

**PHOTOVOICE PROJECT ASSESSING LIVED EXPERIENCE AT LOCAL
PITTSBURGH SCHOOL**

by

Emma Hosman

BS, Truman State University, 2013

Submitted to the Graduate Faculty of
Behavioral and Community Health Science in the
Graduate School of Public Health in partial fulfillment
of the requirements for the degree of
Masters of Public Health

University of Pittsburgh

2017

UNIVERSITY OF PITTSBURGH

Graduate School of Public Health

This essay is submitted

by

Emma Hosman

on

December 15th, 2017

and approved by

Essay Advisor:

Elizabeth Felter DrPH

Associate Professor

Department of Behavioral and Community Health Sciences

Graduate School of Public Health

University of Pittsburgh

Committee Members:

Elizabeth Miller, MD PhD

Child and Adolescent Medicine

School of Medicine,

University of Pittsburgh

Copyright © by Emma Hosman

2017

**PHOTOVOICE PROJECT ASSESSING LIVED EXPERIENCE AT LOCAL
PITTSBURGH SCHOOL**

Emma Hosman, MPH

University of Pittsburgh, 2017

ABSTRACT

Background: In the fall of 2017, approximately 50.7 million students attended public elementary and secondary schools. School-aged children are more vulnerable to contaminants and toxins because their organs are developing during the years they attend school and children breathe in more air per pound of body weight compared to adults. However, there is a relative lack of information on how children perceive the environments in which they attend school. **Purpose:** To utilize a community-based research method to assess the needs and strengths of a local, private Christian school, within the context of the Whole School, Whole Community, Whole Child model. **Methods:** Using the photovoice method, 3rd and 7th graders were asked to answer, “What is it like to go to school at Pittsburgh Urban Christian School (PUCS)?” Twenty-four students took photos of the school environment to answer this question. Students discussed the photos and decided on themes. **Results:** Themes of creativity, community, learning, accomplishments, and exploration were discussed in their photographs. **Conclusions:** While some physical environment issues were mentioned, the social, emotional, and learning climate was more important to the student’s perceptions of their experiences at school. The public health significance of this work is that photovoice can be an effective method to investigate student experiences of the school environment broadly including the physical, social, and emotional environment.

TABLE OF CONTENTS

PREFACE.....	VIII
1.0 INTRODUCTION.....	1
1.1 BACKGROUND	2
1.1.1 School Environment	2
1.1.2 Whole School, Whole Community, Whole Child.....	5
1.1.3 Health effects of schools	7
1.1.4 Economics of education.....	8
1.1.5 Health Disparities in Schools.....	9
1.2 COMMUNITY-BASED PARTICIPATORY RESEARCH	10
1.3 PHOTOVOICE.....	11
1.3.1 Background of Photovoice as a Research Method	11
1.3.2 Photovoice as a tool for needs assessment	12
1.3.3 Photovoice Method Analysis.....	13
1.3.4 Photovoice with school-aged children.....	17
1.3.5 Photovoice in a school setting	19
1.3.6 Literature Summary.....	21
2.0 METHODS	23
2.1.1 School Partnership	26
2.1.2 Methods Process	27
2.2 DATA COLLECTION.....	30
2.3 DATA COLLECTION TOOLS	31

2.3.1	Cameras	31
2.3.2	Audio Recorder	31
2.3.3	Data collection rules	32
3.0	RESULTS	33
3.1	CREATIVITY AND ART	33
3.2	COMMUNITY	36
3.3	LEARNING	38
3.4	ACCOMPLISHMENT	39
3.5	EXPLORATION AND OBSERVATION	40
4.0	DISCUSSION	43
4.1.1	Applied Theoretical Constructs	43
4.1.2	Environmental relation to social and emotional climate	46
4.1.3	Lessons Learned	48
4.1.4	Future use and project sustainability	50
5.0	STRENGTHS AND LIMITATIONS	53
6.0	CONCLUSION.....	55
	APPENDIX A: HANDOUTS	56
	APPENDIX B: SCHOOL FORMS STRATEGIC PLAN	58
	BIBLIOGRAPHY	62

LIST OF FIGURES

Figure 1: Whole School, Whole Community, Whole Child Model.....	6
Figure 2: Methods Process.....	29
Figure 3: Photo selected by 7 th -grade class representing creativity and art expression	34
Figure 4: Picture selected by 3 rd -graders representing being thankful.....	35
Figure 5: Picture selected by the 7 th -grade class representing connectedness and community	37
Figure 6: Picture selected by the 7 th -grade class representing diversity	38
Figure 7: Picture selected by 3 rd -graders representing learning	39
Figure 8: Picture selected by 3 rd -graders representing school-wide accomplishments.....	40
Figure 9: Picture selected by 3 rd -graders displaying the garden	41
Figure 10: Picture selected by 3 rd -graders displaying the gym	42

PREFACE

I would like to thank Pittsburgh Urban Christian School for giving me the opportunity to work with the school and students and allowing me the time to conduct this project. I would also like to thank the University of Pittsburgh Graduate School of Public Health Department of Behavioral and Community Health Science for granting me the funds to complete this project.

Abbreviations used include:

PUCS- Pittsburgh Urban Christian School

EPA- Environmental Protection Agency

CBPR- Community Based Participatory Research

CDC- Centers for Disease Control and Prevention

WSSC- Whole School, Whole Community, Whole Child

1.0 INTRODUCTION

By any measure, education is a critical component of the health of individuals, communities, and societies at large. In the United States, much of formal education happens during childhood in a school-based setting. Children are in school buildings for many of the waking hours of their childhood and much of their health education and health programming is delivered in this environment. Since children spend so much time in these environments, it seems reasonable to understand, as fully as possible, how the environments affect their development, and in fact there are a host of rules and regulations governing the school environment because of the critical nature of the environment on the physical, mental, and emotional development of young bodies and minds. However, there is a relative lack of information on how children perceive the environments in which they attend school. This essay seeks to explore how the students in one small, private, urban-based Christian school perceived the environment in which they attend school using the community-based participatory research technique of photovoice.

This essay will first explore the issues of the school environment and its importance to education and health, including the health disparities that currently exist. Next, how the technique of photovoice fits into the frame of community-based participatory research will be described. Third, the essay will describe how photovoice was used at PUCS, a K-8 private, Christian school in Wilkesburg, PA, to help the school understand how the students perceive the environment of their school. Lastly, the results will be presented, discussed, and recommendations will be made

for schools who are considering using photovoice to gain the most of the technique and for educators and administrators to consider school environments from students' perspective.

1.1 BACKGROUND

In the fall of 2017, approximately 50.7 million students attended public elementary and secondary schools and of those students, about 3.6 million students are expected to graduate from high school in Spring of 2018. In total, the expenditure for public school is projected to be \$623.5 billion which is approximately \$12,300 per student (National Center for Education Statistics NCES, 2017). School provides students with a myriad of opportunities, including a place to learn and gain self-knowledge, to develop life and social skills, to optimize life chances and quality of life, and to enable future employment and economic wellbeing (Widdowson, Dixon, Peterson, Rubie- Davies, & Irving, 2015).

1.1.1 School Environment

Typically, elementary and secondary education takes thirteen years to complete. With the average school day being approximately six-and-a-half hours in the state of Pennsylvania, and the mean number of days in the school year 181 days, students are spending almost half of the year in the school building (National Center for Education Statistics NCES, 2008). Approximately 53 million children spend at least one-third of their time inside a school building, (Ramachandran et al., 2005) creating a secondary environment for exposure to contaminants with detrimental health effects. According to the Environmental Protection Agency, “unhealthy school environments

can affect children's health, attendance, concentration, and performance," (United States Environmental Protection Agency EPA, 2017). The Environmental Protection Agency (EPA) focuses environmental health interventions on school-aged children not only because of their increased risk of exposures due to substantial time spent in the physical school environment but also because students are required to attend school by law.

School-aged children are more vulnerable to contaminants and toxins because their organs are developing during the years they attend school and children breathe in more air per pound of body weight compared to adults (Potera, 2011). Structural issues, including the slowness of air exchange, aggravate and increase the levels of indoor air pollutants (Sousa et al., 2012). The structural drawbacks combined with the physiology of children creates circumstances that lead to lifelong chronic illness. Indoor air pollution contributes to the development of asthma in children (Sousa et al., 2012), and results in 14 million missed school days per year (Phipatanakul et al., 2011). Due to the infrastructure of the United States, many schools are within 400 meters of a major highway, particularly in the Eastern United States (Potera, 2008). Within that vicinity, ultrafine diesel particles that can exacerbate asthma symptoms, cardiac issues, and other respiratory problems. Additionally, diesel exhaust particles pose a high lung cancer risk, increased by long-term exposure (Office of Environmental Health Hazard Assessment, 2001).

Many contaminants have been shown to affect students' health and academic performance, including carbon dioxide, which exists in some schools at levels high enough to cause significant changes in the ability to focus in children (Miller, Semple, & Turner, 2010). The high levels of carbon dioxide may not be school specific problems but the studies list the issues in relation to school and school environments. These problems stem from the core issue of funding. Many schools cannot afford to make the repairs to upgrade school buildings to "good condition" which

would incur a nationwide-cost of over \$250 billion (American Public Health Association, 2001). This results in more than 1,100 public schools were built within a half-mile of a Superfund site because the land is inexpensive (Wakefield, 2002). Studies have shown that contaminants from affected sites effect surrounding areas, particularly susceptible populations. Though not in the US, a kindergarten near a battery recycling plant in Taiwan exposed that the students acquired toxicity through the soil and the air. The exposed children's average IQ was ten points lower than children who were not exposed to the lead at the recycling plant (Wang, Jang, Hwang, & Chen, 1992). When the No Child Left Behind Act was signed into law in 2001, a section was added to utilize the combined efforts of the Department of Energy, the Environmental Protection Agency, and the Department of Education to award grants to research the effects of decayed schools, titled Healthy and High-Performance Schools (*Healthy and High-Performance Schools*, 2001). However, during the first funding cycle, this section was stripped of funding and no new information can be found about this source of potential funds for research (Wakefield, 2002). The American Public Health Association stated that "federal funds should be appropriated to construct and renovate schools with priorities placed on improving facility environmental issues" (American Public Health Association, 2001, p. 494).

While national guidelines do exist to encourage schools to adopt healthier strategies concerning the physical school environment, there are few national policies concerning the health issues previously mentioned. Some states have policies concerning pesticide spraying guidelines around schools but this is not consistent across the country ("Protecting schools from pesticides," 1999). Further, many policies concerning schools have poor compliance due to the inability to consistently monitor (Wakefield, 2002). The American Public Health Association declares that "every child and school employee should have the right to an environmentally safe and healthy

school that is in good repair,” and encourages to include children in all environmental policy-making (American Public Health Association, 2001, p494).

1.1.2 Whole School, Whole Community, Whole Child

The EPA typically focuses on the physical environment component of school health, and in a model created by the Centers for Disease Control and Prevention in conjunction with the Association for Supervision and Curriculum Development, many other facets that make a school ‘healthy’ were integrated to create an effective model to conceptualize the health of school children. (Centers for Disease Control and Prevention CDC, 2014). The Whole School, Whole Community, Whole Child (WSCC) model expanded the former approach to public health and health education in schools to “strengthen a unified and collaborative approach designed to improve learning and health in our nation’s schools” (Centers for Disease Control and Prevention CDC, 2017b). This model specifically responds to “the call for greater alignment, integration, and collaboration between health and education to improve each child’s cognitive, physical, social, and emotional development,” (Centers for Disease Control and Prevention CDC, 2014, p6). This approach, comparable to the former comprehensive school health approach, focuses on multiple areas of the school experience to promote long-term development and health of the child. The WSCC approach combines the coordinated school health approach with key leaders to strengthen the system.



Figure 1: Whole School, Whole Community, Whole Child Model

This model starts with a child at the center which purposely puts makes children the focal point of the approach. Immediately surrounding the student shows the need for coordination between policy, practice, and the process. In previous models, more emphasis was given to the coordination but did not describe the actual day-to-day processes that could ensure the model's effectiveness (Lewallen, Hunt, Potts-Datema, Zaza, & Giles, 2015). The outer ring of the model reflects more integration between health and education. The importance of the sectors working together is more prominent in this model than the previous model and more sections are expanded in this current model. The areas that are in the outside ring are health education; physical education & physical activity; nutrition environment and services; health services; counseling, psychological and social services; social and emotional climate; physical environment; employee wellness; family engagement; and community involvement. The integration of these areas is important to maintaining the whole health of the child.

When converting from the coordinated school health model to the WSCC, a few of the health sectors were expanded to “better reflect current evidence and practice” (Lewallen et al., 2015, p730). Two expanded portions of the WSCC that are applicable to this research is the physical environment and the social and emotional school climate. The physical environment encompasses the school building, the land that the school is on, as well as the area surrounding the school. “A healthy school environment addresses the school’s environment during normal operations as well as during renovation and protects occupants from physical threats” (Centers for Disease Control and Prevention, 2015). In the original model, both components were contained under a “healthy and safe school environment.” The social and emotional school climate specifically refers to the “psychosocial aspects of students’ educational experience that influence their social and emotional development” (Centers for Disease Control and Prevention CDC, 2015). It encompasses relationships between students, student engagement, and relationships with staff, family, and community. Positive social and emotional school climate is beneficial to successful teaching and learning and these climates “promote health, growth, and development by providing a safe and supportive learning environment” (Centers for Disease Control and Prevention CDC, 2015).

1.1.3 Health effects of schools

Although most people would agree that using the school to keep students healthy is important, there are other benefits to keeping students healthy and keeping healthy students in school. Studies have also shown that healthier students or students who engage in more positive health behaviors have higher grades (Centers for Disease Control and Prevention CDC, 2017a). “Healthy eating and physical activity were associated with higher self-reported letter grades,

whereas sedentary, substance-use, sexual risk, violence-related, and suicide-related behaviors were associated with lower self-reported grades,” and these relationships were similar for recent and lifetime behaviors (Centers for Disease Control and Prevention CDC, 2017a, p923). The results of the school experience have long-term effects regarding health, including that high school graduates live approximately six to nine years longer than dropouts (Levin, 2009).

1.1.4 Economics of education

Keeping students in school saves the United States money. In 2005 an education symposium at Columbia University presented the findings from evaluations about the economic burden of students who fail to graduate from high school. An education economist from Teachers College at Columbia University analyzed the effects of high-school dropouts on the economic system. Dr. Levin categorizes the fiscal benefits of completing a high school education to the taxpayer thusly: 1) additional tax revenue, 2) reducing the cost of criminal justice, 3) reducing the cost of public assistance, and 4) reducing the cost to the public health system.

According to Levin, high school dropouts earn \$235,000-\$300,000 over a lifetime, as compared with approximately \$1,000,000 for a college graduate. This means that students who graduate high school pay more income tax and generate more revenue for the United States government. “America loses \$192 billion - 1.6% of GDP - in combined income and tax revenue losses with each cohort of 18-year-olds who never complete high school. Increasing the educational attainment of that cohort by one year would recoup nearly half those losses,” (Teachers College Columbia University, 2005). Crime, which has a large economic impact on government revenue due to the amount of money that goes into the criminal justice system, incarceration, and probation/ parole. High school dropouts make up 37% of federal prison inmates, 54% of state

prison inmates, and 38% of local jail inmates. “The average monthly cost per inmate for incarceration is \$2,500 and for parole is \$155” (Levin, 2009, p13). “A one-year increase in average years of schooling for dropouts would reduce murder and assault by almost 30 percent, motor vehicle theft by 20 percent, arson by 13 percent, and burglary and larceny by about 6 percent,” (Teachers College Columbia University, 2005). The utilization of welfare benefits was broken down by type of benefit. Of the 1.3 million recipients of Temporary Assistance for Needy Families (TANF), almost half are high school dropouts and of the 9.6 million nonelderly recipients of food stamps, 30% are high school dropouts. Over a lifetime, 64% of dropouts will utilize this service compared to only 38% of high school graduates (Levin, 2009).

1.1.5 Health Disparities in Schools

Minority communities are already at risk of worse health outcomes due to disparities. The built environment in primarily low socio-economic-status neighborhoods is less likely to have facilities related to physical activity, including schools (Gordon-Larsen, Nelson, Page, & Popkin, 2006), and health care services that can properly address all population needs (Lurie & Dubowitz, 2007). The schools that are in the worst condition are the poorer school districts (American Public Health Association, 2001).

Allergic sensitization and asthma are disproportionately high among inner-urban populations, potentially because of indoor air pollution (Sousa et al., 2012). Minority populations and those living below the poverty line are also at an increased susceptibility to environmental exposures because studies have shown they spend more time indoors and this increased exposure “increases a child’s susceptibility to allergic sensitization, respiratory symptoms, and ultimately the development of asthma” (Environmental Protection Agency, 2007). Children in low-income

communities attend schools with the worst environmental conditions, yet they are at the highest risk for learning problems (Potera, 2011). This can be exacerbated by environmental issues that increase the chances of behavioral issues akin to students with higher levels of manganese that were associated with increased levels of hyperactive and oppositional behaviors (Bouchard, Laforest, Vandelac, Bellinger, & Mergler, 2007).

In time, students who are continually sick, and missing school because of illness, are more vulnerable to dropping out of school and that associated health and economic effects (Potera, 2011).

1.2 COMMUNITY-BASED PARTICIPATORY RESEARCH

Community-based participatory research (CBPR) refers to an approach that developed from different methods that were all focusing on building a partnership between the community and the researcher to complete research rather than research through manipulation (Israel, Eng, Schulz, & Parker, 2013). This partnership leads to participant-driven research rather than researcher-driven research. There is a challenge engaging youth as equitable community partners in this process (Yonas et al., 2009), but engaging youth and incorporating their expertise is very important to developing culturally relevant and sensitive health information (Yonas et al., 2009). The key principals of CBPR are to recognize the community as a unit of identity, build on strengths and resources within the community, facilitate collaborative partnerships in all phases of research, integrate knowledge and action for mutual benefits of all partners, promote a co-learning and empowering process that is cyclical, address health from both positive and ecological perspectives, and disseminate knowledge to all partners (Israel, Schulz, Parker, & Becker, 1998). Each of these

principals is essential to make the project work together and contribute to what the community identifies as wants and needs rather than what the researcher identifies as wants and needs. Using the community-based participatory approach makes this project more impactful, effective, and sustainable.

1.3 PHOTOVOICE

1.3.1 Background of Photovoice as a Research Method

Photovoice is a participatory research method developed by Wang and Burris to address needs not met with traditional assessments. The main goals of photovoice are to enable the people of the community to record and reflect their community's strengths and concerns, to promote critical dialogue and knowledge about important issues through larger and small group discussion of photographs, and to last, reach policymakers (Wang & Burris, 1997). The concepts of photovoice were developed from education for critical consciousness, feminist theory, and documentary photography. Education surrounding critical consciousness emphasizes the idea of encouraging "issues people see central to their lives and then enables them to identify common themes." (Wang & Burris, 1997, p370). Participatory research methods each have their strengths, and each work better with particular populations. In general, research methods have a varying set of designs to reach the end goal of a project, and participatory research methods have the designation of integrating more with the community rather than acting as an external researcher. Photovoice incorporates documentary photography and allows participants to be the self-identifiers of their community's issues and strengths, which is why it was the research method of

choice for this project. Information coding should not come from the researchers but rather from the community members participating in the research. The participants, by being members of the community, are more equipped to identify the problems within the community as well as the strengths that the community possesses. Feminist theory plays into photovoice by shedding light on the male bias that lies in participatory research (Wang & Burris, 1997). If men lead a community, most of the participants will probably be men because they would be the most equipped or educated to complete the research tasks. Photovoice relies on the simplicity of cameras to guide the research process. The ability to take pictures can be easily taught and can enable other groups of society- such as women, children, or people experiencing disability- to help direct the research. This gives previously disadvantaged or vulnerable populations power, not just a voice. The last goal of photovoice is to reach policymakers and create social change. By taking the reins of research, this approach empowers them to take change into their own hands (Wang & Burris, 1997).

1.3.2 Photovoice as a tool for needs assessment

As a tool for needs assessment, photovoice provides researchers the possibility to perceive the world from the viewpoint of people who are living in the community that is being assessed. It grants the researchers perception from the viewpoint of people who are traditionally not in control of the image of the world (Wang & Burris, 1997). For example, giving cameras to students gives control to the individuals who spend much of their time within a school and but generally do not have the power to control the overall image that is portrayed of the school. As an assessment tool, the process allows the exposure of strengths and needs (Hergenrather, Rhodes, Cowan, Bardhoshi, & Pula, 2009).

Pictures also provide greater depth than words alone. A picture can elicit different reactions in different people and the phrase “a picture is worth a thousand words” describes exactly why photos are used in this process rather than simple descriptions of the event. It also enables people with a language barrier or people with low literacy level to convey to others what they see as the problems or strengths without using words (Wang & Burris, 1997).

Moreover, photovoice brings vulnerable populations into needs assessments. Many needs assessments will avoid vulnerable populations such as children, people experiencing disabilities, or homelessness. These populations are given a voice with this method and are affirmed of their viewpoints (Warne, Snyder, & Gillander Gadin, 2013).

1.3.3 Photovoice Method Analysis

A literature review was undertaken to better understand how photovoice has been used with students in the past. Photovoice has been successfully been used to gather data from youth, because it provides opportunities to build social competency, confirm personal and social identities, and helps youth recognize their role as activists within their defined community (Vaughn, Rojas-Guyler, & Howell, 2008). This method was also used by other researchers to reduce the power imbalance between researchers and youth because, through this method, the youth lead the research (Staab, Cunningham, Thorpe, & Patil, 2016).

Traditionally, photovoice is a ten-step process. First, is the identification of community issue. Due to the participatory nature of this process, the community issues should be decided internally rather than externally from the researcher.

Following issue identification participants must be recruited. The main issues that arose in many articles were how the participants were chosen and recruited. Bias can appear in multiple

areas throughout participant recruitment. The benefits of community-based participatory research are that the community helps select and recruit participants. The average sample size for the studies involving children was 27, skewed towards the larger studies which had approximately 100 students in their studies (Hennessy et al., 2010).

After participants have been recruited, those participating need to go through a training about the research method, and what the specific project will entail. This will include a discussion of the camera, ethics and power, ways of seeing photographs, and a philosophy of giving photographs back to the community as a way of expressing appreciation, respect, or camaraderie (Wang & Burris, 1997). The discussion of the camera will include how the cameras work and taking test photos.

In the very first article about photovoice, it advised that facilitators minimize technical advice during the initial training so that the participants do not restrict their creativity (Wang & Burris, 1997). During this instruction period, the next step of the photovoice project which is the distribution of the cameras and instructions. By doing this as a group, it begins to build group dynamics which will stimulate group discussion later in the process.

After the photo, the assignment has been discussed, and the participants understand what they are doing, data collection begins. The timeframe for how long to take photos varied drastically between study. One study only gave participants six hours (Florian et al., 2016) to take photos, while another recommends six months (Strack, Magill, & McDonagh, 2004).

One of the problems addressed in a photovoice involving adolescents was a low motivation to participate (Wilson et al., 2007). Their project lasted an entire school year and involved 90-minute after school sessions.

Once the photos have been taken by the students, there are two options to discuss the photographs. Briefly, the participant can complete a one-on-one interview with the researcher. During the interview, the participant describes what is going in the photos, why they took the photos and picks which photos the best show which showed what they were trying to convey. Other studies have completed the interview by writing captions for their photos. The lengthier option is to discuss the photos in a group discussion, which has two parts. First, there is an interview where the participant would choose which photos they wanted to show the group, then during a group discussion, each participant would present their photo and answer a series of questions about their photo.

There are two major methods listed to elicit discussion during photovoice discussion sessions. The discussion takes place after each participant chooses which photos they want to share with the group and which photos best portray what they want to say about the questions asked. The first method that was used during most discussion sessions was the **SHOWED** method (Vaughn et al., 2008). The **SHOWED** method asks: What do you *SEE* in the photograph? What is really *HAPPENING* in this photograph? How does that relate to *OUR* lives? *WHY* do these issues exist? How can we become more *EMPOWERED* by our new social understanding and what can we *DO* to address these issues?

The **SHOWED** method was used in many of the photovoice projects, using these questions to lead the discussion. In the studies featuring older children and adolescents, they could follow along with the line of questions. Wilson et al. discussed that their participants needed help guiding through the critical thinking questions. The other method used to lead discussion was called **PHOTO** (Hergenrather, Rhodes, Cowan, Bardhoshi, & Pula, 2009). The questions used to lead the discussion in the **PHOTO** mnemonic are: Describe your *PICTURE*. What is *HAPPENING* in your

picture? Why did you take a picture *OF* this? What does this picture *TELL* us about your life? How can this picture provide *OPPORTUNITIES* for us to improve life? The other studies who did not use either of these methods created their own set of discussion questions to lead a discussion about the photos. One study only did a one-on-one interview with participants and not group discussions (Walia & Leipert, 2012). That study group had only two weeks to take a photo and an age range of participants between 13 and 18.

Once all the photos are taken and discussion is complete, the data will be analyzed for themes. The researcher does not have to complete the initial stage of data analysis because the students will decide on themes that are apparent in the photographs. During a photovoice in Flint, Michigan, the participants developed the themes for their photos (Wang, Morrel-Samuels, Hutchison, Bell, & Pestronk, 2004). This is the ideal situation and it is more participatory if the group choose the theme, however, that is not always realistic and the data is still valid if the external research chooses the themes from discussions or interviews.

Finally, after the data analysis has been completed, the researcher will present the findings to both the school officials and the participants. Burke, et al, 2013 suggests, “We should encourage partners to feel invested in the data and the findings” (p. 117). Multiple studies have used this method to take the discussion and interview process one step farther than simply the group discussion (Brazg, Bekemeier, Spigner, & Huebner, 2011). Creating captions can also be a starting point for discussions (Strack et al., 2004). Another possibility for display and data retention is a photo book with the photos taken and short descriptors. This is similar to what was done in an assessment of food security within a Canadian Indigenous community (Genuis, Willows, & Jardine, 2015). To complete photovoice, the final step is to create a plan of action for change.

1.3.4 Photovoice with school-aged children

Due to the participatory nature of photovoice, and the ease of data collection, there are many photovoice projects involving school-aged children, all with variations in method, locations, outcomes, and learnings.

A study examined a population of preadolescent Latina girls with no structured research question but just a guide to take photos related to their health. This three-week project was guided by the seven participants, their choice of questions and used the SHOWED method to guide group discussion. The major takeaways from this study were that the younger girls who participated (ages 8-10 years old) had a hard time grasping the theme and choosing the photos to represent the question (Vaughn et al., 2008).

This method, although appropriate for children, did not specify what was the ideal age range for children participating in photovoice. Starting at the younger end, it was important to see at what age was research collection not viable. One study used participants between the ages of eight to ten years old, who were deemed mature enough for both the cameras and the interview. High school students were also recruited and trained as co-researchers. To ensure participant retention, they were given colorful handouts to remind them to take photos. This study looked at food insecurity in Canadian indigenous communities and found that photos were effective when interviewing children on sensitive topics. After the discussions, guided by the high school students, the photos were made into a book, organized by theme (Genuis et al., 2015)

Another study involving young children analyzed specific creative research methodologies in children and if they were effective. Five children between the ages of 6 and 9 years old participated in photovoice involving their therapy dogs. The children used digital cameras and a

laptop to review the photos. The students were able to complete discussion of the photos and were able to recount their perceptions through photography (Pereira et al., 2017).

With technology advancing, it makes sense for photography to advance with it. Camera phones were the tool utilized in this study's methodology. The photos would then be texted back to the researchers, who would then schedule the participant interviews. The target age range for this study was thirteen-to-nineteen years old and had 29 participants. The main focus of this photovoice was to utilize this research method as a motivational tool to aid weight loss in obese adolescents rather than as a tool for change like photovoice's original intention. (Woolford et al., 2012).

A photovoice project in East Harlem, involving eleven to fourteen-year-olds, focused on food justice issues and was completed over ten weeks. The initial stages of photovoice, including the introduction to the method, and introduction to the camera, did not happen in one session but rather over the first four weeks. The SHOWED method was used to guide discussion and the students were all part of an extracurricular program which could explain why the introduction took four weeks (Leung et al., 2017).

Many of the studies analyzed, participants were recruited through schools even if the project was not completed through a school. One study focused on assessing substance abuse in their community as well as the health promotion efforts. This study involved twelve high-school students and the photos were collected over ten weeks. The SHOWED method was used to guide discussion and for final data analysis, participants created captions to go with the photos. The students for this study were recruited through the school but the photos were not taken in the school (Brazg et al., 2011).

One of the last studies involving school-aged children not specifically in a school setting was a photovoice project that partnered with a youth center to work with adolescents aged eleven

to seventeen. The participants attended the twice-weekly sessions for ten weeks. They used the SHOWED method to guide discussion and also completed individual interviews. Out of this article, there were major recommendations for future photovoice projects including committed staff members, a stable site, small size (5:1 youth to adult ratio) and that it would be worth exploring the use of photovoice in a school system. (Strack et al., 2004)

1.3.5 Photovoice in a school setting

Most photovoice projects completed about schools are done within a school program, like an after-school event or a club. Very few studies were done within the parameters of the school system, working with teachers, their schedules, and the administration. If more photovoice projects were done within a school setting, they were not published. This method has been shown to be effective with school-aged children, but the process for applying this research method in a school-setting is under-represented in the literature,

One photovoice project that took place in a school was looking at the physical activity and food habits of school children. The selection process was done by teachers and the 30 students, aged twelve to fourteen, were given disposable cameras and a journal to complete the project. Over the four days that the students could take photos, the journal contained prompts and the photos had to coincide with the prompts. There was no debrief and even though this project was conducted in a different country, one of the considerations for student selection was their knowledge of English (Staab et al., 2016).

Another study specifically looked at how the teachers could increase participation in school in general and create participation in health-promoting projects. This study involved high schoolers and they were chosen based on socio-economic status, the potential for risky behaviors, and due

to their lack of participation in school. This study was unique in the fact that it involved teachers in the process of photovoice and kept them involved with the students throughout the process. (Warne, Snyder, & Gillander Gadin, 2013). Very few studies used teachers but if they did, teachers were used as either a guide or a different source of data collection.

Following, was a study using photovoice within a school looking at the barriers to physical activity for rural youth. The age range for the population was thirteen-to-eighteen and the students had two weeks to take the photos so even though the project was based in a school, most of the photography was done outside of school. This study did not utilize any group discussion and just did individual interviews (Walia & Leipert, 2012).

Not all the studies on photovoice are about using it as a school assessment tool or using it to assess the health of an area. One study was trying to utilize photovoice as an educational tool. Since photovoice is appropriate for giving empowering populations that are typically underrepresented (Wang & Burris, 1997), this study employed photovoice to “create environments and forums that are open to express concerns yet challenging to compel students to think and rethink their previous relationships to knowledge, self, and the other,” (Chio & Fandt, 2007, p487) The other goal was to make students the author of their own lives. Lastly, photography can give the student some psychological buffering if particularly sensitive topics are broached. (Chio & Fandt, 2007)

Another study set in a school was a focused on African-American youth and their perceptions of childhood obesity. This study took place over six weeks, used the SHOWED guide and focused on high schoolers. Many studies recruited participants to meet certain criteria, however, the students in this study volunteered to participate, creating a convenience sample. This study was sponsored by a local graduate school and a part of this study was building a partnership

between the graduate school and the local community. Working with the high-schoolers helped build a sustainable partnership. The participants for this study volunteered to participate versus being recruited. These high schoolers also helped build a sustainable partnership between the University hosting the research and the school (Balvanz et al., 2016).

The Youth Empowerment Strategies (YES!) project focusing on young adolescents and the built environment. This project involved 122 participants ranging from nine-to-twelve years old. Students were given analog cameras with multiple rolls of film to take photos and an incentive to complete the project. Students could also use the film for personal use and all the photos would be developed for free as part of the project. This project was different in many ways from the other photovoice projects analyzed. Rather than do group discussions or interviews, reflection on photos was done in a free-write that followed the SHOWED method. It also lasted for 25 weeks, and the students met for 90 minutes after school for each one of these sessions. The photos were also used to create a storyboard similar to the SHOWED responses. The students were looking for places within the school environment that contained contrasting attributes and after photographing these attributes posted them on a map of the school. The researchers in this project were following Social Constructivists Theory (Vygotskiĭ, 1962) and was trying to assess more than one health condition during the project. The students did not like the writing portion or the discussions, and there was also a low motivation to participate. The article also mentioned that the adolescents needed more support when it came to critical thinking (Wilson et al., 2007).

1.3.6 Literature Summary

The literature surrounding photovoice emphasizes adhering to the process to maintain validity. The age range for this process encompasses all school-aged children but may be more

difficult when working with younger students. Since this is a community-based participatory research method, each step should be completed with a community partner. The community partner is who is relied upon when questions arise about how to better work with the community, how to better complete the project and if each piece is being done correctly. This method can be used to assess a variety of health-related issues including substance abuse, exercise, and obesity. The question for students to answer should be developed with the community partner and should be open-ended enough to elicit discussion of both negative and positive aspects of the subject. Cameras could be manual or digital, however, digital is more practical and reduces the time between taking the photos and discussing them. The time provided to take photos varies but due to the nature of the site chosen for the project discussed in this paper, time can be reduced. The discussion is an important aspect of this method and can be done in a variety of ways, but is typically guided by the *SHOWED* or *PHOTO* method, the latter using simpler language that may be easier for a younger audience. The students typically develop themes from the photos through discussion but it is still valid if the researcher determines those themes. Data translation is an important part of the process and helps convey information to the community partner and other interested parties.

2.0 METHODS

The student population of PUCS ranges from kindergarten to eighth grade, therefore, the focus of the photovoice projects in the literature review were those geared towards a younger participant group.

Step 1- Identification of community issue: When the researcher and the director of the school met together on the research project, the school wanted the research to utilize parts of the school's strategic plan. The only part of their strategy that was not advancing as planned was the facility management portion. This portion could involve students in an implementation of the participatory research process since the students interact with the school environment daily.

Step 2- Participant recruitment: To reduce bias from both the researcher externally and community participants internally, the researcher and school made the compromise to not randomly choose students throughout the school to not incur bias. In the 2015-2016 school year, PUCS enrolled 138 students ("PUCS 2015-16 School Year Stats," 2017) which means that validity can be maintained through a smaller sample size. When participants were recruited, if they were interested in participating in the project, they were given a consent form to exempt them from the project. If the exemption form was returned, the student could not participate. This project was considered exempt by the University of Pittsburgh IRB. The education director and executive director of PUCS chose two classrooms to as participants in this project, as each of them would contribute different views due to the age of students and physical location of classrooms. The first group of participants was a third-grade classroom of 16 students located on the main floor of the school building. The second group of participants was a seventh-grade classroom of eight students,

located on the lower floor of the building. These participants provided diversity to the study in both age and location.

Step 3- Photovoice training: The students were all eager to participate and grasped the concept of photovoice, as evaluated by verbal confirmation.

Step 4- Camera Distribution and Instruction: Many of the studies used disposable or non-disposable cameras that use photographic film and developed the photos for the students to discuss and review at a later date. For ease of access and expediency, this project utilized digital cameras similar to the Pereira study (Pereira et al., 2017). In that study, they reviewed the photos on a laptop and allowed the students to quickly review which photos they have taken. Adding these to the process quickened the transition to the discussion by giving students the immediate gratification of viewing and examining their photos. After the project was completed, the cameras and research materials were donated to the school so they could continue the project if they would like to or they could work on different aspects of curricula involving photos.

Typically, after the process has been outlined, cameras have been distributed, and technical aspects have been discussed then we will cover the specifics of our photovoice project. However, the students were very enthusiastic and wanted to play with the cameras so camera distribution was moved to after photo assignment to maintain student focus. This was a very important for the third graders and younger participants in general. Photos were taken in groups. There were only six cameras available, so for the larger class, the students took photos in pairs- one student at a time choosing the location and taking the photos.

Step 5- Identification of photo assignment: Together with the director of the school and the director of education a question was developed to look at both the strengths and issues surrounding facilities management at Pittsburgh Urban Christian School along with other themes surrounding

the school. The students answered the question “What is it like to go to school at PUCS?”- a question that encompasses the physical and potentially behavioral aspects of what it is like being in their school.

Because the students are familiar with the environment of the school, which is a stable site, the time frame was shorter. The students were given the prompt, given approximately five minutes to brainstorm where to take the photos, and then had thirty minutes to take the photos. The students were encouraged to take the photos that they planned, then come back to start their interview, but many took photos for the entire thirty minutes. This was done to increase motivation and efficiency. Since the school is not a mobile site and the students spend most of their time in the school, the students will not need to venture far to take their photos. The brainstorm aspect increases forethinking to reduce lollygagging post photo-taking, specifically for the younger students.

Step 6- Photo assignment discussion: Students engaged in an interview and short discussion once they had completed taking their photos. To guide the discussion, the PHOTO method was utilized due to the simpler context that surrounding the questions. The discussion of the photos was audio recorded and used for data analysis once completed. During discussion and interview, notes were taken to aid transcription. Each discussion started with an interview to cover why each photo was taken.

Step 7- Data analysis: During each interview and discussion, themes were discussed. Each student also chose their favorite photo that answered that answered the question “What is it like to go to school at PUCS?” After all the data was collected, each interview was analyzed for secondary themes.

Step 8- Identification of influential advocates: During the initial discussions with the school, advocates for change were identified and were used in the data translation portion of this project.

Step 9- Presentation of photovoice findings: To create a cyclical process, the data collected were disseminated back to the school. The school requested a handout with findings to present to the board. After all the research is completed, where the photos and findings will be presented to parents, teacher, board members, and any other interested parties at a future parent meeting. Part of the budget was set aside for research translation and will include the presentation of photos, findings, and snacks. The photos that were selected as the favorites by the students will be displayed and deidentified

Step 10- Creation of plans of action for change: This stage does not involve the researcher but included steps taken by school officials, steps taken by students, or the final steps within PUCS strategic plan.

2.1.1 School Partnership

Pittsburgh Urban Christian School is a kindergarten through eighth-grade school located in Wilkinsburg, PA borough. Following the 2015-2016 school year, the public high school and middle school in Wilkinsburg closed, transferring local students to Westinghouse High school in Homewood (WTAE, 2015). There are two public elementary schools in Wilkinsburg but PUCS is one of the few schools in the area that offer classes up to an eighth-grade level.

From the 2015-2016 school year, 61% of the students attending PUCS received scholarship aid and 41% of the students were eligible for free- or reduced- lunch. The racial diversity of the school is 60% Caucasian, 25% African American, 4% Multiracial, 9% Asian or Pacific Islander,

and 2% Hispanic ("PUCS 2015-16 School Year Stats," 2017). It should be noted that the researcher's academic and thesis advisor has a child enrolled at PUCS.

In December 2016, the lead researcher met with the executive director of Pittsburgh Urban Christian Schools (PUCS) to discuss the possibility of completing a research project within their school. To successfully complete a community-based participatory research project, there should be collaborative partnerships through all phases of research starting with the initial research idea. PUCS has a strategic plan through 2021 and together the director and researcher discussed which goal could be informed by community-based participatory research. An area of interest within PUCS strategic plan is facilities management, specifically delivering an improved facilities management plan. By using photovoice as an assessment tool, the school could gain the students perspective on what are the strengths and weaknesses of the school facilities along with what the students see when they see Pittsburgh Urban Christian School. This collaborative research project also promoted co-learning where students and teachers would be trained in the photovoice method, and encourage sustainability for future projects.

2.1.2 Methods Process

To maintain the validity of photovoice, the process established by Wang and Burris must be followed (Wang & Burris, 1997). Each step was tailored to the school to meet the objectives that were set forth at the beginning of the project. Identification of community issue was done with the school administration working with an already established strategic plan. Participant recruitment was chosen by the administration and convenience. The 3rd-grade and 7th-grade offered

diversity in addition to availability. Each class was briefed on what photovoice was, and the process that the students would be going through. The normal process advises camera distribution before discussion of photo assignment; however, many students had never worked with a camera before, were very excitable, and became very distracted when the cameras were mentioned. To ensure the students understood the photo assignment, camera distribution happened after the presentation of the question. With camera distribution, groups were formed and the time limit for photos was set. There was also a quick practice session on how to use the cameras and what guidelines were in place for taking photos in this setting. After each student was finished taking photographs, we discussed the photos and each student chose which ones answered the question posed. After all the discussion, each recorded discussion was transcribed, and it was analyzed for other themes. The data was compiled into a report that was presented to the school and certain photos that the students chose were printed and delivered to the school. The last step of photovoice, policy change, cannot be done strictly by the researcher but through the provided material, advocacy on the issues presented has been promoted to the policymakers in this community.

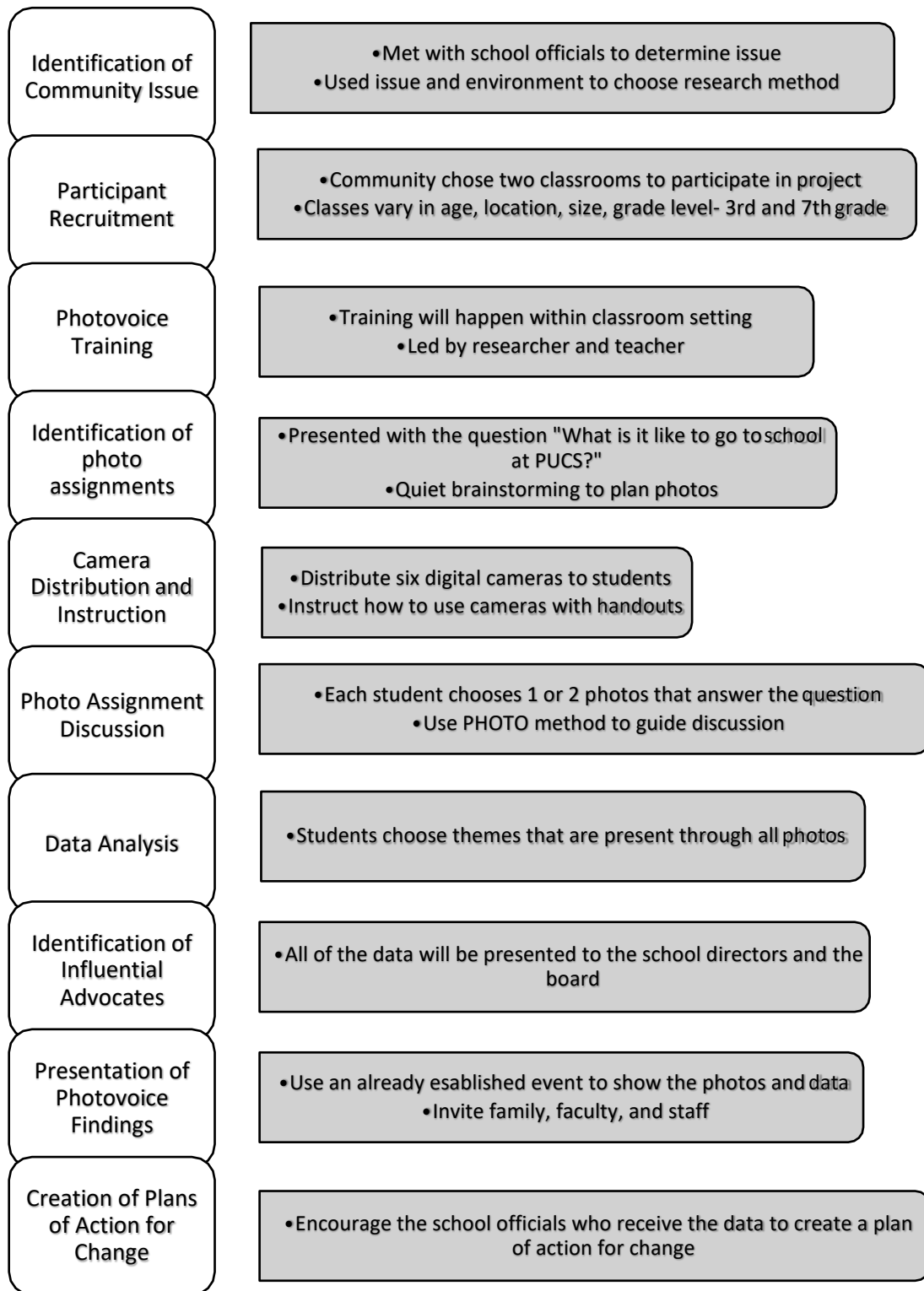


Figure 2: Methods Process

2.2 DATA COLLECTION

The data for this photovoice project was collected over three days, with two classes and a total of 24 students. The first day of data collection took place over the course of one hour with the seventh-grade class. On the next day of data collection, discussion with the seventh grade was completed and the third-grade photos were taken and discussed.

After all the students were posed with the research question, they were all given time to silently brainstorm where to take photos that would answer that question. Once they were finished, all the students were taught how the cameras worked, rules of taking photos, and then they had 30 minutes to take the photos. That time frame was decided on during the 7th-grade photo taking and gave them plenty of time to take all their necessary photos. If they finished taking the photos they brainstormed before the time limit was up, they could come back and start the discussion portion or continue to take photos.

Once a student or student group returned, we reviewed the photos together. First, they were given a card listing the questions in the *PHOTO* prompt to encourage talking points. Then the student or student group documented why they took each photo, why it answered our research question, and which of the photos taken was their favorite. The discussion was audio recorded.

2.3 DATA COLLECTION TOOLS

2.3.1 Cameras

The cameras that were chosen for this project are the Kodak PIXPRO Friendly Zoom FZ43 digital camera. This camera was chosen due to ease of use and produces nice photos. Unlike most digital cameras, this camera does not require a lithium battery that requires an extra external charger, but rather uses AA batteries. This an option that was chosen because the cameras will be donated to the school after the photovoice project is complete and AA batteries are easier to manage than lithium batteries. The cameras required memory cards- internal SanDisk Ultra 8GB SDHC memory cards. These cards were chosen because these memory cards are water, shock, and x-ray proof. It operates at approximately 40 megabytes per second (Class 4) which is ideal for midrange point-and-shoot cameras-the type of camera that was chosen for this project. There was a total of six cameras purchased and nine memory cards. More memory cards were purchased in the event the original six memory cards were filled although, in JPEG format, it can be anywhere from 1040 photos per memory card to 5722 photos per memory card(SanDisk, 2008). There was no funding from Kodak or SanDisk to this project or conflict of interest to buy this product over other products.

2.3.2 Audio Recorder

The audio recorder that was purchased was the BOOCOSA 8GB Voice Recorder. This audio recorder was chosen due to price and the capability to download the media files for later transcription. This recorder is also durable, can store up to 560 hours of audio, and has a

rechargeable battery. There was no funding from BOOCOSA or conflict of interest to purchase this item over other items.

2.3.3 Data collection rules

Before the students began taking photos, the researcher discussed basic rules for taking photos. The rules that were applied to the photo taking were that the students could not take photos of people's faces, could not interrupt classes, and could not be loud while taking photos. The first rule of not taking pictures of people's faces was due to the fact that this project did not have consent from the entire school and did not want them to be identified in future presentations. The rules about not interrupting classes and being loud were in place because this photovoice asked the students to take pictures around the school, and to encourage the students to not disturb the required activities of other students. The third-grade class had one extra rule than the seventh-grade class, due to the number of students. They had to work in groups to take the photos and maintain equal photography time for each student.

3.0 RESULTS

Seventh graders took 234 photos and 3rd graders took 155 photos, for a total of 389 pictures taken. Seventh graders averaged 29 photos a piece; 3rd graders averaged 10 photos a piece. There were differences between what the third and seventh graders identified as key learnings but overall, the photo discussion came down to five main themes. The major themes are creativity and art, community, learning, accomplishment, and exploration and observation.

3.1 CREATIVITY AND ART

One theme that arose through all the discussions was the creativity components prevalent in the culture of this school, and the school community. Every student included photos of art projects that were hanging around the school. Many of the students photographed their own pieces of artwork or pieces of artwork that they viewed daily and found enjoyable. These included pieces that were done recently or many years ago and still had an impact on the students. Certain students made a point to take photos of artwork near classrooms that they would stand outside. This artwork was seen as something to entertain the students as they stand in the hallway. There was very little open space on the walls, and as one student says “it changes so it’s never boring to walk into the school. Everyone at my old school, you just walk in, and its school. With PUCS, you walk in and you see all this art.” This board (Figure 4) was in many photos because of the theme it portrayed. Students wrote what they were thankful for and posted it on the board to share with the school.

A topic that was brought up many times was Art Expression Day. The 7th-grade students had been in the school for many years and took photos of projects that they had made many years ago but were still prominent in the school building. Even though the middle school students no longer participate in the Art Expression Day, they still benefit from the art crafted by the students created on that day and displayed throughout the school. The first photo, Figure 3, features a mobile that hangs in the entryway of the school. This piece was created during a past Art Expression Day, showcases the name of the school, and was created from used cans. One student said that if you stood under it, your body heat would cause it to spin. Many students took photos of this mobile, in both the seventh, and third-grade, but only a seventh-grader chose it as a photo that answered the question posed.



Figure 3: Photo selected by 7th-grade class representing creativity and art expression

The students described the school as very welcoming. The idea of welcoming is shared across two themes- art and community. When the students walk into the building, there is an artistic mobile that hangs above the door, a relic of an Art Expression Day. The door to the office is also surrounded by boards about the all-school unit- a theme shared across grades-, and a board

describing what everyone was thankful for, described earlier. These boards gracing the entrance, change depending on the theme of the month. Recently, it was about what the students were thankful for and tied in with the community aspect of the school.

A group of photos contained photos of projects throughout the school. Each project was associated with certain classes but the photos were taken not to emphasize the abundance of projects or the lack of wall space, but rather the individual student accomplishments. Project-based learning was not specific to a course, a subject, or a grade, but to the culture of this school. Figure 4 is a close-up of the board near the office representing a theme of the month. The photovoice project took place in November and the theme of the month was asking what each student was thankful for. The student's answers were written on hearts and stapled to this board near the school entrance. This board also featured in many student's photographs in third and seventh-grade, in addition to their discussion about the school's welcoming atmosphere and artistic nature.



Figure 4: Picture selected by 3rd-graders representing being thankful

3.2 COMMUNITY

The next theme that was prevalent in the discussion is the sense of community that the students experience. One student ensured each classmate was included in their photos because “we’re all friends and we all spend time with each other and help each other. We are around when we need support.” This sense of togetherness was much more prominent in the seventh grade than the third grade, however, both showed this sense of unity with their school and class. Another photo was of a piece of art displaying puzzle pieces made by different classes that all fit together, with the caption, we fit together.

These ideas of community are reinforced throughout the school through posters, school projects, and events. Some of the posters that were hung around the school stating that “The sum is greater than all our parts.” The community aspect is reflected as students having positive relationships with their teachers, along with a way for the school to constantly improve themselves as a community. Throughout the school were posters and the photo in Figure 5 is one of the posters that garnered much attention from the students. This poster, though the students presented it with no other context, used it as a method to portray the community built within the school.



Figure 5: Picture selected by the 7th-grade class representing connectedness and community

This also showed itself in the way that the students were working on this project. During their descriptions of the photos, they knew all the people who they were taking photos of as well as how they fit into the fabric of PUCS. Even the younger students who had not spent many years at the school wanted to show off the people who made their experience special and important.

One specific aspect of community that was analyzed by the seventh graders was racial diversity. The students specifically mentioned the fact that this school had diversity and was an integral part of this school. One of the students, who had not attended previously, compared this to their last school, and about how this school was much more diverse. Another student also focused on the fact that even though the school is diverse, the students within these diverse groups do not try to separate themselves but stay part of the school community. This topic was not brought up by the younger students. Figure 6 is the photo chosen by a student to display the diversity that they saw within the school. The photo also displayed how the students support each other and create a community.



Figure 6: Picture selected by the 7th-grade class representing diversity

3.3 LEARNING

One of the large differences between the classes taking the photos was that the third-graders took a very literal approach to the question while the seventh graders took a more abstract approach. The third-graders wanted to photograph learning and the classroom experience more than the seventh graders. The seventh-graders did include photos that represented learning, but in a conceptual manner, that showed the school as being organized, respectful, and stimulating. The younger students wanted to represent the school from a more emotional place with photo descriptions like “School is love.” It seemed during the discussion portion that the third graders wanted to show off their school work more as an accomplishment rather than the school building contributing to their learning. Many students took photos of their own work, or of reading curricula they followed emphasizing that they used this process.

The values that did come through the photos- “learning is important,” “we like to learn,” “PUCS is a place of learning”- emanated as very important to both students and teachers. The projects hanging outside the classrooms can be an external emphasis on learning- out outward declaration of education. The students also commented that the projects were a way to share their information with the public. Figure 7 is a classroom filled with a circle of students and a teacher. This photo was taken by a third-grade student to display an active portrayal of learning.

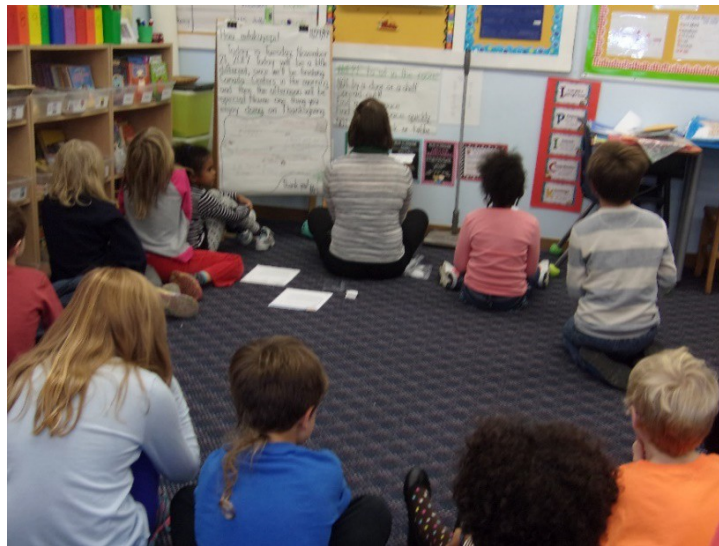


Figure 7: Picture selected by 3rd-graders representing learning

3.4 ACCOMPLISHMENT

Both grades took photos of the trophy case in the school. Many of the seventh graders discussed how they had won some of these trophies by being a part of various teams but the younger students had not been as involved in many of these activities yet. The robotics club came up many times as a recipient of these achievements as well as the cross-country team.

Although this trophy case is the physical symbol of accomplishments for the school, many of the students showed off their own accomplishments in the form of projects or art. There was also a sense that whenever PUCS achieved something, everyone in the school benefitted making these trophies meaningful to all students. Figure 8 is a photo taken by a third-grader of the school's trophy case to represent the shared achievement of PUCS. The trophies sit behind two clear doors that reflect the lights of the hallway. The trophy case was the feature of many photos in both the third and seventh-grade.



Figure 8: Picture selected by 3rd-graders representing school-wide accomplishments

3.5 EXPLORATION AND OBSERVATION

The last theme encompasses exploration and observation. Recently, the school built an outdoor classroom that both grades utilize. The outdoor classroom also contains a garden with plots for the younger grades and a rain garden. When pictures of this came up in the discussion,

the word observation was used every time. “We used our observation skills in the outdoor classroom,” “in science class, we sometimes go to the outdoor classroom where we practice our observation skills,” are just a few quotes from the students regarding this new space. All the students had positive reviews regarding the area and wanted to continue to learn more. Figure 9 is a garden outside of the school where classrooms each have plots that they maintain. This garden also contains an outdoor classroom that was photographed to represent observation, exploration, and continuation of learning.



Figure 9: Picture selected by 3rd-graders displaying the garden

The skills of observation were well taught because as the students moved through the school taking photos, they were making very astute observations about the school environment and culture. For example, when the seventh-grade students took photos of the lockers, they related it back to organization, community, while also bringing up the point that the hallways are narrow but the colorfulness brightens their day. When the younger students took photos of the gymnasium, they knew to equate it with physical education but also to their positive relationship with the gym teacher and staying healthy. The last photo, Figure 10, is of the gymnasium and was taken by a

third-grader. The gymnasium, the lockers, the outdoor classroom, and the chapel were the main physical structures that appeared in the photographs.



Figure 10: Picture selected by 3rd-graders displaying the gym

The students all wanted to learn more, and that was noticeable from the start of this project. While there are some exceptions, most of the students were engaged and excited. PUCS encourages this excitement and this exploration of knowledge. During the description of their projects, the students often said that these projects were about something new and something they had never done before. This information came mostly from the older students but the younger ones shared their sense of exploration.

4.0 DISCUSSION

I developed a community-based participatory research project with a local school to assess one of the aspects of their strategic plan using students as the assessors. This project gave students the opportunity to tell their stories about their school through a photographic lens. It gave students the ability to show their perspectives and present that to the administration. Completing this project, from its origin to completion using the photovoice method, was a learning experience as well. It provided me with the opportunity to develop relationships with a community partner, hone my own skills conducting research, and translating results back to the community. Together with the students, the themes discerned from the photographs tied in more with the social and emotional climate of the school rather than the physical environment. Both of these concepts relate to the health of the students, and the school community. These themes can be tied into the economic and environmental issues related to school health.

4.1.1 Applied Theoretical Constructs

The social-ecological model is a health model that analyzes behavior at multiple levels: intrapersonal, interpersonal, institution, community, and policy levels (Sallis, Owen, & Fisher, 2015). The intrapersonal level describes biological and personal factors including age, education, substance use, gender, and other biological factors. Some of these factors may be less changable, specifically the biological factors. Interpersonal factors focus on relationships that may increase or decrease a person's risk relevant to the risk being assessed. These relationships include social-

circles, partners, and family members. The institution level factors are not included in every model because this level specifically assesses the perceptions and attitudes of institution leaders, the culture of institutions, the policies, the physical environment, and the capacity of the institution. (Golden & Earp, 2012). The community is next layer of the social-ecological model, focusing on the settings- like schools, neighborhoods, and businesses- that could affect the health issue. The outermost layer of the social-ecological framework is policy level or society level, evaluating large-scale factors like policies, economic factors, educational factors, and large-scale health factors.

Environmental health issues are integrated through the individual, the community, and the culture. To effectively target root causes or interventions, environmental issues must be assessed and addressed from multiple perspectives. By using the social-ecological model, environmental risks can be assessed from multiple levels, from the impacts on the individual, compacted to the impact on policy and society. This multi-level approach to health is similar to how the Whole School, Whole Community, Whole Child model approaches to school health.

The WSCC model treats the child as the individual, keeping them in the center. However, students are not the only occupants of the school. Students interact with teachers and staff at the interpersonal level, creating protective factors or risk factors. The institution level of the WSCC model is the ten sectors to better assess and promote the institutional-level capacity of schools. Lastly, the policy and community level are demonstrated in the exterior level of the model which integrates the community back into the school.

The WSCC model is inclusive of multiple aspects of health education but not all the themes that were discussed in the photovoice were part of this model. Arts and creativity were such a large prominent theme in this photovoice project and do not appear in any sector of the WSCC model.

While arts and creativity may not directly impact health, they can be important aspects of social and emotional health, in addition to acting as catalysts to other pieces of the model. This model is very narrowly focused on health education and the health angle of education. This project showed that other areas can become dominant in the student's perspective depending on what is important for them. But the WSCC model is lacking in areas that have a more creative expression like art or music, which might be worth considering in future iterations of the model, given the students' emphasis on how important those domains are in their daily experiences at school.

The community exterior to the school is included in the WSCC model but community internal to the school is not explicitly mentioned as a sector of importance. The community built within the school can easily fall within social and emotional climate, but that mainly focuses on the students when the community theme chosen in the photovoice project included relationships with teachers and personal development. The theme chosen by the students through their exploration could be integrated through social and emotional climate, employee wellness, and community involvement in addition to engagement, challenge, and support.

Since the WSCC model focuses on health education, rather than general education, the inferences about learning that came from the photovoice project may divert from the health education needs. However, physical education was brought up through interviews and the gymnasium was the focus of photos. Learning can also be demonstrated through the engaged component of the WSCC because the students continually related learning back to how the teachers were engaged in the students' learning process. This is also reflected through the "supported" and "challenged" aspects of the WSCC model. Through discussion and interview, the students reiterated that their relationship with teachers continues to challenge them through learning but that the students were supported through their learning.

“Accomplishment” is a difficult feeling to capture a model. While it fits into the social and emotional climate, specifically the feeling that the school rallies behind the accomplishment of others. Depending on the student and how they want to share their accomplishment, this feeling can be integrated into multiple sectors. Accomplishment can be part of employee wellness because if the teachers feel validated and encouraged to complete their work, can play a large part in their mental health. It can also encourage family engagement if the family also feel invested in the accomplishment, and the same applies to community involvement.

The last theme came from the student’s discussion of the photos is exploration and observation- a theme that is not directly mentioned in the WSCC model. Exploration and observation can be a large part of health education because observation is a key part of improving health. Fostering a feeling of observation can stimulate students’ exploration into the realm of health education and their personal health needs. By beginning the exploration into their personal health, it will begin an easier foray into the other sectors of the WSCC model like nutrition services, health services, and social services.

4.1.2 Environmental relation to social and emotional climate

The benefits of attending school outweigh the consequences of dropping out, economically and physically. But if the environmental issues surrounding school building-like nearness to highways or Superfund sites- are making students and teachers sick, how can they be encouraged to stay in school to reap the rewards associated with continued education? When the environment sickens students, they are more likely to miss school, as has been mentioned in the background section. But what if there can be other ways to keep them in school?

The original intention of this project was to assess the physical environment of school in question, in addition to the secondary themes that may arise in the students' idea of school. However, the social and emotional climate was exposed as a more dominant theme. The students were more influenced by the relationships established with their teachers, the friendships with their friends, and the environment of learning that has been fostered. Even though these answers could have been influenced by the students who were chosen to participate, since the emotional context was intensely dominant throughout all themes, the chances are low.

This positive social and emotional climate came through in increased desire to learn, explore, and continue schooling. Students combined the school community with emotional terms i.e. "School is love." Even though many students do not have the option to choose the school they attend, by fostering school spirit, schools encourage students to continue attendance even if other aspects are not first-rate.

If students are consistently sick, due to environmental factors- like diesel exhaust, mold, or cockroach biocontainment- there is the possibility that they can fall behind in classes. This puts them at higher risk of dropping out. The economic and health effects of dropping out of elementary or secondary school are detrimental to individuals and society. Encouraging a positive social and emotional climate, similar to the one developed by PUCS, can potentially negate the effects that lead a student to drop out.

Further research should be pursued to analyze if the social and emotional climate is a protective factor to reduce the risk of school drop-outs. If the social and emotional climate section of the WSCC model is a preventive factor to reduce factors, then potentially every section of that model can be used in some sense to negate the factors that the schools cannot change.

Most of the research about the physical environment of schools relates back to lack of funds, which cannot be changed unless money is allocated to fix these problems. But problems related to Superfund sites cannot be changed- these problems can just be mitigated. Further research could be done into the other sections of the WSCC model to analyze if any of those sections mitigate effects of the school environment. It would also be interesting to see a longitudinal study of the students who attend the school near the toxic sites to see how the environment impacts their life long-term.

4.1.3 Lessons Learned

When the question “What is it like to go to school at PUCS?” was chosen as the research question, the original intent was to present both the positive and negative aspects of the school environment without restricting to one or the other. Some of the other ideas for questions was “How do you see PUCS?” but the thought was that questions may be too restrictive.

The research question- “What is it like to go to school at PUCS?”- can present some problems by not specifically defining what health problem is being analyzed. This was intended to give the students freer range to take photos. However, like many previous studies mentioned, the younger students had a difficult time grasping the question. The third graders, when discussing why they took the photo, did not have answers for many of the photos they took saying that they took it because it “was cool.” The initial study that stated that eight to ten-year-old students were mature enough to handle the data collection also included high-schoolers as co-researchers (Genuis, Willows, & Jardine, 2015). If this research was conducted again, and the younger students are still a population that the researcher wants to include, having another student assist in research

may help with the behavior problems exhibited by the students but would still encourage the students to share their discussions more openly than if a teacher or staff member were present.

There were many differences between working with seventh graders and working with third graders. The seventh graders came up with more abstract concepts surrounding the photos. They also were more well behaved during the discussion and were easier to manage while they took photos. The third graders took the process and question very literally, one student taking photos of every grade. The third graders were more difficult to manage, one of the students being excluded for bad behavior. The ratio of students to teachers was much larger for the third graders so it was more difficult to manage. The seventh graders were able to keep to the time limitations while the third graders kept pushing the time limit. Also, the older students may have provided different insights because they have been in the building longer.

Both grades were excited to participate and seem very passionate to be part of the strategic plan of their school. They also wanted to share their views of the school to all participants. The teachers were also invested in this project, and even though at this time they were not participants, they were interested in seeing the progress and results of the project.

The photovoice method, being a qualitative method, was able to look into the social and emotional climate rather than just the physical environment. Although it was not intended, it exposed many positive aspects of the social and emotional climate of the school. That may be due to the phrasing of the question and can be determined through follow-up studies or evaluations.

During the analysis of the data, when most of the information was within the social and emotional climate of the school health model rather than the physical environment of the school, this showed that the emotional climate is more important than the physical environment to many of the students. Both of these components are tied together- they were originally in one category

in the coordinated school health model- and in this school's situation, the emotional and social climate supports the physical environment.

One of the restrictions of conducting photovoice within a school environment is that the teachers and students already have many required activities that are necessary for curriculum requirements. The time that was intended for discussion was not long enough and ideally, the discussion could have gone on until the students were done sharing their stories. However, due to the lack of time, everything had to be restricted. If this research was completed, it would be easier to complete this as an afterschool program or with an art class so it is already integrated as part of the curricula.

4.1.4 Future use and project sustainability

If this research was repeated, it would be important to keep the ratios of students to teachers/ researchers low. It would also be easier to work with an older population for comprehension purposes. If the point is to work with a younger audience, keep the research question straightforward. It was important to keep a space between the teachers and the researchers so the students do not feel pressured to answer a certain way.

If the school repeated the research but wanted to center on the physical environment of the school, the author recommends a further analysis of the question. Specificity of question context will require more time and community input. But previous exposure to the method will provide invaluable knowledge to make future studies with photovoice more successful and effective.

If the original question was presented to teachers, a different set of results is expected. Since teachers have more of a set schedule during school, are exposed to different environments,

and different contexts, the results will expose a different area of the WSCC model. The results may be more focused on the physical environment than the results of the students. If the school wants to continue this photovoice project and learn more about their school community, this project can be duplicated with the teachers and the parents.

Teachers have a perspective of students that can encourage more positive health behaviors. The teachers see students from an external view and can utilize their academic records to assess problems earlier than simply one view allows. Teachers may be more open to exploring other avenues of assessing health in students or how the physical environment of the school affects their students.

If this project was duplicated with the parents, the question would have to change depending on what the focus of the future project might be. One of the photovoice studies was looking at the activity levels for students and the students did not have the cameras, but the parents and teachers did, giving a wider perspective than just the student. (Hennessy et al., 2010).

Family engagement is a large sector of the WSCC model. How the parents engage with their students with respect to their health education is another area of future exploration. The combination of how the family engagement ties in with the efforts of the school in respect to health education is another area of exploration. The point of the WSCC model is to integrate all the sectors and ensure that they are working together to create a healthy school and a health student.

Repeated studies discuss how school environments are increasing the risks of asthma and other chronic respiratory issues. Many schools that are near major highways may be exposing students to carcinogens in diesel exhaust. But how can a photovoice project help to mitigate the environmental risk factors associated with schools?

The same report discussing the prevalence of asthma in children states that “involving community partners in collecting, analyzing, interpreting, and disseminating the research results...will help make interventions successful,” while specifically citing CBPR (Community-based participatory research) projects as being active in involving community members. (Environmental Protection Agency EPA, 2007). Many of these health issues, especially asthma, have multiple causal factors. Employing a participatory-based approach can look at an issue as pervasive as asthma from multiple levels.

The final step in photovoice that the researcher is involved in is research translation- giving the research back to the community partner. The school has a meeting in December where the student's favorite picture can be displayed with handouts showing the results of the research. This will engage all aspects of the school community- teachers, parents, and student. Since art is a large aspect of the culture at this school, showing off the photos will probably be well received.

The data that was gathered from the students ‘voices’ could apply to the future buildings that this school may purchase but also to the continual fostering of the positive social and emotional environment that has been built within the school

5.0 STRENGTHS AND LIMITATIONS

There were strengths and limitations to completing this project as intended for both the researcher and community partner. The first major limitation is time. Working with the students was challenging simply because this project was an extra part of their school day. The teachers were very flexible and had room in their schedule for the students to complete this project. However, when it came time for discussion, it had to be shortened for both the seventh and third grade just because there was not enough time. To correct for that and to ensure the validity of the photovoice method, before individual interviews where the students select their photos, all of them were given a card with the PHOTO prompts on them, so when it came time for them to select their photo, they already had the answers to the questions.

As mentioned previously, the students engage in project-based learning throughout many classes at PUCS. When presented with the photovoice project, they were eager to be involved and take part. Their enthusiasm helped strengthen the partnership built with the school and their emphasis on art education created an ideal setting for a research project that involved creativity. Rather than studies than selected random participants, one of this project's strengths comes from the camaraderie built before I arrived. Because of this community and kinship with other students, discussion was easy to cultivate,

This project received funding through the University of Pittsburgh Graduate School of Public Health Department of Behavioral and Community Health Science. With this funding, I purchased cameras to complete photovoice, a voice recorder, and extra memory cards. Without this funding, I may have purchased camera, but not as many as I did, and may not have been able to donate the cameras after the completion of this project. This funding has also allowed me to

complete a research translation for PUCS than will meld with the artistic and creative culture of the school.

A limitation was that there were only six cameras. This was very beneficial for the 3rd graders because their teacher had already split them into groups and by taking pictures in teams, it stimulated discussion. For the 7th graders, it was not as beneficial because only four students had to share a camera, not all of the students. The 3rd graders could work in groups but minor tension developed surrounding the amount of time each student in the group was given to take photos. If there was a group of three, each student was given ten minutes to take their photos; each student had fifteen minutes for a group of two.

I had the idea of this project for a semester before data collection began. CBPR emphasizes community partnerships and stakeholder engagement. A personal strength displayed through this project was the development of the partnership and the project timeline. The initial project pitch happened eleven months before any data collection, and this project developed through graduate courses and work with PUCS as a community partner. Creating the project timeline was also a strength developed in this project. I had project deadlines to meet and by developing a strong relationship with PUCS from the beginning of the project, they accommodated these deadlines and were flexible with the dates.

6.0 CONCLUSION

The photovoice method is used as a qualitative and collaborative approach to help bring voice to populations that typically may not have one, like school-children. To our knowledge, this method has been used with this population before but not to assess the physical environment of the school they attend. While some data about the physical environment was collected, the students wanted to discuss the social and emotional climate of the school more. Both should be considered when moving forward with the strategic plan. This specific data is only relevant to this school, but the process and method can be applied elsewhere, but this information can be used to strengthen the health of the community built in this school and its future endeavors.

The researcher created a partnership with Pittsburgh Urban Christian School to complete the photovoice project. Students from two grades completed the data collection taking over 300 photos. The students selected five themes that encompassed the pictures: creativity and art, community, learning, accomplishment, and exploration and observation. After the data was collected, it was compiled into a report for the school. The data collection tools were donated to the school to complete future projects.




Photovoice has been used as an assessment in previous studies. However, using this tool in a school environment has exposed different viewpoints of the Whole School, Whole Community, Whole Child model. This method has also displayed the integration of the physical environment with the social and emotional climate built in the school community.

APPENDIX A: HANDOUTS

This appendix is filled with handouts- the consent form and camera handouts- that were used in addition to verbal teaching pieces.

CAMERA HANDOUT

How to use a Camera

1. Turn on camera with power button  on top of the camera
2. To take a photo press the large oval button on the top of the camera
 - a. To zoom in press T 
 - b. To zoom out press W 
 - c. To view which photos you have already taken, click the button with the triangle inside the box



CONSENT FORM

Photovoice Project

Today your child took part in a collaborative project between Pittsburgh Urban Christian School (PUCS) and a University student interested in working with this school and learning about school communities.

The student's participation in this project included, being asked "What is it like to go to school at PUCS" and answering this question through photography. This research method is called photovoice and through group discussion, we will find themes that together cover what the pictures have shown. After all the data has been analyzed, there will be an event where certain picture will be shown and the themes that were discovered will be debuted to family members, faculty, and staff. The students will be given digital cameras to take the photos and the discussions will be audio recorded to maintain confidentiality with the data. After the discussion, the results will be written into a master's thesis and a report for the school.

This student's participation in the project will only last for one day where they will take photos, have a group discussion, and decide on themes about the photos.

There are no foreseeable risks from participating in this project and the benefits of participating in this project include learning about the photovoice method, basic photography skills, and helping to shape the future of the school.

This project is voluntary and participation is optional. The students may stop at any time. This event took place on November 15th, 2017.

If you **do not** want your child's data to be included as part of this project, please sign below and return to PUCS

If you have any questions about the project, please direct them to Emma Hosman (primary researcher) or to Christy Wauzzinski at PUCS.

Emma Hosman
(573) 823-6747
erh85@pitt.edu

.....
412-244-1779

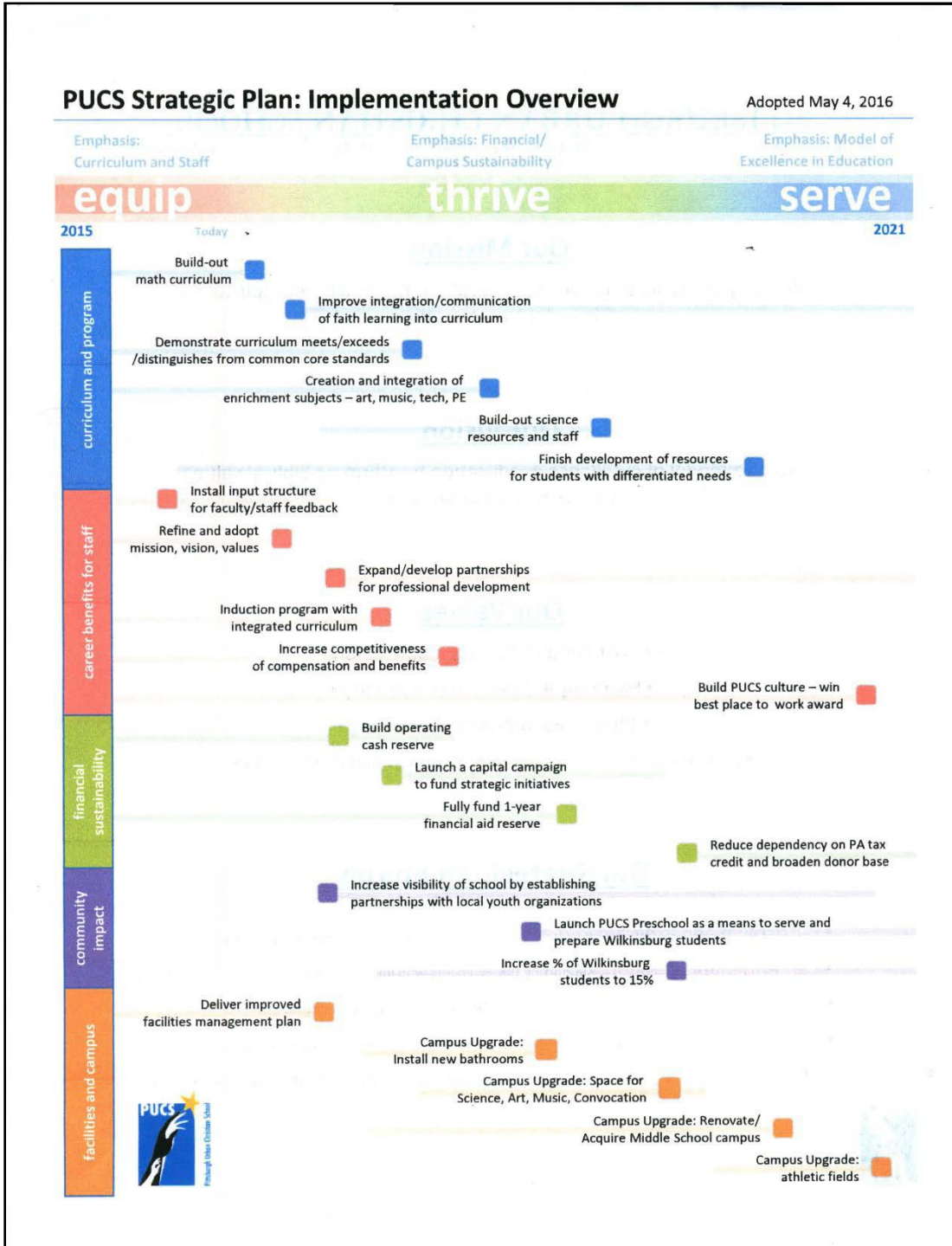
Parent's Signature

Date

Student Name

APPENDIX B: SCHOOL FORMS

STRATEGIC PLAN



PITTSBURGH URBAN CHRISTIAN SCHOOL

www.pucs.org

809 Center Street, Pittsburgh, PA 15221

412-244-1779

Our Mission

To equip students to thrive academically, emotionally, and spiritually,
in order to serve others.

Our Vision

To be a model of excellence in education by affirming Biblical values
in a diverse and urban setting.

Our Values

- Christ-centered thought and action ▪
- Harmony in a diverse community ▪
- Integrated approach to learning ▪
- Nurturing environment that cultivates each child's gifts ▪

Our Strategic Emphases

- **Curriculum and Program Enrichment:** becoming a model of excellence in education
- **Career Benefits for Staff:** supporting the equippers who implement the mission
- **Financial Stability and Sustainability:** building from a position of strength
- **Community Impact and Connection:** modeling service and inviting others to join
- **Facilities and Campus Development:** developing a facility that meets our expanding needs



SCHOOL REPORT



What happened?

- ⇒ Twenty four students participated in a photovoice project where they took photos of the school and discussed the photos to discover themes about PUCS
- ⇒ Over two days 389 photos were taken . The photos featured in this report were chosen from among those identified by the students as their favorites.



Community

- ⇒ Students rely on other students for support, creating a strong network of encouragement
- ⇒ Older students recognize diversity as positive aspect of school life and PUCS
- ⇒ “We are greater than the sum of our parts”- 7th grader

Learning

- ⇒ Students have positive relationships with teachers and the teachers are a strong influence on the students
- ⇒ Younger students view school and learning as an accomplishment
- ⇒ “Every part of our school day is learning” -3rd grader

Creativity and Art

- ⇒ Project-based learning creates an environment of engaged and active learners
- ⇒ Art created during Art Expression Day is cited by students as a positive and present factor in the building
- ⇒ “It’s never boring to walk into school...With PUCS, you walk in, and you see all this art!”- 7th grader

Exploration and Observation

- ⇒ Observation is a skill built through classroom experience but used continually
- ⇒ Students share an excitement to explore the unknown
- ⇒ “The outdoor classroom teaches us about observation and inferences”- 7th grader

Accomplishment

- ⇒ Students share in the schools accomplishments, i.e. trophies
- ⇒ Students are proud of their personal work like class projects and want to show them off

What does this mean for PUCS?

There is a very strong social and emotional climate at PUCS. This climate is much more important to the students than the physical structure. While they notice the facilities issues– like cramped hallways with the lockers– that is not a major concern of theirs.

When working on new facilities for PUCS, it will be important to maintain the social and emotional climate that has been built in the current building. From an outsiders perspective, some ways to maintain that environment would be to keep hanging art on the walls, encourage projects, and encourage exploration.

BIBLIOGRAPHY

- American Public Health Association. (2001). Creating healthier school facilities. *Am J Public Health, 91*(3), 494-495.
- Balvanz, P., Dodgen, L., Quinn, J., Holloway, T., Hudspeth, S., & Eng, E. (2016). From Voice to Choice: African American Youth Examine Childhood Obesity in Rural North Carolina. *Prog Community Health Partnersh, 10*(2), 293-303. doi:10.1353/cpr.2016.0036
- Bouchard, M., Laforest, F., Vandelac, L., Bellinger, D., & Mergler, D. (2007). Hair manganese and hyperactive behaviors: pilot study of school-age children exposed through tap water. *Environ Health Perspect, 115*(1), 122-127.
- Brazg, T., Bekemeier, B., Spigner, C., & Huebner, C. E. (2011). Our community in focus: the use of photovoice for youth-driven substance abuse assessment and health promotion. *Health Promot Pract, 12*(4), 502-511. doi:10.1177/1524839909358659
- Chio, V., & Fandt, P. (2007). Photovoice in the diversity classroom: engagement, voice, and the "eye/I" of the camera. *Journal of Management Education, 31*(4), 484-504.
- Florian, J., Roy, N. M., Quintiliani, L. M., Truong, V., Feng, Y., Bloch, P. P., . . . Lasser, K. E. (2016). Using Photovoice and Asset Mapping to Inform a Community-Based Diabetes Intervention, Boston, Massachusetts, 2015. *Prev Chronic Dis, 13*, E107. doi:10.5888/pcd13.160160
- Genuis, S. K., Willows, N., & Jardine, C. (2015). Through the lens of our cameras: children's lived experience with food security in a Canadian Indigenous community. *Child Care Health Dev, 41*(4), 600-610. doi:10.1111/cch.12182
- Golden, S. D., & Earp, J. A. L. (2012). Social Ecological Approaches to Individuals and Their Contexts: Twenty Years of Health Education & Behavior Health Promotion Interventions. *Health Education & Behavior, 39*(3), 364-372. doi:10.1177/1090198111418634
- Gordon-Larsen, P., Nelson, M. C., Page, P., & Popkin, B. M. (2006). Inequality in the Built Environment Underlies Key Health Disparities in Physical Activity and Obesity. *Pediatrics, 117*(2), 417-424. doi:10.1542/peds.2005-0058
- Healthy and High-Performance Schools.* (2001). Retrieved from http://www.healthyschools.org/HHPS_Act_2002.pdf.
- Hennessy, E., Kraak, V. I., Hyatt, R. R., Bloom, J., Fenton, M., Wagoner, C., & Economos, C. D. (2010). Active living for rural children: community perspectives using PhotoVOICE. *Am J Prev Med, 39*(6), 537-545. doi:10.1016/j.amepre.2010.09.013

- Hergenrath, K. C., Rhodes, S. D., Cowan, C. A., Bardhoshi, G., & Pula, S. (2009). Photovoice as community-based participatory research: a qualitative review. *Am J Health Behav*, 33(6), 686-698.
- Israel, B., Eng, E., Schulz, A., & Parker, E. (2013). *Methods for Community-Based Participatory Based Participatory Research for Health* (2nd ed.): Jossey-Bass.
- Israel, B., Schulz, A., Parker, E., & Becker, A. (1998). Review of Community-Based Research: Assessing Partnership Approaches to Improve Public Health. *Annual Reviews Public Health*, 19, 173-202.
- Leung, M. M., Agaronov, A., Entwistle, T., Harry, L., Sharkey-Buckley, J., & Freudenberg, N. (2017). Voices Through Cameras. *Health Promot Pract*, 18(2), 211-220. doi:10.1177/1524839916678404
- Levin, H. M. (2009). The Economic Payoff to Investing in Educational Justice. *Educational Researcher*, 38(1), 5-20. doi:10.3102/0013189x08331192
- Lewallen, T. C., Hunt, H., Potts-Datema, W., Zaza, S., & Giles, W. (2015). The Whole School, Whole Community, Whole Child Model: A New Approach for Improving Educational Attainment and Healthy Development for Students. *Journal of School Health*, 85(11), 729-739. doi:10.1111/josh.12310
- Lurie, N., & Dubowitz, T. (2007). Health disparities and access to health. *JAMA*, 297(10), 1118-1121. doi:10.1001/jama.297.10.1118
- Miller, J., Semple, S., & Turner, S. (2010). High carbon dioxide concentrations in the classroom: the need for research on the effects of children's exposure to poor indoor air quality at school. *Occup Environ Med*, 67(11), 799. doi:10.1136/oem.2010.057471
- Office of Environmental Health Hazard Assessment. (2001, May 21, 2001). Health Effects of Diesel Exhaust. Retrieved from <https://oehha.ca.gov/air/health-effects-diesel-exhaust>
- Pereira, V. R., Coimbra, V. C. C., Cardoso, C. S., Oliveira, N. A., Vieira, A. C. G., Nobre, M. O., & Nino, M. E. L. (2017). Participatory methodologies in research with children: creative and innovative approaches. *Rev Gaucha Enferm*, 37(spe), e67908. doi:10.1590/1983-1447.2016.esp.67908
- Phipatanakul, W., Bailey, A., Hoffman, E. B., Sheehan, W. J., Lane, J. P., Baxi, S., . . . Gold, D. R. (2011). The school inner-city asthma study: design, methods, and lessons learned. *J Asthma*, 48(10), 1007-1014. doi:10.3109/02770903.2011.624235
- Potera, C. (2008). Children's health: school siting poses particulate problem. *Environ Health Perspect*, 116(11), A474.

- Potera, C. (2011). Schools flunk the test on indoor air quality. *Am J Nurs*, 111(8), 19-20. doi:10.1097/01.NAJ.0000403350.35610.8d
- Protecting schools from pesticides. (1999). *Environ Health Perspect*, 107(8), A400.
- Pittsburgh Urban Christian School (PUCS) 2015-16 School Year Stats. (2017). Retrieved from <http://www.pucs.org/intro-to-pucs/statistics>
- Ramachandran, G., Adgate, J. L., Banerjee, S., Church, T. R., Jones, D., Fredrickson, A., & Sexton, K. (2005). Indoor Air Quality in Two Urban Elementary Schools—Measurements of Airborne Fungi, Carpet Allergens, CO₂, Temperature, and Relative Humidity. *Journal of Occupational and Environmental Hygiene*, 2(11), 553-566. doi:10.1080/15459620500324453
- Sallis, J. F., Owen, N., & Fisher, E. (2015). Ecological models of health behavior. *Health behavior: theory, research, and practice*. 5th ed. San Francisco: Jossey-Bass, 43-64.
- SanDisk. (2008). Number of pictures that can be stored on a memory device. Retrieved from https://kb.sandisk.com/app/answers/detail/a_id/69/~number-of-pictures-that-can-be-stored-on-a-memory-device
- Sousa, S. I., Ferraz, C., Alvim-Ferraz, M. C., Vaz, L. G., Marques, A. J., & Martins, F. G. (2012). Indoor air pollution on nurseries and primary schools: impact on childhood asthma--study protocol. *BMC Public Health*, 12, 435. doi:10.1186/1471-2458-12-435
- Staab, E. M., Cunningham, S. A., Thorpe, S., & Patil, S. S. (2016). A 'snapshot' of physical activity and food habits among private school children in India. *Childhood*, 23(4), 537-553. doi:10.1177/0907568215625758
- Strack, R. W., Magill, C., & McDonagh, K. (2004). Engaging youth through photovoice. *Health Promot Pract*, 5(1), 49-58. doi:10.1177/1524839903258015
- Teachers College Columbia University. (2005). The Price of Inequity. Retrieved from <http://www.tc.columbia.edu/articles/2005/november/the-price-of-inequity/>
- U. S. Department of Education, National Center for Education Statistics (NCES). (2008). Average number of hours in the school day and average number of days in the school year for public schools, by state: 2007–08. Retrieved from https://nces.ed.gov/surveys/sass/tables/sass0708_035_s1s.asp
- U. S. Department of Education, National Center for Education Statistics (NCES). (2017). Back to School Statistics. Retrieved from <https://nces.ed.gov/fastfacts/display.asp?id=372>
- U. S. Department of Health & Human Services, Centers for Disease Control and Prevention (CDC). (2014). *Whole School, Whole Community, Whole Child: A collaborative approach to learning and health*.

- U. S. Department of Health & Human Services, Centers for Disease Control and Prevention (CDC). (2015, August 19, 2015). Components of the Whole School, Whole Community, Whole Child (WSCC). Retrieved from <https://www.cdc.gov/healthyschools/wsccl/components.htm>
- U. S. Department of Health & Human Services, Centers for Disease Control and Prevention (CDC). (2017a). *Health-Related Behaviors and Academic Achievement Among High School Students- United States, 2015*. Morbidity and Mortality Weekly Report.
- U. S. Department of Health & Human Services, Centers for Disease Control and Prevention (CDC). (2017b, November 13, 2017). Whole School, Whole Community, Whole Child (WSCC). Retrieved from <https://www.cdc.gov/healthyschools/wsccl/index.htm>
- United States Environmental Protection Agency (EPA). (2007). A Decade of Children's Environmental Health Research: Highlights from EPA's Science to Achieve Results Program. *U.S. Environment Protection Agency Office of Research and Development*.
- United States Environmental Protection Agency (EPA). (2017). Healthy Schools, Healthy Kids. Retrieved from <https://www.epa.gov/schools>
- Vaughn, L. M., Rojas-Guyler, L., & Howell, B. (2008). "Picturing" health: a photovoice pilot of Latina girls' perceptions of health. *Fam Community Health, 31*(4), 305-316. doi:10.1097/01.FCH.0000336093.39066.e9
- Vygotskiĭ, L. S. (1962). *Thought and language*: MIT Press, Massachusetts Institute of Technology.
- Wakefield, J. (2002). Learning the hard way: the poor environment of America's schools. *Environ Health Perspect, 110*(6), A298-305.
- Walia, S., & Leipter, B. (2012). Perceived facilitators and barriers to physical activity for rural youth: an exploratory study using photovoice. *Rural Remote Health, 12*, 1842.
- Wang, C., & Burris, M. A. (1997). Photovoice: concept, methodology, and use for participatory needs assessment. *Health Educ Behav, 24*(3), 369-387. doi:10.1177/109019819702400309
- Wang, C. C., Morrel-Samuels, S., Hutchison, P. M., Bell, L., & Pestronk, R. M. (2004). Flint Photovoice: community building among youths, adults, and policymakers. *Am J Public Health, 94*(6), 911-913.
- Wang, J. D., Jang, C. S., Hwang, Y. H., & Chen, Z. S. (1992). Lead contamination around a kindergarten near a battery recycling plant. *Bull Environ Contam Toxicol, 49*(1), 23-30.
- Warne, M., Snyder, K., & Gillander Gadin, K. (2013). Photovoice: an opportunity and challenge for students' genuine participation. *Health Promot Int, 28*(3), 299-310. doi:10.1093/heapro/das011

- Widdowson, D. A., Dixon, R. S., Peterson, E. R., Rubie-Davies, C. M., & Irving, S. E. (2015). Why go to school? Student, parent and teacher beliefs about the purposes of schooling. *Asia Pacific Journal of Education*, 35(4), 471-484. doi:10.1080/02188791.2013.876973
- Wilson, N., Dasho, S., Martin, A., Wallerstein, N., Wang, C., & Minkler, M. (2007). Engaging Young Adolescents in Social Action Through Photovoice: The Youth Empowerment Strategies (YES!) Project. *Journal of Early Adolescence*, 27(2), 241-261.
- Woolford, S. J., Khan, S., Barr, K. L., Clark, S. J., Strecher, V. J., & Resnicow, K. (2012). A picture may be worth a thousand texts: obese adolescents' perspectives on a modified photovoice activity to aid weight loss. *Child Obes*, 8(3), 230-236. doi:10.1089/chi.2011.0095
- WTAE. (2015, September 17, 2015). Wilkinsburg to close high school, move students to Pittsburgh. Retrieved from <http://www.wtae.com/article/wilkinsburg-to-close-high-school-move-students-to-pittsburgh/7473599>
- Yonas, M. A., Burke, J. G., Rak, K., Bennett, A., Kelly, V., & Gielen, A. C. (2009). A picture's worth a thousand words: engaging youth in CBPR using the creative arts. *Prog Community Health Partnersh*, 3(4), 349-358. doi:10.1353/cpr.0.0090