

IMAGES OF HEALING AND LEARNING

The Use of Visual Arts as a Window to Diagnosing Medical Pathologies

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Abstract

Observation is a key step preceding diagnosis, prognostication, and treatment. Careful patient observation is a skill that is learned but rarely explicitly taught. Furthermore, proper clinical observation requires more than a glance; it requires attention to detail. In medical school, the art of learning to look can be taught using the medical humanities and especially visual arts such as paintings and film. Research shows that such training improves not only observation skills but also teamwork, listening skills, and reflective and analytical thinking. Overall, the use of visual arts in medical school curricula can build visual literacy: the capacity to identify and analyze facial features, emotions, and general bodily presentations, including contextual features such as clothing, hair, and body art. With the ability to formulate and convey a detailed “picture” of the patient, clinicians can integrate aesthetic and clinical knowledge, helping facilitate the diagnosing of medical pathologies.

The more one looks, the more one sees.

Dr. Abigail Housen, art educator [1]

Introduction

[Observation skills](#) are required for the practice of medicine, yet they are rarely formally taught in medical school curricula [2]. Observation means careful looking and it is sometimes assumed to have happened when, perhaps, it has not [3]. Derived from the Latin word *observare* (“watch over, note, heed, look to, attend to, guard, regard, comply with” [4]), clinical observation requires more than a casual glance; it requires deft integration of visual information. “Visual literacy” [5] is a kind of aesthetic reasoning informed by careful observation that can help generate meaning, based on the images viewed. Notably, there is no accepted system to teach visual literacy to physicians-in-training. However, [use of visual art forms](#), such as paintings and film, has been integrated into curricula at several medical schools [6-7] (also KAB, unpublished data).

The Value of Visual Literacy in Medicine

Humans are not machines, yet it is easy for medical students, especially those in their preclinical years, to view the body as simply a collection of parts. As students begin to

work with simulated patients (actors) and real patients, they discover other elements that are critical to [whole-person care](#)—namely, emotional, psychological, and spiritual aspects. Although physical presentation is an obvious component of observation, emotions can also be interpreted from facial expressions and body language, and these, together with contextual features such as clothing, hair (dirty, clean, uncombed, finely coiffed) and body art, create a “picture” [8] of the patient and his or her humanness [3].

Visual literacy can inform clinicians about things the patient is not directly telling them that might be relevant to a diagnosis or to good communication. For example, patients who are unable to communicate their symptoms due to their clinical state (e.g., coma, intoxication, or hepatic encephalopathy) may display swollen features or erythema. Some patients withhold information from their clinicians due to embarrassment, fear, and the desire to avoid confrontation [9-10], which might be evident from the presence of perspiration, pallor, or body language. By exploring a patient’s facial expressions [11-12], emotions, body language, and contextual features, clinicians can glean nonverbal cues to support how they care for a patient.

The ability to clearly capture and document what is observed is also an aid to teamwork and collegiality. Clinical team members (including nurses and allied health staff) should be able to read a chart note and envision a [“picture” of the patient](#), as medicine is a multidisciplinary effort. Additionally, a thorough picture of the patient can aid clinical investigators who subsequently review charts during the course of research. As early as the 1800s, the value of such documentation was noted by physician Louis Martinet when he stated, “The report of a case should be like the copy of a picture.... the observer should still express its real character” [8].

The Medical Humanities Curriculum at Bond University Medical School

In 2014, the medical humanities program at Bond University School of Medicine in Queensland, Australia, was formally overhauled. The history of medicine lecture and compulsory reflective film-making assignment (viewed as too technically demanding by some students) were replaced with the following four elements: (1) a 50-minute, noncompulsory Medical Humanities Workshop; (2) a compulsory mixed media art creation and reflective essay assignment; (3) Medical Humanities Week; and (4) the Art is Good Medicine community art exhibit. This medical humanities curriculum is offered during year two of the five-year undergraduate medical degree program.

The Medical Humanities Workshop. This workshop uses visual thinking strategies (see table 1) to teach visual literacy [6]. A clinical ethicist (KAB) leads the session, which introduces students to the concept of medical humanities and reviews evidenced-based support for the value of the medical humanities in medical education [2-3, 5, 13-16].

Table 1. Visual thinking strategies used in the Bond University Medical Humanities Workshop

Students are encouraged to actively listen to and engage with their peers and the creative work (film, poem, painting).
All students are given the opportunity to express their opinion about the creative work.
With the film clip/poem/painting shown on a large screen, the teacher points to and focuses students' attention on features of the creative item displayed.
All student comments are acknowledged by the teacher.
The teacher offers no positive or negative evaluation of student opinions.
The teacher positively affirms students' opinions (i.e., there are no wrong answers or views).

The remainder of the session comprises observational activity, with the class divided into three groups. All three groups perform their observations simultaneously (but separately). With all groups present together the teacher then interacts with each group using visual thinking strategies to draw attention to visual cues and their significance. During this experience, all groups listen to and interact with each other about their observations and interpretations. While wearing headphones/earbuds, Group #1 watches a brief film clip on a laptop or tablet device (e.g., the scene from *The Diving Bell and the Butterfly* [17] in which a doctor describes his ski trip to his patient with locked-in syndrome or the scene from *Silver Linings Playbook* [18] in which a psychiatrist plays anger-triggering music in his clinic waiting room). Group #2 studies an award-winning poem [19] written by a medical student during her oncology rotation. Group #3 studies high-resolution color printouts of a painting (see table 2).

Table 2. Bond University Medical Humanities Workshop teaching images (Group #3)

Painting	Artist	Date	Image
<i>The Madness of Joanna of Castile</i>	Lorenzo Vallés	1866	Joanna refuses burial of her deceased husband (Philip I), believing he will be reanimated [20].
<i>Self-portrait with Dr. Arrieta</i>	Francisco de Goya	1820	The artist is the patient, receiving treatment from his physician [21].
<i>Healing the Deacon Justinian</i>	Giovanni da Fiesole	1443	Saint Cosmas and Saint Damian transplant the (black) leg of a Moor onto the (white) body of deacon Justinian [22].

Note: Images rotate in the curriculum each year.

The mixed media assignment. The compulsory art assignment gives students seven weeks to create a work of mixed media on any topic related to health care (for examples, see figures 1 and 2). Mixed media is the required type of art as this allows students a wide range of creative expression, rather than limiting them to simply drawing or painting. The students also write a 500–1,000 word reflective essay that describes the media, interprets the artwork, and discusses their reasons for creating the artwork. The students submit their essay and a photograph of the artwork for assessment, and the assignment is marked on a 100-point scale using seven marking criteria: (1) the ability of the artwork to communicate the student’s message; (2) photographic quality; (3) quality of descriptive writing; (4) quality of interpretive writing; (5) quality of reflective writing; (6) adequacy of referencing; and (7) grammar, syntax, and spelling. On the rare occasion that a student fails the assignment, it is generally due to not following directions (e.g., creating art that is not mixed media—for example, a pencil sketch or performance art). Artistic talent is not a marking criterion.



Figure 1. *Trauma*, by Sachi Chadha. Reprinted from *Art Is Good Medicine* [23] with permission of the author.



Figure 2. *Too Many Words*, by Hana Yusuf. Reprinted from *Art Is Good Medicine* [24] with permission of the author.

Medical Humanities Week and the Art is Good Medicine community art exhibit. During a five-day period each March, the foyer of the medical school is converted into an art gallery displaying mixed media art creations from the compulsory assignment. Each year, approximately 20-25 students (from a class of approximately 100) volunteer to display their art during Medical Humanities Week. Students and teachers from across the university visit the foyer to view the art. Medical Humanities Week culminates with an evening gala for the local community, giving medical students the opportunity to interact with teachers and fellow students as well as parents and guests attending the free event. The gala also includes a live performance from the Bond University Orchestra. The art is judged by two professionals from the community and an AUD \$100 prize awarded. Teachers also judge the art during the week using an online survey; the winner of the Teachers Choice Award receives an AUD \$50 shopping mall gift card. At the conclusion of the event, an exhibit book is produced and distributed free worldwide on the Internet [23-25].

Compared to the prior curriculum, this revamped curriculum allows students to explore their “creative side” without the pressure of a requirement for technical or artistic skill. The art gallery component promotes direct interactions with peers, teachers, and the community (their future patients). And the use of visual thinking strategies during the workshop gives students an opportunity to deepen their observation skills.

Evaluation of Bond University’s Medical Humanities Curriculum

In April 2016, the impact of Bond’s new medical humanities curriculum was studied using a Human Research Ethics Committee-approved protocol [6].

Method. Feedback was solicited with a voluntary, anonymous, online 15-question survey [26]; no demographic data was collected. Most questions were multiple-choice with an open-ended free text option. (Questions other than Yes/No/Undecided allowed for multiple answers to be selected.) The survey was posted on students' electronic blackboard and the cohort Facebook page, with one survey reminder posted after two weeks.

Participants. The survey was offered to 280 medical students who had taken the curriculum; 23.6 percent ($N = 66$) completed the survey. Three cohorts participated in the evaluation study: Cohort #1, from 2014 ($n = 16$); Cohort #2, from 2015 ($n = 18$); and Cohort #3, from 2016 ($n = 32$). (Since the data were collected from the three cohorts simultaneously, the cohorts had two years, one year, and one month of reflective time after participating in arts education, respectively.) Since taking the curriculum, all student groups would have interacted with both real patients and simulated patients.

Results. The majority of the students supported the addition of arts education to the medical school curriculum (54.6 percent) and keeping arts education in the curriculum (63.6 percent). Upon hearing about the requirement of undertaking the art assignment, many students reported liking the idea (42.4 percent) or being excited about it (39.4 percent). After completing the art assignment, many students felt pride (65.2 percent), a sense of achievement (53.0 percent), and enjoyment (48.5 percent). Most students were comfortable with the quantity of arts education (62.1 percent), although some wanted more of it (18.2 percent) and some less of it (19.7 percent).

All three student groups ranked improvement of reflective thinking as the skill most influenced by arts education. Improvement in observation skills was also ranked among the top three skills by all three cohorts. Interestingly, a large proportion of students from Cohort #1 (2014) and Cohort #3 (2016) indicated that arts education had no impact on their skills (43.8 percent and 40.6 percent, respectively). Perhaps the reflective period for Cohort #1 was too short and Cohort #3 had additional education experiences during their lengthy reflective period that overshadowed anything potentially gained from the arts curriculum.

Furthermore, after engaging with the arts curriculum, 40 percent of students were actively creating art or observing art as a method of stress relief. This finding is important due to the high-stress nature of medical education and the attendant psychosocial and health risks that students face [27, 28]. Additional data from the evaluation study are presented in table 3.

Table 3. Partial data from the Bond University medical humanities curriculum evaluation study

Question	No. (%) of students			<i>M</i> ^a (<i>N</i> = 66)
	Cohort #1 2014 (<i>n</i> = 16)	Cohort #2 2015 (<i>n</i> = 18)	Cohort #3 2016 (<i>n</i> = 32)	
Curriculum				
Attended workshop	7 (43.8)	12 (66.7)	18 (56.3)	37 (56.1)
Exhibited artwork	9 (56.3)	9 (50.0)	15 (46.9)	33 (50.0)
Attended exhibit	12 (75.0)	9 (50.0)	17 (53.1)	38 (57.6)
Future art ^b use				
Office décor	10 (62.5)	13 (72.2)	22 ^c (71.0)	45 ^d (69.2)
Stress relief	7 (43.8)	6 (33.3)	13 ^c (41.9)	26 ^d (40.0)

^aThe final column (*M*) is the mean percentage over all cohorts.

^bMore than one response permitted; top two responses ranked.

^c*n* = 31

^d*N* = 65

Students' comments—most of which were positive—express the value that the arts curriculum had for them.

"I still display my artwork in my room and will continue to do so for many years to come" (fourth-year medical student, Cohort #1).

"Many people did not see themselves as creative, and were frustrated and refused to see the value in such an assignment because they thought they would perform poorly. For this reason, I think it is a useful exercise, not just for the relevance of the medical humanities, but to force students to move outside of their comfort zone and be resilient which are skills vital to becoming a successful junior doctor" (fourth-year medical student, Cohort #1).

"I think its [sic] a fantastic inclusion to the program. Arts education in medicine helps to humanise science and connect medical education theory into a patient journey. The art also brought out other qualities the medical student possesses other than science. It [made] me realise how

creative and thoughtful some of my peers were and that deep down the really do think about and care about the patient's journey in medicine" (third-year medical student, Cohort #2).

"I spent a lot of time on it that could have been spent studying" (second-year medical student, Cohort #3).

"The art assignment made me remember why I decided to study medicine. It is easy to forget when all you do is study study study [sic]. The art assignment made me stop and reflect, resetting [sic] my drive to study to become a doctor not just for exams. Thank you" (second-year medical student, Cohort #3).

"Its [sic] easy to be blinded by the science part [of medical school] and forget the human part. So its [sic] good to have a well-balanced approach syllabus" (second-year medical student, Cohort #3).

The positive comments show students' general support for visual arts in the medical school curriculum. It is possible that some students will never find value in [medical humanities education](#) and view it as a distraction from their scientific studies. Although the purpose of medical education is said to be training students to form a "balanced judgment" about the data they encounter [29], it would be difficult to gain balance if students exclude their patients' humanistic data in favor of the "science." Including medical humanities education in medical school curricula is thus vital to the cultivation of balanced judgment.

Study limitations. Firstly, the low response rate (small sample size) is acknowledged. This is a common problem at our medical school, and steps are being taken to address it, as medical education research is valuable. Secondly, skills were self-reported by students rather than formally assessed, and self-reported data in the form of memories can be selective. Moreover, the three cohorts had taken the curriculum during different years. The 2016 cohort had a one-month reflective period that may have been too short for skills assessment and thus not readily comparable to the longer reflective periods of the other cohorts. Also, other aspects of medical education, in addition to visual arts exposure, could have influenced students' self-reported data about their reflective, listening, and observational skills.

Although the sample size of this study was too small to draw definitive conclusions, students who indicated that they had no involvement with the arts prior to enrolling in medical school (19.7 percent) generally had very low opinions of the arts curriculum when they were initially informed of it. It appears that exposure to the arts prior to medical school fosters receptiveness to arts education during medical school. By

contrast, students who have no arts exposure prior to medical school might not see the relevance of the arts to their education or medical practice.

Possible Application of the Bond University Medical Humanities Curriculum to Pathology

The Bond University medical humanities curriculum is currently delivered during education “blocks” focused on the immune, endocrine, and musculoskeletal systems; however, the medical humanities content has no direct link to the scientific content of the blocks. This was done to give students more freedom of artistic expression within their compulsory assignment. Another approach could be to directly link the medical humanities content with the scientific content. For example, an anatomy session could be co-taught with a [medical illustrator](#) experienced in drawing pathologies for books and journals. Another option would be to create a session that linked standard anatomical teaching with the history of medicine, using a medical historian to educate by way of famous paintings depicting pathologies [30-32].

Conclusion

This small study shows that arts education can be a “breath of fresh air,” a complement to the rigorous and stressful nature of the medical school curriculum. Overall, evidence from Australia and elsewhere shows numerous benefits of such education—especially the development of reflective thinking and observation skills—and students around the world overwhelmingly embrace it. Medical schools and accreditation bodies should support and encourage the inclusion of visual literacy training using the visual arts.

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