Using Photovoice as A Student-Centred Teaching Method among Graduate Nursing Students: A Mixed Method Study

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ABSTRACT

Photovoice is used commonly for community action research. Evidence shows that when used appropriately in the classroom, it can effectively engage students and enhance learning. Use in the nursing classroom is however limited. The aim of the study was to assess perception and experiences of postgraduate students, as well as the effectiveness of photovoice teaching strategy on acquisition of skills in critical thinking, communication, self-directed learning, and problem-based learning. This mixed method study used photovoice pedagogy to teach the course "Health Systems Management" to twenty postgraduate students of Nursing Science at a University in Nigeria. Ethical clearance was obtained from the University Research Ethics Committee. Evaluation of students' understanding of the teaching method and learning content involved obtaining photographs supporting both the positive and negative aspects of assigned topics, and presenting them as photovoice seminar. Data collection was through a validated 40-items questionnaire (for quantitative data) and Focus Group Discussion and in-depth interview (for exploratory data). Descriptive and inferential data analysis was on SPSS 18.0, while qualitative data were thematically analysed on NVivo 7.0. Results showed that photovoice methodology helped students develop critical thinking skills (p = 0.01), promoted self-directed learning (p = 0.001), strengthened communication skills (p = 0.01) and ensured problem-based learning (p = 0.02). Participants reported benefits of the method as empowerment of students for more effective involvement/participation in the teaching-learning process (100%), creation of powerful visual facts of topics (95.0%), effective engagement of students (90.0%), and enhanced appreciation of different points of view (85.0%). Qualitative data analysis yielded three themes "Transformation of the teaching-learning process", "Critical group dialogue", and "Engagement of students". In conclusion, photovoice enhanced critical reflection, critical thinking, social communication, and self-directed learning skills and increased engagement of students. It can serve as an effective instructional method in nursing education.

Keywords

Introduction

A common phrase/adage credited to Fred Barnard is that 'a picture is worth a thousand words.' This opinion has been re-echoed through the years, and pictures have been used in several circumstances to tell stories. A photograph or picture could depict several emotions and enable the viewer to capture the essence of a story without a lot of explaining [1]. This is because pictures ensure creative communication of ideas, provide persuasive evidence, and develop insight into a phenomenon [1]. Photovoice or modified documentary photography is the process of talking with pictures. It involves using "selected pictures, imagery, and the voice (short textual messages) to reflect social, cultural and political realities that influence people's lives" [2]. Photovoice was developed by Wang and Burris in 1994, and modified in 1997 as

a research methodology for participants to record their perception through photographs [3,4]. Since then, the methodology has gained popularity in community-based participatory action research to reflect people's perceptions and experiences, where people use photo images to capture aspects of the environment or their experiences, which are then shared with others [1,4,5]. Photovoice also serves as a community mobilization and health education tool whereby "images, as depicted by the community, are used to reflect the social and political realities that influence people's lives, by ensuring that the things to be said are said in the language of pictures" [2]. Therefore, in research, photovoice has been used as a means of creating knowledge and conveying understanding of health promotion in the community [6,7]. This it does by enabling participants to share their stories through the selection of images that most accurately reflect the issues under study.

Innovative teaching strategies are important in nursing education in order to meet requirements of the cognitive, affective, and psychomotor learning domains. Such strategies should be able to capture acquisition of the "soft skills" and abstract aspects of learning, including values, experiences, creativity and critical thinking skills of students. Photovoice is one of such teaching strategies, and requires that students interact and participate directly in the learning process in order to have a better understanding of complex phenomena related to healthcare. This strategy is flexible and can be adapted for use in different situations. One of the goals of photovoice is "to promote critical dialogue and knowledge through large and small groups of photographs" [4]. This means that photovoice can be used in any area where there is need for critical dialogue, sharing of knowledge, and enhancing critical consciousness. The classroom is one of such areas. Given its influence on critical reflection and critical thinking, photovoice has potential for use as a teaching strategy. However, although the strategy has gained momentum in social work practice and participatory action research, it is rarely explored as a strategy for teaching and learning [8]. Therefore, there have been recent discussions among educationists about how teachers and students could use visual methods (photography and imagery) and other innovative strategies for instructional (teaching-learning) purposes. This is because when used appropriately, documentary interactive photography and other art-based strategies can effectively engage students and enhance learning.

In the classroom, photovoice is sometimes called *artistic pedagogical technology* (APT) and uses photography in a non-traditional manner as the basis for students' activities [9-11]. However, despite its popularity in community research, its use in the nursing classroom is limited resulting in only a small number of available researches [1,8,9,12,13]. The use of photovoice in education started when Paulo Freire in 1970 and 1973 adopted the strategy in "problem-posing education for critical consciousness", where it was stressed that enabling people to think critically starts with the use of visual imagery, especially where the people themselves create the images [14,15]. Such images serve as a means for critical dialogue, experiential knowledge and critical consciousness. Use of photovoice is a collaborative process, and

when used as a teaching-learning methodology, the teacher can help learners to develop critical reflection and critical thinking skills [10]. Based on a scoping review, it was found that photovoice in the classroom aligns with Wang and Burris' original goals, and has a promising place in pedagogy and education applications in participatory, diverse, and equitable educational settings [11]. Therefore, in the classroom, photovoice is a critical reflection methodology that enables the teacher to *'talk with pictures'* and the student to *'think outside the box'* by interpreting pictures and using their choice of photographs to control their learning and knowledge acquisition [10].

Some studies adopted photovoice with Secondary/High School students [1,5,9,16,17]. However, others [12,18] adopted the strategy with graduate students from multi-disciplines., while others [8] adopted photovoice method as a strategy for planning, applying, and implementing graduate nurses' field seminar. Photovoice studies in nursing students mostly used qualitative designs [13,19,20], and most literature accessed on the use of photovoice in the classroom are from developed nations. In Nigeria, it is an innovative method with very few studies, mostly in health research and sociology [21,22]. Despite the potential advantages of using photovoice in the classroom, its use is new in nursing education in Nigeria, and literature on its use is scarce for in-class teaching and learning in nursing. In addition, there has been little research about how students can learn certain skills using photovoice as a teaching methodology. This mixed method study represents one example of the ways in which visual imagery could be used to enhance the learning experiences of graduate nursing students. It discusses the use of photovoice as an innovative and interactive teaching/learning strategy for graduate nursing students at a University in Nigeria.

The aims of this study were to explore the perceptions and experiences of graduate nursing students about using photovoice as a method (strategy) for teaching and learning; and to assess the effectiveness of photovoice methodology in enhancing skills in critical thinking, communication, self-directed learning, and problem-based learning in graduate nursing students.

Materials and Methods
Design
Mixed method design was adopted, with exploratory (qualitative) and quasi-experimental one group pre-test/post-test methods used concurrently. The qualitative aspect used hermeneutic phenomenology to explore the perception of graduate nursing students about the phenomenon of photovoice as a teaching-learning strategy. Hermeneutic phenomenology is concerned with the subjective experience of individuals and groups as lived through their life world. It is based on the belief that knowledge can be generated through subjective experiences and insights [23]. Therefore, phenomenology can articulate the educational and professional contexts of postgraduate nursing students concerning the use of photovoice methodology in teaching and learning. Quasi-experimental (one-group pre-test/post-test) design was used

to assess effectiveness of photovoice in enhancing skills in critical thinking, communication, self-directed learning, and problem-based learning. It also assessed skills with using appropriate pictures and imagery among the participants.

Participants
Twenty (20) postgraduate students of the Department of Nursing Science, University of Calabar offering the course "Health Systems Management" for two sessions enrolled as participants in the study. The University of Calabar is a third generation University in Calabar, the administrative capital of Cross River State. The State is located in the south-eastern corner of Nigeria bordering the Atlantic Ocean on the south and the Republic of Cameroun on the east.

Intervention
Elements of photovoice methodology were used for interactive teaching of the course "Health Systems Management" to twenty postgraduate nursing students. "Panopto Mobile-Ready Video Platform & Mobile App" was adopted to record lectures, video content, images, and narratives, and upload media for teaching. During the teaching process (intervention) photo protocols (relevant photographs and images depicting topics and issues in the course outline along with captions explaining them), were presented to students using PowerPoint. Such issues included staff welfare, communication, staff recruitment, continuing education, and cultural competency. Images (photographs, and internet pictures) were selected to support both the positive and negative aspects of the topics, and provide meaning through reflective narratives. During presentation, participants were encouraged to discuss what the photographs and images possibly depict, before the instructors presented the narratives relating to them. The pictures thus became tools for individual reflection and group dialogue about various topics and issues in health systems management. The pictures, narratives, and collective class dialogue provided a rich understanding of the topics, and served to raise students' critical consciousness, ensure understanding, and stimulate critical thinking and critical reasoning.

Students were given reading materials on photovoice to further familiarize them with the teaching strategy. In order to strengthen photovoice skills in students and assess their understanding of the process and skills in using it, selected topics were assigned to them to explore and present as individual seminars using photovoice. They were encouraged to take pictures (using their phones or cameras), and create a group of images that portray and capture the essence of various topics in the course outline. They had to insert the photographs and images in PowerPoint slides for presentation in class. Certain photo protocols prompted students, and these included briefly describing each selected picture in terms of its intended meaning and significance, why the picture was selected, and how it depicts the issue under discussion. These facilitated students' self-exploration through experiential learning, and highlighted their ability to recognize multiple and diverse perspectives from the photographs or images presented. Both the instructor and other students critically discussed the images and photographs presented and how well they depict the topics assigned. The process thus followed the steps of the photovoice methodology (photo-documentation, photo-elicitation, and photo-gallery exhibition) as elucidated by specialists [19].

Ethical clearance was from the Institutional Research Ethics Committee (A/2017-016), with permission from the Head of Department, and informed consent from the participants. As part of ethical protocols, students signed a written agreement to acknowledge all internet-derived images, and not to take or present pictures that are incriminating of individuals and organizations.

Data collection
Quantitative data collection was through a validated questionnaire with 40 items and data collected before and after the intervention on skills in critical thinking, communication, self-directed learning, and problem-based learning. Items were adapted from the Rubric for Critical thinking and Analytical Skills in graduate students [24], Problem-based Learning Implementation Questionnaire [25], and Self-directed Learning Readiness Scale for Nursing Education [26]. Items were on a five-point Likert-type scale with 1 representing least desirable score and 5 being the most desirable. The questionnaire was pretested on eight graduate nursing students in another University in Southern Nigeria, and had a Cronbach reliability coefficient of 0.91. Variables were assessed before commencing teaching of the course and at the end of the semester.

Qualitative data collection was through Focus Group Discussion (FGD) and in-depth non-structured interview. FGD involved two focus groups of twelve and eight participants each and one session for each group lasting 30 to 45 minutes. Participants were asked to report their perceptions and experiences about the use of photovoice for the course. Discussions were recorded on audiotapes and were transcribed verbatim. In-depth interviews used the narrative approach and augmented and clarified information obtained through FGD.

Data analysis
Data entry and descriptive and inferential analyses of quantitative data were on SPSS 18.0. Transcribed qualitative data were analysed using NVivo 7.0. Hermeneutic circle enabled extraction of significant statements, formulation of meanings, and formation of theme clusters.

Results
Socio-demographic characteristics of participants showed that 65.0% of participants were between 30-35 years of age; 90.0% were female; and 55.0% had over ten years' experience as nurses (Table 1).

Quantitative Results
Participants presented 145 photographs (with corresponding narratives) on the various issues (mean = 7.25). Out of these, 129 (89.0%) adequately depicted the topics being discussed, showing skills in utilizing photovoice for the assignment. Reported benefits of photovoice methodology in teaching and learning (Table 2),

include empowerment and engagement of students in the teaching-learning process, creation of powerful visuals about topics, achievement of course objectives, enrichment of the teaching-learning process, and effective engagement of students. The lowest scores were on enhanced reflective skills, and enhanced appreciation of different points of view.

Post-intervention results on Table 3 showed significant improvement in scores on the evaluated indices, indicating that photovoice methodology significantly helped students to develop critical thinking skills (t = 2.82, p = 0.01); promoted self-directed learning (t = 3.92, p = 0.001); strengthened communication skills (t = 2.85, p = 0.01); and to a lesser extent ensured problem-based learning (t = 2.01, p = 0.02).

Table 1: Socio-demographic Characteristics of Participants (n = 20).

Characteristics	Number	Percentage
Age (in years):		
20-25	2	10
26-30	5	25
30-35	13	65
Gender:		
Male	2	10
Female	18	90
Marital status		
Single	8	40
Married	12	60
Years of experience as nurses		
5 to 10 years	9	45
Over 10 years	11	55

Table 2: Reported benefits of Photovoice by participants (n = 20)

Reported benefits	Number	Percentage
Empowerment and engagement of students in the teaching-learning process	20	100
Creation of powerful visuals about topics	19	95
Achievement of course objectives	19	95
Enrichment of the teaching-learning process	18	90
Effective engagement of students	18	90
Enhanced reflective skills	17	85
Enhanced appreciation of different points of view	17	85

Table 3: Mean and SD of skills before and after intervention (n = 20)

Skills	Before		After		t	p
	Mean	SD	Mean	SD		
Critical thinking	21.7	2.1	32.4	3.2	2.82	0.01*
Communication	25.2	2.4	37.8	3.7	2.85	0.01*
Problem-based learning	22.6	2	30.5	2.9	2.01	0.02
Self-directed learning	20.8	2.2	31.6	3.4	3.92	0.001*

* Significant values

Qualitative results
Participants generally reported that they would never have linked the use of pictures and images with teaching adults, except as a health education tool in the community. One participant clearly reflected this in the statement below,

"Before this course, I never thought that pictures could be used to teach students beyond the kindergarten level" (Partic. 19).
Another participant added,
"I know that pictures can be used to teach clinical nursing courses but I never thought they could be used to teach non-clinical courses. It is really amazing" (Partic. 11).

Perception and experiences of students on the use of photovoice as a teaching strategy yielded three themes that complemented the quantitative data. These were *"Transformation of the teaching-learning process"*, *"Critical group dialogue"* and *"Engagement of students"*.
"Transformation of the teaching-learning process"
Using photovoice in teaching involves selecting images that most accurately reflect the issues, and explaining what the photographs mean. This method is capable of transforming the teaching-learning process by enabling students to develop self-awareness, reflection, and critical thinking skills. Exemplar descriptions by participants include,
"This new instructional strategy has enabled me to think 'outside the box' by critically analysing every picture presented for hidden meaning and interpretation" (Partic. 16)
"The method is simple to follow. It allows time for students to reflect on, think about, and discuss the pictures and images presented. It is innovative, and makes teaching and learning more interesting" (Partic. 11)
"Photovoice transformed the teaching-learning process by sharpening my skills of reflection and critical thinking. I had to reflect on different pictures before choosing what to my mind would be the most appropriate to depict my assigned topic" (Partic. 03)

These responses indicate that apart from transforming the teaching-learning process, skills in self-awareness and reflection were acquired by participants through the process.
"Critical group dialogue"
Because both the teacher and students contributed to the interpretation of photographs and images presented in class, this tended to promote reasoning and critical group dialogue. The process of critical dialogue involves deliberation, negotiation, inquiry, information seeking, and even arguments. All these occurred when both the teachers and the students presented on topics in class. Such critical dialogues are the beginning of critical thinking. The dialogue-based theory of critical thinking provides a framework that is descriptively richer and more appropriate than most other theories. Typical verbatim statements were,
"Each picture presented by the teacher and other students provoked discussion of varied perspectives. It provided the opportunity to see and discuss something different from each picture presented. This enhanced my learning" (Partic. 13)

"The method ensured reciprocal teaching and learning. Both the lecturer and the students were teaching and learning at the same time" (Partic. 11)

"Thoughtful engagement during interactions"

Photovoice reportedly fosters greater participation in the teaching-learning process, enhances active thoughtful engagement between the student, the subject matter, and knowledge. It ensures engagement with one another during interactions, and ultimately enhances learning. According to participants,

"Photovoice allows time to reflect and think, and this actively engaged us (students) in the teaching-learning process" (Partic. 18).

"Discussion of the presented pictures ensured active participation and engagement of students, and this enhanced learning of the topics" (Partic. 06).

Other participants corroborated this,

"This teaching method has made me participate and engage more in class discussions because sometimes I see things from the pictures presented that other students don't seem to see" (Partic. 08)

"I sometimes looked for different perspectives from the presented pictures because some pictures had multiple meanings. Discussing them made me to reflect and participate more in class discussions, and engage intensely with the learning process" (Partic. 11)

Other reflections by students revealed the fact that although the method is "innovative", "interesting" and "motivational", it also entails increased workload.

"Although the method engaged us in the teaching process, doing the assignments for seminar presentation was a different ball game. It involved taking many photographs or searching the internet for pictures that would portray the phenomenon or topic intended. This was tedious" (Partic. 15)

Another participant echoed this,

"Photovoice is a very versatile and interesting method of teaching and learning, but selecting appropriate pictures to depict assigned topics is burdensome and gave me a lot of stress" (Partic. 12)

Discussion

Use of photovoice teaching method enhanced critical thinking and self-directed learning in this study. This is in consonance with previous findings [8,12,13,27] which also reported that when used appropriately, photovoice stimulates critical thinking, effectively engages students and enhances teaching and learning. According to those studies, photovoice use in the classroom enhances students' ability to create and make meaning of pictures thus enhancing reflective skills. It also enhances understanding of the world and encourages critical thinking skills in sociology students [12]. Photographs create rich ideas for knowledge and enhance memory, by helping students to focus on particular perspectives, ideas and issues [10,12,18]. Participants in the present study demonstrated adequate understanding of the photovoice methodology by presenting 89% pictures that accurately depict phenomena in their assigned topics. Through the sharpening of students' self-reflective skills, photovoice teaching methodology enhances critical thinking, experiential learning and self-directed learning [18,19]. Moreover, students gain a deeper understanding and knowledge when they themselves generate knowledge and experiences rather

than just acquiring knowledge generated by the teacher [28]. Encouraging students to discuss the presentations of both the teachers and fellow students (as in the present study), encouraged reflection and discussion of the different perspectives that possibly exist. This enhances experiential learning, and critical reflection, and supports student professional identity development [8]. Such reflective practice focuses on the power dimensions of assumptive thinking, and builds confidence and self-awareness in students.

Photovoice teaching methodology in the current study enhanced student participation and engagement in the teaching-learning process through critical dialogue. Participants reported that photovoice teaching strategy promotes critical dialogue among peers, and transforms and enriches the teaching-learning process, similar to findings in other studies [5,11,12,18,27]. These authors therefore posit that photovoice promotes critical dialogue in small and large groups; and supports participatory, diverse, and equitable educational settings. They also state that with photovoice, students' ability to critically discuss and recognize multiple and diverse perspectives from pictures enriches the learning process and fosters professional socialization. This is because when students are actively involved in shaping the context portrayed by the pictures through critical dialogue, deliberation, and arguments, they are engaged in self-directed and experiential learning [18]. In addition, when students are allowed to describe their own constructs through narratives and photographs, it fosters creativity and motivates engagement [11,18]. The present study also identified these outcomes.

There were however challenges in using this teaching strategy. These include initial difficulty by students to select pictures and images that capture the essence of the issues under discussion. Some students did not have access to digital camera, while others were not competent in its use. On the part of teachers in the postgraduate programme, although we wanted to use innovative teaching strategies for the graduate students, engaging in this new methodology was a risk not only for us as teachers but also for the students. As teachers, we were putting ourselves in a very vulnerable position with a new class of students. We were counting on trust by asking students to take the risk of engaging in a process that could affect their end grades in the Course. On the other hand, they may have failed to understand the topics, and teachers would have had to repeat teaching the Course in a more conventional way. However, the students were eager to follow through with the method. Thereafter, they organized a photo exhibition for other students in the Department, from the class assignments.

Conclusion

Photovoice methodology enhanced critical reflection, critical thinking, social communication, and self-directed learning skills among graduate nursing students in this study. It also increased engagement of students and enhanced learning. It can therefore serve as an effective instructional method and a suitable useful pedagogical tool in nursing education at the postgraduate level. Photographs and images produced through photovoice provided

extensive and 'rich' informative material that engaged students and enhanced learning. Integrative pedagogies like photovoice should be used for nursing education in Nigeria because they involve reflecting, conceptualizing, and explicating information. The findings of this study have implications for the future of nursing education. Critical dialogue and the discussion of varied perspectives among the teacher and students promotes critical thinking, transformed the process of learning, and ensured reciprocal learning. With the "new normal" of virtual teaching/learning brought about by the COVID-19 pandemic, there is need to explore the adaptability and applicability of using photovoice teaching method for remote-based training where necessary. Future research is recommended on the use of photovoice among undergraduate nursing students in developing economies, and its possible use for teaching clinical and practical-based nursing courses at undergraduate level. Its use with a more heterogeneous sample from a variety of disciplines, and potential for virtual teaching/learning is also suggested.

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