

THE ARTS IN HEALTH PROFESSIONS EDUCATION

Using Photovoice to Encourage Reflection in Health Professions Students Completing a Short-term Experience in Global Health

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Objective. To engage health professions students in a photo and caption sharing methodology to stimulate reflection and inculcate principles related to global health at a formative time in training.

Methods. Undergraduate and graduate students from multiple colleges enrolled in a course that would prepare them for an in-country global health experience. As part of the course, participants took photos to illustrate one of three topics: global health ethics, interprofessional practice, or social determinants of health. The iterative and participatory photovoice process was used for students to analyze, discuss, and reflect on their work in country and upon return. Final photos with captions were displayed online. Researchers analyzed photos and captions using content analysis to identify unifying themes. All students were required to complete the photovoice assignment, but only those who gave informed consent were included in the qualitative analysis.

Results. Twenty-six students were included in the analysis. Two overarching themes emerged: revelation and adaptation. Revelation encompassed novel elements that surprised the students, including differences and similarities between the United States and Ecuador. Coded segments related to adaptation discussed participants' resourcefulness while challenging work environments, and how they would apply this new perspective to their future practice in the United States.

Conclusion. This global health photovoice project provided a unique medium for reflection for health care trainees. This project enhanced our understanding of the learners' perspectives and this new means of expression offered the learners a greater opportunity for deeper reflection. The assignment also revealed gaps in learning related to social determinants of health and areas of concern related to solidarity and privilege.

Keywords: photovoice, reflection, global health, medical mission, education abroad

INTRODUCTION

Developing meaningful experiential and interprofessional learning opportunities in global health poses unique pedagogical challenges. Study abroad and service learning are both high-impact educational practices.¹ Thus, experiential learning in global health can be a transformative experience for health professional students, but many are overwhelmed and unable to articulate the profound impact of their in-country experience.² Without the practice of deliberate critical reflection to address the complexity of the human experience, the learner's description of a global health experience can be minimized to a superficial sound bite.³ A wide range of innovative critical reflection tools are needed to meet the diverse educational needs of learners and trainees in global health.

A course entitled "Interprofessional Teamwork in Global Health" was created in 2012 at the University of Kentucky to prepare health professions students for a global health educational experience. Specifically, this course aimed to prepare students to assist faculty members, Ecuadorian health providers, and community partners in providing health care and health promotion in a low-resource community. From its initiation, the course incorporated a reflective component in the form of a final essay that students completed upon return from Ecuador. Despite providing students with specific prompts for the essay, the content of the reflective writing typically did not represent how students were processing their experience nor reflect the transformational learning that facilitators had often observed while in country and upon returning to the United States. Instead, essays were often superficial, overly general, and lacked focus. In seeking to improve the quality of the reflective assignments that students submitted, the course directors considered incorporating a form of artistic

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expression into the assignment as art can be a powerful catalyst for learning.⁴ According to Barone and Eisner, arts-based research methodologies, which are used to train pre-professional students, can provide a “heuristic through which we deepen and make more complex our understanding of some aspect of the world.”⁵ The course directors theorized that an assignment using a visual arts-based methodology could mitigate the limitations of the essay by offering opportunities for iterative reflection throughout the global experience. Capturing a specific moment in a photo provides a visual reference that students can use to tell a story and which can assist them in processing the unique complexities of a global experience. Garner suggests that a photo provides a medium of further expression for difficult to describe concepts and feelings.⁶ Harper discussed the ability of a photo to elicit further discussion with peers about an experience compared to the ability of an essay or oral discussion, particularly when the topic involves personal identity and/or culture.² Harper explained that this is because photos engage more areas of the brain than language alone.² Hence, we created an assignment that required students to use photovoice, a visual arts-based methodology used in qualitative research to stimulate new avenues of expression by depicting a scene with a photo and telling a story in a caption.¹

Photovoice is a visual arts-based methodology developed by Wang and Burris to use as a qualitative research tool to bring about positive social change.⁷ It has been adapted for use in higher education as a pedagogical tool to engage learners through observation and reflection.⁸⁻¹⁵ The expressive properties of photovoice can serve as a new critical reflection tool to contribute to the understanding of our humanity in a global health setting.⁵ Photovoice participants are encouraged to observe their environment; capture a point in time through photography; and reflect, analyze, and describe their image both orally and in writing with a caption. Additionally, the authors thought the ubiquity of social media would make this project appealing to students who already documented many of their life experiences through photos that are eventually posted online. Photovoice was implemented as an assignment for all interprofessional students who participated in the global health experience in Ecuador.

The reflection activity was guided by an experiential learning theory. According to Kolb’s Experiential Learning Theory, to promote effective learning, students must participate in a four-stage cycle that includes concrete experience, reflective observation, abstract conceptualization, and active experimentation.¹⁶ Students can enter this cycle at any stage and may complete it multiple times throughout the learning experience (Figure 1). Photovoice methodology was employed to enhance experiential learning in

a global setting. Students were encouraged to creatively connect their observations and conceptualization of a course topic to a concrete moment in their global health experience. The purpose of this study was to promote critical reflection and creatively inculcate principles related to global health at a formative time during training. Second, the researchers identified unifying themes that emerged from the perspective of the learner, which will inform global health educational processes.

METHODS

The purpose of the “Interprofessional Teamwork in Global Health” course was to prepare students for an in-country global health service-learning experience. Undergraduate, graduate, and professional students were enrolled in the course together. Students from several colleges at the University of Kentucky participated: Arts and Sciences, Dentistry, Design, Health Sciences, Medicine, Nursing, Pharmacy, and Public Health. Students earned variable credit hours for the course and either a letter grade or pass/fail depending upon which college they were enrolled. The course had two to three components: an interprofessional didactic portion, an optional profession-specific portion, and an in-country service-learning experience. For the interprofessional didactic portion, students completed online modules and in-class activities to facilitate learning about Ecuador and global health, as well as what their specific roles would be during the in-country portion of the course. Both large-group and small-group learning strategies were used. The topics covered included: the Ecuadorian health system; the society, culture, and politics of Ecuador; an overview of each participating

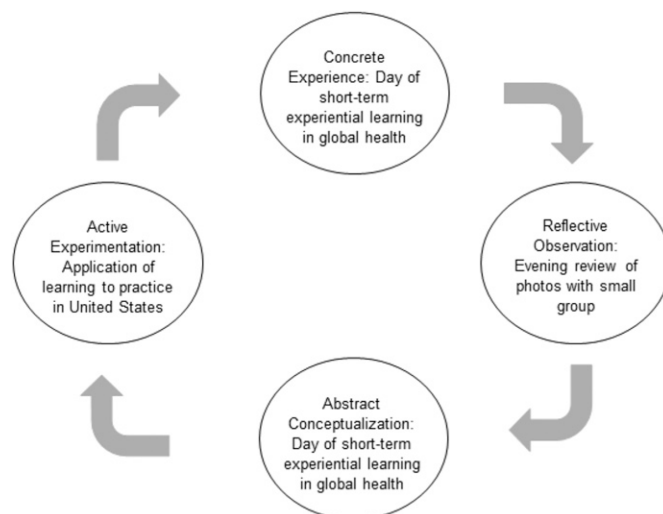


Figure 1. Kolb’s Experiential Learning Theory as Applied to the Short-term Experiential Learning in Global Health (modified from Kolb, 1984)⁶

profession; social determinants of health; ethics in global health; working with interpreters; community engagement; health promotion; culture and health; a travel and safety orientation; and participation in a mock clinic day. For the photovoice project, an introductory lecture on visual communication and storytelling, mobile photography, ethics of photography in global health, and photovoice methodology were provided. The in-country service-learning portion took place over 10 days in Santo Domingo, Ecuador, in four separate experiences. This paper reports on the preliminary data from 26 students who completed their global health experience in March 2019. Faculty members from each profession accompanied students on the service-learning experiences to supervise and facilitate learning. This study was deemed exempt by the University of Kentucky Institutional Review Board. An informed consent form was obtained from each student participant.

In Kolb's Experiential Learning Theory, the various stages are described as follows. Concrete experience: the learner actively participates in a new experience. Reflective observation: the learner reflects on the concrete experience and obtains new insights. Abstract conceptualization: the learner uses the previous stages of experience, observation, and reflection to develop new ideas and concepts. Active experimentation: the learner applies their new ideas and theories to future work.

These stages were applied to the current study in the following ways (Figure 1). These learners participated in a day of the short-term global health experience for the concrete experience. For reflective observation, photo sharing and reflection occurred during the small group experience at the end of each day of the short-term global health experience. Abstract conceptualization took place during the reflective time when the feedback from the small group and the facilitator helped move the learner toward new concepts in global health. For this experience, the active experimentation phase occurred as the learner experienced another day of the global health concrete experience and another reflective observation session. While this cycle may happen each day during the short-term global health experience, the intention was for the learner to bring these concepts of global health home to the United States and apply them in their current learning and future practice.¹⁶

The eight steps of photovoice methodology as outlined by Latz and Mulvihill (identification, invitation, education, documentation, narration, ideation, presentation, and confirmation) were applied in the following manner.^{17,18} Identification: All students enrolled in the course were potential subjects. Invitation: Although all students completed the photovoice assignment, only those who agreed to participate in research and provided consent were included in the analysis. Education: The

assignment was introduced and photovoice methodology was described. The concepts of visual communication and storytelling were then taught and instruction in mobile phone photography was provided by a photojournalist. Documentation: participants were prompted to take photos that embodied one of the course topics (ethics in global health, interprofessional practice, or social determinants of health). The subject matter for the photos was limited to these topics to provide structure for students' reflections. Students were instructed that patient's faces could not be in the photo and no photos could be taken during home visits. Participants were encouraged to experiment, take multiple photos to tell a story, and share their photos in facilitated small groups each evening while in Ecuador. Narration: A photovoice technique developed by Graziano and Hussey using the PHOTO acronym was modified and employed to guide students in discussing the photos and in writing their captions (Table 1).^{19,20} Ideation: participants shared their photos with a small interprofessional group and an on-site facilitator while in-country. Following group feedback and reflection, students chose their best photo and drafted a caption for it. The final group reflection in-country focused on methods to bring their experiences to their professional practices in the United States. Upon return from the trip, students uploaded their photos and the captions they had drafted to a discussion board in the school's learning management system for final input from their group. In this way, the photos were contextualized prior to the submission of the assignment. Finally, participants selected the final photo used for the assignment. Presentation: If participants gave permission, their final photo and caption were displayed on an Instagram (Facebook; Menlo Park, CA) account developed for this purpose. Photos were labeled with particular hashtags to facilitate retrieval as a group. Confirmation: Students had the opportunity at multiple points during the process to confirm that their photos and captions conveyed what they were trying to express. These confirmations occurred both

Table 1. Pneumonic Device Used by Health Professions Students During an International Health Experience to Develop Captions for Photos Taken as Part of a Photovoice Assignment^a

P	Describe your P icture
H	What is H appening in your picture?
O	Why did you take a picture O f this?
T	What does the picture T ell us about your life as a learner on this experience?
O	How can this picture provide O pportunities for you to improve your practice in the US?

^a Modified from Graziano¹⁹ and Hussey.²⁰

in-country during the evening reflection time as well as after returning from the trip through the course management software discussion boards.

The participatory analysis was accomplished in the ideation step above, where students assigned meaning to the photos through captions. Initially, the authors chose an inductive approach, evaluating both the photo and caption to gain an understanding of the meaning students attached to concrete events through the use of visual elements and captions. The photos were categorized into visual topics of interest to students, but the final caption was the source of qualitative data analyzed by authors to inform the educational process. Following the photovoice process outlined in Latz and Mulvihill, first the authors began open coding by hand, then developed a coding key, and later added to the key as needed.¹⁷ This was followed by an iterative process of coding and recoding in a shared document via Google Drive by all three authors. Next, axial codes were created by the authors through discussion and reflection on the dimensions of codes, which led to the creation of categories. The categories were then merged into broader themes.

RESULTS

Twenty-six of 29 students (89.7%) consented to participate in the research portion of the assignment. The following degree programs were represented: nursing (n=7), physical therapy (n=5), health and human studies (n=4), pharmacy (n=4), biology (n=2), agricultural and medical biotechnology (n=1), human nutrition (n=1), medicine (n=1), and physician assistant studies (n=1). Students chose the following topics for their photos: social determinants of health (n=17), interprofessional practice (n=3), ethics of global health (n=1), and unspecified (n=5). Four hundred fifty-three caption segments were coded with 67 codes. These codes were grouped into 16 categories. Two themes emerged from these categories: revelations and adaptations. An example of the content analysis process from captions to codes to categories to themes is shown in Table 2.

A review of what is captured in the photos demonstrate subjects of importance from the students' perspectives. The setting in which the photos were taken was overwhelmingly in an indigenous community (n=21). Other settings included community centers where a temporary clinic was set up for the day (n=4), and a medical clinic (n=1). People were included as an element of the photo in 16 cases. Students took several photos illustrating the subtheme of One Health, the concept that the health of people, animals, and the environment is interconnected, with four photos depicting chickens or a turkey, two showing dogs, and three showing some other aspect of agriculture. Seven students found the use of suitcases as supply carts to be photo-worthy. The two major themes identified from the students' captions were

revelation (represented 64% of the coded segments) and adaptation (represented 24% of the coded segments).

The first major theme identified was revelation, which encompassed photos depicting the differences and similarities between the United States and Ecuador, as well as things that surprised and/or shocked the participants about their experience. Although students heard, read, and viewed material to prepare them for their trip, being confronted with the realities of the brigade and experiencing things they had only read about or viewed from a comfortable, air-conditioned seat often forced internalization of that knowledge in a way that students experienced as a revelation.

Some of the categories under the revelation theme were disparities and differences, challenges with the work environment, and a sense of shared humanity. Students were confronted with a very different work environment than they were used to in US hospitals and clinics. In many cases, they were not expecting these conditions in the temporary clinic spaces. This surprise or shock was mentioned frequently in the captions, particularly with regard to animals in the clinic areas and the lack of cleanliness of the environment (Figures 2 and 3). One excerpt from a participant's caption was, "I took this picture because of the extreme difference in work environment than what we are used to. In my picture, the clinic is outdoors with dirt floors, some plastic chairs, suitcases with limited equipment, and a jug of sanitized water. This is very different from any clinic or work environment that I have seen in the States. These conditions really opened my eyes . . ."

Additionally, students were struck by the differences they saw in the living environments of the Ecuadorian patients and the lack of community resources. Some students commented that they were surprised by these things, but that the conditions were "normal for them [Ecuadorians in the community]." One participant stated, "It is hard to wrap your head around the fact that many of the people we were serving do not have easy access to health care."

The other aspect that seemed to be a revelation to students was the shared humanity they felt with the patients. This aspect was highlighted though comments about making connections with patients despite language barriers, noting similarities in emotions and concerns between patients in Ecuador and patients in the United States, and the universal quality of play with and among children (Figures 4 and 5). One student expressed surprise when providing physical therapy that "Both sides were equally curious about each other's cultures and the knowledge that could be shared." Participants also described themselves as learners, working with faculty members to gain experience, but also how powerful it was to see Ecuadorian families learning "side by side" with the US students.

Table 2. Content Analysis of the Captions Health Professions Students' Created for Photos Taken During a Short-term Experience in Global Health

Themes and Sample Captions	Codes	Categories
Theme: Adaptation		
Participant 15 “with our patients in Ecuador we do not have these same opportunities. Education and activity modification are most of what we are able to provide our patients. . . I am learning how to treat patients alongside an interpreter.”	Limited resources Change of practice Use of interpreter Making do	Different than home Low-tech interventions Resourceful
Participant 6: “I learned to work with the resources I have available to me at the time and how to work in an environment that I am not used to...can help me improve my practice in the US.”	Making do Limited resources Change of practice	Resourceful Different than home
Participant 9: “This photo shows the sharps container made from a wet wipes container used by the nursing team ... we had an ethical obligation to ensure that our sharps were disposed of safely. . .”	Creative Rationing Safety	Repurpose Obligation
Theme: Revelation		
Participant 10: “I took a picture of this because it displays how there are numerous animals ... this is a common occurrence in Ecuador ... It wasn't just the chicken ... we also had cats and dogs that came over to see what we had in the suitcases.”	Taking things for granted Unsanitary Animals in workspace	Gratitude Different than home Normal for them One Health Surprise/shock
Participant 17: The [Ecuadorian] psychology students continued to amaze me all trip because I felt that they offered something different ... I think I forgot that the purpose of this trip was to bring well care and not just health care ... this would be a really interesting thing to bring into the United States, because I wonder what sort of changes could be made for mental health if all offices had psychologists”	Team Eye opening Mental health Perspective Application to Care at home	Shock/Surprise Preventive care Different than home
Participant 4: All around [student] children were jumping to catch bubbles while other providers, nurses and students were laughing and blowing bubbles as well ... no matter where you are in the world all children are the same ... my eyes were opened to the vast differences in living between Lexington and Santo Domingo. The dirt floors and concrete walls that lack glass in the windows is not a common sight in Lexington, Kentucky but in Santo Domingo, this is normal.”	Play People are the same Perspective Dirt/ Worn Eye opening	Universality Different than home Normal for them
Participant 2: “It was a complete shock to me that this chicken was two feet away from [medication suitcase] ... shows the importance the environment has in a healthcare setting. The living conditions and healthcare environment are very different in this part of Ecuador, the contrast of the area ... to the US with our air-conditioned buildings and clean white floors. It is funny how we take things like a pharmacy for granted”	Amazement Taking things for granted Perspective Animals in workspace	Gratitude Different than home One Health Surprise/shock



Figure 2. In this photo, there is a chicken running wild in the pharmacy. This was in the pharmacy that was set up on our second clinic day on the porch of a Tsachila community member's home. We didn't have room to spread out the medications, all we had were the suitcases. In this picture, a chicken got up on the porch and was running around and actually climbed up in one of the suitcases full of medication. I took a picture of this because it displays how there are numerous animals running wild in and around their homes, and how this is a common occurrence in Ecuador. It wasn't just the chicken that the pharmacy got a visit from, we also had cats and dogs that came over to see what we had in the suitcases. This picture also provides a perspective of how we set up the pharmacy on 3 out of 4 of our clinic days. We didn't have room to work or even a large amount of supplies to work with like we're used to back home. We had to be flexible every day and work with what we had. This picture reminds me of the importance of being flexible, not just in my career, but in my everyday life. It's important to remember that everything might not be going how we want it, but we need to work with what we have and remember how fortunate we are to have the opportunities that we do here in the United States.

Students were also impressed by patients who expressed gratitude for the services they were given (Figure 5), although some students noted that they felt they were not able to provide the quantity and/or quality

of care they would have liked to provide. One student stated, "this was not an ideal treatment...however...she was very appreciative of the little time we had together."

The other major theme was adaptation, which encompassed the "make do" mindset of the participants in the challenging work environment. These comments were primarily related to how the participants responded or reacted to a revelation. Many captions described the limited resources available to both the patients and providers, and details of how each profession adapted to this environment. They described the clinic environment as largely outdoors in different locations every day, often with a dirt floor and limited privacy. Participants had to be creative with space and at times limit practice to focus on health promotion or education rather than the interventions they would have normally done at home. One caption from a physical therapy student described a "regimen in the US... might last 3-6 weeks and consist of [multiple modalities]. However, with our patients in Ecuador we do not have these same opportunities. Education and activity modification are most of what we are able to provide for our patients." Also, after doing a home visit, one participant reported that adaptations had to fit the context of the living environment.

Many of the students reflected that this global health experience was the first time they needed to ration supplies or take into account what they could repurpose while still providing safe and ethical care. A nursing student illustrated the resourcefulness necessary to promote ethical practice and safety in Ecuador by fashioning a sharps container out of a plastic bottle (Figure 5). Another student described using a tree to hang a chart for vision screening as a way of "making do" with the resources available. A physical therapy student discussed with pride the satisfaction over how she had adapted donated orthotics for children with mobility limitations, and how her work improved one child's functionality.

Many students wrote about and photographed the suitcases that had been used as makeshift supply carts during each clinic day. They described the challenges of keeping supplies and workspaces clean, how they had to plan for each day, making sure to include the necessary supplies and medications for the patient population they would encounter. Some participants also reported working interprofessionally, from setting up the clinic areas to patient care; how vital the interpreters were; and how they had to adapt to the needs of the patients and the team.

Additionally, the majority of students discussed adaptation as an important ability they would take home to their professional practices. They discussed how they would incorporate flexibility, eg, "This picture reminds me [of] the importance of being flexible, not just in my



Figure 3. In this picture, an MD/MPH student, is blowing bubbles for children who had come to a community center in Santo Domingo seeking medical care. All around her, children were jumping to catch bubbles while other providers, nurses and students were laughing and blowing bubbles as well. I took a picture of this specific moment because it shows no matter where you are in the world, all children are the same; they all enjoy playing with bubbles. On the brigade my eyes were opened to the vast differences in living between my city and Santo Domingo. The dirt floors and concrete walls that lack glass in the windows is not a common sight at home, but in Santo Domingo, this is normal. Children are still the same: happy-go-lucky with no care in the world, in both places. This picture speaks volumes to the differences in the social determinants of health in different communities, cities, and countries.

career, but in my everyday life. . .we need to work with what we have.” Students also reflected on how the ability to be flexible and adapt would be important to their future practice and how they would be more mindful of resources when they returned home. This realization promoted a sense of gratitude among the students, both for the seemingly unlimited supplies in their health care environments at home, and how grateful they were to experience how other health care systems operate.

DISCUSSION

The photovoice methodology has not been employed as an educational tool for reflection with an interprofessional group of students. Garner noted that not allowing photos of people challenged her nursing students but eventually encouraged them to think more creatively and abstractly, and that this had the potential to amplify knowledge.⁸ Similarly, our interprofessional students were initially challenged by the limitations of not including identifiable patients in their photos; however, they were able to capture images that depicted their experiences.

While Instagram has been used previously in a photovoice project, it has not been used previously in global health education.²² Creating the Instagram gallery allowed students to share their experience with others in a meaningful, curated fashion that could promote further reflection upon returning, both personal reflection and reflection among classmates, friends, and family members, as well as the broader Instagram community.

Although faculty comments were not formally part of the study, the course coordinators asked faculty participants for feedback about the assignment. Their anecdotal comments were of interest. In comparing the photovoice assignment to the previous assignment of writing a reflective essay, the faculty members noted several improvements. The photovoice reflections were clearly more thoughtful and the students who had taken photos had developed more clarity about their experience in Ecuador. Additionally, the students seemed to be more sensitized to patient privacy and respect for persons in how they depicted the community in their personal photography. Despite having had similar class instruction on ethics and further specific discussions in country, past cohorts of students had often shared pictures of community members and potential patients on social media. Having to be immediately conscious of what their pictures represented as part of the photovoice assignment seemed to have an impact on this cohort of students, as they seemed to no longer be sharing faces of children and families on social media and instead were critical of other students who they felt were taking photos inappropriately.

An important outcome of this research for the investigators was to have a clearer picture of how well students were able to apply concepts from the course to their experience. The most prominent of these problem areas were the ethics of global health, social determinants of health, and preparation for the work environment. As part of the US-based coursework, students received a recorded lecture, completed a quiz, and participated in a facilitated small-group discussion on global health ethics. The lecture and materials discussed how the traditional ethical principles of autonomy, beneficence, non-maleficence, and justice apply in a global health context. The principles of global health ethics articulated by Pinto and Upshur: humility, introspection, solidarity, and social justice, were also incorporated.²³ Despite this preparation, some students included remarks in their captions that illustrated that they had not fully incorporated these principles into their worldview. While student comments did appropriately incorporate the principles of humility and introspection, they also included phrases that suggested the students found the principle of solidarity more difficult. The investigators coded 30 phrases as suggestive



Figure 4. While on the medical brigade, I felt very inspired by the passion the Ecuadorians had for learning about healthcare. I was stationed as a fluoride provider and I had the opportunity to teach the children how to floss, brush their teeth, and have good oral health. For my picture, I chose to do the theme of social determinants of health. My picture is focusing on a mother and son and there are many colors within the picture that provide a beautiful contrast. Within my picture is a mother holding her young toddler son while he gets treated with fluoride by a dentist. I took a picture of this scene because it was truly beautiful to see how caring the mother was about her young son and her smile is visible within the photo. This picture portrays how I learned how eager the Ecuadorians were to learn about healthcare and get treated. Within the United States this picture teaches me to never judge a book by its cover and to always give 100% while giving services.

of *colonialism*, *othering*, and/or *ethnobias*, indicating that, while students were able to identify and discuss differences between their cultures and the cultures of the Ecuadorian communities, some were unable to process these differences in a way that created connections rather than reinforcing privilege. In previous offerings of this course, the reflective essays often included similar phrases, and the investigators thought that the iterative process

of discussing the photos and captions several times would bring these attitudes to light. While fewer comments of these types were identified with the photovoice assignment than in essays in previous years, solidarity clearly remains a challenging concept for all who participate in short-term global health experiences. It is unrealistic to expect that one course and a short-term global health experience could drastically change ingrained perspectives developed over the students' lifetimes or that true connection with a new community could be achieved in only a few days. In terms of teaching global health ethics during short-term experiences, incremental gains among students may be a more realistic goal.

Additionally, only a few students were able to recognize similarities between the living environment in Ecuador and impoverished areas in the United States. Although a lecture was given that focused specifically on the social determinants of health in the United States, students rarely identified these issues as more universal challenges. The "O" prompt of the PHOTO acronym was modified in this study to help students make this connection to challenges and opportunities they might have in their home practices or environments, but most did not allude to the considerable health and socio-economic challenges faced in the United States in general or in Kentucky specifically. The social determinants of health covered in the course included education, agriculture, work environment, living and working conditions, employment, water and sanitation, health care services, housing, social and community networks, and individual lifestyle factors. It became clear from reading the captions that several of the participants who chose the topic of social determinants of health interpreted "work environment" as the difficult work environment of the learner in-country rather than the work environment of the patient. This distinction and the universality of social determinants of health should be made clearer in coursework and in the facilitated discussions of the photos and captions.

Preparing learners for the challenges of working in a temporary clinic was an important part of coursework, yet students were consistently surprised by the conditions. During the course, students were shown multiple photos of the clinic sites and participated in a mock clinic. Additionally, all students brought supplies for the experience in their suitcases. However, students were frequently surprised by the use of these suitcases on a daily basis to store supplies used in the care of patients. Despite not being part of the assignment, almost all students made comparisons between their work environment in Ecuador and that in the United States. The captions revealed that students were fixated on the physical differences, the dirt floors, the open-air clinics, and the proximity of animals.



Figure 5. While on the Shoulder to Shoulder brigade, I learned a great deal about how to be flexible and creative when dealing with limited resources, while also maintaining patient safety. This photo shows the sharps container made from a wet wipes container used by the nursing team for a majority of the brigade. Although our team did not have access to the typical sharps containers that are used in the United States, we had an ethical obligation to ensure that our sharps were disposed of safely in order to prevent accidental injury and disease transmission. This sharps container, although unconventional, offered easy access to dispose of sharps and prevented their removal from the container, which are the functions of traditional sharps containers. This image captures the resourcefulness used by brigade participants to adhere to their ethical responsibility to provide safe care despite resource limitations.

These findings may point to a need to provide even more explicit depictions of the area in which students will be working prior to departure.

Although the findings from this study will help guide future critical reflection work in global health at our institution, a major limitation of this study is that qualitative research is not generalizable to other educational environments or student populations. The subjective nature of this type of analysis also could call into question the credibility of the study findings; however, the authors tried to ensure that the interpretation of the data was consistent and transparent throughout the process. The authors also failed to include study participants in the content analysis and development of themes; thus, the research lacked respondent validation.²⁴ Two types of bias were of concern and may be study limitations. The authors were faculty members for the course and facilitators in the iterative process of review and reflection of the photovoice assignment, which could have led to confirmation bias. Also, there was selection bias, as the

students enrolled in the course were already motivated to take an experiential service-learning course in global health. Thus, this study does not reflect the views of students with different inclinations. Another limitation was that there was not a measurable evaluation method in place after the students' photos were posted in the Instagram gallery; thus, we were not able to determine the full impact of the assignment. Anecdotally, students seemed to enjoy the gallery. Many appreciated the relevance of the assignment after viewing the gallery and following and "liking" the posts on Instagram. The final limitation of the study involves the scope of the analysis to improve the validity of the findings. Ideally, the authors would have been able to do a content analysis of the post-experience essays from prior years to compare with the photos and photo captions, or would have randomly assigned some students to complete the photovoice assignment and others to write an essay, but these designs were not feasible for the scope of this study.

CONCLUSION

The unique approach of incorporating arts-based participatory research through photovoice methodology to engage interprofessional students in critical reflection is particularly suited for the short-term global health environment. The sensory nature of study abroad lends itself to expression through art forms such as photography. This generation is smartphone-equipped and social media savvy; thus, an assignment such as this may be appealing to contemporary students. The use of Instagram was a unique feature of this project and one that was immediately relatable to students. The public nature of the photo display also allowed students to connect with the broader university community as well as domestic and international partners. The learners' perspectives seen in this assignment offered in-depth reflection, thoughtful processing, and specific discussion of the learner experience. This assignment does not eliminate the need for written reflection but refocuses it as an extended caption of a concrete moment. Changing one assignment to incorporate a visual medium and different form of writing also allows artistic expression and may meet the needs of diverse learners. Analyzing the students' photos and captions revealed gaps in learning related to social determinants of health, areas of concern related to solidarity and privilege, and opportunities for improving the course to better prepare students. In future offerings of the course, a wide range of examples from the Instagram gallery will be used in the classroom to visually demonstrate local conditions through a peer perspective that may resonate more with students. Analysis of data from the remaining students in the course will take place after their

in-country clinical experiences and will include learner satisfaction with the assignment and further qualitative content analysis to detect additional codes, categories, and themes that may emerge with a larger dataset.

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