From Contemporary Art to Core Clinical Skills: Observation, Interpretation, and Meaning-Making in a Complex Environment

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Abstract

Many medical schools have incorporated experiences with representational or figurative art into the curriculum in an effort to improve learners' powers of observation, visual diagnostic skills, and pattern recognition skills or to enhance communication skills, foster teamwork, and/or improve empathy. The Keck School of Medicine of the University of Southern California has partnered with Los Angeles' Museum of Contemporary Art to design an educational experience with the goal of honing students' abilities to observe, describe, and interpret complex information. The authors discovered that through a constructivist approach to viewing and discussing nonrepresentational, contemporary art, students were able not only to apply their observational and interpretive skills in a safe, nonclinical setting but also to accept the facts that ambiguity is inherent to art, life, and clinical experience and that there can be more than one answer to many questions. This intervention, entailing extensive guided inquiry, collaborative thinking, and process work, has allowed students and faculty to reflect on the parallel processes at work in clinical practice and art interpretation. In patient encounters, physicians (and physicians-in-training) begin with attention and observation, continue with multiple interpretations of that which they observe, move to sorting through often ambiguous evidence, proceed to collaboration within a community of observers, and finally move to consensus and direction for action. In the worlds of both art and medicine, individuals imagine experiences beyond their own and test hypotheses by integrating their own prior knowledge and intuition and by comparing their evidence with that of others.

Numerous medical schools and at least one postgraduate training program have incorporated experiences with art observation into their curricula in an effort to improve learners' powers of observation, visual diagnostic skills, and pattern recognition skills. Other goals of these educational interventions, which are based on viewing and discussing works that have an effect on emotions or promote cross-generation/cross-cultural awareness, have been to enhance communication skills and teamwork and/or to improve empathy and personal awareness. These interventions comprise everything from a single-session interaction with artwork to a series of structured classes involving collaboration between clinicians and art educators. The first report of such activity, to our knowledge, is a letter by Jacqueline Dolev and colleagues[1] from Yale School of Medicine in *JAMA* in September 2001. Later that year, Charles Bardes and colleagues[2] described the educational collaboration between Weill Cornell Medical College and the Frick Collection, the goal of which is to develop students' skills in observation, description, and interpretation. In 2004, Paul Rodenhauser and colleagues[3] reviewed many arts-related activities across U.S. medical schools. After that, Johanna Shapiro and her colleagues[4] reported on their work using the arts to develop medical students' observational and pattern recognition skills, and Nancy Elder and colleagues[5] wrote about a partnership with the Cincinnati Art Museum through which they developed a Year II elective course called the "Art of Observation," meant to foster students' observational, descriptive, interpretive, and reflective skills. The first prospective, partially randomized study of the use of visual arts in medical education involved students who had participated in a series of eight sessions that focused on incorporating art observation and physical diagnosis.[6] These students were significantly more likely than those in the control group to make accurate observations of both art and physical findings. The investigators who conducted that study,[6] as well as Reilly and colleagues,[7] use carefully selected pieces of medically related art that offer multiple meanings, to stimulate cognitive thinking, teamwork, and critical learning in medical students.

The Keck School of Medicine (KSOM) of the University of Southern California has partnered with Los Angeles' Museum of Contemporary Art (MOCA) to introduce an educational experience, the goal of which is to enhance students' core clinical skills through guided instruction in observation, description, and interpretation of visual art. To our knowledge, this is the only art and medicine experience to focus solely on contemporary, often nonrepresentational art.

Contemporary Art

More so than representational or figurative art, contemporary art often

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fosters multiple interpretations and reflects the psychology of the artist, the time in which the artist lived and worked, and the artist's desire to deeply engage the viewer on multiple levels. Contemporary art may demand a different kind of viewing than more traditional art forms, and it may create more obstacles for the viewer as it challenges some of the widely held beliefs and values of our time. For example, in the case of Louise Bourgeois' sculpture work (described later in this article), several of the abstract "personages" have little or no resemblance to people, except for their vertical orientation; nevertheless, viewers interpret their various forms, colors, heights, etc., attributing different personalities, moods, and motivations to each. Likewise, Rothko's color-field paintings evoke in different viewers particular emotional responses, which often parallel other people's responses to these works.

Contemporary artists often rely on metaphor, open-ended symbolism, nonrepresentational imagery, and images from popular culture for which associations and interpretations are not fixed. Because contemporary artists rely on color, sound, space, smell, and abstracted shape and line to create a connection with the viewer on a *subconscious* as well as a conscious level, the viewer must combine visual examination with emotional response, psychological association, memory, and kinesthetic observation (moving around to get a different view) in order to gather information from the work and create meaning. An important part of the training at MOCA is translating the thinking process and the insights gained from both intuition and sensory experience into language.

Although our initial efforts in the design of this session were aimed at honing observational skills, we were pleased to discover that students and faculty alike responded with great enthusiasm to the opportunity to think about their imaginative and interpretive skills, their comfort with ambiguity, and the importance of community in the integration of new knowledge. In this article, we describe this innovative educational experience, present the evaluation data to date, and briefly discuss our plans for future development and study.

Art and Medicine at MOCA

At KSOM, Year I and II students spend one half-day per week in the Introduction to Clinical Medicine (ICM) program, which focuses on early clinical skills. Most of their experiences take place in the hospital or clinic and entail encounters with actual patients. On selected mornings, ICM groups, composed of six students and one faculty preceptor, may elect to participate in a structured focus experience, or mini-elective, that takes place in another setting. For example, students might elect to visit a grief support organization or a dialysis center to learn more about a particular topic relevant to clinical practice.

We began planning the Art and Medicine Focus Experience in 2003 shortly after the opening of an art gallery featuring student and faculty art at KSOM. We read about other schools' experiences with medical students visiting art museums and implemented the experience in 2004 at the University of Southern California's Fisher Museum of Art. We began the collaboration with MOCA in 2008 (see Table 1 for details of collaboration.) Since then, more than 20 groups of Year II ICM students have participated.

MOCA's Pedagogical Approach

The museum's educators approach teaching and learning from a constructivist perspective that is meant to enhance critical and creative thinking skills. The ultimate goal is to increase learners' (in this case, medical students') ability to think reflectively about what they see, a goal shared by medical educators who teach clinical skills. Constructivist learning is predicated on the recognition that learning is dependent on the active participation of the learner: The conclusions that learners reach are valuable not because they can

Table 1

Resources Shared and Not Shared by the Keck School of Medicine (KSOM) of the University of Southern California and the Museum of Contemporary Art (MOCA), 2008–2011

Resources	KSOM	KSOM+MOCA	MOCA
Faculty/institution	Clinical faculty with expertise in visual/literary arts		Expert art educators and institutional commitment to community education
Course design		Collaborative effort of clinical and museum faculty after review of literature in both fields	
Time	Incorporated into existing curriculum as new "focus experience" in Introduction to Clinical Medicine		Approximately one Thursday morning per month before museum opens to public
Funding	In kind: allocation of two faculty members' time of three hours/session; minimal clerical time for each session	No external funding: MOCA's educational mission aligns with KSOM's mission to stimulate imagination, curiosity, skills of close observation, and careful interpretation through engagement with the arts and humanities	In kind: allocation of art educator's time of three hours/session; security officer time; entrance fees

be validated as "true" but, rather, because they are backed by the evidence at hand and because they are the result of making cognitive connections between personal experience and new ideas. Constructivist inquiry in a visual arts setting involves asking initiating questions, asking questions to respond and follow up, and inserting information at key points. Art educators—as well as clinical teachers—sequence dialogue so that objective questions about observations precede interpretive questions. They gather data as a place to begin exploration, postponing any "solution" for as long as possible so that discussion and insight can flourish. The goal is to explore ideas rather than to reach incontrovertible conclusions. Educators who use a constructivist approach reward divergent responses by exploring the potential of each as a path of further inquiry. They encourage students to read their emotional or personal responses, which become, once the students deconstruct and understand them, possible sources of additional information.

Through this process of guided inquiry, students come to recognize their own knowledge in the form of detailed examples, evidence, ideas, theories, and speculations. The facilitator who is guiding the process then attempts to push the thinking further through asking additional questions and encouraging the group process. In his work on the social and constructivist nature of cognition, L.S. Vygotsky[8] theorizes that learning is most likely to take place in the "space" between a student's ability to perform a task either under the guidance of a more knowledgeable person or through peer collaboration, and the student's ability to solve a problem independently. The focus experience at MOCA, which incorporates expert-guided, collaborative construction of knowledge, provides Vygotsky's requisite space for medical students. They struggle in a nonclinical but fraught environment to interpret complex and potentially conflicting meanings.

Logistics and Progression of Learning Activities

Most often, two ICM groups visit MOCA together (for a per-session total of 12 students). Each session, which occurs early in the morning before the museum opens to the public, lasts about three hours.

The faculty apprise the students of the objectives of the focus experience in advance. Students will

- Identify visual and narrative elements in a series of works of art,
- Apply observational and interpretive skills in a nonclinical setting,
- While working as a team, integrate prior knowledge in the service of interpreting what is portrayed,
- Gain comfort with ambiguity as an inherent part of art, life experience, and clinical practice, and
- Understand that there can be more than one answer to many questions.

We (i.e., two clinician educators who have expertise in the visual arts [R.M.T.] and literary studies [P.B.S.], and MOCA's director of education [S.I.]) meet the students and their ICM preceptors at the museum. After setting the agenda for the day and pointing out the terminology shared between visual description in art and physical diagnosis in medicine (line, color, shape, and texture), one of us (S.I.) introduces the educational approach at MOCA, making clear its emphasis on observation, exploration, listening, and interpretation, all of which parallel medicine's core clinical skills. We point out that students' engagement with the works—that is, their interpretation of and decision making in art—as opposed to their work in clinical encounters with patients, has no life or death consequences. In other words, observing and discussing art is a safe way to explore these skills, even if some initially feel uncomfortable or inexpert. One of us (S.I.) then takes the group through a series of observations and discussions in MOCA's galleries. Because the exhibits at the museum change regularly, the experience is never exactly the same; however, the *process* of engaging with the art remains consistent.

The first exercise is a warm-up intended to elicit full participation. We have designed it to impress the students with the different ways that each person in the group interprets what he or she sees, to encourage students to learn that the longer they look, the more they see, and to give them easily accessible tools to structure their observations. For the warm-up exercise, students observe a group of nonobjective or nonrepresentational works of art. We ask each of them to independently (and privately) select a work and then to write a list of 10 words or phrases that describe their own physical and emotional responses to it. For example, if the students are observing Louise Bourgeois' abstract "personages," the art educator (S.I.) encourages the students to describe the person represented by the abstract form. In a room of Mark Rothko paintings, she asks them to write any personal associations that come to them as they view the selected painting—but they may not use the names of colors. As the students observe and write, they automatically begin to think metaphorically about the art work.

After the students have written their lists, each reads his or hers aloud, and the group members attempt to match the description to the artwork—working backward from the verbal to the visual. Follow-up questions encourage students to explain what they saw that supports their interpretations. When two students choose to describe the same work of art, we ask the group to examine how the two students' visions are similar or dissimilar.

Next we encourage students to reflect on their thinking processes: *How did the group work together to explore solutions to the question of meaning? What metaphorical language is common to the group and what is purely personal? How did their observations develop? What influenced changes in the group members' level of attention to detail or to the whole picture? How did the interaction between the educators and the students influence the process?* As the students and faculty undertake this metacognitive journey, fascinating observations and conclusions emerge. Students comment, for example, that when they label Bourgeois' personages or Rothko's paintings with words, they "turn nonverbal shapes or colors into feelings." They each build unique stories from blocks of color or abstract shapes, yet the similarities of their interpretations impress them. Students have wondered if their group's shared "visceral" understanding of art would translate across cultures.

The third step is the initiation of guided conversations about particular art works. This activity requires students first to find facts or create an inventory of visual cues related to a work of art, then to progress

to questions about how the parts of the art actually work together and how artistic choices affect meaning (as well as a cumulative building of all the possible meanings), and, finally, to arrive at a consensus of likely interpretation through soliciting additional factual information by asking questions. During this portion of the focus experience, the art educator may ask them to consider the following: *What associations does this work inspire in you? What else might the artist be trying to convey? What has the artist done to contribute to your impressions?* Students are often surprised by the dimensions of the knowledge that they and their peers and faculty recruit in the course of their interpretive work. They comment that they come to a "richer, deeper, and broader" understanding of the works through hearing what others have experienced or "know." The clinical faculty are quick to point out how very similar the process of constructing knowledge in the art world is to the process of constructing knowledge in the clinical world where it is essential to excellence in patient care.

In the last portion of the experience, groups of students explore a work of art on their own, noting and then publicly sharing their group process, the questions that developed, and how the group answered them. In the last 20 or 30 minutes, in a quiet space away from the galleries, students and faculty step back and think about the experience in its entirety. Much of the conversation that takes place during this final portion of the session focuses on the parallels of the work done in the art museum and in the clinical setting. Students and faculty discuss the anxiety that results from having to interpret multiple, often conflicting clues gleaned from a history or a physical; they talk about the recognition that thinking with others (their peers, more senior trainees, or faculty) helps them to construct both specific knowledge and a way of thinking (clinical reasoning skills); they explore the role of intuition in clinical practice and the importance of checking that intuition against the evidence conveyed by historical and physical data; and lastly they recognize that uncertainty is often a given in life and medicine, as it is in art. After the formal guided inquiry and discussion, we give students 30 minutes to explore the museum on their own before returning to campus for lunch and afternoon classes.

At each step of the guided museum visit, we encourage students to reflect on and understand the progress of their thinking and observation processes. Through informal and collaborative conversation, the faculty provide a safe atmosphere for exploration, discussion, and interpretation. Effective teaching in the art museum requires accessing different kinds of strategies for extending divergent thinking. By encouraging fluency, flexibility, elaboration, and abstraction, deeper and more meaningful analysis takes place. Experience with creative thinking skills may help students gain fresh perspectives and may encourage curiosity and openness to additional possibilities in the arena of clinical diagnosis.

Evaluation

Approximately 30% of the Year II students have completed the Art and Medicine Focus Experience during each of the past three academic years (2008–2009, 2009–2010, 2010–2011). ICM groups choose the MOCA experience from a menu of 10 choices, but the decision to attend a particular experience may not be unanimous. Over the past two years, student and faculty interest in the Art and Medicine Focus Experience has steadily increased. The ICM course administrators report that although only 10 student groups can currently be accommodated each year, approximately 20 of the 28 Year II ICM groups asked to participate during the 2010–2011 academic year.

At the end of the Art and Medicine Focus Experience, we ask students to rate the degree to which objectives of the experience were met (on a five-point Likert-like scale, where 1 = not at all and 5 = very adequately). The evaluation tool also asks students to comment on the most valuable aspect of the experience, to provide recommendations or suggestions, and to say whether they would recommend this experience to other students. The University of Southern California institutional review board has deemed this evaluation to be not human participants research. The data gathered are anonymous and password protected.

Evaluations of the Art and Medicine Focus Experience have been overwhelmingly positive. The students rate the experience's fulfillment of its objectives very highly; the mean Likert score has been 4.87, 4.70, and 4.78 for, respectively 2008–2009, 2009–2010, and 2010–2011, making it the most highly rated of all ICM focus experiences (the mean score for all Year II focus experiences for this time period was 4.18). Selected student comments include the following:

> This was my favorite ICM experience EVER. I am so glad I had this opportunity to reflect on interpretation, teamwork, and ambiguity through art (emphasis in original).

> The most valuable part of this experience was the director of education guiding us through the exhibits and asking us questions that made us consider how we interpret and make connections.

> This was a unique experience within the context of medical school. It was very valuable to be able to engage with classmates about art, to have a dialogue about different works of art, and to work together to delve into the[ir] meanings. I learned something from every person who participated, and was blown away with some of the insights that my colleagues who claim to "know nothing about art" and take little interest in it, were able to make. Beforehand I was excited about going to see art but thought the connection to medicine would probably be forced. In fact, the connection was strong and very compelling in terms of group process, the importance of different perspectives in formulating an impression (be it art or a new case), and enhancing our perceptive abilities. I cannot say enough about the experience and I wish all Keck students and all future doctors were able to take part in an experience like this.

We recognize that in order to analyze any measurable or longitudinal outcomes of the Art and Medicine Focus Experience at MOCA, students will need more than a single museum visit, so we have begun to explore the idea of randomizing Year II students into an eight-week mini-course. Perhaps participation in this course will improve students' observational or interpretive skills. We could test this hypothesis through analyzing students' performance on clinical reasoning exercises, both pre- and postcourse, or perhaps by comparing the performance of two randomized groups on such an exercise. Further, we have conducted an

ICM faculty retreat at MOCA so that all the faculty preceptors would have the opportunity to engage with the art and the constructivist process of observing it—for enjoyment, and in service to their clinical and educational work. Future evaluation efforts will include the faculty participants, and we hope to be able to study the effect of this intervention on their practice and teaching as well.

Observation, Interpretation, and Collaborative Meaning-Making

Although a growing number of medical schools access art museums to assist students in developing their visual and perceptual skills, the use of a constructivist approach to viewing contemporary art enables students to transfer the process of synthesizing their observations, prior knowledge, self-knowledge, and experience of the process to the practice of clinical diagnosis. The open-ended meanings embodied by contemporary art allow students to develop a resistance to closure and an ability to manipulate and play with ideas. The experience of observing and interpreting contemporary art through a constructivist lens allows medical students to try on various interpretations simultaneously and to discard or transform those ideas as they collaboratively create a web of possibilities about interpretation and significance. As the process requires them to look longer and to support their initial ideas with evidence from their observations, students learn the value of postponing a seemingly inevitable conclusion in order to deepen and broaden the solutions to the problem at hand.

Students often comment during the wrap-up conversation that they are reminded both of the importance of probing preliminary assumptions and of the value of hearing perspectives other than their own. As with the medical team's approach to a clinical encounter, the process that takes place during the Art and Medicine Focus Experience at MOCA begins with observation, continues with multiple interpretations of that which is observed, moves to sorting through often ambiguous evidence, proceeds to collaboration within a community of observers, and finally moves to consensus and a direction for action.

In Sum

As Julia Marshall[9] writes in *Visible Thinking*, much contemporary artwork serves to translate ideas and concepts into visual form and to reveal the thought processes involved in making the work. She writes, "When students are directed to the processes behind contemporary artworks, metacognition is fostered"; that is, students become engaged in a kind of metacognition that is critical to learning. Through their experience at MOCA, students and faculty engage in this metacognitive process together and reflect on the process of how they encountered the works of art and created their own communal interpretive work. To illustrate, during the wrap-up session, one of the ICM faculty preceptors said to the students in his group, "When I heard your interpretive responses … I was struck by your recruitment of imagination. Those stacks of geometric pieces and curved linear structures were transformed into images and symbols of the human condition."

Each time we conduct the focus experience, a rich discussion occurs, leading to an inspired recognition that this collaborative, critical thinking process is parallel—and *vital*—to effective clinical practice. Individuals in both realms observe with intention, test hypotheses by integrating prior knowledge and comparing their evidence with that of other observers, imagine experiences beyond their own, and recognize that uncertainty is an inherent part of what they do.

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