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Learning Harmony: Medical Student Reflections on the Intersection of the Arts & Humanities and Medicine, A Mixed Methods Study

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ORIGINAL RESEARCH REPORTS

Learning Harmony: Medical Student Reflections on the Intersection of the Arts & Humanities and Medicine, A Mixed Methods Study

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Abstract

Background: The arts and humanities form a critical part of medical education. In this study, we explore medical students' reflections following an arts and humanities experience. An intensive day and a half long program focused on music and reflection was designed for first-year students at Harvard Medical School.

Methods: Students completed an evaluation of the experience with both open-ended and Likert scale questions. Data were analyzed using a mixed methods approach. Descriptive statistics were used to analyze quantitative data and inductive content analysis for qualitative data.

Results: 168 first-year medical and dental students participated in the activity. Survey response rate was 73% (n = 122). Quantitatively, the overall quality of the experience was assessed at a mean value of 4.86 points (SD = 0.37 points) out of a maximum of 5, with 5 being excellent. The qualitative evaluation illustrated how the arts and humanities experience encouraged students to reflect on their leadership and doctoring skills, taking a holistic approach to their medical education, and integrating the lessons of the arts and humanities into their medical practice.

Conclusion: The arts and humanities program encouraged student reflection on profound questions in medicine related to empathy, vulnerability, and authenticity. This experience broadened students' perspectives regarding the relationship between medicine and the arts and humanities.

Keywords: Arts and humanities, Humanities, Medical education, Undergraduate medical education, Mixed methods

1. Introduction

Most patients want to be seen by their doctors as people, in all their complexity, and not merely as problem lists. Medical school curricula focus on biomedical science content and the acquisition of cognitive and practical skills, producing physicians who are well prepared to diagnose and treat, but have less certainty in their ability to

observe, reflect, be empathic, and tolerate ambiguity [1,2]. To close this gap, there has been growing interest in incorporating the arts and humanities (AH) into medical education, to foster insights beyond those provided by the traditional medical curriculum [3–6].

The use of art to teach humanism in the medical field is supported by the singular characteristics that arts offer: metaphorical and representational,

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subjective, ambiguous, and universal [7]. When these features are integrated with constructivism theory it is possible to move students' attention from the professional domain into a new dimension open to be explored. According to the National Academies of Sciences, Engineering, and Medicine (NASEM) report of 2018 [8], "The humanities teach close reading practices as an essential tool, an appreciation for context across time and space, qualitative analysis of social structures and relationships, the importance of perspective, the capacity for empathic understanding, and analysis of the structure of an argument". The NASEM report emphasizes that the arts "teach creative means of expression, understanding of different perspectives, an awareness of knowledge and emotions throughout the human experience, and the shaping and sharing of perceptions through artistic creation and practices in the expressive world." [8].

The impact of the AH on medical education has been well documented [4,9,10], and may enhance students' ability to appreciate multiple perspectives, sharpen their analytic and diagnostic skills, and improve teamwork and communication [11,12]. In a 2016 national survey of US medical schools, 70.8% of schools reported offering required coursework in the humanities, and 80.6% offered electives, which were commonly courses in either writing or the history of medicine [4]. For medical schools with limited time to incorporate the AH, even a single exposure may still provide an impactful experience for medical students. In this paper, we describe the impact of a day and a half AH experience with an acclaimed musician, and its immediate impact on first-year medical and dental students, using a mixed methods analysis.

Much of the research on the value of AH education on cultivating skills such as empathy and compassion in medical students have emphasized either quantitative or qualitative approaches. These two methods reveal different aspects of the impact of AH initiatives. For instance, through procedures such as pre- and post-tests and attitude scales, quantitative studies have found that students exhibit enhanced observation skills, and increased empathy and positive attitudes towards people living with mental illness or neurodegenerative disease [5,9,11,13,14]. However, since the effect of art and humanities can sometimes be profound yet intangible, focusing only on quantitative methods can miss meaningful information. Therefore, incorporating students' perspectives should be considered to gain better insight into the true impact of art and humanities on medical learners. Qualitative

studies using tools such as interviews and focus groups have shown that participating in the AH may increase medical students' self-awareness, empathy, and wellbeing [15–20]. Hence, our study integrates both quantitative and qualitative approaches in a mixed methods analysis to provide a multifaceted description of the effect that an educational experience in the AH can have on medical students' perspectives, emphasizing that more than one approach is needed to evaluate the benefit of incorporating the AH into medical student education.

Previous mixed methods studies have focused on the impact of longitudinal AH courses or more specialized AH workshops during clerkships [21–24]. For instance, first-year medical students showed a statistically significant increase on the Groningen Reflection Ability Scale (GRAS) and expressed broadened perspectives, increased awareness, and increased appreciation for the arts in feedback given after a 20-h course taught in a collaboration between Columbia University Vagelos College of Physicians and Surgeons and Weill Cornell Medical College [24]. Students from The University of Hong Kong also shared increased self-awareness and a better understanding of the doctor-patient relationship after participating in an arts workshop during the Family Medicine clerkship [22]. However, many medical schools may not yet have the time or ability to integrate a longitudinal program in the AH. Here we describe student learning and reactions to a day and a half experience with a musician, cellist Yo-Yo Ma, to demonstrate that a circumscribed AH program geared towards medical school students at the start of their academic journey can have an important and lasting impact.

2. Methods

A day and a half educational experience in the AH was held during a required session students' Professional Development Week (PDW) and offered by the HMS Arts and Humanities Initiative (HMS-AHI). The HMS-AHI seeks to incorporate AH into medical student education and unite faculty and students with shared interests in this space. Previous AH workshops had featured a variety of fields in the humanities, such as literature. This experience focused on music. In contrast to other forms of art, music is "widely accessible," "cuts across cultural boundaries," and has an immediate "visceral and emotional impact" independent of language [25]. Thus, music can be a useful tool to illustrate some of the fundamental characteristics of humanism in

medicine, such as empathy, human dignity, communication, and teamwork [25,26].

The AH experience featured celebrated musician and social activist Yo–Yo Ma, who spent one and a half days with medical and dental students at Harvard Medical School (HMS) discussing and reflecting upon the AH and the practice of medicine. At a lunch with students, Mr. Ma noted the similarities between his career as a performer and that of a clinician. He emphasized that both professions require a commitment to staying engaged with audience members or patients, respectively, regardless of one's inner emotional state. The next day, he held a two-hour workshop with the entire first-year class. During the workshop, he played the cello and delivered a talk on his career and the commonalities he saw between medicine and music. Then, he participated in a panel discussion about the connections between music, the AH, and medicine. The panel included a medical educator with expertise in the humanities and a senior medical student leader in the medical humanities, and it was moderated by the Dean for Medical Education (author EH). Students had opportunities to ask questions and engage in discussion with Mr. Ma and the other panelists. The workshop concluded with a student musical performance.

Students participating in the workshop ($n = 168$) were invited to complete a survey at the end of the day and a half AH experience. The survey was developed by content experts in the area of the AH (authors SP and LW) and consisted of Likert scale and open-ended questions to elicit student reactions to the AH experience and their attitudes to the AH in medicine; and thereby evaluating the effectiveness of the AH educational experience based on the Kirkpatrick's model [27], specifically level one (learner satisfaction or reaction to the program) and level two (knowledge gained and attitudes changed). The resulting quantitative and qualitative survey data were then extracted and anonymized prior to analysis. The study was approved by the Educational Scholarship Review Team from the Harvard Medical School Academy as an educational quality improvement study exempt from further IRB review.

2.1. Analysis

We analyzed the quantitative data with univariate descriptive statistics with the statistical software STATA version 16 (StataCorp, 2019), to determine students' rating of the AH experience.

For the qualitative analysis, we transcribed the qualitative data on the surveys and de-identified

them. One author (AWS) spot-checked the transcription accuracy. Two authors (DH and TL) open coded the transcripts and developed an initial codebook using inductive content analysis to identify dominant themes, using the first 20 survey transcripts. The codebook is provided as [Supplement 1](#).

Before coding the complete dataset, to monitor inter-coder reliability and unify coding criteria, the two authors (DH and TL) independently conducted an initial coding round. We randomly selected 20 surveys different from those used to create the codebook and calculated the initial inter-coder reliability. We set a kappa value of 0.8 as the minimum criterion for acceptable coding.

The same authors (DH and TL) conducted two rounds of coding using the Dedoose software platform (www.dedoose.com). We identified some additional minor themes during the first round and added new codes to the codebook. We resolved coding disagreements by consensus and, in some cases, with the involvement of a third author (AWS). We calculated inter-coder reliability again, based on the complete dataset. Once we completed the coding, a content analysis guided the evaluation, where the frequency of appearance was determined for each code.

3. Results

A total of 122 first-year medical and dental students completed the survey (73% response rate out of 168 who were invited to attend the AH experience. 11.5% of the respondents identified as dental students.

3.1. Quantitative results

The quantitative results included six questions that measured Kirkpatrick level 1 (Reaction) [27] and are reported in [Table 1](#). Students' opinions on the overall quality of the experience showed a mean of

Table 1. Descriptive statistics from student rating of the AHM workshop. Rating variables: overall quality; content: current and accurate content, interesting and valuable, and relevance to participants' interests and needs; from a survey administered immediately following the session with Yo–Yo Ma, $n = 122$. Likert scale rated from 1 (poor) to 5 (excellent).

Variable	n	Mean	SD
Overall quality	122	4.86	0.37
Content			
Current and accurate	122	4.84	0.41
Interesting and valuable	122	4.82	0.45
Relevant to participants' interests and needs	121	4.55	0.71

Table 2. Number of times of code application for question one, regarding two key points learned from the arts and humanities experience, by first-year Harvard Medical students, $n = 119$.

Theme	Code	n (%)	Representative quote
"Qualities of a good doctor"	Genuineness	20 (12.6)	"Stay true to yourself in your profession" (Student 75)
	New stance	15 (9.4)	"Think about things from different perspectives" (Student 99)
	Vulnerability	8 (5.0)	"Be vulnerable- it's a strength" (Student 55)
	Holding ideals	5 (3.1)	"Reflecting on values and holding to ideals over time" (Student 19)
	Empathy	4 (2.5)	"Tapping into our shared humanity" (Student 3) "Look at all perspectives in a situation to analyze how your actions or experience will get across" (Student 87)
	Promotor of change	4 (2.5)	"Be a changemaker" (Student 4)
	Reflection	4 (2.5)	"Think about our different states of mind and how they contribute to our daily lives" (Student 84).
	Significance	4 (2.5)	"Only memorable experiences are learned" (Student 28)
	Trust	4 (2.5)	"[The] importance of trust in [the] relationship between physician and patient, [is] like musician and audience" (Student 78)
	"Connection between the arts & humanities and medicine"	Arts and humanities as a tool	67 (42.1)
Integrate arts/humanities into healthcare/healthcare education		12 (7.5)	"AH have a central role in medicine and medical training" (Student 97) "How art/humanities can enrich our medical career" (Student 104)
The connection between art and medicine/science		9 (5.7)	"Art and medicine draw parallels in that they both provide space to create connection" (Student 86)
Triad		3 (1.9)	"Need to split yourself into three people: take context, utilize content and listen uninterrupted" (Student 21)
Total		159 (100.0)	

4.86 points (SD = 0.37 points), with 5 being excellent. Students' opinions regarding the content being current and accurate, and interesting and valuable, showed a mean value of 4.84 (SD = 0.41), and 4.82 (SD = 0.45), respectively. Finally, students' evaluation of the relevance of the material to their particular interests and needs presented an average score of 4.55 points (SD = 0.71).

3.2. Qualitative results

Students were asked two open-ended questions regarding the AH experience, to measure Kirkpatrick levels 1 (Reaction) and 2 (Learning and Attitude Changed) [27]. A total of 119 survey respondents (97.5%) replied with 234 comments for question one, which asked students to list two key points learned. For question two, students identified improvements in their education or practice that they intend to make based on the information learned, 115 (94.3%) students replied with 206 comments, for a grand total of 440 comments which were analyzed. Content analysis provided insights about the impact of the AH experience which we will discuss below. Interrater reliability was excellent for coding question 1 ($\kappa = 0.85$) and question 2 ($\kappa = 0.84$).

For question one, we identified 17 main codes that were applied 98 times. Two main themes emerged from the students' comments regarding their attitude towards the AH and its intersection with medicine: "qualities of a good doctor" and "the connection between the AH and medicine".

Regarding the first theme, "qualities of a good doctor", students considered how some important takeaways from the session were important for their professional life. In this space, the most applied code was "genuineness" (12.6%), followed by "new stance" (9.4%), "vulnerability" (5.0%), and "holding ideals" (3.1%). The codes "empathy", "promotor of change", "reflection", "significance", and "trust" were applied a total of four times (2.5%) each. Please refer to Table 2 for a summary and representative quotes.

For the theme "connection between the AH and medicine" the experience inspired students to think about the relevancy of AH for medicine and how these two areas intersect. The most applied code for this theme was "arts and humanities as a tool" (42.1%), where students described how AH can serve as an instrument for different purposes in medicine such as creating a connection with oneself and others, gaining perspective, and managing of

Table 3. Number of times of code application for question two, regarding improvements in education or practice students intend to make based on information learned from the arts and humanities experience, by first-year Harvard Medical School students, n = 115.

Theme	Code	n (%)	Representative quotes	
"Improve their leadership and doctoring qualities"	Empathy	20 (11.17)	"Find time to use art as a way to empathize" (Student 74) "Will work to realize how patients may perceive my comments" (Student 24)	
	Awareness	12 (6.70)	"Have a keen, watchful eye when observing my surroundings" (Student 6)	
	Broader perspective	12 (6.70)	"Renewed emphasis of keeping an open mind, considering things from many states of mind" (Student 49)	
	Genuineness	10 (5.59)	"Being myself more unapologetically in this environment" (Student 2)	
	Confidence	7 (3.91)	"Be ok with not knowing and not feeling comfortable" (Student 5)	
	State of mind	7 (3.91)	"Take a few moments before entering patient's room to channel an appropriate state of mind" (Student 42) "Try to find music that puts me in a right state of mind" (Student 16)	
	Humanistic care	3 (1.68)	"I will focus on seeing and getting to know my patients" (Student 87)	
	Resilience	2 (1.12)	"Don't let failures get you down for too long" (Student 118)	
	"Take a holistic approach for their education and practice of medicine"	Engage with arts and humanities	42 (23.46)	"Spend more time practicing my musical side" (Student 77) "Find a way to incorporate humanities into everyday practices" (Student 31)
		Reflection	16 (8.94)	"Take time for reflection in daily practice" (Student 57)
Wellbeing		16 (8.94)	"Explore the arts as a way to de-stress" (Student 76)	
Self-expression		14 (7.82)	"Express myself more through journaling/listening to music" (Student 108)	
Holistic education		8 (4.47)	"Incorporate dance into my learning" (Student 54)	
Incorporation of Arts and humanities into medicine		5 (2.79)	"Integrating art into clinical work (bring a poem to rounds)" (Student 63)	
Memorable educational experience		5 (2.79)	"Performance/education need to be memorable. Needs to not be forgotten the next day" (Student 21)	
Total		189 (100.0)		

stress, among others. The code "integrate arts/humanities into healthcare/healthcare education" was applied 12 times (7.5%), and represents how students think about the importance of AH and the need to include it in the practice of medicine and the formation of new professionals. Finally, the code "connection between art and medicine/science" was applied nine times (5.7%) and "triad" three times (1.9%). These codes explicitly represent how the participants of the sessions realized the resemblance and relationship between AH and medicine. Please refer to [Table 2](#) for a summary and representative quotes.

In terms of question two (changes to practice), 15 codes were identified and applied 189 times. The changes students reported being willing to pursue after the AH experience focused on two main themes: "improving their leadership and doctoring qualities" and "taking a holistic approach to their education and the practice of medicine".

For the theme, "improving their leadership and doctoring qualities", after the sessions students felt

encouraged to work on connecting with and understanding others, while also emotionally responding to them. This was illustrated by the code "empathy" and its application on 20 occasions (11.7%). The codes "awareness" and "broader perspective" were applied 12 times each (6.7%) and related to students willing to work on being more observant and better listeners, while also considering different viewpoints. Finally, students also mentioned some other aspects related to their leadership and doctoring attributes they wanted to enhance, "genuineness", mentioned 10 times (5.59%); "confidence" and "state of mind", mentioned seven times (3.91%) each; "humanistic care" and "resilience", mentioned three (1.68%) and two (1.12%) times respectively.

For changes related to the theme "taking a holistic approach for their education and the practice of medicine", students showed high interest in "engaging with the arts and humanities" which manifests in the application of this code 42 times (23.46%). The codes "reflection" and "wellbeing"

were also considered as important changes participants were encouraged to consider after attending the AH session. These two codes were applied 16 times each (8.94%), followed by “self-expression”, 16 times (8.94%); “holistic education”, eight times (4.47%); and “incorporation of AH into medicine” and “memorable educational experience”, mentioned five times each (2.79%). Please refer to [Table 3](#) for a summary and representative quotes.

4. Discussion

The very nature of how to evaluate the impact of the AH in medical education is the subject of much discussion [28]. While quantitative analyses may point to measurable impacts of this type of integration, it may miss meaningful reasons to include them in the curriculum which cannot be as easily measured. Our mixed methods approach therefore allowed students to share their perspectives beyond the quantitative evaluation of the AH experience.

The findings of this study show how an intensive AH experience can prompt medical students to consider questions of great import in medicine: questions of resilience and empathy, of vulnerability and authenticity. Students were challenged to reflect on the connection of science and arts, and how music can bring multiple and diverse benefits to medicine and society. Furthermore, participants were invited to reflect on the power of music specifically- and the AH in general- and how it impacts medicine and medical training. Students reported being motivated to improve their leadership and doctoring skills, and to take a holistic approach to both their medical education and the practice of medicine. The excitement of hearing music and discussing the AH with Mr. Ma may have engaged students who might otherwise have been less enthusiastic about AH as a required seminar in the medical school curriculum. Furthermore, Mr. Ma wanted to follow up with the original group of students before they graduated to continue the conversation about the impact of AH on their medical school experience. The students had a dialogue with him on an online platform again before their commencement, reflecting together on the impact of COVID-19 on their appreciation of the very humanistic elements of medicine that came up during his visit in their first year.

Mr. Ma's presence at the medical school generated immense excitement amongst the students and faculty and was recognized as a unique and important learning opportunity to reflect on the intersection between AH and medicine and how AH can impact them during their formative years becoming physicians. Mr. Ma has a wide range of interests, one of them being to put “science back in conversation with the arts,” and using the arts to create connections between people, particularly during times of stress and conflict [29]. While we were fortunate to have a luminary like Yo–Yo Ma spend time with the students, the arts and humanities are just as effective without the superstar involvement. What really matters is the passion and dedication of the physicians involved with teaching the medical students and sharing their love of music, writing, theatre, and the arts in a way that inspires students.

Finally, it is also important to emphasize how AH initiatives for medical students have an impact beyond the individual session(s) [30]. In addition to informing the hidden curriculum [20], AH education may have an impact on medical students on a deeper level, on their personal or private experiences, feelings, and thoughts [31]. In the present study, we explored students' responses to an AH experience, revealing some of their ideas about the AH in medical education.

We acknowledge some limitations to our study. This was a one-time event at a single institution with one class of medical and dental students, and thus may not be generalizable to other contexts. Additionally, our survey tool was designed to evaluate the impact of the AH experience on the students only and did not collect additional information related to students' previous experience with AH or music. Moreover, our results could be explored further with focus groups or structured interviews that may yield more meaningful discussion of the themes raised here. Longitudinal follow-up of the students and comparison to other groups who did not participate in the AH experience may provide helpful comparisons. Future studies should investigate the longer term impact of memorable AH educational experiences on medical students and other health professions trainees.

Despite these limitations, our study offers a window into the impact of an AH experience with an internationally known musician on medical students, and how such programs may shape the

education of future physicians. This unique program may serve as a model for other institutions seeking to integrate the AH into medical education in a meaningful way, to help medical students connect with the human aspects of taking care of patients.

Other disclosures

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Disclaimers

Some of this material is the result of work supported with resources and the use of facilities at the Veterans Health Administration Boston Medical Center and the New England Geriatric Research Education and Clinical Center. The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.

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Authors' contributions

Substantial contributions to:

The conception or design of the work: all authors.

The acquisition, analysis, or interpretation of data for the work: all authors.

Drafting the work or revising it critically for important intellectual content: all authors.

Final approval of the version to be published: all authors.

Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved: all authors

Conflict of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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Appendix A. Codebook Learning Harmony: Medical Student Reflections on the Intersection of the Arts & Humanities and Medicine, a Mixed Methods Study

Question 1: What are two key points students learned from the arts and humanities experience?

Code	Definition	Quote
Art/humanities as instrument	Art/humanities can serve as a tool for different purposes: connection, gain perspective, stress relief, etc.	"How art relates to medicine and building rapport" #32
Connection and understanding	Use art/humanism to connect with others our one-self, to be empathic or self-empathic.	"How arts can enhance our capacity for empathy" #66 "The arts can help us relate to pts" #57
New standpoint	Use art/humanism to take a new perspective about familiar and unfamiliar things/people.	"Use art to make the strange familiar and the familiar strange" #29

(continued on next page)

Question 1: (continued)

Code	Definition	Quote
Professional improvement	Art/humanities as a tool to be better professionals.	"The arts give us the perspective necessary to be better doctors" #38
Self-expression	Art/humanities as a tool to express one's thoughts, emotions, ideas.	"Role of arts in expressing ideas and conveying the emotion with the ideas" #50
Self-regulation	Art/humanism can be a tool to get in contact and/or deal with emotions, e.g. stress.	"Turning to art can be a good way to deal with emotions" #22
State of mind	How art/humanism can positively change a person's mood and influence the interaction with others.	"Music and arts can put you in a great state of mind" #5 "Your state of mind can influence your interactions with pts" #18
Think deeply	Art/humanism as a tool to reflect.	"Art can be a great way for learning about yourself and sharing thoughts" #35
Correlation between art and medicine/science	Participants highlight the resemblance and relation between art and medicine/science.	"Art and medicine draw parallels in that they both provide space to create connection" #86
Creativity	Be imaginative, original.	"Think outside the box" #18
Empathy	Importance to connect with others, understand the shared humanity. Look beyond your own point of view, consider how someone else may think or feel about something.	"Understanding viewpoints of others" #51
Genuineness	Students understand the value of being themselves, regardless of their flaws. Discover one true self, be your true self. Be authentic with yourself and/or others.	"It's ok to be you" #1 "Feeling our actual selves" #8
Healing	How you can take care of yourself by healing your patients.	"You heal yourself by healing others" #17
Holding ideals	Keeping principles and ethics. Be aware of injustice and act when something is wrong.	"Address injustice when you see it" #6
Integrate arts/humanities and healthcare/healthcare education	Arts and humanism can be incorporated into the practice/education of medicine.	"Many opportunities exist for incorporating art into medical practice" #35
New stance	Set aside our preferences, prejudices, and ingrained habits when encountering other perspectives. Reconsider the assumptions of everyday society. Question things you often take for granted to better understand the world.	"Make the strange familiar and the familiar strange" #29 "Art is important for learning how to take on other perspectives" #22
Promoter of change	We should improve and/or reform the current systems.	"Be a change maker" #4 "We need to rely on one another to develop a better system" #6
Pursue of goals	Participants express the importance to go after your objectives and interests.	"Always chase your interests" #37
Reflection	Take time to think.	"Take time to reflect" #1
Resilience	Importance to increase the ability to recover or adjust easily to changes or problems.	"Use arts to build resilience and connect with others" #7
Significancy	Importance to make experiences and education memorable.	"Performance and education must be memorable" #23 "Only memorable experiences are learned" #28
Triad	Relation Composer-performer-audience.	"Need to split yourself into three people. Take context, utilize content and listen uninterrupted" #21
Trust	Importance to have confidence with others and/or with ourselves.	"We need to rely on one another to develop a better system" #6
Vulnerability	Participant describes the importance to be open to criticisms and/or get hurt emotionally, to be exposed. Vulnerability can be seen as a virtue.	"Be vulnerable- it's a strength" #109

Question 2: What changes to their education and practice students intend to make after participating in the arts and humanities experience?

Code	Definition	Quote
Awareness	Participants want to observe and listen more. Be more mindful.	“Have a keen, watchful eye when observing my surroundings” #6
Broader Perspective	Participants want to start to amplify their vision, widen the way of seeing a situation, a scene, or a person.	“Be more open” #58
Confidence	Participants want to start feeling empowered and secure about their selves (includes actions and decisions). They want to be able to tolerate uncertainty.	“Doing my best and not being afraid to do things my way when there is no right way” #14
Empathize	Participants want to work on connecting with others, understand them, and our shared humanity. Being able to emotionally respond to another person.	“Art and humanities help connect people with each other and remind us of our shared humanity” #27
Engage with arts and humanities	Students want to dedicate time to the arts and humanities.	“I should engage more in the arts” #31
Genuineness	Students value the possibility to be themselves, regardless of their flaws. They want to be more authentic and discover their true selves.	“Practice the piano more” #4 “It’s ok to be you” #1
Gratitude	Participants want to be more thankful and show appreciation for kindness.	“Being myself more unapologetically in this environment” #2 “Reminding myself of gratitude and service” #3
Holding ideals	Participant wants to keep his principles and values. He understands the importance of them and wants to act according to them.	“Address injustice when you see it” #6
Holistic Education	Students express that they want an integral education. Incorporate other disciplines different to science into the Medical School or their education.	“Incorporate other disciplines into my education, less narrow focus on sciences” #19
Humanistic care	Participants want to focus more on the patient during care. They want to get to know them better.	“Focus more on pt. and providing more humanistic care” #14
Incorporation of Arts and humanities into medicine	Student expresses the need to take the arts and humanities into the medical profession.	“Integrate art into medicine” #46
Reflection	Participant wants to take time to think.	“Take time to reflect” #1
Resilience	Participant wants to increase the ability to recover or adjust easily to changes or problems, sometimes art can be used as a medium to accomplish this.	“Use arts to build resilience and connect with others” #7
Self-expression	Participant want to communicate his feelings, thoughts, or ideas. He wants to express creatively.	“Find a way to express myself” #17
Memorable Educational Experiences	Participant expresses the need to make education significant, outstanding.	“Work to make my education and teaching memorable” #23
Social Change	Participant wants to improve and/or reform the social system.	“Using your passion & creativity for social change” #32
State of mind	Participant wants to be aware of his own disposition. Use art to positively change his or other people’s mood.	“Music and arts can put you in a great state of mind” #5
Vulnerability	Participant wants to be open to criticisms or getting hurt emotionally.	“Remembering my inner self & vulnerability” #3 “Have the courage to be vulnerable” #4
Wellbeing	Participant wants to gain welfare, to cope with stress. He can use art to accomplish this.	“Carve out time to appreciate arts for my own wellbeing” #27

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