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Applying art observation skills to standardized patients☆

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ABSTRACT

Aim: In this interprofessional education Art Applications Workshop, 104 medicine, nursing and psychology students apply skills developed through visual arts observations that enhance students' collaboration, communication, and observational skills to standardized patient encounters. Students observe two-dimensional images, write case reports on the paintings' subjects, and apply principles to complete assessment notes on standardized patients. This descriptive paper's goal is to disseminate this interprofessional curriculum and share experiences in implementing this workshop.

Background: Visual arts education in healthcare programs expand students' visual, tactile and oral expression, especially in collaborative team settings.

Methods: In session 1, student teams analyze paintings and learn visual assessment techniques. In session 2, student teams observe paintings in a museum setting and write observations in case notes. In session 3, student teams apply visual assessment techniques to standardized patient interviews, write patient histories, assessment notes, and finally, complete post-survey self-evaluations.

Results: In the standardized patient assessment 73% of students made accurate diagnosis with supporting evidence in patient histories and notes. In post-survey results, 91% of students agreed/strongly agreed they improved their visual observation skills, 92% agreed/strongly agreed they improved their communication skills in listening and encouraging the ideas and opinions of other team members, 91% agreed/strongly agreed they are more confident in communicating with students from different disciplines, and 97% agreed/strongly agreed they are more confident in collaborating with students from different disciplines.

Conclusions: This Workshop demonstrates enhanced self-reported perceptions of collaboration, observation, and communication skills in case notes and standardized patient assessment notes.

Seeing is believing, but feeling is the truth.
-Thomas Fuller, 17th Century

What is the most difficult of all things? What seems to you to be the easiest: to see with your eyes what your eyes are looking at.
-Johann Wolfgang von Goethe, 18th Century

1. Aim

This Art Applications Workshop's aim is for the 104 health care students from medicine, nursing and psychology, through the multi-session exercises of this workshop, to improve their self-reported observational and communication skills, build collaborative relationships, and engage faculty from diverse healthcare disciplines in reinforcing student team-building activities. These workshop activities promote

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relationship-building with other healthcare provider students through listening and considering various perspectives and positions. This Art Applications Workshop differs from other workshops in that students from interdisciplinary teams apply learned skillsets to standardized patient encounters, write problem-focused patient histories and then complete an assessment note.

2. Background

To improve observational skills among healthcare students, visual art education has been used in some healthcare degree programs to expand students' visual, tactile and oral expression, especially in collaborative team settings (Bentwich & Gilbey, 2017; Karkabi, Wald, & Castel, 2014; Klugman & Beckman-Mendez, 2014; Wellbery & McAteer, 2015). This Art Applications Workshop seeks to stretch students' skills in understanding and communicating what their patients are experiencing, as well as assessing their patients' emotions and perspectives. Catapulting healthcare students' imaginations from the classroom to art museums, in outings where they analyze and interpret artistic masterpieces, complement the frenetic pace of intense scientific learning. By discussing the visual arts, scientifically-trained minds learn to subdue inhibitions and enhance communications with an enriched vocabulary in the safe confines of visual beauty (Zaidel, 2007). By drawing attention to new visual stimuli and inquiry in the humanities, students' creativity is sparked because the "activation of remote conceptual associations, the moving away from common, stereotypical, familiar patterns is a likely scenario in creative thoughts, and healthy, intact, well-oiled connectivity (e.g. axons, myelin, synapses, neurotransmitters) is at the heart of creativity's neural substrates" (Zaidel, 2014). Previous visual art applications were found to be effective in single discipline settings, whereas this workshop incorporates an interdisciplinary education venue which utilizes the use of standardized patients in producing surrogate patient outcome data.

Art education bolsters two skill-sets - good communication skills and well-developed observational skills - that are important to healthcare providers, and therefore merit additional training (Bell & Evans, 2014; Zazulak, Halgren, Tan, & Grierson, 2015). Well-developed visual observation skills specifically are important to healthcare providers in assessing patient needs and providing safe patient care (Hall, Brajtman, Weaver, Grassau, & Varpio, 2014a). The Joint Commission notes that miscommunication is responsible for 80% of serious medical errors (The Joint Commission, 2012), with estimates that up to 440,000 deaths per year are due to preventable medical errors (James, 2013), and amount to accumulated losses of $12 billion annually in the U.S. (Agarwal, Sands, & Schneider, 2010). To improve communication, interprofessional education (IPE) tenets reinforce shared accountability, shared problem-solving, and shared decision-making (Interprofessional Education Collaborative Expert Panel, 2011). For enhancing observational skills, visual arts have been used extensively to enhance clinical observational proficiency in both nursing and medical education (Moorman, 2015; Shapiro, Rucker, & Beck, 2006; Wellbery & McAteer, 2015). Viewing and interpreting paintings improves the quality and detail of students' observations, and increases the communication capabilities among health care student teams (Klugman & Beckman-Mendez, 2014; Wellbery & McAteer, 2015; Zazulak et al., 2015). In addition to improving observational and communication skills, viewing and analyzing artwork also enhances students' tolerance for ambiguity, fosters empathy, and develops diagnostic reasoning skills (Bentwich & Gilbey, 2017; Zazulak et al., 2015). By stimulating conversation, healthcare students express their views of art through combinations of rational and emotional processes, at the core of creative expression (Tyler & Likova, 2012).

In this IPE Art Applications Workshop, 104 medicine, nursing and psychology students view paintings to increase their observation and communication skills and summarize those observations in written form. Students then bridge the classroom and museum settings and move into the realm of live simulation with standardized patients, applying the acquired skills immediately to a dynamic setting of human interaction, with its diverse context, background, words, and light. In these applications, student teams apply the observation skills learned through art assessment to standardized patients. The patient-centered observations offer crucial educational links because "patients' outcomes are congruently associated with their feelings about aspects of communication after the consultation with a physician" (Zandbelt, Smets, Oort, Godfried, & Haes, 2004). It is proposed that 55% of communication content is non-verbal, 38% is vocal and 7% is semantic (Mehrabian, 1972), and students learn to apply these acquired skills in a dynamic environment while continuing to observe physical bodily characteristics with comparisons to patient affects. This multi-tasking of oral and visual stimuli melds the acquired art observational skills to students' encounters with standardized patients and encourages student teams to immediately apply these skills in their standardized patient assessments, promoting confidence in utilizing these acquired skills.

3. Methods

The Art Applications Workshop incorporates IPE and collaborative exercises to increase students' observational skills through three 3-hour practicum sessions involving 104 students, comprised of medical students from a state university, and nursing and psychology students from private universities, all located in the Midwest. The 104 students are from medicine, nursing and psychology degree programs. This workshop is a component of their clinical skill courses. No IRB is required because this is a curriculum development workshop.

In Session 1, all 104 students attend an art lecture and workshop, and learn to apply observational strategies, which ask the students to describe in depth what they see, to assess what they see in relationship to other visual cues, and then to ask for further information on what more they can see (Sisson, n.d.). The 104 students are assigned to teams of six, with a mixture of students from each discipline. These student teams assess two paintings and one photograph as their 'Art Patients'. The student teams then apply the visual perception techniques they learned in the first session to applications in the subsequent sessions. In the second session, student teams analyze pieces of artwork in a museum as their 'Art Patients', in the third session the student teams apply the observational assessment techniques they learned through working with their 'Art Patients' to standardized patients to test their new skill capabilities. Each student team works together to observe, assess, and provide medical notes as deliverables for the second and third sessions.

3.1. First session

The initial 3-hour session begins with a 1.5-hour interactive presentation, delivered by an Art Department Chair that instructs students on visual assessment techniques and basic concepts in art (e.g. space, color, line, shape). The students then participate in an interactive workshop that involves two blind contour drawing exercises. Blind contour drawing is a method of drawing that trains the eye and hand to work harmoniously, requiring the student to observe all the details of an object's contour without looking at their paper as they draw. Blind contour drawing is an exercise that helps a person see an object in all its detail and activates the part of the mind that observes abstract shapes (Sisson, n.d.). The blind contour drawing exercises require students to draw two complete images.

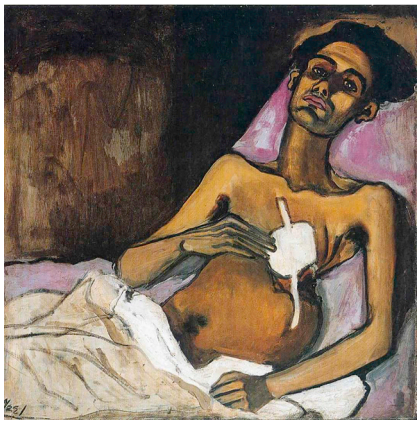
The Art Chairman then shows three additional images and asks students to further develop their observational skills by assessing these visual images. He engages the students in an in-depth discussion of the differences between *mere looking* at an object and *in-depth seeing and observing* an object. This exercise encourages the students to describe in detail what they see, to assess what they see in relationship to other visual cues, and then to probe for additional details of what they see (Sisson, n.d.). To increase the clarity of communication with other students, the Art Chairman asks each student to listen carefully to other students narratives and to become aware of potential differences in

perspective, to reflect on other students' areas of observational interest, and then to restate or paraphrase other students' thoughts to increase understanding (Sisson, n.d.).

Next, the 104 medicine, nursing and psychology students are assigned to teams of six and view three more images, which will be observed as their 'Art Patients' in additional 1.5 h classroom settings. No details are revealed about the artwork (i.e. artist, title, date, etc.) and the student teams are asked to spend time observing the artwork and applying the visual techniques to ascertain what they see. The teams then create a list of at least three differential diagnoses for each piece of artwork, and to list their diagnoses in order of likelihood. The student teams then explain what in the artwork indicates if the subject may, or may not, have the condition or disease.

These images are Robert Remsen Vickrey "Pulse" (1978), Alice Neel "T.B. Harlem" (1940) and Andrew Wyeth "Christina's World" (1948):

Robert Remsen Vickrey, "Pulse" (1978) https://www.google.com/search?q=robert+remsen+vickery+%22pulse%22&tbm=isch&source=univ&sa=X&ved=ZahUKEwjogKrZjpLiAhULCawKHUCbDuUQAR6BAgJEAE&biw=1366&bih=608#imgrc=IBwFn4fTEL6z7M:



Alice Neel, "T.B. Harlem" (1940) https://www.flickr.com/photos/gandalfsgallery/6825920692/in/photostream

Andrew Wyeth, "Christina's World" (1948) https://en.wikipedia.org/wiki/Christina%27s_World

After honing these observational techniques, student teams share their assessments of the artwork, listen carefully to each team's assessments, reflect on the points of interest, and paraphrase patterns and repetitive themes (Sisson, n.d.). Students focus on each art subject's gestures, postural position, eye contact and contextual environment. The teams then collaboratively construct an assessment note, which compiles the detailed observations of their 'Art Patients'.

3.2. Second session

In the second 3-hour session in a museum setting, the same student teams choose a piece of artwork that is considered their 'Art Patient' and apply the observational techniques from session one. The objective of this session is to reinforce the building of these observational techniques and to further interpret images based on the available evidence. The teams view, observe, and interpret these works of art, as these skills can translate into improved patient physical observation skills (Bell & Evans, 2014; Klugman & Beckman-Mendez, 2014). The student teams then construct the differential diagnosis and assessment note by compiling their observations of the 'Art Patient', with the goal of avoiding subjectivity and promoting objectivity.

3.3. Third session

In the third 3-hour session, the student teams interview two standardized patients. This exercise transitions the teams from a two-dimensional assessment setting to a three-dimensional live assessment, and from analysis of inanimate objects to analysis of living and reacting people. The student teams apply the observational techniques developed in the first two sessions to the standardized patients to observe and provide assessment notes.

The first standardized patient is interviewed by each of the student teams in a medical exam room. The standardized patient portrays a 49-year-old heterosexual married female coming to her primary care provider with a chief complaint of three months of general aches all over her body (especially in the back), generalized fatigue, and of "just not feeling well". This is her fourth visit in three months, but she is reticent to talk of what triggers her pain. The student teams obtain a detailed history relevant to the chief complaint, a pertinent review of systems, assess the causes of the pain complaints, and write an assessment note. The first standardized patient presents with slight blue and yellow bruising on the right side of her face near the temple area, as well as black and blue bruising on her right upper arm and right hip areas. The standardized patient is very hesitant to reveal that she is a victim of domestic violence but will reveal this if specifically asked.

The second standardized patient portrays a 44-year-old heterosexual single male, a sales representative road warrior, with four days of urethral discharge. He is reticent to reveal that he had sex eight days ago with a woman he met on his prior business trip. Prior to that incident, he had one sexual partner in the past three years. He is hesitant to reveal that he was treated for gonorrhea five years ago and fears he may have a sexually transmitted infection. He will reveal this information if nudged. The objectives are to practice eliciting difficult information from reticent patients, not comfortable sharing sexual history, past sexually transmitted infection or being a victim of domestic abuse.

The assessment notes the student teams create for the standardized patients list the collaborative observations of the team. The teams create at least three differential diagnoses (listed in order of likelihood) for the patients in the assessment notes and offer their provisions of supporting evidence for these diagnosis. These standardized patient encounters offer students opportunities to increase their observational and written detail capabilities, and to gain practice applying increased communication and empathy skills in their discussions with patients. By combining the lessons learned from observing artwork and applying them to standardized patient encounters, the students learn to further communicate and share details of what constitutes an image, and to

interpret those images and physical appearances based on the available evidence. At the conclusion of the third session, the students complete an anonymous post-survey, self-evaluation of the workshops.

4. Results

The analysis is a descriptive tabulation of all post-survey results. Eighty-five out of the 104 students completed the post-workshop survey. The post-survey results demonstrated that 91% of the students agreed/strongly agreed that they are better at visual observation, 92% of the students agreed/strongly agreed that they improved their communication skills in listening and encouraging the ideas and opinions of other team members, 91% of the students agreed/strongly agreed that they are more confident in communicating with students from different disciplines, and 97% of the students agreed/strongly agreed that they are more confident in collaborating with students from different disciplines as a result of the workshop.

Student Survey Questions	Disagree or Indifferent	% of all Nursing Students	% of all Medicine Students	% of all Psychology Students	Agree or Strongly Agree	% of all Nursing Students	% of all Medicine Students	% of all Psychology Students
1. I will be better at visual observation as a result of this workshop.	**9%**	3%	11%	20%	**91%**	97%	89%	80%
2. I am able to inform care decisions by integrating the knowledge and experiences of other professionals appropriate to the clinical situation.	**12%**	6%	17%	10%	**88%**	94%	83%	90%
3. I am able to listen actively, and encourage ideas and opinions of other team members.	**8%**	0%	11%	25%	**92%**	100%	89%	75%
4. I am able to engage other health professionals in shared problem-solving appropriate to the specific care situation.	**10%**	3%	13%	20%	**90%**	97%	87%	80%
5. I am able to apply leadership practices that support collaborative practice and team effectiveness.	**9%**	3%	13%	10%	**91%**	97%	87%	90%
6. I will reflect on individual and team performance for individual, as well as team performance improvement.	**3%**	0%	4%	10%	**97%**	100%	96%	90%

In addition, the students were evaluated on their assessment notes of the standardized patient encounters, and 82 students created problem-focused patient histories and completed assessment notes, with 73% making an accurate differential diagnosis and supplying the supporting evidence for each diagnosis. The assessment notes were graded based on their accuracy of differential diagnosis and degree of supporting evidence.

5. Conclusions

The objectives of this Art Applications Workshop are for medicine, nursing and psychology students to learn the visual observation techniques acquired in assessing art work, and to apply these skills to standardized patient encounters. The goals of these exercises are to enhance observation and communication skills, and to correctly write patient histories in collaboration with other healthcare students. The highest satisfaction scores came from the students' acknowledging their improved team dynamic and enhanced communication skills. By analyzing two-dimensional paintings for perceptual (Tyler & Likova, 2012) and conceptual learning, health professionals strengthen their visual cognition, hone their ability to process visual images and then refine their oral and communication skills in a collaborative setting (Klugman & Beckman-Mendez, 2014; Wellbery & McAteer, 2015). Moreover, discussing art interpretation can lower inhibitions and increase creative activity in certain subjects (Zaidel, 2014).

In the group dynamics, students applied their honed visual skill of interpreting nonverbal communication as well as their semantic summarizing skills (Tyler & Likova, 2012) to standardized patient encounters. Students learned to extract histories from reticent patients, detecting nonverbal cues. As over 55% of communication is nonverbal (Mehrabian, 1972), observing, interpreting, and discussing art enabled these students to consider cues such as gestures, postural positions, eye contact, and contextual environments. As practicing health professionals, these students will enter interview scenarios better equipped to interpret these non-visual cues (Vogel, Meyer, & Harendza, 2018). For greater preparation for healthcare settings, students are attuned to the possibility that nonverbal cues (i.e. gaze and body orientations) may be more important than verbal expression in understanding how patients communicate with them (Brugel, Postma-Nilsenová, & Tates, 2015). Moreover, nonverbal sensitivity, including the ability to recognize the emotional state of the patient, has a high impact on the quality of the provider-patient relationship (Hall, Brajtman, Weaver, Grassau, & Varpio, 2014b).

By repeatedly revising their chosen oral expressions in the group, and by asking and being asked several questions about what they see,

this type of visual repetition priming can encourage student to explore the visuospatial arena and engage in further semantic priming (Stevens, Kahn, Wig, & Schacter, 2012). Priming is a nonconscious form of memory in which encounters with a stimulus facilitate subsequent processing of the same or a related stimulus (Stevens et al., 2012). Measures of behavioral priming include increased accuracy, lower detection thresholds, and faster response time for identification, production, and classification of primed items (Stevens et al., 2012). Moreover, these students strengthened their conceptual links between drawing and language (Gainotti, Silveri, Villa, & Caltagirone, 1983; Kirk & Kertesz, 1989; Swindell, Holland, Fromm, & Greenhouse, 1988), because drawing may access the semantic system, improving cognitive access (Tyler & Likova, 2012). When triggering different cognitive modalities, distinct mechanisms are utilized to traverse and "process spatial representations in the visual modality" (Tyler & Likova, 2012).

Methodologically, weaknesses in this Art Applications Workshop involve self-reported post conference student surveys, which represent the lowest portion of the Kirkpatrick framework (Kirkpatrick, 1959). Additionally, the standardized patient scenarios provided surrogate patient outcomes. Weaknesses also revolved around 1) the amount of time medical, nursing, and pharmacy school curricula allow for visual arts IPE education, 2) the scoring of the students' team interaction and prior art observations skills with a qualitative tool, if one exists, and 3) lack of funding for the videotaping and external review of the standardized patient interviews to score students' use of verbal language, learned from the art observation lessons. Long term skill and attitude retention were not assessed.

Finally, by assessing art, these students learned to assume the subject's role in the artwork, experience their emotions, and mentally don their physical condition (Piechowski-Jozwiak, Bartlomiej, Boller, & Bogousslavsky, 2017). By doing so, they learn a key component of empathy, the "ability to *understand* the patient's inner experiences and perspective, and a capability to communicate this understanding to others" (Hojat et al., 2003) as well as the affective dimension, i.e. the ability to perceive the patient's emotions and perspectives (Gainotti et al., 1983). Understanding a patient's affect is core in interpreting body postures, facial expressions, and gestures (Hojat et al., 2003). Students are challenged to improve their visual acuity by blind contour drawing, a skill which improves their spatio-motor cognition abilities and promotes cross-cognitive transfer in learning and creativity (Tyler & Likova, 2012). By interviewing standardized patients, students focus their perception on three-dimensional figures; and also learn to recognize disparities in depth perception that they may not have encountered in two-dimensional art (Mayer, Salovey, & Caruso, 2008).

For the next iteration of this study, a three-pronged baseline assessment of visual, oral, and team communication skills will be given to the students during the first hour of the workshop. This assessment will be administered again at the end of the workshop to measure incremental changes in each student as well as health care discipline as a group. The art instruction sessions should be extended to include art drawing, live model sessions and additional self-critique of their own artwork. Videotaping of the initial student art discussions can be compared to the standardized patient interviews to assess students' expressive and vocabulary changes as well as non-verbal cues. Moreover, standardized patients should score each student teams' ability to coax out information on additional verbal and nonverbal cues. Finally, students should offer peer feedback on other students' level of expressive inhibition/introversion as well as listening skills. In conclusion, this IPE Art Applications Workshop demonstrates self-reported enhanced perceptions of collaboration, observation, and communication skills in both case notes and standardized patient medical notes.

Declaration of Competing Interest

The Authors declare no conflicts of interest for this project.

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