

THE ARTS IN HEALTH PROFESSIONS EDUCATION

An Exploratory Study Using Visual Thinking Strategies to Improve Undergraduate Students' Observational Skills

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Objective. To describe a teaching approach that incorporated visual thinking strategies (VTS) into an existing health humanities course and measure the effects on the observation skills of undergraduate health professions students.

Methods. Visual thinking strategies were used to introduce students to a variety of health-related topics. Each week a facilitated 15-minute discussion was held about a work of art related to the day's topic. Pre- and post-course assessments were administered in which students were shown three images and asked to describe what they observed in each image. Student responses were evaluated using deductive content analysis with two different categorization matrices. The assessments also included six Likert-style questions.

Results. For matrix one, the most frequent type of observation was naming or identifying something. Growth between pre- and post-course assessments occurred in the following categories: what is happening, how it looks, and where it is located. The number of student observations for two of the three images increased. The majority of students indicated that the use of this visual art exercise was an enjoyable learning experience.

Conclusion. In future studies, a larger sample size and inclusion of a control group could better demonstrate the meaningful impact of VTS on developing students' observational skills.

Keywords: visual thinking strategies, observational skills

INTRODUCTION

Enhancing students' observation skills is attracting increased attention, especially in health care education.^{1,2} Visual thinking strategies (VTS) is a method that was founded by Abigail Housen and Philip Yenawine that encourages thoughtful discussion of and engagement with art.³ The VTS approach has been used to teach and enhance observation skills in diverse diagnostic health professions, including in medical, dermatology, veterinary, and ophthalmology programs.⁴⁻⁸ Observational skills are clearly important to future physicians as they will need to notice minute changes in patients' appearance and demeanor in order to make appropriate diagnoses. However, advanced observational skills in other health professions students, including pharmacy students, are also necessary. For example, pharmacists must collect and assess patient-specific information to determine a patient's health status, establish the appropriateness of recommending self-care vs referring the patient to

another healthcare professional or determining whether there is a need for other preventative care. Also, pharmacists frequently interact with patients one-on-one and should be able to notice small changes in body language that reflect emotional changes in the patient.

Visual thinking strategies is an approach used to facilitate discussion when viewing different visual arts. It uses three questions to focus observations: What do you see? What makes you say that? What else do you see?⁹ The first question (What do you see?) helps with identifying objective visual findings and forming narratives. The second question (What makes you say that?) directs viewers to make judgements that are connected to their own perceptions, previous knowledge of the natural world, and the values of the social, moral, and conventional world. The third question (What else do you see?) concludes the observation and completes the objective findings. The reports that best demonstrated the effectiveness of teaching observational skills using VTS had art experts leading one or several concentrated sessions at an art museum. For example, the work of Klugman and Beckmann-Mendez had students attend four 2.5-hour long sessions at an art museum where they were given instruction based on VTS.¹⁰ While this approach is

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effective, creating a new course or adapting an old course to encompass such intensive time commitments from instructors and students is challenging for professional schools to incorporate. There has been little research into whether an intervention that uses less class time and fewer resources can be just as impactful on students' observation skills. We incorporated VTS in an existing health humanities course and describe the assessment methods used to measure the effects on students' observation skills. The purpose of the study was to assess the effectiveness of holding brief VTS sessions in an undergraduate classroom setting.

METHODS

Perspectives of Health Through Literature and Media was a three-credit hour undergraduate honors level course offered at Southern Illinois University Edwardsville (SIUE) in the fall semester each year.^{11,12} Students are not all health care majors but represent a variety of disciplines. The purpose of the course was to develop students' perspectives regarding healthcare by prompting them to make a human connection through discussion, reflection, and exposure to a variety of materials including literature and media. Students enrolled in the course are typically juniors or seniors, but pre-pharmacy sophomores are accepted into the course as well.

The class met twice weekly for an hour and fifteen minutes. To incorporate the VTS approach into the course design, 10 to 15 minutes were used at the beginning of the class at least once per week for students to observe a work of art that related to that day's topic and discuss the work of art using the VTS as a framework. For the weekly in-class VTS activity, instructors leading the session chose works of art that complemented their topic. Instructors met prior to the start of the semester to discuss which pieces would be used for each section and were mindful about selecting art that would encourage robust observation and discussion. A variety of art mediums and styles were selected. When selecting art images, the faculty members used several resources including museum websites that include online collections, such as the Met Collection Open Access Artworks.¹³ The listing of images used during the course are found in Appendix 1. The art images were projected on a screen in the front of the classroom, and students were asked a series of three questions: "What do you see?" "What do you see that makes you think that?" and "What more do you see?" Students were allowed to freely provide verbal responses to these questions in-class. However, students who did not volunteer comments were called upon if necessary, to enhance participation.

Students were asked to complete a pre-course and post-course assessment to evaluate their observational

skills at the beginning and end of the semester. The same three visual art images were used for the pre- and post-course assessments. Students were asked to create and enter a unique identifier on the assessments so that the instructors could pair pre- and post-course data to determine whether a change occurred in students' observational skills. The post-course assessment incorporated six Likert-scale questions (responses ranged from strongly disagree to strongly agree) to gauge student perception of the value of this exercise. The pre- and post-course assessment and the weekly in-class VTS activities both used the same prompting questions; however, the pre- and post-course assessments solicited individual, written student responses to three images while the in-class VTS activities elicited verbal in-class discussions.

The pre- and post-course assessments included three images not discussed in class: George Tooker's *Ward*, Frida Kahlo's *The Two Fridas*, and Moonassi's *Manageable Pain*.¹⁴⁻¹⁶ Students were asked to write their response to the three prompting questions (What do you see? What do you see that makes you think that? What more do you see?) for each image provided. Student responses were evaluated using deductive content analysis with two different categorization matrices. The first matrix was adapted from Gurwin's study and categorized student responses by the types of observations described in their free-text responses.⁸ The second matrix was adapted from Klugman and colleagues and defined an observation as "a single, factual declaration about an image."¹⁰ Three researchers independently coded each response using both matrices, then met to discuss their coding results and reach consensus when differences in coding existed. The mean number of coded observations between pre- and post-course assessments for each matrix was compared using paired *t* test. To facilitate the coding process, MAXQDA 2018 (VERBI Software, Berlin, Germany) was used.

All students who enrolled in the course were invited to participate in the study voluntarily on the first day of class. Students received 20 bonus points, which was two percent of the total points in the course, for completing both assessments. The project was reviewed by the Institutional Review Board (IRB) at the Southern Illinois University Edwardsville and deemed exempt.

RESULTS

All students enrolled in the course during the 2018-2019 academic year completed the pre- and post-course assessment (n=17). Using matrix one, the most frequent category identified was "naming or identifying something." Significant growth occurred between pre and post-course assessment in three categories: "What is happening?" "How does it look?" and "Where is it located?" (Table 1).

Table 1. Changes in the Observational Skills of Students Who Were Taught Visual Learning Strategies Using Works of Art as Part of an Undergraduate Health Humanities Course

	Pre-course, Mean Number of Observations	Post-course, Mean Number of Observations	<i>p</i> -Value ^a
Image One			
Matrix One			
Name or identifying something	4.59	4.53	.90
What is happening	0.59	1.06	.13
How it looks	0.18	0.59	.24
Where is it located	0.29	1.06	.01 ^a
Counting things	0	0	.94
What does it mean	2.24	2.71	.33
<u>Total</u> for all matrix 1 categories	7.88	9.94	.04 ^a
Matrix Two	4.82	6.88	.03 ^a
Image Two			
Matrix One			
Name or identifying something	3.71	3.29	.52
What is happening	2.06	3.18	.01 ^a
How it looks	0.24	0.82	.06
Where is it located	0.18	0.06	.33
Counting things	0.94	1.00	.67
What does it mean	4.29	1.35	<.01 ^a
<u>Total</u> for all matrix 1 categories	11.41	9.70	.15
Matrix Two	8.00	6.65	.11
Image Three			
Matrix One			
Name or identifying something	2.06	2.47	.54
What is happening	3.06	3.29	.58
How it looks	0.12	0.47	.14
Where is it located	0	0	
Counting things	0.88	0.88	1.00
What does it mean	1.41	2.24	.06
<u>Total</u> for all matrix 1 categories	7.53	9.35	.06
Matrix Two	4.77	6.12	.03 ^a
Total for Image One, Two, and Three			
Matrix One			
Name or identifying something	10.35	10.29	.96
What is happening	5.71	7.53	.02 ^a
How it looks	0.53	1.88	<.01 ^a
Where is it located	0.47	1.12	.04 ^a
Counting things	1.82	1.88	.79
What does it mean	7.94	6.29	.12
<u>Total</u> for all matrix 1 categories	26.82	29.00	.31
Matrix Two	17.59	19.65	.14

Matrix One: Observation skills by category

Matrix Two: Counting Direct Observations

^a *p*-values calculated using paired t-test; statistically significant at *p*<.05

Illustrative examples of responses coded using matrix one can be found in Table 2. When comparing both matrices, the mean number of observations for two of the images

generally increased; however, a significant increase in total observations was only found for image one (matrix one) as compared to images one and three (matrix two).

Table 2. Illustrative Examples of Each Category for Matrix One Coding

Category	Example Student Responses
What it is or is not	Hospital Patients Metal Railings Scissors Tools
What is happening	Laying on beds Holding hands Connected by veins Blood spills from the vein Destroying each other Treating wounds
How it looks	Dim lighting Somber tone Bright colors but simple design Simple contrast and mood The piece is so still Monotone
Where it is located	Man behind a curtain Flags on the wall People in corners Storm in the background
Counting things	Two women Two depictions Two nearly identical figures
What does it mean	Patients appear to either be sick or tired Sad, measured society May be underfunded The ones in the bed could even be dead and no one would know Drawn in a way so that a gender cannot be assigned to them Suggesting they are all dealing with the same illness of problem Maybe to represent love Portraying the difficulty of accessing health care Oblivious to the sabotage happening to them because they are caught up in sabotaging the other person Symbolize silence

Comparative examples of how responses were coded using each matrix can be found in Figure 1.

There were differences noted between pre- and post-assessments in the level of detail included in some responses that was not captured by the matrix categorization. For image 1 on the pre-course assessment, a student wrote “[I see] a picture of a hospital with patients in beds [because I see] hospital beds and curtains that go

around them [all] of the people depicted look the same.” On the post-course assessment, the same student wrote a more lengthy and detailed response for the same image: “There are hospital beds and people laying in the beds and also some people who are not laying down. The people depicted look very sad and like they have no expression. [I say this because] the colors are monochromatic which provides that dull and dreary emotion. [I also see] all of the people look the same, also there are American flags in the background, so it could be involving the military.” For image 2, a student wrote the following on the pre-course assessment: “[I see] two women in dresses with their hearts exposed.” On the post-course assessment, the same student wrote, “I see two women sitting on a bench holding hands. They are both wearing old-fashioned dresses and have dark hair. The background is kind of murky and cloudy so it may be a portrait. One lady is holding a pair of scissors, and both of their hearts are exposed.” On the pre-course assessment, a student wrote the following for image 3: “[I see] two people, both dressed the same, one tearing the other’s back, the other chiseling the first’s thigh off.” In describing the same image on the post-course assessment, this student wrote: “I see two people drawn in a style that reminds me of Chinese or Asian art, and they are both breaking the other down. The one on the bottom seems to be chipping away at the waist of the other as though they were made of stone, and the one on top seems to be tearing the bottom one as though they were made of paper.”

The post-course Likert-scale perception survey of the value of the VTS strategy indicated neutral to slight agreement with the various statements. Forty-seven percent indicated that the strategy increased their awareness of multiple perspectives. 53% indicated that it helped increase their observation skills. 59% indicated more awareness of others as a whole. 41% indicated that it helped them communicate their observations. 53% indicated that it helped them appreciate nonverbal skills in better understanding concerns, feelings, and emotions. Finally, 71% indicated that the use of visual art exercises was an enjoyable learning experience.

DISCUSSION

There is a distinct difference between seeing and observation. By providing the class with the collection of artwork and with the organized discussions on visual art observation, the students were directed from naively seeing the art piece to observing and connecting the details in a mindful manner. This intervention to promote student active thinking and participation has the potential to increase students’ attention to the details of the artwork, in a systematic approach, and enhance their observational

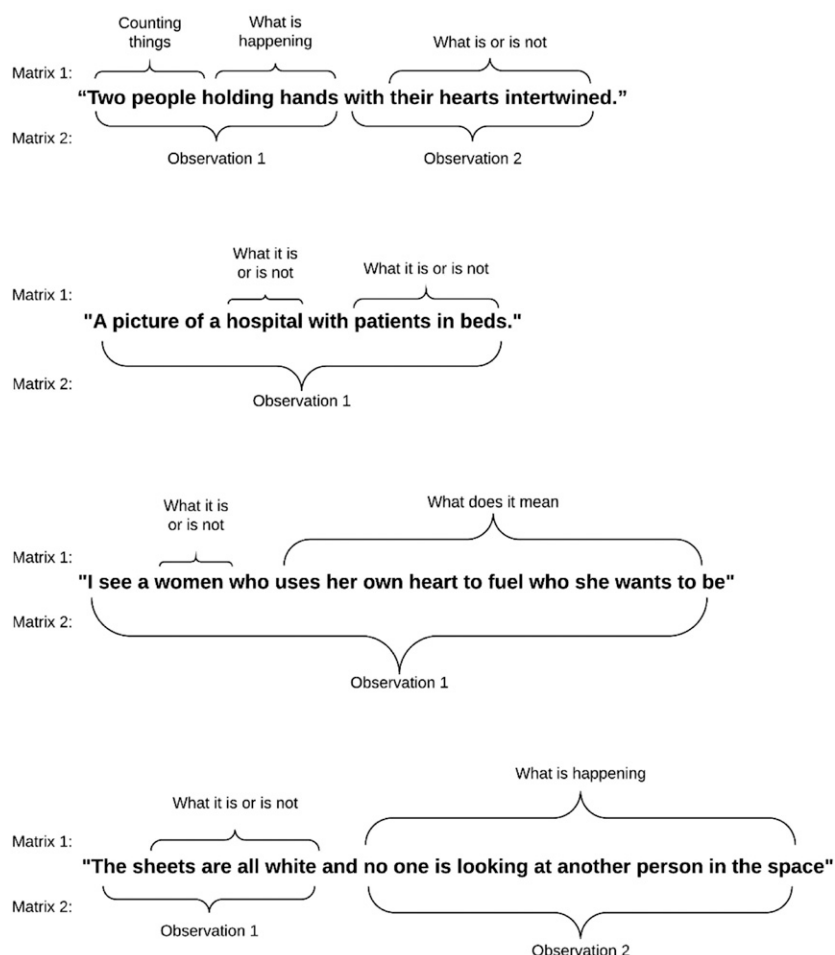


Figure 1. Examples of Student Responses Coded Using Both Matrices

skills in the clinical setting. The active classroom discussion sessions may also direct the students to think about what they see and motivate them to make more intentional observations that match what they think, which can be an effective way of training the students to be inquisitive and active observers.

While differences in the mean number of observations students found pre- and post-intervention were limited, we noted examples of growth in the depth and quality of some students' reflections. In addition, we observe that some students incorporated the VTS intervention and visual images to illustrate book themes in their final presentation. Assessing the quality of the observation was not part of the methodology of this study; however, the anecdotal observations by researchers provided promising qualitative information that could guide future assessment of VTS.

In a review, Mukunda and colleagues emphasized the need for more robust, evidence-based approaches for using visual arts instruction in health professions training.¹⁷ Their work explores assessment methods that

go beyond measuring student satisfaction using pre- and post-course assessments and qualitative methods. In addition, the authors emphasize the need for larger sample sizes and a randomized control group for further research. They also address concerns regarding the amount of instruction required for effects.

This study had some limitations. First, because of the selective nature of the course, the class size was limited to less than 20 students. The limited number of students may have resulted in less than optimal power for determining statistical significance. The differences in the pre- and post-intervention data and limitations of the *p* values (Table 1) did not allow us to determine whether the intervention had a meaningful impact. The differences noted are more likely due to a type I error. It is also unclear whether the results could be generalizable to pharmacy schools as the study population were undergraduate students including some pre-pharmacy students. The second limitation is that the timeframe of the intervention itself may not be suitable for all learning styles. Although the intervention spanned the entire semester, it was limited to

under 15 minutes per class session. Because students learn at different paces, some students may require more time to observe and discuss the information before their observation skills are fully developed. The third main limitation is that the study was not randomized; instead, it was volunteer-based. There may be a sample bias in our population towards students who were more interested in art and thus would theoretically already have somewhat better developed observational skills. Ideally, a control group should be used to assess the effectiveness of a VTS intervention. However, because this was an exploratory study, having such a control group for randomization to the interventions was not practical. Now that we have experienced implementing VTS in the classroom and using the two developed matrices for assessment, adding a control group for future evaluation of VTS use in the method presented would be achievable. Further evaluation of VTS using a more rigorous approach that includes control groups is desirable.

The previous publications that demonstrated significant improvement in students' observation skills after VTS training mostly involved sessions held at art museums that lasted at least two-hours per visit and were led by art experts. The incorporation of 15-minute VTS sessions into a course led by health professions faculty members could be a viable option for attempting to develop observation skills. The instructional strategy was successfully implemented within the course with minimal disruption to class time and resources. However, the small sample size and lack of a control group in this study limited the conclusions that could be reached regarding the impact of the intervention on students' observation skills.

Overall, implementation of the VTS strategy within an existing course without redesigning the entire structure of the course was successful. Students' survey responses indicated they enjoyed the activity, and we did observe increases in observations for two of the three images between the pre- and post-intervention assessments.

CONCLUSION

This study explored the use of a less time- and resource-intensive approach to addressing the need to enhance the observation skills of undergraduate pre-professional students by using visual thinking strategies. Further research in using the described methods to assess observation skills in a larger sample size and with a randomized control group could provide more robust evidence of the value of this approach.

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Appendix 1. Images Used for VTS Exercises

Course Topic	Image References
Public Health	Lupick, Travis. "Murals and graffiti all over Vancouver's Downtown Eastside depict the fear that's crept into the neighbourhood since fentanyl arrived." <i>The Georgia Straight, Vancouver</i> , 24 March 2020. https://www.straight.com/news/920056/vancouver-mayor-calls-fentanyl-crisis-bloodbath-overdose-deaths-continue-soar
Stigma/Gender Reassignment	Kahlo, Frida. <i>Self-portrait with Cropped Hair</i> . c. 1940, The Museum of Modern Art, Manhattan. https://www.moma.org/collection/works/78333?artist_id=2963&locale=en&page=1&sov_referrer=artist . 2019 Banco de México Diego Rivera Frida Kahlo Museums Trust, Mexico, D.F./Artists Rights Society (ARS), New York. Basquiat, Jean Michel. <i>Offensive Orange</i> . c. 1982, https://www.mutualart.com/Artwork/OFFENSIVE-ORANGE/B282E5E602E2B07B Noble, Kim. <i>The Twins</i> . http://www.kimnobleartist.com/our-work.html
Mental Illness	Cockburn, Henry. <i>Henry's Demons: a dangerous road to recovery</i> . c. 2017. Canterbury Museum & Galleries, Canterbury. https://canterburymuseums.co.uk/events/henrys-demons-a-dangerous-road-to-recovery-2/
HIV/Stigma	Thwaites, Simon. <i>Frustration</i> . c. 2011, http://www.thebody.com/content/65603/art-positve-fighting-spirit.html Chitrakar, Swarna. <i>HIV/AIDS</i> . c. 2008, Fowler Museum at UCLA, Los Angeles. https://www.artslant.com/ny/articles/show/1697-please-listen-people-addressing-hiv-aids-in-bengali-scroll-paintings .
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Health Care Ethics	Mayne, Don. IRB Pressure Cooker. http://www.researchcartoons.com/ . 2008-2012 Wretched Mess and Don Mayne - All Rights Reserved. Qut Office of Research Ethics Amp Integrity. (n.d.) http://getdrawings.com/ethics-drawing#ethics-drawing-63.jpg Erikson, Lou. Editorial Cartoon. <i>Atlanta Constitution</i> , July 1972. https://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.81.11.1498
Patient Experience	Fildes, Luke. <i>The Doctor</i> . c. 1889, https://www.tate.org.uk/art/artworks/fildes-the-doctor-n01522 Sargent, John Singer. <i>The Interior of a Hospital Tent</i> . c. 1918, Imperial War Museum, London. https://www.iwm.org.uk/collections/item/object/23728
Aging	Utermohlen, William. Self Portrait. c. 1967, http://www.williamutermohlen.org/index.php/11-artwork/self-portraits/37-self-portrait-slideshow . Utermohlen, William. <i>Self Portrait with Easel - Yellow and Green</i> . c. 1996, http://www.williamutermohlen.org/index.php/11-artwork/self-portraits/37-self-portrait-slideshow . Utermohlen, William. <i>Self Portrait with Easel - Green</i> . c. 1997, http://www.williamutermohlen.org/index.php/11-artwork/self-portraits/37-self-portrait-slideshow . Utermohlen, William. <i>Self Portrait with Easel</i> . c. 1998, http://www.williamutermohlen.org/index.php/11-artwork/self-portraits/37-self-portrait-slideshow . Utermohlen, William. <i>Erased Self Portrait</i> . c. 1999, http://www.williamutermohlen.org/index.php/11-artwork/self-portraits/37-self-portrait-slideshow . Utermohlen, William. <i>Self Portrait – Head I</i> . c. 2000, http://www.williamutermohlen.org/index.php/11-artwork/self-portraits/37-self-portrait-slideshow . Kosofsky, Isadora. Rosie sits in a hospital room in Los Angeles at night [Photograph]. (n.d.). Retrieved from https://isadorakosofsky.com/this-existence-rosie .

(Continued)

Appendix 1. (Continued)

Course Topic	Image References
Death and Dying	Klimt, Gustav. <i>Death and Life</i> . c. 1910, Leopold Museum, Vienna, https://www.leopoldmuseum.org/en/collection/highlights/146_ Griffith, Abril Andrade. <i>The Final Awakening</i> . c. 2012, https://fineartamerica.com/featured/the-final-awakening-abril-andrade-griffith.html