin format. While each student presented their photo, other group members wrote down similarities or differences that they noticed between their photos and their peers' photos. For example, some students noticed that their neighborhoods had sidewalks that were easier to walk on than other students' living in different neighborhoods. From observing study participants, similarities consisted of a general

frustration with the lack of walkability in Mesquite Texas, fear of safety while walking in Mesquite, and the fact that streets were designed to prioritize cars over people.

Once students were finished presenting their photos and discussing similarities and differences, I asked each group to list common themes that perhaps the whole class would notice. Commonalities between all groups included cracked, broken, or missing sidewalks, feeling unsafe while walking in the neighborhood, not being able to walk anywhere meaningful or interesting, and cars driving too fast in the neighborhood. We listed the common themes on the white board so everyone could write them on their similarities and differences chart.

After the group presentation and discussion phase, students were asked to choose one photo to write an explanatory narrative about and present for our photo voice exhibition. Each student completed a photo analysis using the SHOWeD method. The SHOWeD method asks students to analyze their photo(s) by answering the following questions:

Table 2: The SHOWeD Method for Photo Analysis

Abbreviation	Question for Photo Analysis
S	What do we **See** here?
H	What is really **Happening** here?
O	How does this relate to **Our** lives?
We	**Why** does this situation, concern, or strength **exist**?
D	What can we **Do** about it?

In the SHOWeD method, students study their photograph and write open-ended responses to the questions seen in Table 2. The SHOWeD method prompts students to think critically about the details of their photograph, which helps start the process of writing the explanatory narrative. For example, a student could answer the question, "How does this relate to Our lives?" with an answer such as, "The photo relates to our lives because we have to use the streets and sidewalks every day." See Appendix B for a copy of the SHOWeD method activity students completed in class. Students spent the rest of the class dissecting and analyzing their chosen photo using the SHOWeD method and wrote a first draft of their explanatory narrative about their photo. We agreed as a group that on the third day we would print, cut, and assemble the photo voice exhibition for display in the hallway outside of the classroom.

Day 3: For the control group, we continued the previous day's Fishbowl discussion. Students discussed the merits and drawbacks of banning cars from city centers. Students discussed potential problems that could arise if cars were banned from the city center. For example, the difficulty of delivering goods to homes and businesses without cars, the difficulty police, fire, and emergency personnel would have in accessing those that need help if cars were banned, as well as difficulties for those living in the city center to receive visitors from outside the city center. Again, the discussion content and pacing were largely student led and produced. A common realization that all three control group classes had was that banning cars from city centers would require a complete reorganization of urban functions. At the end of the discussion, students completed a short reflection activity. Students were asked to complete 2 out of a possible 7 sentence stems, ranging from, "After this discussion, I now realize…," to, "After this discussion, I

am now beginning to wonder…," to, "After this discussion, I learned…" Students shared their reflection statements with their partner. Then I asked for volunteers to share their reflections with the class. A common theme that emerged from our discussion of student reflections was that students took pride in having a student-led discussion without any animosity or combative language. At the conclusion of the fishbowl discussion and reflection debriefing, students were given the post survey to determine if the discussion impacted their perceptions of geography. See the second page of Appendix A for a copy of the reflection form used to debrief the discussion.

For the experimental group, each student was instructed to place their chosen photo on a Google slide and their explanatory narrative next to the photo onto the slide. Next, I printed all the photos with accompanying narratives on white cardstock and gave each student their photo and narrative statement. Students were then instructed to cut out their photo and explanatory narrative caption and glue them to a black piece of cardstock. Students then prepared their photos for exhibition in the hallway by applying loops of painter's tape to the back of the black card stock. We hung the photovoice display pages in the hallway so they could be viewed all at once in a gallery walk style presentation. See Figures 2 and 3 for examples of student photos and explanatory narratives.

Figure 2: Five steps to the parking lot.

This student's explanatory narrative was, **"**Five steps. Five steps outside my door takes me to a concrete wonderland where cars live. The inability to be outside is depressing."

Figure 3: The Walk Home.

This student's explanatory narrative was,
"Walking home has never been pleasant
Unfinished or cracked sidewalks
Trash covering the once beautiful
Greenery
The sounds of the
Cars rushing by
Making my hair
Waver
Walking home is never pleasant."

Next, students were instructed to walk to a displayed photo that was not their own. Then, students were asked to view each individual photovoice entry of their classmates, keeping in mind similarities and differences they notice. Once we finished the

gallery walk, we came back together to discuss how the Photovoice project gave us an opportunity to see the perspectives of others and display student concerns about walkability for the school community. A portion of the final display is seen in Figure 4.

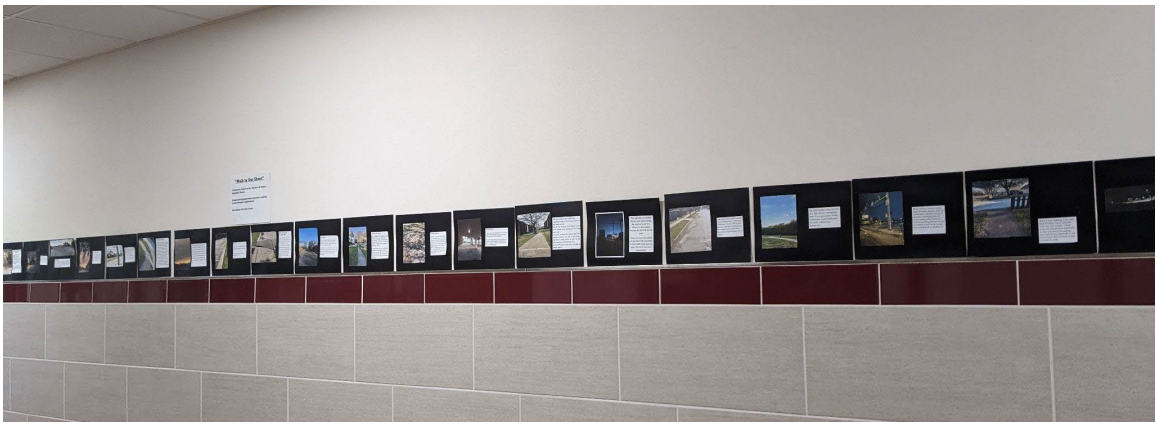

Figure 4: Photovoice exhibit in hallway at Mesquite High School.

Finally, we discussed what could be done next to address walkability concerns in the Mesquite. Common answers included repairing broken sidewalks, paving new sidewalks in areas people walk that do not have sidewalks, and altering existing sidewalks to include increased buffer space between cars and pedestrians. I informed the students that I would send a message to a Mesquite city council member informing them of the photovoice exhibition and asking what students can do to bring their concerns to the city council. At the end of the class, students took the post survey to determine if the photo voice project impacted their perceptions of geography.

Data Collection and Analysis

Both quantitative and qualitative data in pre and post surveys were collected through Google forms where students entered their responses to survey questions.

Students completed their surveys on their Chromebooks during class time. Response data was stored on Mesquite ISD internet servers. Quantitative data consisted of Likert scale survey responses. Students were asked to indicate the degree to which they agree or disagree with a statement. For example, question 1 asked, “How much do you agree or disagree with the following statement? ‘Geography is an enjoyable subject.’ "After each Likert scale survey question, students had the option to type out their thought process, reasoning, or any other details that would explain their quantitative answer choice. These responses produced qualitative data that is detailed in the discussion chapter. Student answers were converted into an Excel spreadsheet for quantitative and qualitative data analysis. Next the quantitative data was imported into Statistical Product and Service Solutions (SPSS) software. Then, paired sample t-tests were conducted on the control and experimental groups to analyze the quantitative data. I analyzed qualitative data by reading each response to learn how it explained the Likert scale response. Qualitative data was used to partially explain quantitative findings.

V. RESULTS

Results for each survey item for control and experimental groups are detailed below. Paired sample t-tests were conducted using SPSS software. Each section consists of the quantitative data from questions 1-5 for both control and experimental groups. The statistical significance level for all tables is $p<.05$.

Geography is enjoyable

Question one of the survey asked students how much they agreed or disagreed with the following statement, "Geography is enjoyable." Results of paired sample t-tests for both groups are detailed in Table 3. Results indicate an increase in mean scores for both groups, however only the control group's result was statistically significant.

Table 3: Descriptive Statistics for Question 1 - Geography is enjoyable

Group	Pre/Post	N	Mean	Std. Dev.	Std. Error Mean	Sig. p<.05 (2-tailed)
Control	Pre	51	3.76	.838	.117	.
Control	Post	51	4.35	.716	.100	.000
Experimental	Pre	50	3.98	.622	.088	.
Experimental	Post	50	4.20	.700	.099	.094

Geography is useful for solving problems in our community

Question two of the survey asked students how much they agreed or disagreed with the following statement, "Geography is useful for solving problems in our community." Results of paired sample t-tests for both groups are detailed in Table 4. Results indicate an increase in mean scores for both groups, however only the

experimental group's result was statistically significant.

Table 4: Descriptive Statistics for Question 2 - Geography is useful for solving problems

Group	Pre/Post	N	Mean	Std. Dev.	Std. Error Mean	Sig. p<.05 (2-tailed)
Control	Pre	51	3.92	.976	.136	.
Control	Post	51	4.24	.839	.117	.062
Experimental	Pre	50	3.98	.828	.115	.
Experimental	Post	50	4.50	.735	.104	.001

Geography has great value in modern society

Question three of the survey asked students how much they agreed or disagreed with the following statement, "Geography has great value in modern society." Results of paired sample t-tests for both groups are detailed in Table 5. Results indicate an increase in mean scores for both groups, however only the control group's result was statistically significant.

Table 5: Descriptive Statistics for Question 3 - Geography has great value in society

Group	Pre/Post	N	Mean	Std. Dev.	Std. Error Mean	Sig. p<.05 (2-tailed)
Control	Pre	51	4.02	.787	.110	.
Control	Post	51	4.27	.777	.109	.018
Experimental	Pre	50	4.08	.922	.130	.
Experimental	Post	50	4.36	.722	.102	.090

Interest in taking a Geography course at the postsecondary level.

Question four of the survey asked students how much they agreed or disagreed with the following statement, "I am interested in taking a Geography course at the postsecondary level." Results of paired sample t-tests for both groups are detailed in Table 6. Results indicate no difference in mean scores for the experimental group and a statistically significant increase in mean scores for the control group.

Table 6: Descriptive Statistics for Question 4 - Interest in taking Geography at the postsecondary level

Group	Pre/Post	N	Mean	Std. Dev.	Std. Error Mean	Sig. p<.05 (2-tailed)
Control	Pre	51	2.53	1.20	.169	.
Control	Post	51	2.96	1.30	.181	.001
Experimental	Pre	50	2.66	1.11	.161	.
Experimental	Post	50	2.66	1.14	.161	1.00

Geography class is useful for potential career(s)

Question five of the survey asked students how much they agreed or disagreed with the following statement, "Geography class is useful for my potential career(s)." Results of paired sample t-tests for both groups are detailed in Table 7. Results indicate an increase in mean scores for both groups, however only the control group result was statistically significant.

Table 7: Descriptive Statistics for Question 5 - Geography is useful for career(s)

Group	Pre/Post	N	Mean	Std. Dev.	Std. Error Mean	Sig. p<.05 (2-tailed)
Control	Pre	51	2.86	1.39	.194	.
Control	Post	51	3.24	1.39	.190	.019
Experimental	Pre	50	3.06	1.30	.183	.
Experimental	Post	50	3.38	1.21	.171	.200

VI. DISCUSSION

Results from the pre and post survey indicate increases in mean scores for both groups on all questions except question four, where there was no change for the experimental group. Control group results showed statistically significant increases in mean scores for questions one, three, four and five. Experimental group results showed a statistically significant increase in mean scores for question two. These results led to a rejection of the hypothesis that the Photovoice project would improve student perceptions of geography and increase the probability of students taking a geography course in college. The following sections will detail reasons behind the statistical results. I analyzed the qualitative data collected for each question to provide a more detailed understanding of the quantitative data. Again, students were not required to explain their thought process or reasons behind their Likert scale answers, so qualitative data is limited to those students who chose to respond to the open-ended section.

Geography is enjoyable

After taking the post survey, control group students showed a statistically significant increase in mean scores for enjoyability of geography. Experimental group students showed an increase in mean scores for enjoyability of geography; however the result was not statistically significant. To better understand the reasons behind this discrepancy, I consulted qualitative data students entered for the question. The following quotes from students in the control group provide some insight about why the increase in enjoyability was statistically significant.

> "Being able to interact and discuss our thoughts made it significantly more enjoyable."

"I really love how our conversations can be and sharing our ideas was wonderful. I love seeing the other perspective of others and it was great to listen to. I honestly love the idea about talking modern problems."

"I very much agree with this. I love geography and now that all of us, as a class, can talk about it in a respectful manner makes me very glad."

"The conversations and the way we do our work is amazing."

These comments suggest that students enjoyed the discussion process because they were able to freely express their ideas as a group and work cooperatively towards a more complete understanding of the issue of banning cars from city centers. Qualitative data from the experimental group did not provide insight behind the statistical results, however the pre-survey mean score of 3.98 in the indicates students already had a high level of enjoyment in the course, which leaves little room for improvement for the mean scores.

Geography is useful for solving problems in my community.

After taking the post survey, experimental group students showed a statistically significant increase in mean scores for the usefulness of geography in solving problems in the community. Control group students showed an increase in mean scores for the usefulness of geography in solving problems in the community; however the result was not statistically significant. The following quotes from experimental group students provide some insight about why the increase in usefulness was statistically significant.

"With this project it could maybe convince people to give more thought into fixing the streets for pedestrians."

"After completing the Photovoice project it made me realize how we can see

these problems in our communities so much clearer and try to make a change."

"Because if you don't know how to identify what's wrong with your community, you can't fix it."

"I agree, geography made me see the problems I have around my neighborhood."

These comments suggest that students in the Photovoice group understood the utility of documenting their experience walking in their neighborhood and publicly displaying their findings for the school community to see. This finding aligns with Hope's (2009) hypothesis that fieldwork gives students a unique opportunity to apply classroom concepts to real world contexts.

Geography has great value in modern society.

Following completion of the post surveys, control group students showed a statistically significant increase in mean scores for the value of geography in modern society. Experimental group students showed an increase in mean scores for the value of geography in modern society, however the result was not statistically significant. The fact that both groups had pre-survey mean scores over four shows students saw value in geography before participating in the research study. The following quotes from control group students provide some insight about why the increase in the value of geography was statistically significant.

"We discussed a serious issue in today's world and came up with great solutions. These skills have great value because in further purposes we can help solve problems in our own community."

"Like the thing we did about banning cars that has great value and is a thing we have to think about."

"Geography can help us know what happened in the past, and what's happening now. It helps us realize how much we could help the modern society."

The qualitative data suggest that students appreciated the solution-focused nature of the class discussion and understood that geographic knowledge can be used to improve society. The fact that students repeatedly referred to themselves as "we" indicates that the discussion brought about feelings of unity. These ideas help explain why control group students showed a statistically significant increase in mean scores for understanding the value of geography in modern society.

Interest in taking a Geography course at the postsecondary level

After completing the post surveys, control group students showed a statistically significant increase in mean scores for the probability of taking a geography course at the postsecondary level. Experimental group students' data showed no change in the probability of taking a geography course at the postsecondary level. Qualitative data for this specific question yielded little insight into the reasons behind the statistically significant increase in mean scores for the control group. However, control group qualitative data from questions 1 and 3 suggest that the discussion process made students feel that geography is enjoyable and valuable, which could increase the probability that they would take a geography course at the postsecondary level. This finding led to a rejection of the hypothesis that the Photovoice project would increase the probability that students would take a geography course at the postsecondary level.

Geography is useful for future career(s)

After completing the post surveys, control group students showed a statistically significant increase in mean scores for the usefulness of geography in their future

career(s). Experimental group students showed an increase in mean scores for the usefulness of geography in their future careers, however the mean difference was not statistically significant. It seems that the Photovoice method did have a positive impact on student perceptions of usefulness of geography in potential career(s), but the impact cannot be reliably generalized. Qualitative data from the control group provided some insight for the statistically significant increase. Qualitative data from the experimental group did not yield useful insights as to why there was not a statistically significant increase for this question. The following quotes from control group students provide some insight about why the increase in usefulness for career(s) was statistically significant.

> "To me it helps cause at first I didn't like geography but after the discussion I noticed it's really cool to learn and it paint pictures in your head about the world in the future or now."
>
> "I wanted to become a police officer and I believe this could help me understand all perspectives and all choices. Gives me a better look on life."
>
> "What I want to do is something related to art (like an art manager) and I'll definitely need to have conversations and get feedback, opinions, and their viewpoint on my own ideas. I feel like the discussion was a good practice of these skills."

The comments suggest that the skills students used to discuss potentially banning cars in city centers are transferable to a diverse array of potential careers. While observing the discussion, I noticed students genuinely listened to each other and considered each other's perspectives. The Photovoice group did not have an entire class period devoted to

the discussion about the results of their work. Therefore, they were not able to use the same skill set that control group students used in their discussion. This difference could help explain why control group students rated geography higher in terms of usefulness for future career(s).

Other factors could have impacted study results. The experimental group consisted of classes of 26 and 24 students, while the control group consisted of classes of 16, 17, and 18 students each. Fishbowl discussions with smaller classes give more time for everyone to speak without having to worry about being left out or being spoken over. The smaller, more intimate atmosphere could have positively impacted the way students experienced and perceived the class discussion. I noticed a sense of camaraderie and accomplishment amongst students at the end of the final discussion day, which indicates students all seemed to experience the discussion in the same way. The camaraderie of the discussion could explain the statistical significance of increases in mean scores for four out of five survey questions.

The larger size of experimental group class periods led to longer than anticipated time to complete each phase of the Photovoice project. Some students completed their Photovoice exhibit slide very quickly, while others struggled with inserting the photo and formatting the explanatory narrative entry correctly in Google slides. The effect of this dynamic was that some students were idle while others were still working. I noticed that the project looked and felt different for students based on their ability to create their Photovoice entry. This discrepancy could explain why experimental group survey results for questions one, three, four and five were not statistically significant. Students that finished quickly and did not have problems creating could have viewed the project and

therefore geography in a positive light, while students that had technical problems or general frustrations with the project could have viewed the experience negatively, which could have negatively impacted their perceptions of geography.

VII. CONCLUSIONS

The Photovoice method is a departure from traditional classroom activities and allows students to share their perspectives through visual and narrative means. It is a simple, flexible method for people to raise awareness about problems in their community. Class discussions are a traditional classroom-based activity that does not involve students conducting research in their community. The purpose of this directed research is to understand student perceptions of geography as a subject and the probability of students taking a geography course at the postsecondary level. To achieve this objective, this study posed the following questions: How will participation in a Photovoice project impact student perceptions of geography as a subject? How will participation in a Photovoice project impact the likelihood students will take a geography course at the postsecondary level?

To answer these questions, I separated my classes into a control group, which participated in a class discussion about the positive and negative impacts of banning cars from city centers, and an experimental group, which participated in a Photovoice project to document and exhibit student experiences as pedestrians in Mesquite. Before and after each intervention, I surveyed students about their enjoyment of geography, their view of the usefulness of geography in solving local problems, their view of the value of geography in modern society, their likelihood of taking a geography course at the postsecondary level, and their view of geography's usefulness for future career(s).

Even though four out of five experimental group results were not statistically significant, students did find the Photovoice project enjoyable and useful. More research on the impact of Photovoice on student perceptions of geography is needed, as there is

currently a dearth of available literature on the topic. Control group results show that giving students the opportunity to collaboratively discuss societal problems and potential solutions is a powerful way to improve student perceptions of geography and increase the likelihood students would take a geography course at the postsecondary level. Although data from this study led to a refutation of the hypothesis, the Photovoice method still has potential to raise awareness about local problems and provide community members with valuable insights about how people perceive their community.

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APPENDIX SECTION

APPENDIX A: Fishbowl Discussion Observation and Reflection Form

Observation Form- Fishbowl Discussion

Your Name_____ **Partner**_____

Directions: **Each time your partner does one of the following put a check in the box.**

SPEAKS IN THE DISCUSSION

LOOKS AT THE PERSON WHO IS SPEAKING

REFERS TO THE TEXT

ASKS A QUESTION

RESPONDS TO ANOTHER SPEAKER

INTERRUPTS ANOTHER SPEAKER

ENGAGES IN A SIDE CONVERSATION

DURING DISCUSSION: What do you want to say when it is your turn?

AFTER DISCUSSION: What didn't you say that you wish you had?

APPENDIX A, CONT.

Reflection Statements

Take a few minutes to reflect on today's discussion. Write your thoughts beginning with these phrases. Complete **at least 2** of these statements:

I learned...

I observed...

I was surprised...

I am beginning to wonder...

I now realize...

I would like to find out more about...

I am still confused about...

APPENDIX B - SHOWeD Method Handout used during Photovoice project

SHOWeD Method

After you have selected two photographs, use the questions below to identify and explore the community concerns related to the project topic that is illustrated in the photos.