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ORIGINAL RESEARCH

The Museum as a Shared Space: Developing Contextual and Cross-Disciplinary Approaches to Arts-Based Education

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Introduction: Despite the growing evidence favoring use of context-based interdisciplinary pedagogies in medical education, museum learning remains underutilized as a low-cost, replicable tool for introducing such constructs. We describe a novel approach to museum-based education building off the existing pedagogy of Visual Thinking Strategies that heightens the role of context.

Methods: *Outside the Frame*, an optional elective at Emory University School of Medicine, was piloted in two iterations for a total of 7 second-year medical students who voluntarily enrolled in the course for the fall 2022 and 2023 semesters. Participating students were transitioning from the preclinical classroom environment to clinical clerkships, a period associated with feelings of personal and professional instability that may particularly benefit from critical reflection. The course included didactic components, hands-on crafting activities, presentations, and discussion groups. Student feedback was collected through anonymous pre- and post-course surveys, as well as written narrative reflections.

Results: All post-course responses ranked their experience of the course as being "valuable" or "very valuable". Narrative reflections were overall positive and highlighted the role of context and cross-disciplinary input in shaping metacognitive awareness and cultivating comfort with uncertainty.

Discussion: This pilot innovation demonstrates that a methodical framework to arts-based learning can elevate the role of context in a standardized museum education curriculum. Future visual arts and medicine courses may incorporate this framework to chart more active collaborations with museum educators and humanities faculty, as well as engage a broader range of communities and professional disciplines beyond medicine.

Keywords: medical humanities, visual arts, undergraduate medical education, pedagogy, curriculum evaluation

Introduction

Recent trends in undergraduate medical education (UME) have demonstrated the use of medical humanities programming in enhancing diagnostic skills, promoting uncertainty tolerance, increasing empathy, and mitigating burnout.[1–5] Among a broad range of humanities disciplines, visual arts analysis has been formally recognized as a key pedagogical approach, with instruction traditionally involving in-person visits to cultural institutions such as museums.[1,6]

This expansion of arts curriculum in UME also parallels a growing focus on context-based, interdisciplinary learning. Medical trainees must evaluate and reflect on how clinical reasoning, learning, and performance is determined within multilayered contexts such as the social determinants of health, population mistrust in medical research, or spiritual and religious identity. By adapting their learning to these unfamiliar contexts, learners can also hone their metacognitive skills, or the higher-order ability to understand, monitor, evaluate, and manipulate one's own learning processes.[7,8] Demand is increasing for the formal integration of contextual and interprofessional teaching into scientific disciplines, as well as a shift in focus from siloed, objective assessments of individual learners to more systems-based evaluations cognizant of social and situational factors in the dynamic clinical environment.[9–12] As such, we believe viewing

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museum-based learning through a more contextual, cross-disciplinary lens merits further attention as an undervalued pedagogical method in promoting these advanced cognitive skills.

Many museum-based programs in UME rely on Visual Thinking Strategies (VTS), a pedagogical method in arts-based learning that has been widely adopted by educators for professional development across diverse fields.[13–15] The VTS method requires a trained facilitator to lead students in discussing art objects through a series of three questions: (1) *What's going on in this picture?* (2) *What do you see that makes you say that?* And (3) *What more can we find?*

The VTS process uses the artwork as a common substrate that grounds viewers in a space of inquiry, which in turn heightens participants' observational attention and challenges them to root their interpretations in evidence.[16,17] In an effort to encourage an open frame of mind, students are traditionally provided little to no context regarding the work, forcing them to rely on visual cues alone to speculate and generate hypotheses. Because of its attenuated reliance on outside expertise to provide context, VTS has promise as a broadly transferable learning tool across institutions. However, we believe current adaptations of VTS pedagogy in medical curriculum may preclude its larger potential to encourage more explicit interactions with diverse disciplines that frequently intersect in the museum space. For this reason, we sought to augment our museum curriculum through the intentional inclusion of historical background, biographic information, and sociocultural context, while honoring the practice of validating multiple perspectives that is central to museum-based education. In so doing, we hope to encourage encounters with unfamiliar cultural, historical, and sociopolitical fields and diversify dialogue in the academic medical community.

To better understand how cross-departmental collaborations might support medical student learning, we designed and piloted a semester-long pre-clinical elective course in museum-based learning for second-year medical students. Participating students were enrolled between their first board exam and the beginning of clinical clerkships, a critical inflection point in medical education that has shown to heighten student uncertainty through transitions that can increase workload, stress, or feelings of inadequacy.[18,19] The course incorporated literary readings, hands-on crafting exercises, oral presentation, and historical didactics, culminating in summative writing assignments. To limit potential confusion, we wish to clarify that our course's approach to "contextual" museum-based learning primarily alludes to the socio-cultural, historical, or political context provided by collaborating experts, and not to the physical context of the museum or exhibition space itself as a curated framing device with its own institutional ideologies and interpretations.[20]

As this was a pilot intervention, this study is underpowered to detect any effects reliably, and any outcomes were interpreted as feasibility data. We aimed to capture how students responded to varying degrees of interdisciplinary exposure, and the role it might play in helping students cope with the inherent uncertainties in transitioning from the classroom to the clinical learning environment.

Materials and Methods

A multidisciplinary team comprised of a second-year medical student, an attending palliative care physician, and two museum educators collaboratively developed the curriculum. The selected activities addressed the following primary learner objectives:

- Build visual literacy skills to empirically ground interpretations about art objects in evidence
- Communicate empirically grounded interpretations to others in team-based discussion settings
- Develop metacognitive practices for planning, monitoring, and evaluating one's approaches to unfamiliar or uncertain situations

The course held 2 offerings through the months of September to November of 2022 and 2023 as a listed option fulfilling a mandatory second-year elective requirement at Emory University School of Medicine. To be eligible for the course, participants were required to be full-time enrolled students at Emory University School of Medicine and currently in their second year of medical school prior to clerkships. Transportation and admission to the museum was provided for enrolled students and was not a requirement for participation. Each session featured an arts-based exercise, along with an introduction and discussion of ground rules by the course facilitators and a final debrief in which participants reflected on clinical takeaways generated from the session.

The sessions took place at one of two locations: the Michael C. Carlos Museum and High Museum. Each session ranged between 2 to 3 hours in length, including a 15-minute introduction and 15-minute debrief at the session's conclusion (Appendix 1). Students were provided with supplementary tools (pencils, sketchpads, stools, clipboards, etc). The sessions were co-led by a physician, a medical student, and/or a museum educator or other Emory University's faculty from a discipline in the humanities. Discussed artworks were collaboratively pre-selected by the session facilitators. Artworks with figurative, narrative, or representational components (as opposed to more abstract works) were prioritized to lower potential barriers to participation and mitigate overt focus on stylistic technique.

Seven students (excluding the co-facilitating medical student) enrolled across 2 course offerings.

Assessment of course effectiveness was divided into three primary components:

1. Prior to the first session and following the final session of the course, students anonymously completed the validated Tolerance for Ambiguity (TFA) survey tool through SurveyMonkey (https://www.surveymonkey.com/r/38RFBGP).
2. To assess engagement in the course, students were asked to rate the different activities on a 4-point Likert scale (1 = not valuable to 4 = very valuable), as well as comment on the overall positives/negatives of the course and its logistical execution (ie timing, formatting of activities, etc). (Appendix 2).
3. As their final assignment, students also completed a written narrative evaluation of the course, responding to two short prompts (Appendix 3).

The TFA survey was selected based on previous studies suggesting the impact of arts-based learning activities on ambiguity tolerance,[9] as well as the availability of published validity evidence from large US medical student samples.[21,22] All open-ended evaluations and narrative reflections (see Appendix for prompts) written by participants were reviewed by two authors to ensure interobserver agreement for relevant quotes and narrative trends. As the study was limited by its small sample size and our primary aims were to discuss instructors' perspectives on lessons learned to inform other health professions educators, we refrained from undertaking a formal thematic qualitative analysis at this time. Of note, both authors also acted as course creators and course facilitators. While this positionality enables the authors to use a priori knowledge of the subject to gain a more insightful interpretation of the results, this may also introduce inherent and unknowing biases to the study.

All participating students were emailed beforehand for consent that their survey responses and narrative reflections be anonymously used in a research report. The Emory University Institutional Review Board determined that this study does not meet the criteria for human subjects research, given that the study was on the effectiveness of a specific instructional technique and curriculum, was framed as an educational program evaluation, and therefore does not meet the criteria for "research" as defined in the federal regulations. This study was performed in accordance with the principles stated in the Declaration of Helsinki.

Results

Of those enrolled (n = 7), 7 completed the TFA pre-survey and 6 completed the TFA post-survey, post-course feedback survey and the written narrative evaluation. All individual student scores reflected a directional increase in tolerance for ambiguity after completion of the course, with a mean group increase in tolerance for ambiguity by 4 points (Table 1). In addition, 100% of students ranked all activity types as either "valuable" or "very valuable".

Overall, narrative feedback from the post-course survey and reflective assignment was positive. When asked about the course structuring and logistics, students commented that one of the course's strengths was the diversity of its activities, and how it created a space to exercise ways of thinking and handling "unknowns" that heavily contrasted with formal medical curriculum. Most students expressed a desire for additional sessions, as well as optional outside resources/readings. The general timing and length of the sessions were well received.

With regards to a context-friendly approach to museum education, students recognized the importance of incorporating cultural and historical context to formulate an impression of the artwork from multiple sources of information. In addition, two students acknowledged the critical role non-medical faculty and personnel played in enacting this

Table 1 Pre- Vs Post-Course TFA Survey Scores

Individual TFA Scores[a]	Pre-Course	Post-Course
	26	25
	31	25
	36	28
	19	-
	28	20
	32	27
	29	24
Mean	29	25

Note: [a]Lower scores reflect a higher tolerance for ambiguity.

understanding, in that they allowed them to "contextualize the pieces" and "engage with the artwork on a deeper level". All students were positively receptive to exploring through the humanities a broader solution space that proposes a range of different interpretations. This space was often described as a necessary and needed respite from the preclinical curriculum.

Participants' narrative reflections spoke to the sessions' impact in relation to managing the uncertainty of their preclinical to clinical transition. Several students described how the course helped them to develop a focused and deliberate process for accurately identifying, analyzing, and communicating key details in a visual work without jumping to premature conclusions. One noted growing comfortable with "making peace" with this uncertainty, contending that "the beauty in some artwork is that it cannot be fully understood or explained, but it can be thoroughly experienced."

Two participants commented on the significance of metacognition and cultivating self-awareness of one's own learning practices. One student specifically referred to the different stages of metacognitive self-assessment, consisting of planning, monitoring, and evaluating: "Taking the time to sit with a piece and create my own story…pushed me to cognitively practice the action step of planning." One drew explicit distinctions between the types of metacognitive approaches encouraged in arts-based learning and the use of medical heuristics and algorithms: "a 'breath of fresh air' from the…preclinical curriculum."

Discussion

This semester-long pilot elective was designed to deliver visual arts learning in a manner that intentionally elevates the role of context and art history-based methodologies in VTS and UME. VTS's wide popularity as a learning tool can in part be attributed to the fact that participation does not necessarily mandate an extensive background in art history and its related disciplines.[23] For highly specialized vocations like medicine, which may be facing additional burdens of time and funding when incorporating the visual arts into curriculum, it may seem tempting to employ VTS in a manner that skirts the role of context. However, being that VTS's primary goal is to engage the audience in a space of inquiry, explicitly introducing contextual elements to the discussion– when heedful of the nuances of individual experience and interpretation– can only further these aims.

Notably, feedback from participants offers insight into how VTS can best be utilized in conjunction with context to enrich discussion without assigning a predetermined "answer" to the artwork. We present here several instances of when our context-based approach elicited varying degrees of student engagement (Appendix 1). While participants commented that the didactic lecture on shamanism proved interesting and deepened their understanding of the works, they ultimately preferred to first explore the exhibit independently before receiving the didactic component. In contrast, discussion preceded the provision of historical context in our session on the portraits by Henry Inman, which depict Native American delegates who had been political advocates for native land preservation (Figure 1). Here, several students

Figure 1 Portraits by Henry Inman, Left: Shingabawossin (Chippewa) by Henry Inman, ca. 1831–1834, oil on canvas. Right: Opothle-Yoholo (Creek Chief) by Henry Inman, 1831–1832, oil on canvas. Images in the public domain.

initially commented on the traditional headdresses and embroidery that were donned over more formal European attire. Others noted the overall muted atmosphere of the composition, both in the color scheme and diverted, somewhat uncomfortable gazes of the subjects. Once the context and original purpose of the portraits were subsequently introduced, students began to further constellate their previous observations to extrapolate narrative threads from the piece, speculating how navigating diplomacy in a country with such a fraught relationship with their own homeland might contribute to the visual dissonance and psychologically guarded air in these depictions. This evolved into a fruitful discussion on identity in medicine, and the tensions between the personal and professional that arise when one advocates for patients as a trainee themselves, with the limited agency that entails. Similarly, the *Crossing Waters* discussion proved especially fruitful because of the freedom granted to students through a VTS-style discussion that preceded the contextual component, which then allowed them to retrospectively build upon and/or reconsider their initial comments as a group.

Hence, we suggest facilitators organize sessions into three phases (Figure 2): 1. Starting with a VTS-oriented focus on the decontextualized art object itself, 2. Introducing a pre-selected contextual fact once the group has sufficiently shared their interpretations, and finally 3. Returning to the object at hand to appreciate how their perceptions may have changed. The first phase prioritizes skills development in areas such as close observation, reasoning with evidence, and ambiguity tolerance, while also articulating one's personal thinking process, with all its blind spots, biases, or assumptions. Through the second phase, students are asked to contend with a foreign element in the artwork, reframe their own thinking accordingly, actively integrate personal interpretations with the lived experiences and insight of others, and explore other disciplinary modes of inquiry. The third phase encourages participants to collectively enter into a metacognitive space that attends to personal growth, value recognition, and reflection that they can carry forward beyond the museum and into the clinical realm. As the session progresses, facilitators may find it beneficial to occasionally return to Phase 1 from phases 2 or 3, allowing participants to continually develop an evolving connection to the artwork as more information is introduced.

In addition to the course facilitators' experiences leading this context-based approach, the students' narrative written feedback reflects many benefits to incorporating context into the arts-based learning curriculum. First, the use of context enables students to encounter uncertainty in a manner such that they are not only driven to "sit with" their feelings of discomfort, but can actively query external disciplines and knowledge. When students encounter a foreign concept or ideology, they are hence forced to admit that some knowledge exceeds the boundaries of self, and cannot be internalized through mere close observation or visual analysis– principles traditionally espoused by earlier models of visual arts-based

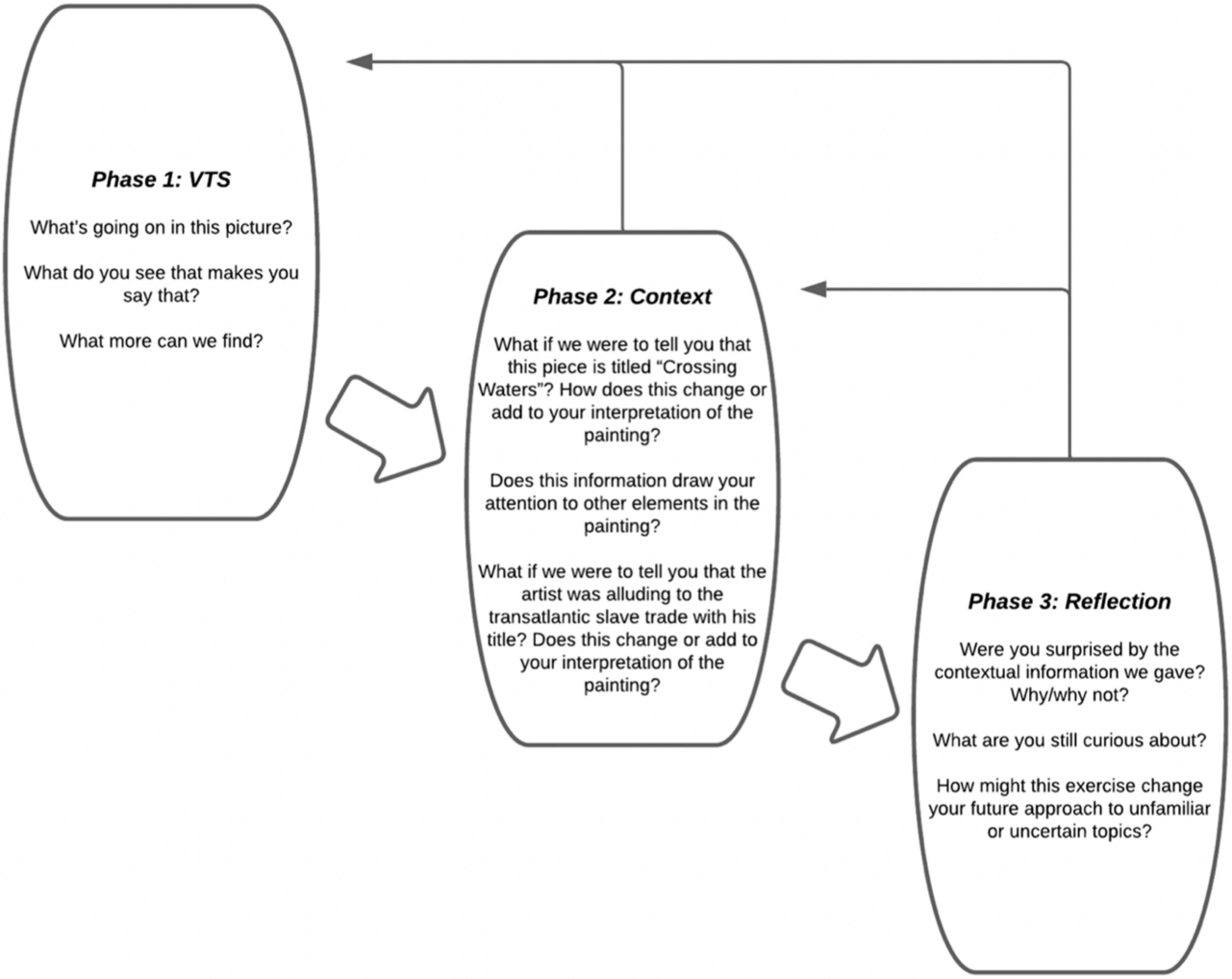

Figure 2 Example discussion questions for session on crossing waters.

teaching in medical education.[24] We argue that this experience in itself is a useful stimulus for uncertainty, as much of patient care involves encountering cultural, social, or political narratives that feel intrinsically "other" and may even feel contradictory to the clinician's personal beliefs and values. Providing context, then, does not necessarily curtail generative thought, but can instead challenge students beyond the limits of their own knowledge and encourage them to productively engage with the uncertainty this conjures. This was reflected in the student responses centering on uncertainty and usefulness of context, which one student aptly summarized as "bringing to life" the "exquisite details" of the art that one would have no way of knowing otherwise. In our experience, we found that the synergy of following up VTS-led sessions with minimal, yet thought-provoking, lines of context– such as the painting's title, the iconography of a specific symbol, or the actual historic utility of an artifact– does not lead students to draw premature conclusions, but rather stimulates students to delve into themes and take notice of elements in the work they may not have explored otherwise.

Second, introducing context is useful epistemologically by exposing students to various modes of inquiry. A recurring theme throughout the sessions and student feedback was how the open-ended process of unpacking a work of art is juxtaposed against the surface, rapid recall-style learning encouraged by shelf exams and test banks. These reflections were intensified by the fact that the students were experiencing a period of transition away from such standardized learning towards a more contextually dependent clinical environment. The importance of such transitions and their effect on healthcare-related uncertainty have likely been further underscored by the various rifts wrought by the COVID-19

pandemic.[25] Fortunately, recent changes to make licensing board exams and clerkship courses pass/fail create potential space in the curriculum to cultivate uncertainty tolerance; in stimulating the context-dependent nature of the intersectional clinical space, museum-based learning presents a promising solution in exploring these aims.[26]

Introducing context in museum education can be particularly beneficial due to its necessary reliance on the expertise of other disciplines whose methodologies differ from those medicine. Their open-ended modes of inquiry and investigation contrast with the standardized use of multiple-choice testing, illness scripts, and pattern recognition frequently endorsed by the traditional pre-clinical curriculum. Rather than striving to arrive at the "correct" answer in as little time as possible– at the peril of yielding premature judgement or imposing a false ending– students embraced the flexible restructuring of their cognitive approach to problems, utilizing of outside resources, and prioritizing among a range of possible solutions. This is supported by student responses that honed in on the benefits of metacognition, expressing heightened awareness of their approach to problems and how it was influenced by the guidance of others in the humanities. More specifically, several students spoke to how the iterative process of first formulating personal observations and then subsequently being introduced to new contexts or contradictory information enabled them to revise their previous interpretations, explore new possibilities, or deepen understanding of existing theories. This aligns with the "regulation" component of metacognition, which is defined by stages of planning, monitoring, and evaluating one's own learning practices, and has shown to be critical for medical learner success.[27]

While contextual learning in museum education has many advantages, it also foregrounds some challenges. The use of didactic components, like the PowerPoint-based virtual lectures, can promote restlessness and limit student participation in comparison to more discussion-based sessions.[28] Future iterations of the course might allot students time to explore the exhibit thoroughly prior to disclosing any contextual information, so as to help participants feel more attuned to the art and more actively partake in meaning-making. In contrast, there was an overall consensus that the use of hands-on artmaking activities and student presentations encouraged deeper engagement with course content. In addition, while our use of multiple museum sites for the course could improve generalizability of our findings and grant students a greater diversity of materials to work with, it could also create need for travel and increase the time burden on instructors to recruit multiple experts from local cultural institutions.

There were several limitations to the design, implementation, and evaluation of this museum-based course. First, faculty recruitment was limited to those instructors available within the host institution's community. Second, the small cohort of enrolled students, as well as the voluntary nature of course registration, poses limitations to the generalizability of student course perceptions and post-course feedback. Further, this restricted our ability to conduct more rigorous analysis of data, which is reported descriptively in this manuscript. However, it is worth noting that students were granted the option of choosing among approximately 40 courses for their mandatory elective (including the popular option of pursuing an independent research project), and so historical enrollment size typically ranged between 1 and 5 students per course. Third, because of the relatively small nature of the class, these findings may not translate to larger class sizes, which may also necessitate recruitment of additional instructors and/or facilitators. Finally, while this study did incorporate the use of validated metrics, future iterations of this course could consider including control groups, structured qualitative interviews, and long-term evaluation of outcomes from participating in the course.

One continued challenge of note remains finding protected time to ensure opportunities for student reflection. While participants in our cohort were able to engage in reflective activities through a required course, this was one of the only times they could have elected to do so in a dense preclinical schedule; moreover, a common alternative for these students was to use this allotted space in the curriculum to engage in independent research. In future studies, we hope to engage in follow-up interviews with participants to further gauge any impact the course might have had in the clinical phase of their medical education.

Rather than feeling discouraged by the limits of personal experience, students may find a contextual approach to art discussion can rejuvenate their appreciation for such complexity and re-evaluate their own cognitive approaches to interdisciplinary problems. We hope the lessons learned can inform future educators wishing to incorporate deeper interprofessional collaborations and contextual learning to engage health professions students in the visual arts.

Conclusion

Overall, our results demonstrate that existing frameworks in museum-based education can be bolstered through a context-focused lens that supports uncertainty tolerance and metacognitive thinking. Participants in our pilot program were able to discern a relationship between the unfamiliar contexts undergirding artworks and the importance of drawing upon multiple modes of contextual understanding in clinical practice. Utilizing the museum space to introduce cross-disciplinary discourse may help resist insularity in UME learning and assist students in transitioning to the clinical environment.

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Disclosure

The authors declare no competing interests relevant to this manuscript.

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