9-2019

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Some U.S. institutions have begun to include formal art training as a component of the medical school curriculum and many of these institutions have formed professional partnerships with area art museums.

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Introduction and background

Diagnostic skill development is an essential, and historically central, driving force of medical education. Teaching future physicians how to think critically and deliver a correct diagnosis, in addition to instruction of procedural ("doctoring") skills, is what has been at the core of medical education for close to a century. After all, making an accurate diagnosis sets off a chain of events, investigations, and therapeutic treatments, which likely will lead to appropriate management. However, patient care and positive patient outcomes require more than abilities that are often reflected in academic achievement, performances on examinations, declarative knowledge, and procedural skills (i.e., cognitive abilities). These additional and essential skills are often described under the rubric of "personality" and includes features such as personal qualities, attitudes, interests, values, and other psychosocial.[1] These skills help to shape and strengthen the health provider-patient relationship, which is positively correlated to higher satisfaction rates and health outcomes in patients.[2] Naturally, then, the ultimate goal of medical education is to graduate physicians that demonstrate excellence in their cognitive abilities as well as personality.

Although medical education has placed strong emphasis on diagnostic skill development, some experts estimate that 75% of diagnostic failures can be attributed to clinician diagnostic thinking failure from multiple causes including inadequate knowledge, faulty data gathering, and/or faulty verification.[3]

Decision-making is complex. It is partly based on a dual-process theory[4] which describes two families of cognitive operations called System 1 (intuitive) and System 2 (analytical) thinking. System 1 thinking is often described as a reflex system that relies heavily upon "pattern recognition." System 1 thinking, often described as the "gut feeling," is an automated mode of thinking, generated without much conscious effort, and channels the available information through a subconscious pattern recognition based on similar past situations. Alternatively, System 2 is the more "analytical," "deliberate," and "rational" side to the thinking process. It is a combination of logical judgment and additional information acquired through past learning and experience.[5,6] Through a conscious application of rules, this information is carefully processed, making System 2 thinking a much slower and cognitively demanding process, but one that is more likely to lead to better decisions. If there is adequate time to think, this process is usually engaged when there is uncertainty, complexity, or if the outcomes give little room for error.[7,8] Most matriculating medical students have mastered System 1 thinking but struggle with System 2 thinking. Medical education is called upon to develop opportunities for learners

Michael #145973 by Rick Ashley. This photo was finalist of the Outwin Boochever Portrait Competition in 2016. This tri-annual competition is supported by the Smithsonian National Portrait Gallery and traveled nationally and internationally. The Kemper Museum of Contemporary Art hosted the traveling gallery of finalists in the fall of 2017.
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to practice balancing these two systems in order to refine critical thinking skills. Deliberate practice of advanced critical thinking skills will help to ensure graduates are ready to meet the demands of patient needs as diseases and disorders increase in complexity.

Educators in health professions are also called upon to identify and implement curriculum that will develop positive personality attributes that will result in improved healthcare delivery and patient outcomes. Empirical research suggests that a number of personality attributes, including empathy, are among significant predictors of clinical competence of physicians-in-training[9,10] and of positive patient outcomes.[11,12] Empathy has been described as one major element of professionalism in medicine,[13] and the most frequently mentioned personality attribute of the humanistic physician.[13] As such, cultivating empathy is among the goals of medical education, endorsed by professional medical organizations.[1]

Recognition that strong communication, observation, and emotional skills are essential for health care professionals is virtually universally accepted in the medical education community, yet there are limited opportunities to cultivate these skills given the intensity of the curriculum designed to deliver knowledge and practical patient care skills to the learner. This challenge is further complicated by the increasing emphasis on national board exam performance among medical students and residency programs. Even with time allocated for targeted practice of these skills, challenges remain in creating curriculum that comprehensively addresses and allows development of communication, observation, and emotional skills in addition to teaching diagnostic decision making and critical thinking.

In the past 15 years, increasing evidence has shown that health professionals benefit from exposure to the visual and performing arts.[14–17] Because of this, some U.S. institutions have begun to include formal art training as a component of the medical school curriculum and many of these institutions have formed professional partnerships with area art museums. Delivery of this curriculum has been varied, ranging from one class period[18] to weekly museum sessions over eight weeks.[19] The majority of these programs utilize Visual Thinking Strategies (VTS) as the andragogical approach and prioritize its effect on students' observations skills.[16,19–21]

At KCU-COM, we have created a course we believe can address the curricular needs described above; one that will teach diagnostic skill development, enhance communication skills, and emphasize the importance of empathy and relationship building. The Art, Observation, and Medicine (AOM) course for Year 1 Osteopathic Medical Students aims to help forge connections between active art examination and diagnosis, awareness of tolerance for ambiguity in healthcare, teamwork, communication skills, and empathy. As a required course in the first year of the osteopathic medical curriculum and through collaborations with the

Kemper Museum of Contemporary Art (Kansas City, Mo.) and Crystal Bridges Museum of American Art (Bentonville, Ark.), all KCU-COM students, from both Kansas City and Joplin, gain new perspective of the skills needed to deliver healthcare and address patient needs.

Description of AOM Sessions

First year medical students participate in small groups (10-15 students) at each museum under the guidance of a museum educator (docent). Prior to entry into the art galleries, students are reminded to respect one another's thoughts and opinions. Establishing a safe environment for communication and idea sharing is critical to the process. Three questions are asked at each piece of art: (1) What is going on in this picture? (2) What do you see that makes you say that? (3) What more can we find? The specific language used and order of questioning represent Visual Thinking Strategies (VTS), a research-based methodology that utilizes art discussion to develop growth in aesthetic and cognitive skills. Through VTS questioning, students are afforded the opportunity to comment on what they perceive is occurring in the piece and are asked to provide reasoning and information that supports their claims. The small group setting creates an opportunity to listen to the thoughts and opinions of their colleagues. The opportunity to share and listen in a collaborative environment helps foster an open and safe setting to practice communication skills and learn the value of teamwork to create a common narrative.

The VTS process aligns with the practice of System 1 thinking and development of System 2 thinking. Students often describe how they make an initial conclusion of an image based on their initial impression or snap judgement (System 1 process). It is only after listening to their peers, understanding the reasons that support their peers thoughts and opinions, and gaining perspective of the value others bring to the discussion of the piece of art do the students begin to change their opinions. By asking: What more can we find? students are asked to take a deeper dive into the image. The reshaping of their initial reactions into new ideas and opinions, based on more information, replicates a process that aligns with System 2 thinking. Through the AOM course, we've been able to create opportunities for students to practice their critical thinking skills and, in part, develop diagnostic skills.

After each image, students are asked to reflect on the process and share their thoughts with the group. Typical reflection questions are outlined below.

- What was the experience like for you? Pros? Cons? (This is a safe environment to provide feedback.)
- What did you notice about your observations?
- What did you notice about your peer's observations?
- Did you ever change your mind about your initial impressions during the course of the viewing?
- What did you notice about yourself when you encountered something that was confusing, vague or ambiguous?
- What did you notice about the process when you discussed vague and ambiguous aspects of the work?
- What kind of connections can you draw from this experience and working with a patient?
- Will patients present with a similar ambiguity or vagueness?
- How can we relate this experience to patient care? To team-based patient care?

Through these questions, students have an opportunity to discuss concepts related to communication, empathy, collaboration, diversity, ambiguity, burnout, interprofessional teamwork, and other topics that are difficult to teach in a lecture-based format yet are all recognized as essential for practicing healthcare providers.

After viewing up to five images at the museums and using the VTS process as the foundation of each discussion, the student groups reconvene and participate in a large-group debrief sessions. These sessions are composed of up to 45 students and are facilitated by KCU faculty within the College of Osteopathic Medicine and, when possible, the Clinical Psychology Program. Discussion at the large-group debrief reemphasizes the principles of communication and listening skills, collaboration and teamwork, changing opinions, ambiguity. Students also spend time discussing concepts of working on interprofessional teams. Some of the AOM sessions include both medical and clinical psychology students; these sessions offer great potential to discuss the benefits of multi-disciplinary teams and their positive impact on patient outcomes.

Measurements of Student Outcomes and Next Steps

In conjunction with the delivery of the AOM curricular content, we are associating a student outcomes study based on the museum experiences to evaluate the impact of the arts curriculum. The study focuses on measuring changes in observational skills, empathy, and tolerance for ambiguity. These variables are closely interrelated, and this study presents a unique opportunity to analyze the impact of one AOM session on factors that contribute to a strong doctor-patient relationship. Pre- and post-session surveys use the Interpersonal Reactivity Index subscales to measure empathic concern and perspective-taking[22] and Tolerance for Ambiguity Scale.[23]

We chose to study changes in observational skills, empathy, and tolerance of ambiguity in order to build

upon and expand prior research of arts-based strategies in medical education, which prioritized the skill of observation. Observation plays an important role in the practice of medicine given its role in clinical diagnosis. Some institutions have begun to include formal art training as a component of medical curriculum to help their learners develop observational skills[19] or to provide additional training in specialties for which visual skills are imperative, such as ophthalmology.[24] Teaching students to see visual details in clinical settings laid the foundation of using arts-based strategies.[14,25,26] Tolerance for ambiguity (TFA) is said to be a necessary skill of medical professionals as it enables them to deal with situations in which there is incomplete information or multiple answers.[27,28] In addition, one study using arts-based training in the context of classroom learning further explored the connection between TFA and empathy.[18] Empathy is inherently related not only to TFA, but also to communication, given that better communication can impact the extent to which an individual is able to participate in the perspective-taking necessary for empathy. To date, evaluation of empathy primarily exists in studies exploring arts-related training of medical students as a correlation or through elective coursework.[29] Our AOM course responds to the call for "empathy training" to be added to medical school curricula.

This year's curricular AOM offerings will be complete in June 2019 and outcomes will be analyzed soon after. We look forward to evaluating and reporting our findings from this year's curriculum. Our future directions include building upon the existing arts-based AOM curriculum. There are opportunities to create a thread of curriculum within the AOM course that focuses on diversity and cultural competency. We plan to increase interprofessional education in the AOM sessions for all of our students by collaborating with students in other health-professions programs. Additionally, we have opportunities to build in 'booster' sessions to reinforce skills learned in previous AOM sessions, both in the museum setting as well as campus-based setting using virtual technology.

References

1. Hojat M, DeSantis J, Shannon SC, et al. The Jefferson Scale of Empathy: a nationwide study of measurement properties, underlying components, latent variable structure, and national norms in medical students. Adv in Health Sci Educ. 2018;23(5):899-920. doi:10.1007/s10459-018-9839-9
2. Boissy A, Windover AK, Bokar D, et al. Communication Skills Training for Physicians Improves Patient Satisfaction. J GEN INTERN MED. 2016;31(7):755-761. doi:10.1007/s11606-016-3597-2
3. Tay SW, Ryan P, Ryan CA. Systems 1 and 2 thinking processes and cognitive reflection testing in medical students. Can Med Educ J. 2016;7(2):e97-e103.
4. Epstein S. Integration of the cognitive and the psychodynamic unconscious. American Psychologist. 1994;49(8):709-724. doi:10.1037/0003-066X.49.8.709
5. Croskerry P. A universal model of diagnostic reasoning. Acad Med. 2009;84(8):1022-1028. doi:10.1097/ACM.0b013e3181ace703
6. Croskerry P. Context is everything or how could I have been that stupid? Healthc Q. 2009;12 Spec No Patient:e171-176.
7. Croskerry P. Critical thinking and reasoning in emergency medicine. In: Patient Safety in Emergency Medicine. Lippincott Williams & Wilkins; 2008:213–8.
8. Moulton CE, Regehr G, Mylopoulos M, MacRae HM. Slowing down when you should: a new model of expert judgment. Acad Med. 2007;82(10 Suppl):S109-116. doi:10.1097/ACM.0b013e3181405a76
9. Hojat M, Gonnella J, Nasca T, Mangione S, Veloksi J, Magee M. The Jefferson Scale of Physician Empathy. Academic Medicine. 2002;77(10). insights.ovid.com. Accessed March 12, 2019.
10. Hojat M, Erdmann JB, Gonnella JS. Personality assessments and outcomes in medical education and the practice of medicine: AMEE Guide No. 79. Medical Teacher. 2013;35(7):e1267-e1301. doi:10.3109/0142159X.2013.785654
11. Hojat M, Louis DZ, Markham FW, Wender R, Rabinowitz C, Gonnella JS. Physicians' Empathy and Clinical Outcomes for Diabetic Patients. Academic Medicine. 2011;86(3):359-364. doi:10.1097/ACM.0b013e3182086fe1
12. Canale S, Louis D, Maio V, et al. The Relationship Between Physician Empathy and Disease Complications. Academic Medicine. 2012;87(9):1243-1249. doi:10.1097/ACM.0b013e3182628fbf
13. Veloski J, Hojat M. Measuring specific elements of professionalism: empathy, teamwork, and lifelong learning. Measuring medical professionalism. 2006;1.
14. Bardes CL, Gillers D, Herman AE. Learning to look: developing clinical observational skills at an art museum. Medical Education. 2001;35(12):1157-1161. doi:10.1046/j.1365-2923.2001.01088.x
15. Perry M, Maffulli N, Willson S, Morrissey D. The effectiveness of arts-based interventions in medical education: a literature review. Medical Education. 2011;45(2):141-148. doi:10.1111/j.1365-2923.2010.03848.x
16. Jasani SK, Saks NS. Utilizing visual art to enhance the clinical observation skills of medical students. Medical Teacher. 2013;35(7):e1327-e1331. doi:10.3109/0142159X.2013.770131
17. Moorman M. The meaning of visual thinking strategies for nursing students. Humanities. 2015;4(4):748-759.
18. Bentwich ME, Gilbey P. More than visual literacy: art and the enhancement of tolerance for ambiguity and empathy. BMC Medical Education. 2017;17(1):200. doi:10.1186/s12909-017-1028-7
19. Naghshineh S, Hafler JP, Miller AR, et al. Formal Art Observation Training Improves Medical Students' Visual Diagnostic Skills. J GEN INTERN MED. 2008;23(7):991-997. doi:10.1007/s11606-008-0667-0
20. Edmonds K, Hammond MF. How Can Visual Arts Help Doctors Develop Medical Insight? International Journal of Art & Design Education. 2012;31(1):78-89. doi:10.1111/j.1476-8070.2012.01716.x
21. Klugman CM, Peel J, Beckmann-Mendez D. Art rounds: teaching interprofessional students visual thinking strategies at one school. Academic Medicine. 2011;86(10):1266-1271.
22. Davis MH. Interpersonal reactivity index (IRI). A multidimensional approach to individual differences in empathy JSAS Catalog of Selected Documents in Psychology. 1980;10:85.
23. Caulfield M, Andolsek K, Grbic D, Roskovensky L. Ambiguity tolerance of students matriculating to US medical schools. Academic medicine. 2014;89(11):1526-1532.
24. Gurwin J, Revere KE, Davidson SM, et al. A randomized controlled trial of art observation training to improve medical student ophthalmology skills. Journal of American Association for Pediatric Ophthalmology and Strabismus {JAAPOS}. 2017;21(4):e30.
25. Shapiro J, Rucker L, Beck J. Training the clinical eye and mind: using the arts to develop medical students' observational and pattern recognition skills. Medical education. 2006;40(3):263-268.
26. Dolev JC, Friedlaender LK, Braverman IM. Use of fine art to enhance visual diagnostic skills. Jama. 2001;286(9):1020-1021.
27. Luther VP, Crandall SJ. Commentary: ambiguity and uncertainty: neglected elements of medical education curricula? Academic Medicine. 2011;86(7):799-800.
28. Simpkin AL, Schwartzstein RM. Tolerating uncertainty—the next medical revolution? New England Journal of Medicine. 2016;375(18):1713-1715.
29. Graham J, Benson LM, Swanson J, Potyk D, Daratha K, Roberts K. Medical humanities coursework is associated with greater measured empathy in medical students. The American journal of medicine. 2016;129(12):1334-1337.

Disclosure

None reported.

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