Visual Thinking Strategies for Medical Students

A Master's Degree Project
Presented to the Arts Administration Program of the University of Oregon

March 16, 2016

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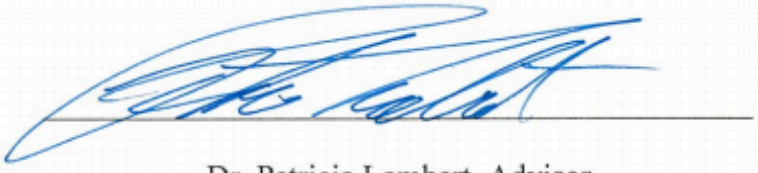

Dr. Patricia Lambert, Advisor

March 16, 2016

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Abstract

This research project explores the broad topic of visual arts and its use in medical schools, focusing specifically on Visual Thinking Strategies (VTS) as a method. After analyzing the medical school reform and the new curriculum at Oregon Health Sciences University (OHSU), I made a set of recommendations for how to create a successful arts-based program for medical students. This research includes explanation of how developing skills using arts-based methods benefits the doctor, patient and society as a whole.

Keywords: Visual Thinking Strategies, Medicine, Arts-based learning, curriculum, students, education

Section 1: Introduction

This research project explores the use of arts-based learning in medical education, focusing on how Visual Thinking Strategies can be used for medical students to augment their training. Arts-based training in observation, communication and listening can inform their practice and promote the doctor-patient relationship as well as enhance patient-centered care. Data was collected through literature review and four key informant interviews. This study concludes with a set of recommendations for how Oregon Health and Science University can support their medical students with arts-based learning.

Significance of Study

The purpose of this research is to explore how the visual arts and arts-based learning can enhance medical education. I have examined a method, which is currently being used in medical schools, called Visual Thinking Strategies. I analyzed four program examples where students look at art in a gallery setting to help improve their observation skills. After examining local medical school curriculum at Oregon Health and Science University (OHSU), I developed a set of recommendations for how to provide opportunities in visual arts-based training for OHSU medical students.

The goal of providing opportunities for visual arts-based training is to enhance the medical students' training, promote the doctor-patient relationship and support patient-centered care. In medical school, the doctor-patient relationship is a core value. It has been a guiding principle in medicine for many years. As Goold (1999) states, the doctor-patient relationship is the medium in which data are gathered, diagnoses and plans are made, compliance is accomplished, and healing, patient activations and support are

provided. However, there is sometimes a feeling of distance between the doctor and the patient, and this disconnect can also cause feelings of dehumanization in the patient. Compassion, sensitivity, observation, and collaboration are skills that doctors develop in their training. Arts and humanities courses aid in teaching these skills.

Patient-centered care is valued in health centers and hospitals. Allowing the patient to be a central part of clinical decision-making is a priority. There are five attributes of patient-centered care. They are whole-person care, coordination and communication, patient support and empowerment, ready access, and autonomy. The doctor-patient relationship plays a large role in patient-centered care. Improving the relationship improves clinical outcomes such as reducing the amount of prescription medications and number of hospitalizations (Rickert, 2012).

Hospitals and other healthcare facilities focus on patient-centered care because of its positive effects and the ability to reduce general costs. For example, patient-centered care frequently improves doctor-patient relationships by offering a clearer understanding of disease and diagnoses, ultimately decreasing the amount of prescription medications. Decreased amount of prescription medications translates to fewer dollars spent. The dollars being saved can go towards improving the overall patient experience.

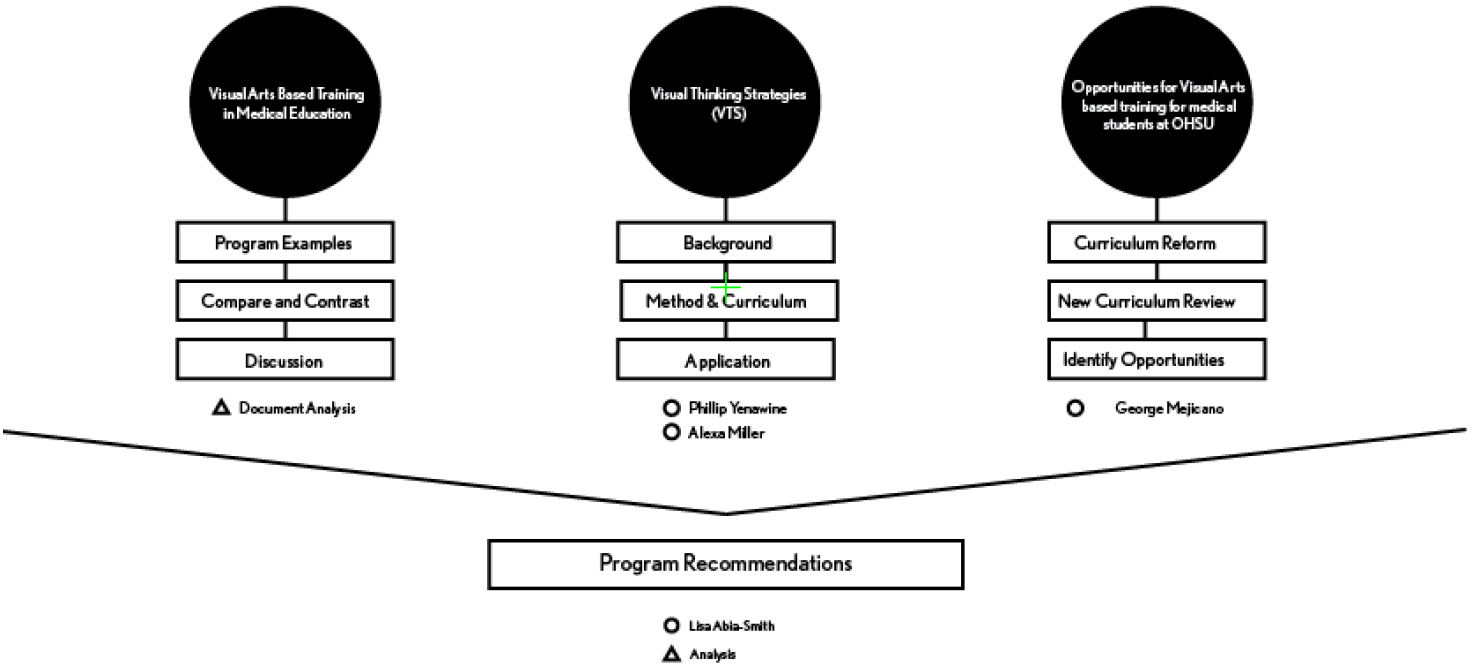
All hospitals and health centers have high standards for patients' treatment and care. What makes a healthcare facility more competitive is patient-centered care and overall patient experience. Outstanding patient-centered care and patient experience ratings will help inform people when they must choose one health facility over another. With access to more information than ever before, people are making careful decisions about which health center or hospital to choose.

Medical facilities and medical practitioners strive to offer the best healthcare. Consumers of healthcare want nothing but the best. There is not a cure for every disease. Healthcare is not always about the cure, but rather the quality of life. It is important to comfort the patient in every situation whether or not there is a cure available. The doctor-patient relationship and communication is vital to the treatment and healing of a patient. Professional skills in compassion, sensitivity, observation, and collaboration help doctors build their relationships with patients.

Current Gap in Research

Incorporating arts and humanities courses in medical school programs enhances the students' professional skills. Research shows that art training and art intervention improves observation skills (Dolev, 2001; Nahshineh, 2008). Improvements were shown in unbiased observation and more accurate observation. In the Performing Medicine program for medical and dentistry students, observation as well as communication, self-presentation, and self-care skills were developed (de la Croix, 2011). A review of the literature identified several findings on the improvement of observational skills in accordance with several findings on the improvement of observational skills through taking art courses. There was a need for further research on other professional skills developed through taking art courses. Compassion, empathy, sensitivity, communication, and collaboration are skills that were mentioned throughout various journal articles. My research revealed several studies discussing empathy in medical students. I suggest that further research should be conducted to examine whether empathy may improve from training in Visual Thinking Strategies (VTS).

Conceptual Framework



The broad topic of this research project is visual art in medical school. Through a literature review I explore the use of arts-based training for medical students. I look at four examples of programs for medical students across the United States. Through interviews and literature review, I research a method called Visual Thinking Strategies. After examining medical school curriculum at Oregon Health and Science University, I make recommendations for how to integrate arts-based learning for medical students. The main question I seek to answer is: how can Visual Thinking Strategies based education be designed for Oregon Health and Science University (OHSU) medical students? I also discuss the professional skills medical students can develop through taking arts-based courses. I explain how training the doctor using visual arts benefits the

doctor, the patient, and the whole healthcare system. To conclude, I make a set of recommendations for utilizing Visual Thinking Strategies in medical school.

Research Methodology

Purpose Statement

The purpose of this study is to discover how arts-based learning in medical schools can benefit the doctor, patient and society at large. In this study I explore existing arts programs in medical schools and interview both art and medical professionals who have expertise in education. This research also includes recommendations for implementing arts-based learning for medical students at OHSU.

Methodological Paradigm

As a researcher I believe in subjectivism. As author O'leary (2010) states, subjectivism "emphasizes the subjective elements in experience and accepts that personal experiences are the foundation for factual knowledge" (p. 10). My data collection strategy involves conducting interviews with professionals in both art education and medical education. Interviews combined with literature review are my main source for acquiring knowledge.

Research Biases and Role of the Researcher

As the researcher I must acknowledge my own biases. My interest in this topic stems from my personal belief that art education can aid in the development of many skills including professional skills for medical students. Having the opportunity to facilitate VTS with a variety of age groups, I have had the privilege of seeing firsthand how VTS training can improve observation and other skills of students. As the researcher it is important for me to examine the VTS method critically and analyze this

method from all angles. I must consider opposing views in order to understand the program in an unbiased way.

My experience in working in arts and healthcare programs has shaped my perspective. I see art as a medium for expression as well as a tool for learning. Having utilized VTS with various audiences, I believe that this is an effective method of teaching and learning. I must pay attention to data that may oppose this. Opposing data could help inform why there may be resistance to integrating arts-based learning in medical schools. It is important to see the opposing side and be informed of obstacles and challenges when implementing an arts-based program. To recognize other points of view can also strengthen the research by being aware of reasons why arts-based learning might not be successful in a medical school setting.

Research Question

How can Visual Thinking Strategies based education be designed for Oregon Health and Sciences University Medical Students?

Delimitations

In order to answer the research question I conducted four key informant interviews. Those interviewed were chosen based on their expertise and contributions to their respective fields. The research focuses on needs for medical students at OHSU. Several key informants were selected based on state location, a primary reason why the Director of Education at The University of Oregon's Jordan Schnitzer Museum of Art and the Dean of Students at Oregon Health and Science University were selected. Other key informants include Visual Thinking Strategies founder and VTS specialist from New York and Connecticut.

Limitations

Selecting OHSU as the medical school to base my recommendations limits the study. Results and recommendations may not be generalized for other medical schools. With only four key informant interviews, the population for this study is small. With this specificity, some bias may occur and results cannot be generalized.

Relevance

This research explores the current state of arts-based learning in medical schools. Recommendations for integrating arts-based learning at OHSU will benefit other medical schools that have similar goals in enhancing medical school education. It is also relevant for arts educators interested in suppoting medical students through offering arts-based learning opportunities.

Research Design

Research Approach

Data was collected through literature review and key informant interviews. The was designed to answer the question: How can Visual Thinking Strategies-based education be designed for Oregon Health and Science University Medical Students? After analyzing data, recommendations for integrating an arts-based program for OHSU medical students were made.

Interview Participants

Philip Yenawine, cofounder of Visual Thinking Strategies, was selected for an interview, which focused on how VTS can build professional skills. Alexa Miller, VTS specialist and Arts Practica developer, was interviewed on how VTS and arts-based learning can be used in the medical and healthcare setting. Dr. George Mejicano,

Professor of Medicine and Dean for Education at OHSU, was interviewed and gave input from the medical education perspective. Lisa Abia-Smith, Director of Education at the Jordan Schnitzer Museum of Art, was interviewed to provide perspective from the arts education point of view.

Visual Arts-Based Training in Medical Education

There are currently programs at various medical schools that provide arts-based training for medical students. This paper overviews a selection of those programs and highlights successes and challenges. By studying the programs that already exist I can see which ones have been sustained and use this as a measure of success.

Visual Thinking Strategies (VTS)

One method of arts-based learning is Visual Thinking Strategies (VTS). I will examine the benefits of using VTS and see how it can be used for medical students. Alexa Miller's Arts Practica is a medical education consultancy that provides workshops for care providers, clinical teachers, art leaders, and educators (Miller, 2012). She specializes in VTS and applies this strategy to the medical learning process. Her practice will serve as an example of how VTS can be used in the healthcare setting.

Opportunities at OHSU

Based on a review of OHSU's new curriculum and an interview with Dr. George Mejicano, Professor of Medicine, Senior Associate for Education at the School of Medicine, opportunities for visual arts-based training for medical students will be identified. Potential partners for arts learning will be suggested and program recommendations will be made.

Benefits

The population that is being focused on in the research is medical students. However, results will benefit educators in the art and medical fields as well as all healthcare practitioners. Arts-based learning is not limited to medical students. Doctors, nurses and other healthcare practitioners are dedicated to life-long learning and utilizing VTS can help improve their professional skills. Therefore, this research and its results are useful for those working in the field. Primarily, it will benefit educators by presenting opportunities and recommendations for arts-based learning in medical schools.

Section 2: Visual Arts-Based Learning in Medical Education

Medical students go through rigorous training to become medical professionals. Many schools have incorporated arts-based learning in their curriculum. Arts-based learning programs are offered either as a part of the medical school curriculum or as an elective course. I have identified four programs across the country that use looking at artworks in a gallery setting to improve medical students observation skills. 1] Art and Medicine at Yale Medical School (1998). 2] Training the Eye: Improving the Art of Physical Diagnosis at Harvard Medical School (2004.) 3] Visual Thinking: How to Observe in Depth at University of Washington School of Medicine (2008). 4] Art Rounds at University of Texas Health Science Center San Antonio (2010).

Background

Art has been used in medical school training to help medical students learn various skills such as observation, communication, teamwork, and empathy. These skills are important for medical students to learn and help form a successful doctor. With patient-centered care being a significant social value today, patients expect their doctors to carry these traits.

There has been evidence that the skill of physical examination is inadequate in medical students, residents and practicing physicians (Naghshineh, 2008, p. 991). With the advancement of technology and increase in digitized records, doctors are spending more time examining computer imaging, test results and patient charts. The face-to-face time between doctors and patients is decreasing and affecting the doctor-patient relationship. The teaching of examination skills and student confidence level has diminished, which suggests there is “broad opportunities to improve patient care with

implementation of better physical examination teaching methods" (Naghshineh, 2008, p. 991). Arts-based learning is one strategy, which aids in teaching examination skills.

The arts encompass many methods and there have been several approaches for integrating the arts into medical school training. Theater, poetry and examining artworks are examples of tools used in the arts to augment medical school training. In my research I examine programs that use looking at artwork to help improve observation and visual diagnostic skills. All four program examples partnered with an art museum and utilized medical school and museum staff for their programs. Three of the four programs I examined use Visual Thinking Strategies (VTS), a systemized way of looking at art utilizing a VTS trained facilitator.

There are many arts-based programs in the United States and around the world that have attempted to improve medical students' observation skills. I will focus on four programs in the United States, which use examining artworks and Visual Thinking Strategies to train medical students.

Art and Medicine – Yale

Art and Medicine at Yale Medical School pioneered visual arts-based programs. The program was the first to collaborate with an art museum in order to approach art as a strategy for learning. The collaboration between Yale School of Medicine and Yale Center for British Art is a great opportunity for medical students to utilize the art museum, located only several blocks away from their school. The program began 18 years ago and was developed by Professor of Dermatology, Dr. Irwin Braverman and Curator, Linda Friedlaender.

Dr. Braverman saw a need for medical students to further develop their observation skills. "The idea to use works of art to practice observation skills first occurred to Braverman at grand rounds in 1998, when he noticed the dermatology residents weren't describing what they saw on patients as thoroughly as they should. 'It occurred to me that if I were to ask them to describe some object that they were totally unfamiliar with-like a painting- they wouldn't know what was important or unimportant. They would describe everything in that object'" (Wheeling, 2014, p. 1). This was the preliminary phase for creating a program where medical students would look at art to learn how to improve their observation skills.

During the Art and Medicine workshop, students were asked to examine a preselected painting for 15-20 minutes and gather as much detail as possible. In small groups of about four students they discussed what might be taking place in each painting based on their observations. "Braverman explains that 18th- and 19th- century British paintings are perfect for this exercise because many tell a story about a real historical event, but like a patient with unexplained symptoms, they often contain ambiguous or contradictory information" (Wheeling, 2014, p. 1). This ambiguity gives students something to critically analyze, discuss, and provide possible solutions or explanations.

After the group discussion, the facilitator asks the group if anything was left out. In addition to observation skills, teamwork and communication are learned through this process. As students discuss their observations with one another they learn to listen, communicate and work with one another to dissect the painting. As a follow up to the workshop students look at 10 photographs of skin lesions and write down what they see. As a result of the workshop, students go more in depth with their observations of the

photographs. "Braverman is trying to impress upon the students that physical diagnosis requires more than just a glance. According to Braverman, doctors today spend only a short amount of time actually looking at their patients, relying instead on tests and numbers. The more time a doctor spends with a patient, the more likely they are to notice something that tests would miss" (Wheeling, 2014, p. 1). This can also improve the doctor-patient relationship and patient-centered care.

The Art and Medicine course at Yale is one of the few arts-based courses in medical school that is mandatory for students. The success of the program has led to other medical schools in the United States and internationally establishing similar programs.

Training the Eye: Improving the Art of Physical Diagnoses – Harvard

Training the Eye: Improving the Art of Physical Diagnoses is an elective 9 week pre-clinical course offered to students at Harvard Medical and Dental School as a part of an intervention study. Sessions were 2.5 hours with 75 minutes of observation exercise at the Boston Museum of Fine Arts followed by a one-hour lecture linking visual arts concepts with physical diagnosis. "In groups of up to 12, students practiced inspecting, verbally describing, interpreting, and actively building on others' analyses of artworks that were pre-selected to strategically exercise fine arts concepts linked with medical didactics (Naghshineh, 2008, p. 992).

There were two groups in this study, which included a control group of 34 pre-clinical students and a group of 24 students in a similar stage in training, who participated in the intervention. All participants were self selected and showed interest in the course. Since this was an elective course, these students valued the arts and also valued the

process. The process included strategies in VTS and art educators trained in VTS taught the course.

The results of this study showed that after the intervention participants increased the number of observations and had increased sophistication in their descriptions of artistic and clinical imagery. From the writing samples, qualitative results emerged. "Qualitative data demonstrated that students who completed the course compared to control students used more fine arts concepts linked to physical findings in their post course descriptions of images, including specific mention of color/shadow/light and symmetry/balance" (Naghshineh, et. al., 2008, p. 994).

Visual Thinking: How to Observe in Depth – University of Washington School of Medicine

University of Washington started offering an elective course called Visual Thinking Strategies: How to Observe in Depth for first and second year medical students at University of Washington School of Medicine in fall of 2008. A similar workshop was offered for medical residents at Swedish Medical Center during the same time. The course and workshop were held at the Henry Art Gallery and used their works of art to aid in teaching students using VTS as a tool for learning. VTS helps train medical students to observe objectively and critically, filtering out bias and assumptions that can cloud their perception (Song, 2008).

Considering and accepting what is unknown is an important skill that students learn through VTS. One student reported that the training made them realize the pitfalls of jumping to clinical conclusions (Song, 2008). Looking carefully, making in depth

observation and improving visual literacy are skills learned through the process of VTS training.

Former Curator of Education at the Henry Art Gallery, Tamara Moats, instructed the course along with Andrea Kalus, MD, assistant professor of the University of Washington Dermatology Department. They combined using VTS to look at art with discussion and slides of medical observation ("Visual Thinking Strategies | UW Medicine at the Henry", (2008).

Art Rounds – University of Texas

Art Rounds is a program that took place at McNay Art Museum in San Antonio, Texas in 2010. Medical and nursing students from the University of Texas Health Science Center were recruited to participate in the program, which included three 90 minute sessions. During the sessions Visual Thinking Strategies (VTS) was used to teach observation skills.

A study took place where the goal was to evaluate whether students' exposure to VTS would improve their physical observation skills, increase tolerance for ambiguity, and increase interest in learning communication skills. Students took pre- and post-intervention tests. Students were tested using Geller and colleagues' variation of Budner's Tolerance of Ambiguity Scale and the Communication Skills Attitudes Scale (CSAS).

The results of this study showed that students significantly increased the amount of time they spent looking at art and patient images, the number of words they used to describe art and patient images, and the number of observations made of art and patient images. Students significantly increased their tolerance for ambiguity and positive views

toward health care professional communication skills. In conclusion, authors speculate that these improved skills may help in patient care and interprofessional team interactions (Naghshineh, 2008). Craig Klugman, the assistant director of the Center for Medical Humanities and Ethics at University of Texas Health Science Center states "In medicine, the answers are not always obvious and we don't know the answers a lot more often than we teach that we do. It's important that students are comfortable with not knowing and that they can work through it" (Marini, 2011).

Discussion

The four programs highlighted at Yale, Harvard, University of Texas and University of Washington Medical Schools utilized looking at art in museum or gallery settings to train medical students. The program at Yale Medical School is unique for utilizing methods other than VTS to train medical students in observation. Although Art and Medicine at Yale did not use VTS, some tools and many outcomes were similar to the other programs. Goals set for all four programs included enhancing students' observation skills. Methods used to reach that goal were similar across the programs and looking at art was consistently the method, which was supplemented with other methods and strategies.

The four programs examined utilized varying time frames. Each program was successful at attaining their goals with as few as three sessions for 90-minutes each and as long as 9 weeks with 2.5 hour long sessions. The length of the program depends on the needs of the students and the resources available including staff time and booking a location. When art galleries are being utilized the working hours of the museum or institution must be considered.

Successes

Alexa Miller, consultant in arts and critical learning, states that there are a number of factors that make VTS programs successful in medical school. It starts with an accurate understanding of VTS and investing in VTS trained instructors is crucial to the success of the program. It is important to identify the needs of the students or the institution and have a clear vision for what the program goals are. Having a climate of support and feeling supported by the leadership are necessary.

VTS facilitators must be trained and when using VTS with medical students it is important to link lessons to the medical curriculum. Alexa states, "VTS has to be facilitated really well, reflected upon well and linked strategically to medical curriculum." If students do not know why they are using VTS they don't value the process as much and the learning is not as rich. VTS is a method and has been successful with medical students because it is linked to medical school curriculum. What is learned in the museum or classroom can be applied to medical images and clinical settings when practicing physical diagnosis.

Looking at art and using VTS allows students to look at images that are not as familiar and allows students to dive deeper into observation without worrying about being right. Philip states during his interview, "The education system tends to push people towards right answers. That happens straight through university and is a problem in many classes" There was a time when it was more important that a doctor bear a lot of medical knowledge and was able to apply that knowledge. Now, with the technology, internet and online resources anyone can acquire that knowledge. Dr. Mejicano states, "It is more important to ask the right question, to filter the sources, and then determine

whether or not you should apply that to patient care." There has been a shift in focus for medical students. VTS has helped medical students gain comfort with ambiguity. In medicine ambiguity often occurs. For medical students to learn how to process and critically think during times where ambiguity is present in order to arrive at an accurate diagnosis in a timely and efficient way is valuable.

Challenges

After examining these four programs and looking at research and articles, the majority of the information is positive and promotes using VTS or arts based programs to enhance medical education. However, it is important to investigate what challenges may occur. Timing, resources, and funding are issues that arise when looking at challenges that might occur with arts-based programs for medical students.

The four program examples range in length of sessions from three 90-minute sessions to 9 weeks of sessions that last 2.5 hours. This might have to do with resources available. When initiating a program there may be challenges with how much time is available at the partnering museum, how much time instructors have to teach the class as well as how much time students have to take the class. It is important to consider time frame when starting a program and also recognize that this might be a challenge to coordinate with all stakeholders.

Having VTS trained instructors might be hard to find. However, museum staff can be trained in VTS by attending two 2-4 day workshops that are held across the country. Also, gathering funds to support a VTS program might be challenging depending on the medical school's budget and whether or not the course if offered as an elective or part of the curriculum.

In interview with Dr. Mejicano he explains that the new curriculum, YourMD, acknowledges different learning styles. While some students would be very interested in taking VTS or arts-based classes, there are students' who would question why they should take this and how it is helpful. It may not cater to their learning style. As the program is being set up, and student's needs are being assessed, catering to various learning styles may be another challenge.

Section 3: Visual Thinking Strategies

Introduction

Visual Thinking Strategies (VTS) is a method used by educators to facilitate discussion about art images. The goal of VTS is to build visual literacy and improve viewing skills. The method helps students develop skills in critical thinking, observation, teamwork and communication. Critical thinking skills include synthesizing data and drawing conclusions.. The process involves asking students three basic questions: 1] What's going on in this picture? 2] What do you see that makes you say that? 3] What more can we find? These questions and how they are phrased are based on research done by Abigail Housen, a cognitive psychologist. The questions are meant to encourage students to talk about the art and put them into an active discovery mode (Yenawine, 2013, p. 25).

History

Visual Thinking Strategies (VTS) began in New York City at the Museum of Modern Art (MOMA) in 1991. The Board of Trustees at the MOMA wanted to find out if visitors were learning from their education programs. After some research and evaluation they found out that people attending the museum and participating in the education programs enjoyed the experience and evaluations were positive, but they were not learning much from their experience. The Board of Trustees wanted to look more deeply and find out if people attending the museum left knowing more than when they came in. Philip Yenawine, the Director of Education at the time, responded to this by working with his colleagues to develop VTS in order to build visual literacy (Yeanawine, 2013, p. viii). Visual literacy defined simply is the ability to recognize and understand

ideas conveyed through visible actions or images (as pictures) (Merriam-Webster Dictionary, (n.d.).

Development and Founders of VTS

Philip Yeanawine and Abigail Housen developed VTS as a response and desire to improve the museum experience. Yeanawine was the Director of Education at the Museum of Modern Art (MOMA) from 1983-1993. "He worked in 1992-94 as consulting curator at the Institute for Contemporary Art, and during the academic year 1993-1994 as visiting professor of art education at Massachusetts College of Art, both in Boston" ("Home - Visual Thinking Strategies", (n.d.). He is the author of several books, such as *How to Look at Modern Art, Visual Thinking Strategies: Using Art To Deepen Learning Across School Disciplines,* and has written six children's books about art.

Abigail Housen received her Ed.D from Harvard in 1983. Housen has been researching aesthetic development. For VTS she has studied how people think when they look at art and was asked to help see if people retained what was being taught at the MOMA. What she found was that people did not retain what was being taught (Yenawine, 2013, p.4). Yenawine and Housen worked together to create Visual Thinking Strategies.

The effort to create VTS was started when Yenawine was at the MOMA and the board of directors wanted to know whether people who participated in the museum education programs were learning new information and were retaining that information. After conducting research they found that although reviews were positive and people were satisfied with their museum experience they were not learning or retaining new information. Yenawine saw this as an opportunity and challenge to change the way

people experience art. This is when he partnered with Housen for further research and started the process of developing Visual Thinking Strategies.

VTS started with goals to improve critical thinking and reasoning skills through the process of investigating works of art. Museum educators have been using VTS as a teaching method, which has been proven to improve critical thinking, visual literacy and communication skills. Now the VTS curriculum has expanded to over 175 schools across the country as well as in 11 other countries (Abia-Smith, 2016).

Visual Understanding in Education

In 1995, Yeanwine and Housen founded Visual Understanding in Education (VUE) to fund research and to train teachers in VTS. This led the development of a K-6 curriculum with derivatives for middle and high school students. After 12 years of research they learned that VTS achieved its objectives and much more (Yenawine, 2013, p. viii). VUE is a non-profit organization that "conducts educational research focused on aesthetic and cognitive development that results from interaction with art. Based on its findings, VUE develops programs for schools and museums across the United States and in Eastern Europe. VUE published the arts education curriculum called Visual Thinking Strategies (VTS), (Home - Visual Thinking Strategies. (n.d.)).

VTS Participants

People who use VTS are museum visitors, students of all ages, professionals and elderly with dementia. The VTS curriculum was originally created for K-6 students. Since the development of VTS in 1995 there have been several programs deriving from the original program. VTS has been used for students of all ages starting with preschoolers, including college students, medical students and has more recently been

utilized for adults living with dementia. Many people of all ages have benefited from using VTS in an academic or other setting.

Facilitator's Role

VTS is a teacher-facilitated, student-centered discovery process that focuses on carefully selected images. The facilitator plays an important role in the VTS process. The students drive the discussions so rather than the facilitator being an authoritative figure they aid the student in learning. The facilitator does this by helping students to "look carefully at works of art, talk about what they observe, back up their ideas with evidence, listen to and consider the views of others, discuss and hold as possible a variety of interpretations" (Yenawine, 2013, p. 16). The facilitator's role is to acknowledge students' answers, paraphrase what they hear, point to parts of the image being talked about and make connections across responses to show similarities and differences in students' interpretations (Abia-Smith, 2016). Yenawine explains, the facilitation process and method of teaching does not change with different audiences. The facilitation process is great training for your ears, says Yenawine. You must practice good listening. The process the facilitator goes through allows them to make sure they understand what the students or participants are saying. It also breaks down hierarchical barriers. Facilitators learn to deal with their biases very effectively. VTS benefits both the educator and the student. Often the facilitator learns a great amount from the students' perspectives and students' comments during the discussion.

Founding Principles

Vision Statement

> Imagine classrooms where educators use the power of visual art to guide students in inspiring conversations. Every student's perspective is valued and builds deeper engagement and thinking. All of our students are actively participating in their learning. They learn from one another, respect each other, listen and understand there are multiple ways to see any given situation. Our students are curious, lifelong learners and thoughtful citizens contributing to a diverse and changing world. Visual Thinking Strategies is an educational curriculum and teaching method, which enables students to develop aesthetic and language literacy and critical thinking skills, while giving teachers a powerful new technique they can utilize throughout their career (Home - Visual Thinking Strategies, (n.d.)).

Mission

"VTS transforms the way students think and learn through programs based in theory and research that use discussions of visual art to significantly increase student engagement and performance" (Home - Visual Thinking Strategies, (n.d.)).

VTS Process

Images for VTS sessions are carefully selected. The images provide rich detail, tell a story, have a sense of mystery, and typically people are present. Students discuss, theorize and find meaning from the image. VTS sessions are typically held in small groups of about 10 people with one facilitator per group. Students are asked to take a quiet moment to look at the artwork. Then, the first question is addressed to the group

1] What's going on in this picture? Students take turns responding and listening to one another scaffolding their ideas. The second question is 2] What do you see that makes you say that? This question solicits a response that provides evidence for theories and statements made when answering the first question. The third question is 3] What more can we find? This invites students to look deeper and find further meaning from the image. VTS is a conversation-based approach and conversations around a single image can easily last 15 minutes or more.

Benefits of VTS

VTS was created with the intent to build visual literacy and viewing skills. It was created in order to solve the issue of information not being retained. VTS promotes "gritty" learning, meaning that the information sticks or is easily remembered. Skills learned through VTS go beyond visual literacy. People who participate in VTS learn complex thinking and new language to express their thinking. Other skills learned are observation, listening, communication and teamwork. VTS builds an interest in and capacity to write as well as collaborative problem solving skills (Yeanwine, 2013, p. viii).

"For teachers it provides a strategy to bring out students who often hang back, to level the field, to introduce discussion as a vehicle for collective meaning-making that extends across disciplines, and to establish a clear means of scaffolding students' abilities/peer learning" (Yeanwine, 2013, p. viii). VTS benefits both teachers and students through the facilitation and discussion process. Students learn many valuable skills during the process and the information they learn when looking at the artwork or image is retained.

VTS Applications

Visual Thinking Strategies has been used in a variety of settings. VTS was originally created to build visual literacy and improve viewing skills in a museum setting. After research was conducted through Visual Understanding in Education (VUE), a K-6 program was created and VTS was used in the elementary classroom setting. There have been offshoots of this program adapted for middle school and high school students.

VTS is used to help students attain Common Core Standards. Common Core Standards are the learning goals for what students should know and be able to do at each grade level. The standards ensure that all students graduate from high school with the skills and knowledge necessary to succeed in college, career, and life, regardless of where they live ("Preparing America's students for success," 2016). Visual Thinking Strategies is perhaps the simplest way in which teachers and schools can provide students with key behaviors sought by Common Core Standards: thinking skills that become habitual and transfer from lesson to lesson, oral and written language literacy, visual literacy, and collaborative interactions among peers" ("Home - Visual Thinking Strategies," (n.d.)).

Police detectives have used the VTS process to improve their visual skills and increase the number and quality of observations made at crime scenes (Klugman, 2011). Other applications of VTS include VTS for people with Alzheimer's and dementia, people with disabilities and people who have suffered from brain injury. This paper examines how VTS is used for medical students.

In medical schools, VTS is used to teach students skills in observation, teamwork, communication and to increase students' tolerance for ambiguity, which overall helps students gain skills in diagnosis. VTS helps medical students learn not jumping to

conclusions too quickly or making interpretations before careful observation. Additionally, it helps medical students improve the skills they need to carefully assess symptoms while considering other hypotheses (Abia-Smith, 2016). Alexa Miller points out that medical students are trained to become obsessed with numbers and words as sources of information. They often neglect what is most viable and right in front of them. VTS helps train medical students to look, discuss and retrieve information. It teaches medical students to be more patient, listen actively, reflect and appraise diagnostic connections and possibilities based on observation and to ask others for their interpretation of evidence presented.

Art is a tool for the VTS method. Some medical students have little experience with art or art history background. When art is unfamiliar, it allows students to express freely without fear of misinterpretation. In contrast, if dermatology students were to examine an image of a clinical skin disease there is added pressure. Looking at art allows students to practice observation and other skills while eliminating barriers and fear.

In 2004 Harvard Medical School initiated "Training the Eye: Improving the Art of Physical Diagnosis," a program that used VTS at Boston Museum of Fine Arts combined with lectures linking visual art concepts with physical diagnosis. In 2008 University of Washington School of Medicine offered an elective course called "Visual Thinking: How to Observe in Depth" where first- and second-year medical students learned, using VTS, how to observe objectively and critically, filtering out bias and assumptions. University of Texas Health Science Center San Antonio offered "Art Rounds" for medical and nursing students, a program which included three sessions where VTS was used to teach

observation skills in 2010. Today there are 20 medical schools across the United States and Ireland that use VTS for training medical students (Abia-Smith, 2016).

Section 4: Opportunities at Oregon Health and Science University

In this section I will discuss how medical school is changing their curriculum and use the state medical school, Oregon Health and Science University (OHSU), as an example. Through research and an interview with Dr. George Mejicano, I examined the changes that led to a recent medical school curriculum reform at OHSU. Dr. Mejicano, Professor of Medicine, Senior Associate for Education at the School of Medicine, and Infectious Disease Specialist, managed the revision and development of the new curriculum titled YOUR M.D.

The Role of a Doctor

As Dr. Mejicano points out, it is a fundamental question to ask: what is the role of a doctor? Doctors, nurses and other healthcare professionals play vital roles in our healthcare system. Doctors have many duties and perform a variety of tasks on the job. Some duties include diagnosing patients, treating patients and prescribing medication. Specialists in cardiology, neurology, or anesthesiology perform tasks related to their fields of expertise, but also are responsible for diagnoses, treatment and medication. Doctors consult with nurses and other medical professionals to make sure the care instructions are carried out (Browne, (n.d.)).

Doctors are required more education than nurses, but eventually both work together as a team to provide healthcare services. In this type of work setting there is overlap in responsibilities, and the team aspect is important in providing excellent care. As a doctor who works at a university hospital, Dr. Mejicano says, “I’m interacting with all sorts of different health professionals and with patients and families. The quality of care that is delivered is contingent upon how we work as a system and as a team, and not

my individual excellence." Teamwork is an important trait for doctors to have and is a skill that could be emphasized more in medical training.

Typically doctors undergo four years of medical school to attain their Doctor of Medicine (MD) status. The first two years are primarily classes and lectures in the basic sciences, which covers anatomy, physiology and biochemistry. The last two years include rotation, which involves clinical sciences such as internal medicine, pediatrics, psychiatry and general surgery.

Medical education is changing to meet the needs of society. At OHSU a new curriculum was launched in 2014. There are many reasons for the medical school reform. Some of the main themes propelling medical school reform include a changing society, the role of technology, emergence of a third science, inter-professional collaborative practice, systems-based practice, and transition from a time-based system to a competency-based system.

Medical School Reform

Need for Change

The current model of medical education is the Flexnerian model, named after Abraham Flexner. Some refer to it as the "two plus two" which refers to two years in the classroom and two years in the clinical setting.

> Flexner conducted an assessment of medical education in North America visiting all 155 medical schools in the United States and Canada…Although reform in medical education was already under way, Flexner's report fueled change by criticizing the mediocre quality and profit motive of many schools and teachers, the inadequate curricula and facilities at a number of schools, and the

nonscientific approach to preparation for the profession, which contrasted with the university-based system of medical education in Germany (Cox, 2006).

Dr. Mejicano explains that the Flexnerian model has been embraced in how medical education has been taught. "Flexner wrote a report 110 years ago. It's time for that model to go…Flexner himself said I only expect this model to last for 20 years and it lasted a century"(Mejicano, 2015). Not only is it time for a new model, there are many other reasons why medical reform is happening.

OHSU New Curriculum

At OHSU a new curriculum, YourMD, was launched in 2014. Over four years the new curriculum will be phased in and students will move to a competency-based model for medical education. The new curriculum addresses the topics of a changing society, advancing technology, the emergence of a third science, and interprofessional collaborative practice. The new curriculum accounts for various learning styles and backgrounds. Someone coming into the program with 10 years of professional experience in the field can finish the program quicker than someone coming right out of pre-med bachelor's program with less experience. The new curriculum is more flexible than the old model. Students reach benchmarks and the program is competency based rather than a one-size fits all program that is time based, like the old model. YourMD promotes learning skills for adapting to the changing needs of society and the rapid advancement of technology. The curriculum encourages students to engage in continual learning.

Changing Society

A doctor's job is to treat the patient. The patient is an individual and is part of a greater community. As society changes, doctors must adapt to the needs of the society and to the needs of the individual within that society. From a medical school perspective, Dr. Mejicano explains that "what we are producing in terms of a product, people with an M.D. degree, are already not able to and in the future not going to be able to meet the needs of society" (Mejicano, 2015). This lack of preparation is the fundamental reason for medical school reform.

One example of how society is changing is the role of social media in healthcare. In general, the way people are communicating with each other is changing. We use our computers, cell phones and social media platforms to communicate through words or pictures to tell a story or send a message. We must take into account how healthcare professionals are communicating with their patients today as well as how they will be communicating in the future.

For medical professionals and patients to maintain a healthy relationship and for healthcare to stay relevant, it is critical to adapt to changing society. Society and culture is constantly evolving. Doctors need to be trained with skills that well help them adapt to a changing society and they must be confident that they can grow in their practice as the demands from patients and society continue to change.

The Role of Technology

Currently we are seeing more and more of how technology is integrated into healthcare. The digitization of charts and records is one example. Booking appointments online through an online account rather than calling in to book an appointment is

becoming more standard. Also, doctors have to record more patient data on computers during the appointment. This is something to consider for the doctor-patient relationship. Some doctors are finding that learning new computer systems is taking away time from interacting with the patient. This is something to consider in training medical students for their practice. Students must be well equipped with technological skills as well as skills in interacting with patients to maintain a positive doctor-patient relationship.

Medical education and healthcare are undergoing a rapid change. Alexa Miller, who consults medical educators and healthcare professionals, acknowledges "the role of technology is a huge factor in the changing landscape of medicine" (Miller, 2015). The role of technology influences how medical students learn, how doctors practice and how doctors interact with patients. The field of medicine is changing as technology is becoming more integrated and playing a larger role in how doctors examine and treat patients.

For medical students technology plays a huge role in their education. Technology has changed how students access information. Dr. Mejicano talks about technology and explains, "When I was a medical student a long time ago it really mattered what was between my ears. In other words when I was seeing a patient, how much medical knowledge and the application of that knowledge I had and I could bring to bear actually made a difference" (Mejicano, 2015). He continues to explain now that many of us can access information and medical knowledge online, the role of the doctor has changed. Before a doctor was required to retain a lot of medical knowledge and now it is more important that doctors are able to ask the right question, filter the sources, and then determine whether or not they should apply that knowledge to patient care.

Technology has also changed the way healthcare is delivered. Technology allows healthcare professionals to work with more efficiency using online platforms for scheduling and patient communication. There is also digital imaging which decreases the amount of wait time for results. The digitization of patient records makes for easy access to this information as well as the ability to transport this information from one healthcare facility to another. In order to keep up with these changes it is imperative that medical students are trained in using technology. With these changes in society and technology there is also the emergence of a third science, healthcare delivery science.

A Third Science: Healthcare Delivery Science

Typically in medicine there are two sciences that are taught. One is foundational science, which includes anatomy, physiology and biochemistry. The other is clinical science, which includes focuses in internal medicine, pediatrics, psychiatry and general surgery. The emerging third science is healthcare delivery science.

Within healthcare delivery science there are fields such as informatics, quality improvement, teamwork and patient safety. All of these fields add to the quality of patient care and are crucial to the delivery of excellent healthcare. Dr. Mejicano states that the Affordable Care Act is an example of the part of the science of healthcare delivery. The Affordable Care Act is a law put in place in order to make healthcare more affordable, accessible and of a higher quality for families, seniors, businesses, and taxpayers alike ("Key Features of the Affordable Care Act," 2013). The affordable care act ensures that quality care is accessible to all citizens. Dr. Mejicano provides one way to look at it: "you could have an excellent clinician and an excellent hospital, but if you can't get a patient in to see them, then that population has not been served" (Mejicano,

2015). Along with this, healthcare delivery science includes patient-centered care as a part of quality improvement.

In healthcare, patient-centered care is a significant social value. "Patient-centered care focuses on the patient and the individual's particular health care needs. The goal of patient-centered health care is to empower patients to become active participants in their care" (Reynolds, 2009). Patient centeredness is highly valued and important when providing care, but can lead to ethical issues. In some cases doctors can be challenged with patient centeredness when advocating for an individual or society's well being. Dr. Mejicano states, "To be patient centered you have to take into account the value system and the beliefs of the patient and they have an integral right to disagree with you and decide for themselves" (Mejicano, 2015).

Doctors are trained to help people and yet when people do not want the help, what do you do? There is the ethical dilemma. An example that Dr. Mejicano shares shows how this can be a difficult issue to navigate.

> A long time ago, I got called at about three o'clock in the morning and I was a resident at the time. The patient had taken an overdose. It was a suicide attempt. She rolled into the emergency department at a facility. I did a gastrical lavage, pumping the stomach. So you basically put a tube into the stomach and you wash it out and try to get the pill fragments out. She says, what are you doing? I said, I'm trying to help you. She said how are you going to do that? I said, well I'm trying to save your life because if I don't get these pill fragments out, you might die. She said well that would be counter-productive (Mejicano Interview, 2015)

This is a case which involves an individual but there are other cases where individual values are different than societal or community values. What is good for the community may or may not be what is good for the individual. Vaccination is an example of an issue in which the individual's values do not always agree with the community values. If someone does not want to get vaccinated, that is his or her choice but this doesn't always agree with the community's perspective or what is best for society as a whole. Medical students have training in ethical issues and it is very important for them to understand the needs, values and cultures of the individuals they are treating.

In addition to delivering accessible and quality healthcare, teamwork is an important piece of healthcare delivery science. Healthcare professionals work together to provide people with the best care possible. In medical education, students work and are graded as individuals, yet it is important for them to learn teamwork. This will help prepare them for their practice, which involves working as a team to treat patients.

Interprofessional Collaborative Practice & System Based Practice

Interprofessional collaborative education refers to when two or more students of different healthcare professions learn together. Learning together is critical in medical education because during medical practice doctors work with nurses, pharmacists, physical therapists and others to diagnose and treat patients.

An older model, the Marcus Wilde Model lends itself to the idea of captain of the ship and the doctor can do everything. The theory is that with force of will and dedication the doctor can independently take care of people and populations. As mentioned before, the role of the doctor is changing. Now it is a team of healthcare professionals that takes care of the patient. The boundaries are blurred across different

professions and they must work as a team to diagnose and treat patients. Dr. Mejicano states "We need to address what is the interaction between all the different clinical professions. For example, what is the role of a nurse practitioner or a doctor of nursing practice, a PharmD., a doctor of physical therapy, a naturopath, relative to what it all means to be a physician" (Mejicano, 2015).

The system of care is a large issue. Dr. Mejicano says that most clinicians haven't been taught or assessed about this. The system of care involves a team of professionals working to care for the patient. The collective (team) is crucial and also takes precedence over the individual (doctor). In medical school and in all education we are graded as individuals. Doctors get their licenses as individuals, yet in practice and in treating the patient the collective comes first. The issues are around the ideas of how you define ownership, attribution or intellectual property as it relates to medical care. When the collective is treating the patient - who will take ownership, leadership, credit, or responsibility for the work done? These issues need to be addressed in medical education.

Opportunities

VTS has been proven to help increase observation, listening, communication, collaboration, and increasing comfort with ambiguity. These skills contribute to success in practicing medicine. Observation, listening and communication are important skills for doctors to have when examining patients and working with a team of healthcare professionals to deliver the best patient care.

There are many examples of medical schools that use VTS but at OHSU, there are no current programs that utilize VTS methods for training. However, there is great

opportunity for VTS to be utilized. Looking at topics and goals for the new curriculum, there are many ways in which the VTS curriculum aligns well with YourMD, the medical curriculum at OHSU. These topics include, healthcare delivery science, collaborative practice, and continual learning.

Healthcare delivery science covers informatics, quality improvement and teamwork. VTS supports informatics, the science of computer information systems, by teaching students skills in synthesizing data and drawing conclusions. VTS helps students learn not to jump to conclusions too quickly or to make interpretations before careful observation. VTS also teaches students skills in collaboration and teamwork. By discussing a work of art, students learn to make observations, listen to one another, scaffold ideas and draw inferences based on evidence. Listening to others and synthesizing information that is received from all avenues is important in learning teamwork and collaboration. Collaboration is especially important because modern medicine relies on a team of healthcare professionals to treat the patient, and not just one doctor. Input and data on patients is received from nurses, pharmacists, therapists, doctors and surgeons who work together to treat the patient. Often this input is shared and data is received during medical rounds.

Continual learning can be supported by VTS since the VTS program can be taught to practicing doctors as well as medical students. Offering a VTS program for medical professionals as continuing education would be a great way to maintain or enhance the skills of physicians and other health care professionals.

Section 5: Recommendation and Analysis

Four programs were examined in the previous Arts-Based Programs section of this document. The programs varied in length and methods used. The program at Yale Medical School, Art and Medicine, used looking at art as a strategy for improving observation skills with dermatology students. The programs at Harvard, University of Washington and University of Texas Health Science Center medical schools used VTS combined with other methods such as lecture linking visual art concepts with physical diagnosis. All four programs had goals of improving medical students observation skills.

VTS is a method used to help medical students improve their observation skills. A typical VTS session involves looking at a piece of artwork with a small group led by a VTS trained facilitator. The discussion is student driven and based on answering the following three questions. 1] What's going on in this picture? 2] What do you see that makes you say that? 3] What more can we find? The first question asks more than what you see but implies a narrative or story about the picture. The second question asks for evidence for inferences made when answering the first question and the final question asks students to look further and gather more information.

Looking at OHSU's new curriculum, YourMD, there are currently no programs that utilize VTS training for students. There is opportunity for offering such a program for OHSU medical students. OHSU has recently transitioned their curriculum from the old model to a new model, which accounts for a changing society, changing technology, various learning styles, and many other important topics. The new model is a competency-based curriculum rather than a time-based curriculum. Someone entering with more experience in the field can take less time to complete the program than

someone who has less clinical experience. With that, there are a wide range of students who could benefit from a VTS based program.

Considerations

Having a clear vision and setting goals, having a good understanding of VTS, choosing a time-frame to work within and having evaluation and documentation methods in place are several things to consider in order to create a successful VTS program for medical students.

Setting goals and having a clear vision will help all people involved; partners, stakeholders and participants need to understand the purpose of the program. Participants will know what they can gain from the program. An example of a vision statement is; "Add VTS training during medical school to help physicians become better practitioners. By applying the VTS skills to their physical diagnosis medical students practice good listening, communication, observation and looking at the patient as a whole person and not just as their disease or diagnosis." Goals for programs should vary and be tailored to the specific audience that the program is serving. "The goal of Training the Eye: Improving the Art of Physical Diagnosis, a multidisciplinary course, was to improve the visual literacy skills of medical and dental students by developing the practice of "active looking" –unbiased inspection, and accurate reporting"(Naghshineh, 2008, p. 995). Each program will have different goals depending on the needs of the students and the purpose or vision of the program. The instructors delivering the program should value the VTS process and understand how it can be used to benefit their specific audience.

A program where people feel supported by their leadership is beneficial. As Alexa Miller states in her interview, having a climate of support is crucial. Miller goes

on to say, a community of support of other practitioners within the same institution is ideal. Selecting a team of individuals who have a shared vision and complementary skills will benefit the program. One way to create a shared vision is to hold planning and proposal meetings where stakeholders and program leaders can gather to share their visions for the program and work to create a unified vision. The meetings can take place with the idea that program proposal will be discussed and vision for the program will be created. This team of individuals involved in the planning is part of the group of stakeholders.

Stakeholders would include Curriculum Director at the medical school, Dean of Education, professors in medicine, medical students and museum educators. The people or organizations that fund the program are also stakeholders. This could be private funders or supporting organizations or institutions. People who teach the program are art professionals who are trained in VTS. Training for VTS includes two practicum workshops where individuals learn to facilitate VTS image discussions in museum settings over 2-4 days. Miller states that investing in 3 years of VTS training contributes to the success of a program utilizing VTS in a medical school setting. Partners and instructors for the program are stakeholders and additionally, participants, professors and funders are also stakeholders.

The timing of the program should be considered for how many sessions will take place and at what point in the medical students' education should the sessions take place. In the program examples from the previous section, there is a range of number of sessions. One program, Art Rounds, had just three sessions that lasted 90 minutes each. Another program was a 9 week course where sessions were 2.5 hours each. The number

of sessions varies depending on the needs and goals of the program but research has shown that with only three sessions of VTS, students improve their observations skills and increase their tolerance for ambiguity. Success has been shown with programs with as few as three sessions and also with programs that last 9 weeks.

To assess what is ideal for a particular audience, one should look at what is practical within the institution. Medical education is rigorous in many ways. Looking at the particular medical school curriculum and identifying opportunities for VTS program based on time is crucial. At what point in curriculum is there time for a student to participate in VTS training? Are there opportunities to create time for VTS outside of the curriculum? These are important questions to ask and consider. Also, work with museum staff and medical students to find a time frame that works for them. Most program examples involve collaboration. Working with both institutions to find a time that works for everyone can be challenging, but is worthwhile. The success of the program depends on collaboration of the institutions and people involved in the planning of the program.

The programs that I examined were designed for medical students who were preclinical and in the first or second year of the program. It was during the third year of medical school when students started rotation and got clinical experience. This is with the old curriculum model. Although most programs I looked at were targeted at first- and second-year preclinical students, there are instances of VTS programs designed for medical professionals who have completed their medical training. These practitioners participate in the arts-based program as continuing education to enhance their professional skills. Further exploration and research could be done on the timing of arts-

based programs for medical students examining the effects of a program done during preclinical training versus clinical training done during the third-year rotation. Also, as this relates to the new curriculum, when to offer VTS training could be further explored.

My recommendation is to offer VTS in the first year of medical school regardless of which curriculum model is used. This gives students an opportunity to learn VTS skills and apply them to their clinical practice. If enrolled in the old, time-based model, students have two years to learn and practice VTS. If students are enrolled in a new curriculum, like YourMD at OHSU, if VTS is introduced early on students will have the opportunity to apply it to their clinical practice. VTS offered in the first year of medical school gives students the opportunity to learn the VTS skills and enhance their observation skills so that they can apply this knowledge to clinical practice and patient observation.

There has been research conducted which examines changes in empathy during each year of medical school. One study examined the changes in medical students' empathy during medical school using the Jefferson Scale of Physician Empathy, a research tool for measuring empathy specific to medical education and relevant to patient care. This research showed that empathy scores did not change significantly during the first two years of medical school, however there was a decline in empathy score at the end of the third year. This decline in empathy takes place at a time when the medical school curriculum is more focused on patient-care and increased patient interactions (Hojat, 2009).

Empathy decreases, even during a time when medical students are seeing more patients and having more personal interactions, because they are learning to desensitize

themselves so they can focus on the illness. Instead of relating to the patient as a relative or someone they are close to, they need to treat the illness. However, it is important to have some empathy for the patient in order to be a competent and caring physician. This is a delicate balance successful medical students and physicians have to learn.

It was suggested "to prevent extinction of this valuable human quality, we need to make profound changes in medical education by developing targeted educational programs at the undergraduate, graduate, and continuing medical education levels" (Hojat, 2009, p. 1189). There are many approaches for enhancing empathy in medical education. Approaches for enhancing empathy include improving interpersonal skills, role-playing, shadowing a patient, studying literature and the arts, improving narrative skills, watching theatrical performances, and engaging in small group discussions.

My recommendation is to offer VTS-based courses for students in their first year of medical school. The skills learned through VTS training can be transferred to a clinical setting. With curriculum reform there are more clinical opportunities in the first and second years of medical school, which makes it more relevant to have VTS training offered during those years.

As medical students learn through art-based programs it is crucial to evaluate and document the process. Journals for taking notes and reflecting is an example of documentation and evaluation method used at Harvard Medical School program Training the Eye. Students were asked to keep a journal, sketch, take notes, and reflect on the process. Not only was this a great tool for students to aid in learning, it became a tool for evaluation. Excerpts could be taken from the journals to use as qualitative data from the

program. The journals also served as a great way to document the students' learning and document the program as a whole.

Evaluation and documentation helps with the program by getting a full understanding of how the program went, but also helps with sustaining the program and gives information for future programs. Recording success, challenges and process helps inform future programs so that improvements can be made. For programs that are supported by donors or grants, documentation is utilized to show these supporting individuals or organization how the program went. It can help secure further funding to help sustain the program. Specific documentation is required when programs are supported by grants but is also valuable information to report to private donors. Documentation and evaluation can also serve people outside the program when analysis and reports are given. Writing an analysis and creating generalizable knowledge to share with others benefits the whole arts and healthcare field.

Surveys and questionnaires are other examples of evaluation methods used to obtain feedback. Especially when starting a program, getting feedback from the students or population being served is a great measure of how the program is being received and shows opportunity for improvement. Also, having instructors fill out a survey, questionnaire or writing a summary is great feedback. Recording numbers and statistics such as how many observations were made during pre- and post-tests is quantitative data that can be shared. A balance of quantitative and qualitative data makes a good evaluation report.

Conclusions

There are many things to consider when initiating a program. The main considerations I have for implementing a VTS based program for medical students are having a vision and setting goals, having a good understating of VTS, choosing a time-frame to work within and having evaluation and documentation methods in place. Also working with partners and stakeholders to create a climate of support is crucial for the success of the program.

Further research could be done on examining the VTS questions and seeing if those specific questions could be utilized during physical observation. VTS questions are designed to get the viewer to observe and get information from an art piece but I wonder if VTS questions could be used to get the viewer to observe and get information from a patient by looking at the patient and their physical signs. While there is research on VTS for medical students, there is opportunity for further examination and discovery.

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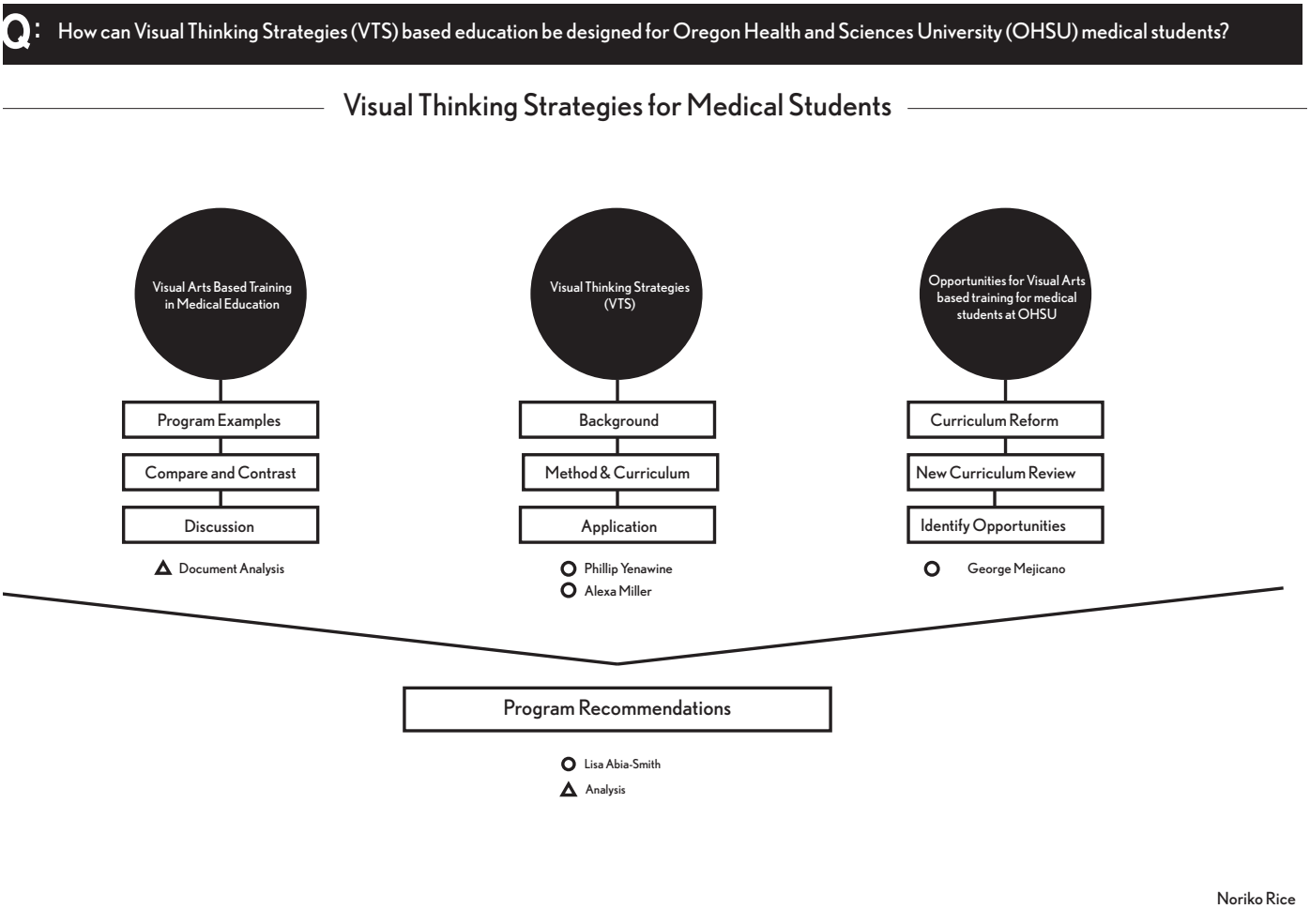
Appendix A: Conceptual Framework



Appendix B: Sample Recruitment Letter

Visual Art in Medical School:
Integrating Visual Thinking Strategies (VTS)
in Medical School Curriculum

Noriko Rice, Principal Investigator
University of Oregon Arts and Administration Program

Date:

Phillip Yenawine
Address
City/State/Zip

Dear Phillip Yenawine,

You are invited to participate in a research project titled *Visual Art in Medical School: Integrating Visual Thinking Strategies (VTS) in Medical School Curriculum* conducted by Noriko Rice from the University of Oregon's Arts Administration program. The purpose of this study is to improve medical education through arts based learning.

To better understand the rise of visual arts based training in medical schools I will look at existing programs in the United States. Specifically, I will research educational approaches, medical curriculum and examples of arts based programs at medical schools. Next I will explore the use of Visual Thinking Strategies as a method used for medical students. After reviewing at the new curriculum, YOUR M.D., at Oregon Health and Sciences University (OHSU) I will look for opportunities for visual arts based training for medical students at OHSU.

You were selected to participate in this study due to your leadership and development of Visual Thinking Strategies (VTS) and your experience as an educator using VTS for a multitude of audiences. If you decide to take part in this research project, you will be asked to provide relevant organizational materials and participate in an interview over Skype, lasting approximately one hour during Spring of 2015. If you wish, interview questions will be provided beforehand for your consideration. Interview will be conducted online over Skype or other convenient platform. Interview will be scheduled at your convenience. In addition to taking handwritten notes, with your permission, I will use an audio recorder for transcription and validation purposes. You may also be asked to provide follow-up information through phone call or email.

If you have any questions, please feel free to contact me at 541-953-0861 or Patricia Dewey at 541-346-2050. Any questions regarding your rights as a research participant should be directed to the Office for the protection of Human Subjects, University of Oregon, Eugene, OR 97403, (541) 346-2510.

Thank you in advance for your interest and consideration. I will contact you shortly to speak about your potential involvement in this study.

Sincerely,

Noriko Rice
938 W. 3rd Ave
Eugene, OR 97402

Appendix C: Sample Consent Form

Visual Art in Medical **School:**
Integrating Visual Thinking Strategies (VTS)
in Medical School Curriculum

Noriko Rice, Principal Investigator
University of Oregon Arts and Administration Program

Date:

Phillip Yenawine
Address
City/State/Zip

Dear Phillip Yenawine,

Any information that is obtained in connection with this study will be carefully and securely maintained. Your consent to participate in this interview as indicated below, demonstrates your willingness to have your name used in any resulting documents and publications and to relinquish confidentiality. It may be advisable to obtain permission to participate in this interview to avoid potential social or economic risks related to speaking as a representative of your institution. Your participation is voluntary. If you decide to participate, you are free to withdraw your consent and discontinue participation at any time without penalty. Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission.

I anticipate that the results of this research project will be of value to the cultural sector as a whole, especially in the region. However, I cannot guarantee that you personally will receive any benefits from this research.

If you have any questions, please feel free to contact me at 541-953-0861 or Patricia Dewey at 541-346-2050. Any questions regarding your rights as a research participant should be directed to the Office for the protection of Human Subjects, University of Oregon, Eugene, OR 97403, (541) 346-2510.

Please read and initial each of the following statements to indicate your consent:

_____I consent to use of recording devices and note taking during my interview

_____I consent to my identification as a participant in this study.

_____I consent to the potential use of quotations from the interview.

_____I consent to the use of information I provide regarding the organization with which I am associated.

_____I wish to have the opportunity to review and possibly revise my comments and the information that I provide prior to these data appearing in the final version of any publications that may result from this study.

Your signature indicates that you have read and understand the information provided, that you willingly agree to participate, that you may withdraw your consent at any time and discontinue participation without penalty, that you have received a copy of this form, and that you are not waiving any legal claims, rights or remedies. You have been given a copy of this letter to keep.

Print Name: _____

Signature: _____ Date: _____

Thank you in for your interest and participation in this study.

Sincerely,

Noriko Rice
938 W. 3rd Ave
Eugene, OR 97402

Appendix D: Data Collection Sheet – Document Analysis

Document Analysis

Key Descriptor:

Date: *Document Location:*

Document Type:
_____Article
_____Website
_____Report
_____Other
_____Program Description
_____Notes
_____Book

Reference Citation:

INFORMATION	*NOTES*

Appendix E: Data Collection Sheet - Interview

Interview

Interviewee Details:

Name:

Organization:

Title:

Location:

Date:

Consent: _____*Oral* _____*Written*
_____*Audio Recording* _____*OK to Quote*
_____*Thank-You Sent*

Key points:

INFORMATION	NOTES

Appendix F: Semi-Structured Interview Questions

Interview Questions

Phillip Yenawine

1) What skills are developed for those who practice VTS (all ages)?
2) What skills, if different, are developed for those who practice VTS as post-secondary students?
3) Is VTS taught differently when adults are the target audience?
4) In what ways can VTS be used for medical students?
5) What is the future of VTS? How will the program continue to grow?

Alexa Miller

1) What makes art programs successful in medical school settings?
2) What art programs have been the most successful? How do you measure success?
3) What are skills learned by medical students after taking arts based courses?
4) Why is it important to incorporate the arts in medical school training?
5) How can VTS be used in medical schools?

George Mejicano

1) What is the main reason for medical school reform?
2) Is there a focus on patient centered- care in the new curriculum?
3) What is your view on the role of arts and humanities in medical education?
4) Do medical students have arts and humanities learning opportunities with the new curriculum?
5) To what extend do you think there might be interest among OHSU faculty and students in introducing arts-based coursework in the program?

Lisa Abia-Smith

1) What is your familiarity with arts-based learning for medical students?
2) Is there an interest or need for arts-based learning for medical students?
3) Do you or your organization have interest in providing opportunities for arts based learning for medical students?
4) What are potential challenges and opportunities?
5) How do you envision the structure of this kind of opportunity?

Appendix G: Data Collection Schematic