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Picture This: The Use of Visual Methods in Health Professions and Medical Education Research

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ABSTRACT

The use of visual methods in research has grown exponentially over the last several decades. As an evocative form of knowledge generation, visual methods allow researchers, participants, and audiences alike to consider problems in new ways. This article provides an overview of visual methods, with a specific focus on health professions and medical education. A brief history of the use of visual methods, their function in different forms of research, and considerations for their use are also discussed. Overall, visual methods give researchers and participants an alternate way of communicating complex ideas and emotions, allowing their audiences to "get the picture" differently than before.

BACKGROUND AND INTRODUCTION

> Paintings are but research and experiment. I never do a painting as a work of art. All of them are researches. I search constantly and there is a logical sequence in all this research.
>
> –Pablo Picasso[1]

Visual methods have grown in popularity for their evocative and stimulating ways of developing knowledge; but for those new to their use, knowing where to start is difficult. In this paper, I provide a general overview of visual methods by introducing what they are and how they can be used. From there, I discuss some of the epistemological, ethical, and practical considerations when deliberating the use of visual methods in research. Highlighting how visual methods have distinctive and more inclusive features than oral interviews, I further delve into the affordances and challenges that have been experienced with the use of visual methods and note how these challenges can be mitigated.

For as long as we have told stories, we have used various ways to visualize and depict them. From hieroglyphs, cave paintings, and drawings made in the sand, to the generation of images by artificial intelligence, visuals and depictions always have had the power of conveying emotion and complexity otherwise not communicated by words alone.[2-6] However, this understanding of the evocative nature of images ultimately limited their use in forms of knowledge generation, including research.[7] Many early Western philosophers, Plato included, believed that matters of the senses and emotions were not also matters of knowledge.[7,8] How could one produce objective knowledge with the senses, which are inherently personal and subjective?

Perspectives on how knowledge is constructed, and further, what forms of knowledge are valued, have changed dramatically since those bygone years.[9] Today, we commonly understand that the forms of knowledge and knowledge production are numerous. Within these understandings, the use of visuals as a form of data for research is widely accepted in various disciplines. Starting in anthropology and later sociology, the use of visual methods has expanded to other research disciplines, including health professions and medical education.[10-15]

WHAT ARE VISUAL METHODS?

What exactly *are* visual methods, then? Visual methods are research approaches that use visual materials constructed by researchers, participants, or both in the

context of a research investigation.[10,16-18] Within health professions education, such visual methods include videos, photographs, drawings, cartoons, graffiti, maps, diagrams, cyber-graphics, signs, and symbols, among others.[15]

In research, the visual methods that generate these products have distinct names, histories, and assumptions. For example, rich pictures are participant-drawn representations of complex experiences, which can then be understood as the collection of multiple parts that simultaneously work together.[15,19-24] Cristancho et al[21] and Molinaro et al[23] used rich pictures to explore different topics in health professions education (HPE). Another visual method is timeline mapping, in which sequences of events are visualized and presented in chronological order[25-29] (see Basnet et al[25] for an example of timeline mapping in HPE). Spatial mapping, which stems from geography, can be used to visualize various places of knowledge development and knowledge exchange, as well as geographies of emotion.[16,30-34] Lastly, photo-elicitation is a well-known visual method, in which researchers use either researcher- or participant-generated photographs or images to elicit responses from participants.[5,6,14,35-38] Loignon and colleagues,[39] for example, used photovoice to examine social inequalities in primary care teams.

Visual methods can act as elicitation techniques to supplement oral data collection or as standalone forms of data in qualitative research. Elicitation techniques, as described by Kahlke et al,[17,18] are methods that use visual, verbal, physical, or written prompts to assist participants with describing emotions and events during an oral interview. These techniques facilitate reflections and conversations with participants in ways that a conversation cannot.[16,17,18,27,40,41] Elicitation techniques also can assist with avoiding rehearsed answers and responses participants believe the researchers want to hear; they also can elicit affect, emotion, and tacit knowledge.[17,18]

Gaining traction in HPE research are visual methods and methodologies. Methodologies, as opposed to methods, act as the framework for a study, determining which methods will be used.[42,43] Visual methodologies are underlaid with an explicit assumption that visuals are necessary for generating understandings of experience; thus the use of visual methods is centered for data collection.[44-46] For example, photovoice is a participatory action research methodology that aims to document social issues to raise critical consciousness among researchers and the public alike.[39,44-48] The primary method for data collection in photovoice is photo elicitation, which puts "cameras directly in the hands of people who otherwise would not have access, and allows them to be recorders, and potential catalysts, in their own communities"[44] (p. 369).

One may choose to use visual methods for their research for several reasons. Previous research in health professions education and beyond has drawn attention to the ways in which visual methods can depict experiences that are emotional, vulnerable, or complex, which would otherwise be difficult to describe verbally.[15,17,18,20,21,23,49] Visual methods also can help participants and researchers explore nuanced issues in new ways, or in ways that have previously been taken for granted.[15,17,18,20,21,23,49] The use of visual methods, in conjunction with interviews, allows for a level of cognitive processing an experience that cannot be done with words alone, generating insights and knowledge that previously may not have been considered.[15,17,18,20,21,23,49]

In relation to HPE research specifically, visual methods have been used to bring attention to tacit, or embodied, knowledge;[15,19,41,50,51] to help make the experiences of clinicians more accessible within academia and beyond;[22,52,53] to facilitate reflection on difficult experiences;[23,54] to produce new ways of learning;[53,55] and to generate transformation and change within education, practice, and policy.[39,47,48,56] More specifically, Cristancho et al[15] highlighted some of the research questions that have been explored through the use of visual methods:

- How do trainees make sense of their identity and emotional struggles as they navigate their training?[49]
- How do trainee-environment interactions stimulate motivation?[57]
- What are patients with chronic and terminal illnesses willing to share about their experiences for educational purposes?[19,58,59]
- What might patients' photographs teach medical students about biases toward patients living in poverty?[47,48]

CONSIDERATIONS FOR THE USE OF VISUAL METHODS IN RESEARCH

Visual methods can be used in a multiplicity of ways and can help address a plethora of questions. What is most important to consider, however, is *how* they are being integrated into your research. When undertaking a research project that uses visual methods, the research team must consider the epistemological, ethical, and practical.

The epistemological underpinnings of the study always must be considered when conceptualizing the research project. That is, what does the research team believe about the nature of knowledge and how knowledge is constructed?[42] This question informs the epistemological, theoretical, and methodological directions of the research, and further, the intended research goal.[42] From there, the choice of visual method to be used, either as a standalone method or an elicitation technique, must be intentional and tethered to the other elements of the research project.[42,43]

Several scholars in varied disciplines strongly contend that research using visual methods must be rooted within the broad epistemological framing of constructivism.[42,60,61] The central assumption that underlines constructivism is that all knowledge is constructed.[42,60,61] Specifically, knowledge is constructed through relationships between people, as

well as between people and the contexts they are embedded within.[42,60,61]

To frame research in this way requires research teams to think differently about what conducting rigorous research means. Research that uses visual methods is less concerned with generalizability, replicability, or the truth of the data and is instead focused on the evocative power of images to spur dialogue, reflection, and critical thinking.[15,17,18,20,21,23] Thus, if a research team hopes to generate concrete, objective conclusions, the use of visual methods may not be appropriate.

Another differentiating quality of research using visual methods is that data can be coconstructed. The images can be constructed solely by the researcher or participant, or can be coconstructed by the researcher and participant together.[17,18,42,60,61] Regardless of which way the visuals are created, these visuals allow for an understanding of how individual experience is negotiated by broader structures and contexts.

The construction of visuals for an intended study warrants several ethical considerations. Like other qualitative methods, research that uses visual methods raises ethical concerns when participant visuals involve patients, colleagues, faculty, coworkers, or other individuals and/or institutions. Protecting participants' identities and names, in addition to the names of other persons and places throughout any presentation of the data for the study, is important.

Beyond these standard ethical considerations for the conduct of research, the research team also must consider the *narrative* ownership of the data (including images) generated for the study.[15,62-64] Narrative ownership goes beyond institutional concerns for privacy protection and participant safety, and instead questions who ultimately owns the stories (and visuals) being shared. Questions for research teams to consider include these: Once the visuals are generated for a study, how will they be used? If the images are to be interpreted and analyzed, will the research team take full ownership of how they are interpreted, risking potential misinterpretations of participants' visuals?[15,40,62-64]

Last, because much of our research is dependent on funding, teams debating the use of visual methods should be practical and consider the associated costs. These may include the cost of art supplies, shipping art supplies to participants, printing images, and technology required for electronic data transmission and storage. Additionally, teams should consider whether the visuals generated from their study will be used for planned knowledge mobilization activities and whether those have associated costs as well.[40]

AFFORDANCES AND LIMITATIONS OF VISUAL METHODS

In addition to the ways in which visual methods allow for the generation of new knowledge, these methods also can assist in shifting power dynamics within the researcher-participant relationship.[17,18,62,65] Populations that have previously endured harm from participating in research might be hesitant to take part again, or may value types of knowledge that cannot be gained through an oral interview. Visual methods allow for a more inclusive approach to knowledge generation and mobilization by placing emphasis on how knowledge production can come from non-Western means.[66-68] For example, Indigenous métissage was developed as a "research sensibility" attuned to decolonizing Aboriginal and Canadian relations.[66-68] Hasebe-Ludt, Chambers, and Leggo[68] described métissage as

> a counternarrative to the grand narrative of our times, a site for writing and surviving in the interval between different cultures and languages, particularly in colonial contexts; a way of merging and blurring genres, texts, and identities; an active literary stance, political strategy, and pedagogical praxis . . . We braid strands of place and space, memory and history, ancestry and (mixed) race, language and literacy, familiar and strange, with strands of tradition, ambiguity, becoming, (re)creation, and renewal into a métissage. (p. 9)

This braiding of strands weaves together diverse forms of texts, which can include oral and written stories and images. This weaving further holds the complex and ambiguous Aboriginal-Canadian relationship without having to deny Indigenous histories or assimilate Indigenous ways of knowing.[66-68] Instead, these tensions are embraced and are a focal point of analysis.[66-68]

Visual methods further subvert relationships of power through their accessibility. They allow for communication without words, which accommodates participants who may not speak the language of the interviewer,[15,17,18,69] participants who have difficulty participating in conversations for long periods of time,[15,17,18,70,71] and participants who may use accessibility aids or nonverbal methods for communication.[4,70,71] As with verbal forms of communication, participants may not have the ability to engage in drawing, photography, or other visual methods.[4,70,71] Considering the accessibility of the data collection methods alongside the needs and abilities of participants is vitally important for engaging in research that is inclusive and tailored to the needs of the populations the research is intended to serve.

However, participants' comfort level has a significant bearing on how visual methods research can move forward. Several studies describing the use of visual methods have reported that many participants feel uncomfortable about their artistic skill set.[15,23] Within the context of health professions and medical education, trainees and physicians alike have voiced their hesitancy about drawing, noting their concerns about the visual appeal of their drawings.[23]

These concerns are valid and should be addressed and discussed with participants. Because visual methods are used

to generate new understandings of experience, the quality of the drawings created is irrelevant to the conduct of the study, the analysis generated, and the knowledge mobilization products generated. Participants should be reassured that their images are not being evaluated or considered for their artistic potential, but rather for their communication of their emotions, thoughts, and feelings during a particular experience. Their art is meant to be evocative—both in feeling, and in conversation.

CONCLUSIONS

The use of visual methods in research has grown exponentially over the last several decades, with recent adoption in health professions and medical education. The evocative nature of visuals generates possibilities for expressing emotion, communicating complexity and ambiguity, highlighting tacit and embodied knowledge, and above all, questioning ideas and perceptions that may have been taken for granted. The integration of visual methods into research requires thoughtful consideration of their use and an understanding that, at first, participants may be hesitant to engage with them. However, their continued use in research has several benefits, and most of all, allows us to see the bigger picture.

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