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Sara K. Brown

University of Kentucky, sarabrown@uky.edu

Author ORCID Identifier:

 <https://orcid.org/0000-0002-2639-6395>

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Sara K. Brown, Student

Dr. Allan Richards, Major Professor

Garrett Hansen, Director of Graduate Studies

ART EDUCATION IN MEDICAL EDUCATION: BENEFITS AND CHALLENGES

THESIS

A thesis submitted in partial fulfillment of the
requirements for the degree of Master of Arts in the
College of Fine Arts
at the University of Kentucky

By

Sara Kaitlyn Brown

Lexington, Kentucky

Director: Dr. Allan Richards, Professor of Art Education

Lexington, Kentucky

2022

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[https://orcid.org/ 0000-0002-2639-6395](https://orcid.org/0000-0002-2639-6395)

ABSTRACT OF THESIS

ART EDUCATION IN MEDICAL EDUCATION: BENEFITS AND CHALLENGES

Humanity is synergistic with art and medicine. Likewise, art education can be impactful throughout medical education. Art as a tool to develop the next generation of healthcare differs from the clinical goals of creative art therapies. Over the prior decade, many medical schools now provide curricular offerings in the arts and humanities. Less is known about the application in postgraduate medical settings. The focus of this thesis is to review the pairing of artist-educators with postgraduate medical training programs.

One such program is ArtsCAFE (Arts Connect Around Food and Enrichment), an intercollegiate project fusing experienced arts educators with medical educators to improve trainee experiences across disciplinary boundaries. The ArtsCAFE pilot study provided monthly visual art-making workshops to surgical residents and their guests at a single university-affiliated institution. Resident participants self-reported on their overall sense of support and communication effectiveness.

Response to the pilot showed encouraging results—limitations, including the COVID-19 pandemic, paired with the pilot performance to stimulate further exploration. In review, art activities have the potential for replication in postgraduate medical training programs. This thesis provides a roadmap by which art educators and medical education programs may further develop enrichment efforts for trainees or faculty.

KEYWORDS: Art Education, Medical Education, Medical Humanities, Arts Intervention

Sara Kaitlyn Brown

4/20/2022

Date

ART EDUCATION IN MEDICAL EDUCATION:
BENEFITS AND CHALLENGES

By
Sara Kaitlyn Brown

Allan Richards, E.D., MFA

Director of Thesis

Garrett Hansen, MFA

Director of Graduate Studies

4/20/2022

Date

DEDICATION

To the perpetual new kid and the Mimi who loved her.

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Every artist needs a critical eye to advise them. I am lucky enough to have two. Many, many thanks to both Martin Beck and Abby Overstreet.

This thesis represents an individual challenge to myself to believe in what is possible. Sincerest love to my husband and son for their patience when I was too busy; their understanding when I was batty; and for catching my tears when I was overwhelmed. Final credits go to my sweet girl dogs who never let me take myself too seriously.

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CHAPTER 1. INTRODUCTION

Culture connects and challenges us. It inspires, enlivens, and replenishes the weary. Noted as a “powerful prescription” by the World Health Organization, art has intrinsic value far beyond surface-level aesthetics (Alissa Guzman, 2019). For over a decade, researchers and healthcare organizations have explored participatory arts activities in clinical applications (Fancourt et al., 2020; JM Reilly, 2005). Arts modalities are used in clinical training environments with varying success. When reviewing arts-based activities in these settings, Osman (2018) concluded that the data was difficult to measure and suggested the inclusion of trained artist educators for assessing the effectiveness of interventions. The review found that approximately one-third of interventions feature collaborations with artists or art educators, suggesting that their experience and specialization could bolster program efforts.

Art has always been a part of my story. In a military family, I recognize the profound need for connection between people and the power of art to establish this connection. Predictably, creative expression offered a portable nirvana no matter where we moved. Access to the arts was a connective and supportive element throughout my youth. In adulthood, I trained in depth to understand the use of arts to educate and inspire. It informs my focus on the process of learning, and my teaching mission is to foster connection through engagement with art.

Maintenance of this connectivity through the arts is omnipresent in my social circle. Much as I leaned into art education, other members of my extended support system embraced the responsibility and often selfless commitment to become healthcare workers. Submersing ourselves in cultural activities when together, including the visual arts, we frequently found commonalities. Furthermore, upon return to our respective fields, we would find ourselves recharged to address our responsibilities. Art is a shared language, enriching our human experiences and deepening our knowledge. A crucial component of lifelong learning, creativity bolsters existing skills and can impact all

individuals.

Creativity, as well as culture, should be fostered at all levels in clinical training. Presuming medical trainees are purely scientific minimizes the individual in a job description. Related literature suggests an increase in programs implementing arts practices, but a lack of definitive data continues to exist. Specific gaps of knowledge are present regarding the inclusion of arts specialists in these activities as well as the presence of arts and humanities in postgraduate medical environments. By studying an intercollegiate collaboration at a single university-affiliated institution, we present a model that encompasses clinical and non-clinical stakeholders.

1.1 Purpose

The overall research mission of this document is to explore the ways arts interventions may impact surgical residents at an academic institution.

The purpose of the pilot study was to understand the impact of regularly occurring arts workshops for surgical learners. Surgical learners were the focal point of this study due to the infrequency they are the target audience for art interventions. The cohort was queried for overall interest and a structure of monthly offerings was created to allow participants several opportunities to engage in programming. During the pilot intervention, survey instruments were constructed to capture self-reports of sense of support, communicative abilities, and workshop reflections from participants and guests. The researcher also collected observational data throughout the course of the study timeline.

Specific pilot objectives were:

1. Impact communication skills through the creation of visual art.
2. Foster growth in social support networks through visual arts workshops.

1.2 Theoretical Framework

The Association of American Medical Colleges (2018) reports over seven thousand candidates apply to be considered for a residency each year, with the majority representing US medical school graduates. One-third of these programs incorporate the arts and humanities in their curriculum (Mukunda et al., 2019). This metric is the result of three decades of work in the field. Arts interventions in medical education vary in their intended outcomes, from clinical to non-technical skills. The application variation has also led to limits in the conclusive data from these interventions. Notably, researchers have suggested further study in this population as well as the continued application of the arts in postgraduate medical environments.

One such opportunity exists in general surgery. General surgery is a large specialty, averaging over eighty-five hundred trainees on duty each year as reported by the ACGME (Accreditation Council for Graduate Medical Education, 2019). Surgeons are depicted in mainstream culture with an intensity that comes at the cost of 'bedside pleasantries'. Highly intelligent, deeply passionate, and skilled with their hands - the traits that define the surgeon are the same as any would expect of a skilled artist (Preece & Cope, 2016). If the practice of medicine is an art, surgeons inhabit a space of the upper echelon of makers. Their educational path is also one of the longest of any specialty, as residency runs five years and is occasionally lengthened by research or fellowship years dependent on the trainee's career goals. Surgical residents are accepting of the sacrifices this may entail throughout training. The obsession to succeed at any cost can lead to high rates of physician burnout and may affect patient care in the long term (Srinivasa et al., 2019). These truths establish the need for non-clinical methods to aid the residents in their identity formation during training.

A primary beneficial byproduct of the arts is the sense of community that is created when a small group goes through a new experience together. By fast-tracking the group to be open to one another on an interprofessional level, the team may align more quickly to the benefit of their clinical abilities (Acai et al., 2016). Groups engaged in reflective and skill-building exercises reported an enhanced sense of connection (Jones et al.,

2017). Activities structured to deliver educational content should be relevant to learners. When appropriate, creative strategies that introduce instruction, including gamification, competition, or hands-on activities, increase the enjoyment of those involved (Kopel et al., 2021). Furthermore, responses to art allow the group to learn more about one another. These safe spaces allow for honest communication (Orr et al., 2019).

1.3 Background to the Problem

Art nourishes humans as they pace through their lives. It has proven to aid us in reflection, rejuvenation, play, and in the development of knowledge. Nourishment is key to sustaining any marathon attempt.

The marathon to board certification is rife with expectations of hospital-based competency demands. It is common for curricula addressing the soft skills of medicine to be relegated to limited nooks and crannies of the academic cycle. However, as medical ethics pioneer Edmund D. Pellegrino (Fins, 2015) stated, “medicine is the most human-centered of the sciences.” Physicians must employ a myriad of ways to communicate and connect to their patients. Indeed, humanities have long been in the toolkit of medical educators to train this core requirement. The novelty lies in incubating opportunities to include arts educators in such efforts.

Medicine is a demanding profession, and failure to expose learners to this truth is also an unfair career representation. Physician identity develops in a crucible – under great and strenuous pressure. This development occurs across the training timeline (E. Miller et al., 2014). Similarly, interdisciplinary experiences with the arts enrich healthcare learners and challenge them to consider multiple perspectives (Kooker & Kerr, 2018). If the health system is to adapt to the challenges of a global future, trainees must also be able to consider the multi-faceted experience of their patients (Gaeta & Cesarine, 2020). This consideration is encouraged to extend throughout the clinical environment. Emotional intelligence plays a role in this extension. Well-being has long been recognized as enhancing patient care. However, it may also impact the overall effectiveness of physician leaders on their teams (Shanafelt et al., 2020).

Physician effectiveness is of importance to hospital administration. Demonstration of the importance of intrinsic motivation in organizations and its potential impact on healthcare delivery may be found in several modern leadership models. One proposed model by Shanafelt (2021), Wellness-Centered Leadership, emphasizes care for self and others, cultivating relationships, and inspiring change. Values identified by these models often include skills in empathy, connection, and innovation. These values have all been well-proven to be acquired through interaction with the arts and more specifically, gained through intentional art education.

The sustainability of the future physician workforce is a growing concern for training programs as well as the healthcare systems that depend on them. The challenge for the individual is to stay aware of their needs both in and outside of the hospital. The challenge of the institution and the program is to provide the environment that best meets their diverse educational needs. Resident trainees are restricted to an eighty hour work week, double that of the average American worker (Doyle, 2018). The ability of trainees eager to squeeze every ounce of information out of these years, while commendable, often leads to a higher likelihood of struggle with work/life integration (American Medical Association, 2018). Surgeons and physicians in surgical specialties report higher levels of burnout but also overwhelmingly would choose their field again (Dimou et al., 2016). Arts and humanities interventions are often presented as ways to maintain the spark.

Maintaining inspiration allows trainees to stay in their experience (as in the case with mindfulness) and to grow from their challenges. Passive lectures or assigned readings describing work/life integration fall short. Engaging in activities beyond medical acumen to deepen their knowledge is critical. Postgraduate medical learners and practicing physicians identifying values in their lives beyond medicine are more likely to stay balanced in their careers. Systemic changes are needed to create an environment that is conducive not only to learning but also to inspiring this career force.

Art education is not a direct antidote, but arts as nourishment makes sense for medical learners. Despite the presumption of popular culture that arts and science are parallel rather than overlapping, medical educators have long been fascinated with the nuances that the arts and humanities can provide to scientific thinkers. Arts have not only been fascinating – they have been identified as fundamental to undergraduate medical education. The Association for American Medical Colleges (2020), supported by the National Endowment for the Arts, the Josiah Macy Jr. Foundation, the National Endowment for the Humanities, and the Corporation for Public Broadcasting came together to review research focused on the presence of art in medical education. The result was a monograph entitled *The Fundamental Role of Arts and Humanities in Medical Education*, or FRAHME (Howley et al., 2020). National recognition of the utility of art in medical education by these organizations promotes and financially supports continued efforts. FRAHME demonstrates the impact of the arts on skills proficiency, perspective, reflection, and other 21st-century traits needed for physician learners.

These are not novel concepts to practitioners of art education. We are acutely aware of the power of the arts for all ages. Art fulfills the human spirit. The palette from which interventions are pulled must also access the knowledge base to interpret such attempts. By working together, art educators and medical educators can deploy arts as a training tool and provide rigorous assessments of these efforts.

The benefit of arts programming is its inclusivity; a course or workshop in the arts will affect any participant, no matter the background. Specific to visual arts and art-making practices, medical educators acknowledge the complexity of the learner and offer a constructive distraction. If we can impart upon future physicians that their physical health and ability to think creatively is just as key to the healing of their patients as any other skill they have obtained, we may also mold their inner character. Whether through hackathons that offer arenas for the convergence of medicine, business, and design theory, or sports psychologists lending practices in endurance to trainees in neurosurgery, programs take many approaches to fulfilling the varying educational

needs of their learners (Spiotta et al., 2018; Wang et al., 2018). Importantly, character without competency does not a physician make. Educators in all professions are adept at incorporating multidisciplinary approaches, often welcoming diverse viewpoints to the curriculum. Art should be used to enrich or supplement, rather than as a substitute for clinical pedagogy.

Collaboration between representatives on either side is of vital importance. The opportunity for arts educators to assist in the facilitation and instruction grows with the call for arts programming. Existing interventions, though inspired, often lack the understanding of measures and the ability to assess learning in arts workspaces. Art educators without advisors in medical fields may be limited in their understanding of the clinical competencies used in health professionals' education. With many medical schools adopting humanities offerings, it is crucial not to withdraw efforts prematurely before the gauntlet of residency. If it is possible to continually provide spaces where learners can build community, incubate divergent thought, and explore introspectively, growth towards humanism can be sustained throughout training. Even if a simple objective is to challenge the young doctors in an alternate environment, incorporating the humanities into their experience is a base effort.

Controversies

It is possible that the controversies about including the arts in medical education, especially at the postgraduate level, exist in the same manner with which art holds its power. Nuance is far from concrete, and science does not yet understand all facets of creative expression. There are several controversies about the application of art in postgraduate settings. General themes present include arguments about what art is or is not.

Art is not a universal bandage. It is important to distinguish many well-intentioned efforts (including arts interventions) to support the wellness of trainees, shift blame to individuals and attribute personal shortcomings as the cause of burnout. Systemic issues exist in the healthcare structure, and this

research recognizes that institutions must evaluate their systems to best support their staff at all levels.

Art is fluff. Course requirements for undergraduate medical students can deliver curricular arts activities—clinically focused models of residency and fellowship present time restrictions that are distinctly problematic. Art becomes periphery in these years and the onus to participate falls to the individual learner.

Art is reserved. Humanities have not been leveraged to their full potential regarding critical matters (Rolling, 2013; Viney et al., 2015).

Through the critical review, the Social Advocacy function of the arts, as mentioned in the AAMC monograph, can challenge medical learners to review the health institutions for cracks. In addition, the arts and humanities should be used more frequently to inspire discussion on critical issues such as health inequities, racism in healthcare, or structural gender bias.

1.4 Significance of the Study

Further study on arts programming in medical education settings stands to present broad benefits for institutions, physician trainees, arts educators, and arts organizations.

For Institutions

The significance of incorporating arts and culture extends to the potential of meeting institutional level needs. Medical residency programs have included a great deal of growth in the last 130 years and now include over thirty-eight thousand positions. Data released by the National Resident Matching Program (2021) reports over forty-eight thousand US undergraduate medical education (UME) students applied for positions in US graduate medical education (GME) during the 2021 match cycle.

The matching process is a transition between the UME and GME cycles. The

Accreditation Council for Graduate Medical Education (ACGME) provides oversight of graduate medical education programs nationally and abroad. This structure performs oversight of programs educating GME learners. The ACGME has spent the last several years developing a standard of instruction, which has recently come to include the deliberate address of learner well-being. According to 2020-2021 academic year statistics, over twelve thousand accredited residency and fellowship programs were housed within the 830 Sponsoring Institutions. These programs encompassed specialties and subspecialties, accounting for 149,200 resident learners. Relevant to our study, over five thousand learners are in accredited General Surgery programs (Accreditation Council for Graduate Medical Education, 2021).

The ACGME relies on Review Committees to create the standards to which the specialties adhere. The regalia surrounding topics such as professionalism, interpersonal and communication skills, and practice-based learning and improvement may be less delineated than that of medical knowledge or procedural skills. However, their representation within the core requirements shows a dedication by the governing body to create future physicians that excel in all areas of genuine patient care. In addition, the ACGME has increased the focus on the well-being of learners since 2016 through various initiatives and collaborative efforts with the AAMC (American Association of Medical Colleges) and the NAM (National Academy of Medicine). As the shift from service to education continues at the GME level, what had historically begun in the manner of an apprenticeship model continues to evolve. This evolution can be further enriched through the lens of arts and culture.

Feelings of cynicism are one key indicator of burnout, flanked by exhaustion and depersonalization (Maslach & Jackson, 1981). Cynicism in medical trainees suggests a sizable percentage demonstrate levels of burnout before they begin their careers (Peng et al., 2018). Staff well-being involves respecting the holistic needs of individuals. Encouraging the non-clinical aspects of hospital staff and trainees is one method institutions have deployed. In the case of residents, a comprehensive approach to meeting learner needs is essential (Hale et al., 2019). The arts provide a complex,

comforting distraction to meet some of these needs. Creative distractions allow us an arena for connection. Connectedness to peers is a powerful tool in developing appropriate work-life integration during training (McKenna et al., 2016).

For Physician Trainees

For the 2020-2021 academic year, ACGME (2019) oversight included over twelve thousand programs and over 150 thousand residents and fellows. Straddling the equilibrium between learner and employee, these postgraduate learners hone their craft and develop their professional persona. Arts programming equips these learners with additional tools to challenge them in translational ways.

A resident in our program stated that being involved in learning topics beyond clinical acumen provided ‘the brain with something else to chew on.’ Providing time for reflection shows great promise in well-being efforts and can also be structured in a way that enhances the overall education of the trainee.

Arts programming may also benefit learners as they develop competence in the areas required by the ACGME. These content areas apply to all trainees in accredited programs and are used in tandem with specialty-specific milestones that complement overall assessment. Content areas include Professionalism, Patient Care, Medical Knowledge, Practice-Based Learning and Improvement, Interpersonal and Communication Skills, and Systems-Based Practice.

- **Professionalism** requires the learner to exhibit ‘compassion, integrity, and respect for others, plan for personal and professional well-being (Accreditation Council for Graduate Medical Education, 2019).’ Several medical schools have employed arts programming to increase compassion and respect. These efforts should also extend to postgraduate learners, even if provided as extracurricular offerings (Mukunda et al., 2019). This competency includes the ability to

develop a personal and professional plan for well-being. Individuals with traditionally creative backgrounds may feel supported and ‘seen’ by the inclusion of arts programming by the institution.

- **Patient Care** is focused on learner ‘promotion of health’ and ability to practice (Accreditation Council for Graduate Medical Education, 2019). In the case of observational skills for diagnosis, several studies have explored the use of museum-based interventions (Friedlaender & Friedlaender, 2013). Through one Harvard study, nuclear medicine and radiology residents found an arts-based viewing curriculum ‘contributed to both professional and personal growth, and that they would use what they learned.’ They went further to agree on the universal application of residents learning to look at patients as they would art and reflect upon their findings (Hyun et al., 2020). A mature understanding of emotional cues, physician presence, and meaningful encounters should also be present in trainees (Zulman et al., 2020).
- **Medical Knowledge** requires the trainee to demonstrate the knowledge of medical information and its application (Accreditation Council for Graduate Medical Education, 2019). Creative communication strategies are frequently employed in healthcare (Green & Myers, 2010). For example, physician artists such as Mike Natter, MD, and Grace Farris, MD, have used graphic works to illustrate complex concepts during their training for study guides, creative reflection, and patient education tools.
- **Practice-Based Learning and Improvement** require the learner to exhibit the ability to self-evaluate and embrace lifelong learning (Accreditation Council for Graduate Medical Education, 2019). This competency also includes demonstrating the learner’s

ability to ‘identify strengths, deficiencies, and limits in knowledge and expertise.’ Art creation requires consistent self-reflection and provides room to make mistakes safely.

- **Interpersonal and Communication Skills** is a repository of non-clinical skills required to be an effective member of a care team (Accreditation Council for Graduate Medical Education, 2019). However, this broad approach does not diminish the overall importance as this competency is forward-facing and aligned explicitly with bedside abilities. Art has demonstrated its ability to promote respect for others and fosters an alternate language for physician trainees to use with their patients and teams (Brand et al., 2020; Institute for Healthcare Improvement, 2022.; Kearns et al., 2020).
- **Systems-Based Practice** is the understanding of health systems, care coordination, and patient advocacy (Accreditation Council for Graduate Medical Education, 2019). Modern healthcare requires a certain degree of comfort in the nuances of navigating complex care systems. The arts provide a conduit for these lessons for medical students, as in the case of “Can We Talk About Race?,” an art-based anti-racist curriculum collaborative between the University of North Carolina School of Medicine and Ackland Art Museum (Godley et al., 2020). For postgraduate learners, this could be tailored to explore a deeper understanding of health equity or other critical medical humanities topics as they develop into future physician leaders. Visual Thinking Strategies have also been used to increase trainee tolerance of ambiguity (Gowda et al., 2018; JM Reilly, 2005; Katz & Khoshbin, 2014).

Many of the competencies described can be enriched through the lens of art. As they are

applied across all specialties, the inclusivity of arts activities may prove impactful throughout.

Specific to general surgery, the cohort size and length of residency create complex communities that could be utilized to research the impact of programming on trainee experience. Surgical trainees often demonstrate elevated stress, depressive symptoms, and anxiety (Lebares et al., 2018). The use of arts activities in such programs may bridge communication across trainee levels and increase feelings of support. Furthermore, social-relational competence and support networks are protective factors for individual resilience, mitigating depression, and well-being (Gariépy et al., 2016; Ozbay et al., 2007).

For Art Organizations

Arts organizations are well-positioned to benefit through direct efforts to reach the healthcare audience. The AAMC (2022) and ACGME (2021) report more than a quarter-million trainees nationwide. Many are transplants to their respective communities without an immediate connection to cultural centers or support networks. Fording that gap, arts organizations should act as creative catalysts to the growth of arts interventions in medical applications. This population of medical learners presents an opportunity to develop new audiences, nurture relationships with future arts patrons, and offer the arts as a constructive disruption to nourish the healers of our society.

As more programs infuse their training environments with art experiences, collaborations with trained researchers also become available. Art museums have frequently partnered with healthcare professionals over the past two decades (Alvarez et al., 2011). These partnerships may include deepening anatomical understanding, improving manual dexterity, or refining diagnostic skills (Courneya, 2018; Scott, 2000). Arts organizations may also provide a setting to explore the provocative or challenge wide-held notions of aesthetics for this population (Macneill, 2011).

For Art Educators

Art is dynamic – finding problems, addressing, progressing. Community art programs are increasing in popularity, which is also evident in the increased interest from the healthcare sector. The growing field of art in medical education moves comparably. It stands to prove most significant to art educators. This field establishes an alternate pathway of professional options. The potential for knowledge on the topic gives an opening for those interested in research opportunities. Participating in mixed methods action research is one example of how art educators can get involved and supplement the needs of biomedical teams. For those less interested in the data compilation, assisting in developing rigorous tools for arts interventions is also a target area (Perry et al., 2011).

Though the medical education realm can be intimidating for non-physicians, exposure to “outsiders” within educational environments can lead to a more robust experience for the medical trainees. Transplants challenge long-held norms and provide fresh perspectives (Miller et al., 2013). As with art organizations, trained art educators use the nuances of art in a way that differs from most clinical faculty. While not specialized in bedside teaching, they provide a context to inquiry or creativity that is less present in the sterile settings of the hospital.

In secondary and pre-medical education, art educators will take comfort in incubating divergent thinkers interested in biomedical fields with opportunities for cross-disciplinary collaborations to enhance knowledge in the field. In addition, students present at the crossroads of humanities and biomedical field majors may take comfort in understanding that their duality will be supported.

The examples above represent a small sample of suggestions to demonstrate the necessity of art educators in medical education settings. The adaptability of art education training, paired with roots in the liberal arts, is well suited to meet the evolving needs of future healthcare professionals.

1.5 Creative Arts Therapies Distinction

A key distinction to make before embarking on arts and medical research is creative arts therapies and arts programming. Creative arts therapies represent the most common arts programming found in hospitals. This term is rooted in clinical work and primarily is prescribed or seeks to diagnose. Modalities include a focus on music, arts, expressive, and dance therapy. Arts activities in healthcare settings must not be misinterpreted or misrepresented as therapeutic activities without a licensed creative art therapist.

1.6 Definition of Terms

Clear terms are inconsistent in the field. For this research, the terms outlined below will provide guidance and clarity.

Medical or clinical training refers to education in the healthcare professions. Specific to this proposal, the focus is on GME. In the literature, the phrase postgraduate medical education (PGME) is used interchangeably.

Residency and Fellowship following medical school and the two main tracks are seen in GME. Individuals in these programs have obtained medical degrees and complete training to become certified in a medical specialty. Postgraduate years (PGY) identify positions as they progress through their training (ex. PGY1 = postgraduate year one, or intern. Juniors and chiefs are at the highest level of training). Programs vary in length dependent on specialty. General surgery residency training is at minimum a five-year commitment.

Health Professions encompass the education of clinical providers such as but are not limited to, students in medicine, nursing, pharmacy, or other clinical specialty programs.

Arts, for this proposal, shall encompass multiple modalities. The author will identify

when discussing specific arts modalities such as visual, dramatic, literary, or otherwise. Visual arts or literary workshops are presented as extracurricular offerings to increase cultural competency during medical training.

Arts programs and interventions are used interchangeably for this research. In this context, published arts offerings with data (intervention) and those without data (program) are equally valuable.

Medical humanities include the philosophy, history, ethics, and sociology of the medical field. They often overlap and intersect non-medical humanities topics.

Burnout is defined in the health statistics coding tool, *International Classification of Diseases (ICD-11)*, as a state of emotional, physical, and mental exhaustion caused by excessive and prolonged stress. Additional considerations for burnout in medical trainees include lack of autonomy, financial stressors, and the emotional toll of patient care.

Nontechnical skills refer to the soft skills required for an individual's career. A non-exhaustive list of these skills includes compassion, divergent thinking, problem-solving, and team building.

Creativity is defined by Heilman and Acosta (2013) as “a new understanding or novel development and systematic expression of orderly relationships.”

The **Institutional Review Board** is an entity tasked with reviewing studies involving human subjects to ensure the safety of the individuals. IRBs work under the scope of the United States Food and Drug Administration.

1.7 Character Composite

The following character composite has been derived by combining observations from prior years working with postgraduate medical learners of various levels. This model embodies the individual meant to be best reached by the study and is a template

for designing programs.

A young adult exits high school with the intent to enter the medical field.

Up to this point, they have taken advanced courses to impress upon training institutions that they are worthy of a pre-med position. Transitioning to higher education is often the first of several relocations that the individual will face during their training years. Once enrolled in college and in addition to the demanding course load, the student seeks ways to make their academic profile as competitive as possible through appointments, test scores, and leadership roles. They continually focus on performance, which exacerbates the fear of failure in the student's pursuit of the white coat.

Acceptance to medical school is an additional hurdle. The cost of higher education is such that transitioning out of a medical track is problematic. Because of the large student loans involved, medical students note that few other professions would let them pay them off, leading to financial anxiety on top of all else. The medical school curriculum is split between the classroom and the clinic. Clinical service is taught through preceptorships or clerkships.

When the student enters their fourth year of medical school, they begin applying for medical residency. A residency is a clinical internship averaging three to five years in length. Individuals are expected to increase autonomy across their training timelines. Experiential in nature, the clinical time is supplemented with an educational structure including didactic lectures, hands-on simulations, or wet labs. Performance metrics continue to be of importance for the learners. Metrics now include involvement with research, academic pursuits, and society memberships – all with a baseline of clinical performance and examinations.

Our model enters residency equipped with textbook readiness yet requiring clinical acumen. Along the way, however, the areas in which they are challenged are those not found in academic text. When considering the overall trainee experience, the novelty of art may assist in sustaining and retaining the knowledge absorbed over time.

1.8 Limitations of the Study

Within the context of science, several internal limitations are present and should be noted. Broadly speaking, art requires a degree of vulnerability that may intimidate or discourage overburdened trainees. Content delivery should be relevant and appropriate. At the program level, budgetary or logistic restraints may prove unmanageable. Lastly, the impact of the hidden curriculum may obstruct engagement in extracurricular activities (Wong et al., 2021).

Medical culture stigmatizes vulnerability and thus complicates participation in non-clinical activities for physicians (Gazelle et al., 2015). Uncertainty can be difficult for physicians and trainees, though studies have suggested that embracing uncertainty may alleviate feelings of distress (Begin et al., 2021; Lally & Cantillon, 2014; Moffett et al., 2021).

Factors in participation also occur beyond the scope of the learner. Intervention effectiveness in medical education settings has been found anecdotally successful but requires further data to prove conclusive (Dalia et al., 2020). During early study development, it was common for the researcher to be told that the residents would ‘not take time out of their schedule for finger painting.’ Organic acceptance of the programming by the cohort factored into the early performance of the study. Additional external limitations exist in the potential for self-selection bias for workshops and the lack of precise, validated instruments in the pilot study.

CHAPTER 2. REVIEW OF THE RELATED LITERATURE

Arts research specific to cultivating creativity in medical education benefits stakeholders. Psychological research has suggested art's ability, and more specifically art appreciation, to deepen knowledge of self and others (Sherman & Morrissey, 2017). Employing the Helmholtz-Wallas creative process challenges our brain at each stage: Preparation, Incubation, Illumination, and Verification (Heilman & Acosta, 2013). As facilitators of these creative processes, art educators are uniquely equipped to raise the standard of quality found in interventions. Increasingly, adult art activities are growing in popularity within and beyond the medical education community. This growth should be met with a response from trained art educators (Harris Lawton & LaPorte, 2013).

Interventions that infuse art into medical education have been an evolving topic. However, the inclusion of arts educators has been less common. A literature review of arts programming in medical education found the arts used in several ways: professional, pedagogical, personal development, critical review, and medical approaches as performance (Lake et al., 2015). Through nurturing the interests of trainees, programs and institutions demonstrate compassion for the individual beyond the clinical learning hours. The inclusion of creative activities has been documented, but definitive evidence as to the efficacy of such programming is lacking. The use of these programs may benefit the development of socio-emotional, nontechnical competencies and the potential for wellness applications (Acai et al., 2016). Variability is the strength of art applications in medical environments (Peterkin, 2014).

The variability of arts interventions in medical education may also be a key inhibitor. There is limited empirical data regarding visual arts and cognition (Bolwerk et al., 2014). Many articles were excluded during a systematic review of wellness interventions, including arts programming, due to the lack of “measured wellness objectives” (Eskander et al., 2021). The Maslach Burnout Inventory, though widely

utilized, has limited validity specific to medical education learners (Eckleberry-Hunt et al., 2018). In a field where outcomes are the target, the lack of concrete outcomes for the humanities has been an ever-present hurdle (Ousager & Johannessen, 2010). A review published in 2018 found that medical student interaction with humanities correlated with desirable physician qualities. Qualities identified included tolerance for the unknown, increased empathy, and wisdom. The review demonstrated the positive association of humanities access with beneficial personal qualities and mitigation of burnout but questioned whether passive or active engagement best foster continued creativity in healthcare trainees (Mangione et al., 2018).

The following literature review explores the relationship of arts interventions in healthcare education. It highlights ways in which art has the flexibility to teach clinical skills to healthcare trainees, as well as to support healthcare professionals throughout their careers. Additional context is presented in how the arts have been embedded in the healthcare field to combat the endemic of burnout and address stressors throughout the COVID-19 pandemic.

2.1 Art and Clinical Skill Development

Educational programming seeks to improve the abilities and knowledge of learners. Intervention approaches vary from medical specialty and participant training level, often tailored to the interests of the program. Activities viewing art have been deployed to train medical students in Visual Thinking Strategies to improve observational skills, pattern recognition, and increase diagnostic abilities (Shapiro et al., 2006). In one controlled trial in an internal medicine clinical clerkship, researchers found that arts education was integrated successfully into hospital and art museum settings but concluded that a larger study was warranted. The trial did not produce data on educational outcomes or psychological constructs. However, many participants anecdotally found the pilot beneficial (Strohbehn et al., 2020). Training in observation and other non-traditional educational approaches can improve overall empathy, impacting patient care (Zazulak et al., 2017). Increasing tolerance for ambiguity is

possible through the humanities and can be successfully implemented in a residency curriculum. Using poetry, narrative, and art viewing, medical educators challenged intern residents in considering perspectives (Kirkland & Craig, 2018).

Trainees bring many existing unique skills, often including creativity and compassion. Creative thinking, helpful in the complex problem-solving required for clinical care, is negatively impacted by sleep deprivation during training (Nelson et al., 1995). Providing an avenue for creativity during non-clinical times can keep this skill intact (Thompson et al., 2010). Intentional work to support existing these traits, and their iteration in a trainee's professional identity, is an opportunity for curricular activities (Cruess et al., 2019). Critical thinking and creative problem solving are motivated during engagement in arts activities for young learners (Pitri, 2013). The presence of art education in the lives of adult learners occurs under added dimensions of re-approaching or enrichment rather than the requirements of art activities in K-12 education. Application of career context is also imperative (Cucoş, 2014). When provided in the appropriate context, trainees can continue improving their problem-solving or critical thinking skills.

Professional self-identity is significant and should be nurtured during training (Cox et al., 2016). Increasing self-awareness in learners can aid in identity formation for their professional development (Lake et al., 2015). Reflective practice was an element used in a Cleveland Clinic study with surgical interns that integrated humanities to address non-technical competencies. Interactive workshops included reflecting on writing and film, often reviewing the media portrayal of surgeons. The study team concluded that similar formal didactics could benefit other residency programs, especially those with international medical graduates (Colvin et al., 2018). These skills are a key factor in clinical career practice, with patients seeking humanistic physicians (Hochberg et al., 2012). Patients' desire for humanistic physicians is not unique to the United States, nor is the connection of art to humanism. In an Italian study specific to surgical education, residents interested in the humanities demonstrated advanced observational and

communicative skills. The same was found true for medical students at the institution (Sterpetti & Ventura, 2017). The use of art activities to develop skills of compassion is found throughout andragogy and heutagogy. In the case of college students who had a semester of art activities with people who have dementia, increased positive affect and interaction were noted by researchers (Lokon et al., 2018). Continued cultural experiences kindles connection across individuals.

Reflective practices such as the investigation of self-identity through art are impactful (Cox et al., 2016). Arts approaches have been found to support unique learning styles and encourage deep thinking (Nguyen et al., 2016). Emotional empathy is a valuable clinical skill for healthcare workers across specialties. It has been proven valuable for healthcare trainees at various levels (Bentwich & Gilbey, 2017; Erdman et al., 2017; Kinsella Frost, 2019; Ogle et al., 2013). Maladaptive traits, such as perfectionism or imposter syndrome, may be alleviated throughout medical training with intentional efforts on behalf of programs (Thomas & Bigatti, 2020). Design thinking practices are also present in healthcare professions education, with promising results towards encouraging collaboration, empathy, and creativity (Wolcott & McLaughlin, 2020).

2.2 Art and Healthcare Professional Development

The use of art to develop valuable non-technical skills does not conclude with the completion of clinical training. As is evident by the universality of art, professional development using art interventions appears throughout the literature. Inspired by her sculptor father, Alma Dea Morani, MD, maintained her passion for art throughout her training and into her career as the first female plastic surgeon. The only medical college with an onsite art gallery, the Medical College of Pennsylvania, endowed the gallery with her name to celebrate her international efforts and achievements (Solomon & Granick, 1997). Internal medicine physician, artist, and musician Dr. Philip Alexander of Houston Methodist has penned a quarterly journal section devoted to the arts since 2012 (Gerik, 2017). Contending that his artistic endeavors improve his clinical abilities, he says of art and medicine, “the medical world is all left brain. The

left brain tires, but the right brain is tireless.”

The literature surrounding medical practice and creativity supports Dr. Alexander’s position. Individuals involved in both find the interaction beneficial (Weisz & Albury, 2010). Arts and nursing knowledge have been categorized into two methods: knowing about and knowing through (Archibald et al., 2017). These characterizations apply to interventions beyond nursing. Engaging with art fulfills clinicians and encourages their ability to embrace the inevitable uncertainty of their field (Wolpaw, 2016). Art-making activities have also demonstrated the ability to improve the nursing staff’s well-being. After a weekly, ten-week silk painting class, 93% of the control group who engaged in the activity reported enjoyment, and the majority indicated interest to continue with art activities (Karpavičiūtė & Macijauskienė, 2016).

Art involvement in clinical careers is possible. Like Dr. Morari, many accomplished physicians have concurrent interests in the arts. Internationally renowned oncologist Michael Peckham, MD, incorporated his artistry throughout his career. He also attributed artistic understanding as beneficial to his ability to think holistically about his patients (Wagstaff, 2021). Esteemed Japanese Canadian plastic surgeon and medical educator Henry Shimizu, MD, used his talents in painting to communicate his experience of his childhood in internment camps (Sardiwalla & Morris, 2019). Columbia University vascular surgeon Virendra Patel, MD, graphically communicates with care team members, colleagues, and patients through his detailed sketches of complex operations (Gandolfo, 2019). The use of drawings is a popular method for physicians to communicate with their patients. Visual material is frequently present in surgical patient care, with the majority of patients receiving at least one visual resource during the consenting process (Kearns et al., 2020). Communication with patients via creative sources, including graphic illustrations such as comics, is frequent in many specialties. In an American Medical Association commentary, authors advise taking caution when using health-focused comics as a patient education tool (Ashwal & Thomas, 2018).

Seeking creative fulfillment and a sense of belonging is a lifelong pursuit, often evident in retirees (Burns et al., 2020). More frequently, careers based in health sciences are given precedence and delay arts pursuits to post-career life. Retirees engage with community-based art programs and have a continued interest in participating in cultural activities (Harris Lawton & LaPorte, 2013). An academic researcher in developmental biology, Gail Martin (2020) left her scientific career and focused her retirement on a position as an art docent and curator specializing in Asian Art. The leap from sciences to arts is a global phenomenon. South African neurosurgeon, mountaineer, and artist, Dr. Roger Melville (2015), writes that he “took to painting late in life as my dream to paint was pushed aside by the challenges of medical training that merged with the responsibilities and challenges of neurosurgery.”

2.3 Art and the Endemic of Burnout

A lack of addressing an individual’s entire self can deteriorate mental health. The national endemic of burnout is rampant among healthcare professionals and trainees. Burnout is defined as an “overwhelming exhaustion, feelings of cynicism and detachment from the job, and sense of ineffectiveness and lack of accomplishment (Maslach et al., 2001).” Naturally, a single approach will not correct the complex issues in the healthcare ecosystem. Compassion fatigue and moral injury impact many healthcare professionals’ lives (Cocker & Joss, 2016; Griffin et al., 2019). As the system strays further from patient-centered care to modern system-centered methods, one thorny issue is the administrative burden on physicians and trainees (Verma et al., 2020). A study in 2010 with internal medicine residents found that screen time superseded non-computer time (Oxentenko et al., 2012). Electronic health recording (EHR) and electronic medical recording (EMR) have grown over the past decade. Physicians spend an approximate 40% of their time on computer activities compared to intern residents who spend over 45% of their time on clinical notes, chart review, and patient documentation (Verma et al., 2020). Trainee autonomy is impacted by this statistic, which weighs heavily on the learner’s bandwidth for extracurricular activities.

In 2011, a survey of over fifteen thousand internal medicine residents found that over half met the criteria for burnout (West et al., 2011). Data suggest general surgery residents to be equally affected by emotional exhaustion and depersonalization, with severe stress and distress occurring throughout training (Lebares et al., 2018).

Additionally, gender may be a factor in how residents respond to the stress of training (Lebares et al., 2018). Reacting to these concerning trends, many institutional funding projects and certifying bodies have adopted policy requirements to address well-being. Specifically, elements of the institutional environment have been encouraged to be monitored regularly, specific to the PGY level, to optimize the work-life integration of the learners (Jennings & Slavin, 2015; Ripp et al., 2017). Increasing trainee engagement and a sense of support may be an antithesis to burnout.

Fully submerging oneself in one's work is not sustainable long-term. Though physicians have been documented as having higher levels of resilience than the public, systematic changes to the clinical care environment are necessary (West et al., 2020).

2.4 Art and the COVID-19 Pandemic

Before March 2020, the endemic of burnout was a target of much-needed improvement in national healthcare. Upon the arrival of the novel coronavirus SARS-CoV-2, known as COVID-19, the existing endemic of burnout was exponentially impacted. Art became necessary for disruption and comfort. As Dr. Arno Kumagai (2017) stated, "By shining through the distractions that come from the numbers and noises and technology and competencies, the arts and humanities beckon us to be aware of the fact that, in caring for other human beings during times of great vulnerability, we enter into a clearing, a sacred space in which people (including ourselves) change in fundamental and often permanent ways. This awareness of bearing witness to, and participating meaningfully in, those events that make us human is what breathes life into the professional ethos of being a physician." During the pandemic, the arts became a source of tolerance and enhanced immunity (Rezaei et al.,

2021). Physical activity was an alternative tool to combat the complex emotions of COVID lockdown (Matias et al., 2020). As the public was coiled in loneliness and forced solitude, those in healthcare fields were thrust to the frontlines. When words failed, the community turned to art to show their gratitude to the frontlines (Braus & Morton, 2020). Efforts, though sometimes simple as in the case with music through windows or elaborate sidewalk chalk displays, shed light on the shared humanity. Creative expression brought commonality through the chaos.

Creative spaces can enhance mutual recovery for individuals experiencing mental health crises (Slattery et al., 2020; Stewart et al., 2018). When considering what lies beyond the ongoing pandemic, we can presume the inclusion of art approaches to working through what we have experienced. Deployment of art in highly traumatic events has been present in veteran applications and international responses. Art reaches across the divide to bring light to human connection and encourages collegiality and processing of extreme events (Schwartz et al., 2019). Now synonymous with the frontlines of war, many healthcare professionals were embedded in the vast losses. Hasio (2011) found ensuring trust and openness is critical when working with veteran populations. This model may overlap with healthcare professionals seeking an outlet. Internal medicine resident Amrapali Maitra, MD, Ph.D. (2020), paraphrases Elizabeth Bishop's poem "One Art," writing, "In medicine, the art of losing is still the hardest one to master."

By reviewing art created in response to the 1918 Spanish Flu pandemic, we understand how our historical counterparts reacted (Goldstein, 2020; Kambhampaty, 2020). Visual art exposure stimulates and charges our brains in rewarding ways and is influential in mental health recovery (Gallo et al., 2021). Harnessing arts interventions in medical applications may alleviate the emotional toll our healthcare force has been subjected to through the pandemic. Resident physicians Rachel E. Korus, MD, and Danielle G. Rabinowitz, MD (2021), MM have best sounded the alarm in their piece for Pediatrics. "Our appeal is therefore simple, whether during the coronavirus disease 2019

pandemic or afterward: develop opportunities for resident physicians to participate in art-making or viewing, be it through writing, photography, drawing, or music. Empower trainees to share their work and reflect upon it.”

CHAPTER 3. DESIGN OF THE STUDY

Art educators approach programming intending of improving the skillset of their learners. As the literature demonstrates, this development can include clinical skills or fulfillment beyond medical practice. Many articles indicated positive responses. However, they concluded that additional research was needed to identify the cause. Art educators provide the potential for robust assessment in tandem with the activity. When considering deploying similar programming at this institution, it was integral that proof of concept was gathered before launching the series.

Earlier in this work, we highlighted the unique experience of surgical residents. Surgical training is time and labor-intensive. Much of the research known is presented in medical school or non-surgical residency training programs. Learners at all levels inhabit many interests and abilities beyond their current environment. Specific to medical education, this includes creative individuals who may have limited opportunity to work within their ideal learning style. Trainees often lack the autonomy to drive their experience, which emphasizes the necessity of their inclusion in the conception of programming. It was paramount that the residents have a platform to add their thoughts about the series.

During their protected didactic time, a presentation regarding arts in medical education settings was introduced to the surgical residents. Content provided a frame of reference for the topic. One resident was eager to hear of the inclusion of arts activities into their training. They had been involved with art until his undergraduate college years. Since then, medicine took precedence and left little time for external interests. Explaining their interest in the programming, they emphasized that “[the residents] are natural learners, and this [the arts] offers something else for their brain to chew on.”

When developing the study team, program leadership and trainees were core members. In addition to the art educator, members of the study team included stakeholders from the residency, college, study site, and funding source. What follows is an overview of the preliminary research and pilot study structure.

3.1 Preliminary Research

Medical education provides a continuous balance of supervision and autonomy (Sawatsky et al., 2021). Involving residents in the development of programming is a way of increasing their autonomy (Mari et al., 2019). To gain an accurate view of initial interest, fifty-two General Surgery residents in the 2018-2019 academic year were surveyed regarding their preferences and interest level in arts programming. Twenty-six residents responded to the anonymous online survey distributed by email. The survey was approved by the institutional review board and graduate medical education office. Respondents reported broad experience in the arts, spanning from novice to proficiency. The most common reasons for engaging in the arts were individual growth and socialization with peers.

Survey results were used to guide the program structure. Additionally, the survey unlocked collaborations with project stakeholders and presented data on overall interest levels. Several residents were already experienced in the arts. Overall, the pilot study was designed to build upon their experience and sought not to infringe upon their ability to address their basic needs or threaten their educational experience. The design present was hypothesized to encourage the development of community and a safe space to take risks.

3.2 Structural Elements

With the survey results, a program was created that was meant to be enlightening and challenging. Several elements were targeted as critical areas of focus: Environment, Diversity, Support, Timing, and Logistics.

Environment: The intervention environment was taken into significant consideration. Key factors in decision-making included convenience of space, access to clinical locations, and privacy for participants. Third spaces serve as a neutral place for commonality and connection (Reilly, 2019). Courtesy of the

university's fine art department, the intervention utilized the art studio space as such. This artistic environment encouraged and stimulated creativity, a stark contrast to the hospital's sterility.

Diversity: Care was taken to ensure the instructors and media closely represented the diverse, multinational demographics of the study population. One-third of the instructors were women (4 of 12) and 15% of the artist instructors identified as Black or African American (2 of 12). Appalachian culture was also represented in planning workshop activities to incorporate regional arts into the surgical trainees' experience.

Support: Residents were encouraged to include adult guests. In doing so, community growth was posited to be nurtured through organic connections. Residents who may be new to the area or otherwise with limited access to support systems were invited to connect to their peers in a non-clinical space without hierarchy. Incorporating these existing support systems also recognized the importance of maintaining these core relationships during the marathon of surgical training.

Organization: Arts educators and artists skilled in adult education were identified as a core element of program success. Instructors selected for the project were well-versed in adapting approaches to meet their learners. As with any art program or course, participants may be highly engaged, hesitant, or untrusting, and trained instructors provide the ability to adapt to group dynamics.

The research team determined that monthly programming was ideal to allow for the unpredictability of surgical resident schedules. Art instructors were informed to create one-off workshop content to allow each event to be completed within the timeframe given. Two hours is a reasonable duration for art activities for GME learners (Kumar et al., 2021). An additional hour was embedded in the structure to allow a comfortable transition from the luncheon to session content.

Adult education succeeds through presenting relevant topics to learners (Cucuș, 2014). Methods used in creative arts therapies, therapeutic art, and art education should be intentionally planned and delivered (St John, 1986). Specific to the surgical skills needed in residency, exercises in dexterity were offered more frequently than two-dimensional media. Additional principles of adult education were incorporated, including recognition of learner experience and development of self-concept. Residents value variety in art exercises (Kumar et al., 2021). Graphic narratives and drawing fundamentals were included due to their demonstrated application in clinical settings (Green & Myers, 2010; Kearns, 2019; Parsons et al., 2019). Attention was focused to provide regional arts such as basket weaving and well-known modalities such printmaking and painting, monoprint, linocut, watercolor, and mixed media were selected due to the expediency of delivery and their limited delivery presence in the existing literature. Specifically, the inclusion of mixed media work is believed to be novel in this field of study.

3.3 Sample

The study population was limited to General Surgery Residents at the institution and their guests. Subjects were pre-identified as individuals within the residency. The full cohort during the pilot is 38.5% female (20/52) and 61.5% White (20/52). Names, gender, racial, and ethnic demographics for individual workshops were not collected. Workshop information was delivered via the institutional email platform and posted in shared areas. In addition, the acceptance of the event was collected to gather general interest and information for catering meals. The number of accepted, or tentatively accepted, was collected by the research team. Respondents were not identified during attendance analysis in effort to maintain confidentiality.

3.4 Objectives

The pilot, Arts Connect Around Food and Enrichment (ArtsCAFE) was structured to deliver visual art workshops that would:

- 1) Foster growth in surgical resident social support networks.
- 2) Impact communication skills of surgical residents.

3.5 Test Instruments

Multilevel quantitative and qualitative data was collected throughout the pilot, including:

1. Pre-intervention resident survey before the program series.
2. Individual workshop surveys specific to participant role.
3. Post-intervention resident survey after the program series.

Survey instruments were created using Qualtrics software. Each form included both quantitative and qualitative data points. Surveys were delivered electronically via institutional email platform (Pre/Post) and QR code (workshop). Before delivery, all surveys were anonymous and received approval from the IRB and GME research review board. A waiver of consent documentation was approved for this study. Cover letters were available at all workshops and upon request throughout the pilot. Consent was implied if they proceeded with completing the survey after reviewing the cover letter. No identifying names or demographic data were taken during data collection to maintain confidentiality.

Test instruments were designed explicitly for the pilot. Furthermore, observational research was documented throughout the pilot study.

3.6 Hypotheses

Literature in the field presents challenges for arts-based interventions to include artists in their programming and further explore the potential of activities to improve medical learners. Acquiring further information on arts programming in medical education settings presents broad benefits for the parties involved. Five categories of

key components were found by Mukunda et al. (2019) regarding visual art in undergraduate medical education: Clinical observation/diagnosis, Empathy, Team building/communication, Promoting wellness/preventing burnout, and Cultural sensitivity). Specific to the cohort, social connection was an identified target (Salles et al., 2018). Two broad hypotheses were developed: *Communication* and *Connection*.

Hypotheses 1: Communication

Interpersonal skills are paramount in healthcare fields. It was hypothesized that a monthly event in a non-clinical space would encourage discussion on a social level and improve ability to communicate across trainee levels. Visual art was selected also to improve trainees' proficiency in communicating in non-medical terms, which may be helpful when communicating with patients.

Hypotheses 2: Connection

Promoting trainee wellness is a relevant focal area for many programs. Art provides us an arena to gain confidence through failing safely. The second hypothesis suggested that through the act of art-making, residents are challenged in a novel way. By bringing the group together in a creative and unfamiliar environment, with no numerical data or potential for competition, connections across titles may occur. This connection may also improve their sense of connection with their external support system, colleagues, or faculty.

3.7 Procedure

The intervention was developed to take place during the 2019-2020 academic year. Respective of anonymity and to minimize potential coercion from program leadership, individual surgery resident participants were not tracked. Each survey was delivered electronically, whether through direct email or access through a QR Code link.

Pre-Intervention / Post-Intervention

All General Surgery residents were queried at the beginning and conclusion of the 2019-2020 academic year. The anonymous survey link was delivered via an institutional email platform to the cohort. The survey was limited to one submission per respondent and contained no more than ten questions. The cohort was provided three reminders to complete the survey over the month. The pre-intervention survey was completed in July 2019 and a post-intervention survey was completed in June 2020. Throughout all study procedures, residents were reminded that participation was voluntary, and consent was implied by the completion of the surveys.

Recruitment

The overall goal for workshop attendance was determined to be twenty, allowing for ten surgical residents (19% of the overall study cohort) and ten guests. The workshop was not marketed to any individuals beyond the targeted cohort.

Workshop flyers were developed, including event details, activities planned, and the instructor's biography with images of relevant artwork. An email event was shared with the cohort and study team no less than two weeks before each event. Finally, verbal reminders were announced during the weekly didactics in the week leading up to each event.

Activity

Arts activities were derived from reported interest present on the pre-intervention survey. Workshop activities were created to allow introductory opportunities in both graphic and plastic arts. Activities changed monthly, with occasional redundancy to offer varying approaches within the modalities.

Training meetings for all instructors were held in the summer preceding each

series. Instructors were guided to create stand-alone content that could be delivered within the workshop window. Instruction and the art activity took place over ninety minutes during each event. Researchers did not standardize the content delivery or teaching methods in any way.

Study participants in attendance completed a survey dependent on their status. Resident surveys were no more than ten questions and guest surveys included three questions. All data was collected and maintained through the Qualtrics platform. Instruments did not require any identifiers and were collected by QR code scans to ensure further anonymity.

3.8 Workshops

Art activities, participants, and engagement varied across the pilot study timeline. The initial pilot was to run from July 2019 to June 2020 (Series I) but was abbreviated in March 2020. The pandemic played a large role in impacting the course of the pilot. Paused from March 2020 until July 2021 (Series II), workshops resumed when it was determined that it could be done safely. The environment at the study site allowed for safe physical distancing and required full compliance with mask mandates. In total, sixteen workshops were completed between July 2019 and April 2022.

Ceramics

“As a surgeon, precision is key, but artistically you may be anything you’d like.”

Two approaches to ceramics were taught during ArtsCAFE Series I and Series II. The connection from surgery to sculpture is direct. An article depicting the overlap, by Past President of The Australasian Society of Aesthetic Plastic Surgery and sculptor C. J. Edwards (2021), was forwarded to the study cohort. Instructors Jill Coldiron and Bobby Scroggins led sessions in Series I. Bobby Scroggins returned for Series II.

Gallery owner and ceramicist Jill Coldiron has provided art education for all ages for

over thirty years in the local community. She is deeply familiar with working with adult learners, including healthcare professionals. The workshop included a demonstration of how to manipulate the clay slabs as well as a presentation of completed slab art pieces. The engaged group also enjoyed the brief tour of the ceramics studio and the explanation of the firing process. One particularly eager resident inquired about additional ceramics classes available for the future.

High-level instruction in ceramic sculpture was provided by ceramics professor Bobby Scroggins. Nationally and internationally celebrated, Scroggins's work has been featured in exhibitions and text. His personal experience with arts and healing as a young adult provided a unique connection to this surgical group.

His workshop activity included the personal story of art's ability to heal by the instructor, followed by an explanation of mark-making and creating ceramic slab tiles. Participants were introduced to various pattern implements and encouraged to explore the tools. "Discomfort is temporary," the instructor presented to the group, "some of our greatest gifts come from packages difficult to open." He explained that clay is an active material and shared the way it assisted him to return to life after brain surgery as a young man.

In Series II, all attendees were new to the project. They were bubbly in introductions and discussion but became very focused on sculpting when the time came. As Bobby demoed the workshop activity, participants seemed in genuine awe of his techniques. This was repeated when he was kind enough to share his studio space with the group.

Printmaking – Linocut

"Art had fallen away, so it's great to reconnect with it."

Bright, vibrant colors were the inspiration for providing the residents with an introduction to Dr. Susie Sharpe. An internal medicine physician and Korean- American, Dr. Sharpe (2021) uses her energetic paintings to celebrate the gift of life. Printmakers

Elizabeth ‘Liz’ Foley and Joel Feldman provided direction on working within the parameters of their unique styles.

Printmaking professor Joel Feldman brought his years of expertise to the surgical residents and their guests. He challenged the participants to pay attention to details as they carved reliefs for printing. The workshop activity included demonstrating tool use and completing a linocut block. Participants picked up quickly on the activity, with prints ranging from anatomical items to non-medical subjects. Discussion among this larger group occurred organically, and with the high rate of guests to surgical residents in attendance, topics were infrequently “shop talk.”

Liz Foley is a working artist educator established in Kentucky through her years of teaching, exhibitions, and community engagement. She has been in multiple leadership roles through state arts organizations. Her artistic interest in mindfulness and balance overlaps well with the intervention goals.

The workshop activity included a brief introduction to printmaking methods before a demonstration on creating and completing a monoprint. The instructor stressed ‘the restorative importance of play’ when creating. This is also present in the overall demeanor of the group – playful, curious, and upbeat. One resident asked many questions about what it meant to be a working artist, particularly regarding editions in printmaking. They went on to make sure to add edition numbers to their works created that day.

Mixed Media

“Always ask ‘what if’ because that’s where innovation takes place.”

Distributed to the study cohort was the story of oncologist and artist Dr. Michael Peckham (2018), who felt “the separation of artist and doctor was artificial.” A self-proclaimed ‘artist,’ Christine Kuhn agrees with Dr. Peckham’s view. She provides an

intuitive teaching environment where varied ideas are welcome and has worked with cultures throughout the globe. Many of her murals are found in central Kentucky, including at the home hospital of our study cohort.

The workshop activity included a presentation of mixed media work by the teaching artist, followed by an introduction to the modality. The workshop was free-flowing, with talk of faraway travel and the presence of high-tempo music. Some residents struggled with the open-ended question of mixed media and were occasionally visibly unsure. They willingly shopped images in the magazines as they debriefed clinical scenarios. Work discussions seemed more present in this workshop, which may have been due to the growing healthcare surveillance of a recent novel virus.

Infusing an art history introduction to Pop Art, instructor Jeanette Tesmer developed a workshop that provided context to the activity. Her background working with diverse individuals and experience levels was a great fit for the novice group. Both she and Christine Kuhn spoke to the participants about ‘soft eyes’ or being able to embrace the unfamiliar.

Watercolor

“Aww... this makes me want to paint again.”

To connect to the cohort’s experience, workshop invites included a link to a New York Times article featuring neurosurgeon and painter Katherine Ko (Kilgannon, 2014). As a community artist and retired secondary educator, watercolorist Connie Tucker understands providing instruction across a spectrum of ages. Her talents with education and watercolor have been recognized with multiple awards over the past several decades.

Her activity for the group included explaining watercolor media and completing a watercolor painting using rice paper. The date was near the anniversary of September 11th, naturally inspiring the group to reflect on their experiences of that day. One guest

was the mother of one of the residents, who happened to be in town visiting. Before departing, she commented that “the presence of this program gave her comfort that her child was in a training program that cared about her.”

During the Series II workshop, participants created watercolor silhouette landscapes. Connie led the group throughout each step before asking them to complete an image on their own. Many of the participants expressed surprise at their creations. Each time they began, the group stayed keenly focused on their artworks. The group immersed themselves in the activity and conversation so much that they lost track of time, staying 90 minutes past the workshop conclusion.

Graphic Narratives

“I feel like I’m getting to see another side of you.”

Bringing his interest in visual and dynamic storytelling, Kenn Minter is a graphic artist who specializes in autobiographical comics. The workshop activity included a broad introduction to a personal narrative by way of graphic art.

Through introducing graphic narratives, attendees were challenged to create a voice to their experience. The small group discussed their comic panels and laughed as one resident told the story of her parents ‘favorite child’ - Pepper, the family dog. Discussions remained polite, with more time spent in quiet creation.

Other Modalities

Singularly occurring modalities included Drawing Fundamentals and Digital Art. Drawing is directly relevant to communicating to patients and documenting the experience of the operating theater. Surgical art from illustrator George Butler (2017) captured the similarities of skillsets between the surgeons and the artist. Ivy Johnson Fleming, an instructor in drawing fundamentals, sought to make a similar connection to the group. Her undergraduate classes frequently include assisting non-major students to

navigate unfamiliar exercises.

The workshop activity included a discussion on drawing strategies and a description of drawing implements. Implements provided were vine and compressed charcoal, drawing pencils, and Conte crayons. The group was calm and less interactive than in prior workshops.

For the introduction to Digital Art, Lennon Michalski led a tutorial and exercises in Adobe Photoshop. An accomplished artist, Lennon is a community mainstay with several art pieces in key areas of the hospital. After the workshop, we discussed places to view his work while on a break from clinical duties or passing by. Participants struggled with this art form and were vocal about their frustration. Lennon was encouraging throughout the workshop, connecting the use of Photoshop to other digital tools they may find useful in their careers or personal lives.

As depicted, graphic and plastic art modalities were present in both Series. Ceramics was offered most frequently, followed by Printmaking and Collage. The workshops that were eliminated due to the pandemic included a second ceramics studio with Jill Coldiron, basket weaving with Callie Northern, and reflective collage with Sonja Brooks.

Programming was a continuation of the initial year, allowing several modalities to be repeated. The return to normalcy was unclear in the spring, which caused the post-intervention survey to be delivered to the cohort in July 2020. For Series II which followed, it is important to note that the topic of the novel coronavirus and subsequent variants was all-consuming. Any direct inference on the ramifications of the pandemic on the pilot study would be speculative and not academically appropriate to address here. Moreover, the magnitude of its' influence cannot be overstated, overappreciated, or fully understood at the time of this review.

CHAPTER 4. RESULTS

The ArtsCAFE pilot study received IRB approval to explore the impact of arts programming on general surgery residents at a single academic institution. Overall feedback for the intercollegiate offering was positive.

Prior to the pilot, a pre-intervention survey was delivered via email and anonymous link to the study cohort. Seventeen monthly ArtsCAFE workshops took place between July 2019 and April 2022. Four workshops in Series I (2019-2020) and one workshop in Series II (2021-2022) were canceled due to the pandemic. Throughout the pilot, the average of individuals who indicated an interest in attending was higher than those in attendance. During the initial shutdown, it was unclear when we would safely gain access to the study location. This prompted the delivery of the post-intervention survey to take place in July 2020.

The initial goal of the pilot was to engage with 19% of the study cohort. Overall actual attendance for both Series was 7.4% compared to 17.8% overall anticipated attendance.

It is important to highlight that significantly less engagement was present in Series II, though the overall anticipated attendance average was similar, with 19% in Series I and 16.7% present in Series II. Overall actual attendance in Series I averaged 10.4% of the cohort engaged compared to 4.7% in Series II. Workshops in printmaking and ceramics had the highest attendance, with some workshops resulting in less than three attendees. It was not directly apparent if the featured modality caused these shifts in engagement.

Takeaways:

- Subtle changes were seen in both connection and communication.
- Higher RSVP rates may suggest higher overall interest or intent to engage.
- Plastic arts and graphic arts were of equal interest to the cohort.
- Trainees should have the opportunity to engage, *or not*, without consequences.

4.1 Survey Response

Before beginning the pilot, a presentation about arts education and medical education was delivered to the cohort during a protected didactic lecture. This presentation informed the residents of the upcoming interest survey as well as providing a frame of reference for relevant implementations.

Less than a quarter (21.2%) of the cohort responded to the preliminary survey; 72.7% of whom were postgraduate year levels one through three. When queried about the workshop series, 63.6% of respondents indicated they were likely to attend a workshop and 36% were indifferent or unlikely to attend. The ability to bring a guest and limiting workshops to 90 minutes improved the likelihood of attendance more so than the workshop location.

A total of 54 workshop surveys were reviewed; 33 from Series I and 21 from Series II. ‘Fun’ was used a total of 24 times in independent surveys. Similar to the pre-intervention survey, 68.1% of individuals engaging with the workshops were PGY 1-3. Other common adjectives self-reported on the workshop survey included challenging, relaxing, and educational. Participants reported being satisfied with the workshop logistics such as location, instructor, and activity. Workshop surveys provided to guest participants focused on logistics not applicable to the intervention and are not included in further review.

Participants overwhelmingly reported being ‘outside the box’ thinkers. This question was provided as a personal descriptor for respondents, rather than a data point. Sense of connectivity to external support systems appeared to have an inverse relationship to the sense of connectivity residents reported related to their colleagues. Communication skills were self-reported as effective and shifts were not statistically significant across the timeline.

A post-intervention survey was delivered via email to the full resident cohort in July 2020 and relates to Series I. The survey had a 15.4% response rate from the resident

cohort, 87.5% of which were PGY1-3 respondents. Session attendance ranged from 50% having attended 1-3 sessions, 25% attending 4-6 sessions, and 25% that had not attended any ArtsCAFE sessions during Series I. Day of the week was identified as a barrier for attendance.

Meaningful and satisfying were selected most often as words that described their overall experience with the intervention. All participants reported finding the series satisfactory. Overall satisfaction may be an indicator or likelihood to attend again, as 100% of the post-interventions respondents indicated they would be 'Extremely Likely' to do so.

Study protocol resumed once it was safe to do so, which resulted in 21 additional workshop surveys past this date. A post-intervention survey applicable to Series II is planned for summer 2022.

4.2 Hypotheses 1: Communication

A monthly visual arts activity in a non-clinical space would improve surgical residents' self-reported ability to communicate with peers, clinical faculty, and external support systems. Residents were asked to gauge their ability to communicate with colleagues, attendings, and patients effectively. No changes were observed in responses across the pilot study timeline.

4.3 Hypotheses 2: Connection

A monthly visual arts activity in a non-clinical space would improve surgical residents' sense of connection to peers, clinical faculty, and external support systems. Sense of connectedness to peers showed improvement across the study timeline, while connectedness to external support decreased. This supports the hypothesis of expanding the surgical resident support system within the program through the use of visual arts workshops.

4.4 Observed Program Response

In addition to the mixed methods surveys developed for the pilot study, reactions to the intervention beyond the parameters of the workshops were noted. For example, residents were asked “Why Make Time for Art?” as part of a mid-year reporting mechanism to the study team. Replies included:

“To combat burnout.”

“(Art provides) a different perspective that takes us away from medicine or lets us see from a new angle.”

“I’ve really enjoyed participating in the program. I think that any activity which involves using your hands will result in improved dexterity and potentially better operative skills. More importantly, this is time I set aside for myself every month to relax and separate myself from work. I enjoy the challenge of trying something new and feel accomplished when I have created something.”

“[Art] gives people an outlet to express themselves and to forget about work and medicine for a while.”

“Art is a great way to relax and get our minds off the stress from the hospital. It also allows us to be creative, which is rare as surgical trainees.”

“It is an excellent method of human expression.”

Much of this ad-hoc feedback was overwhelmingly positive. External hospital faculty and other healthcare staff expressed interest in having access to creative activities. On several occasions, senior physician faculty conveyed their support of arts programming or shared personal stories of their creative endeavors. An example of two approaches to woodworking was present in the surgical faculty: one, a surgical oncologist had recently completed the woodwork surrounding the organ at his church; and another, an intensivist who created meticulous and unexpectedly modern pieces for his infant daughter. They excitedly shared images of works completed, and as the conversation unfolded, the latter had mentored the former. It was a wonderful story to see the transition of knowledge from a senior faculty to a junior in this way.

These subtle shifts were also found in the trainees at all levels.

A surgical intern commented that after our ceramics workshop, they had been reminded of how enjoyable working with clay had been during their undergraduate years in college. Beyond a fleeting fancy, this individual had acquired a potters' wheel to learn throwing techniques and was exploring kiln access through our community ceramicists.

The art program was celebrated as a catalyst for a friendship between junior residents, stating it was an outlet for creativity that was not available at the hospital. They mentioned it allowed them to get to know other co-residents that they may not have otherwise gotten to.

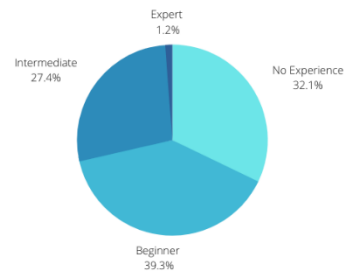
During the intervention, an email was received with a picture taken in a sculpture garden in the Pacific Northwest. The resident wrote that the visit had reminded them of the project and they wanted to share their gratitude.

A favorite response was from a stoic, senior resident. Stopping me in the hall, the resident complimented the series and apologized for not yet attending. The resident went further to share some of the art created by their daughter. After a bit of conversation, it was apparent that the topic softened this individual as they took time to describe her interests. Even if for a quick moment, this discussion allowed them to return to their compassionate self.

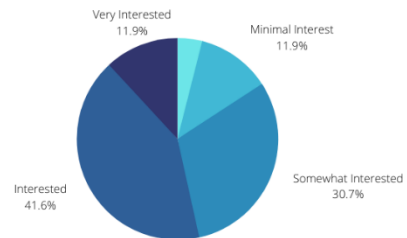
Applying an openness to integrating new concepts into their lives and career activities allows physicians to communicate non-workplace emotions. This self-awareness goes further to aid in their connection with their patients as well as the larger healthcare team. Quantitative data continues to be limited in the case of the ArtsCAFE intervention, but efforts in resolving the cultural deficiencies did show promise.

Figure 1. Collated Arts Preference Response

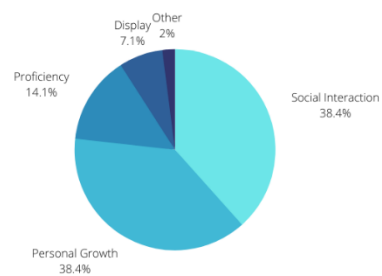
HOW WOULD YOU CLASSIFY YOUR ARTISTIC EXPERIENCE?



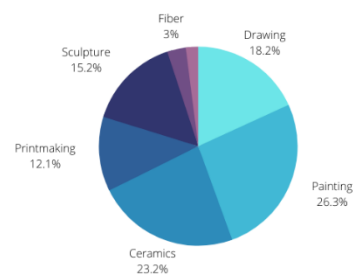
HOW WOULD YOU GAUGE YOUR LEVEL OF INTEREST IN THE HUMANITIES?



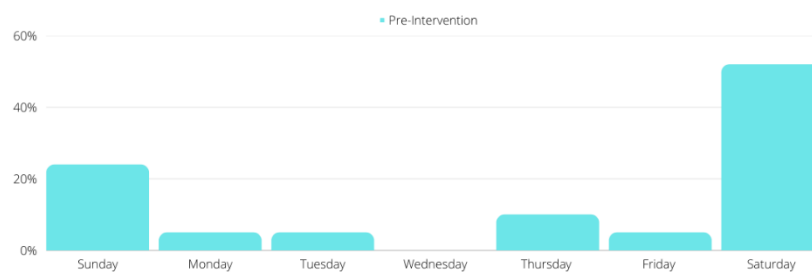
IS YOUR INTEREST IN THE VISUAL ARTS AIMED AT:



IS YOUR INTEREST IN THE VISUAL ARTS AIMED AT:



WHAT DAY OF THE WEEK WOULD BE BEST?



LIKELIHOOD TO ATTEND

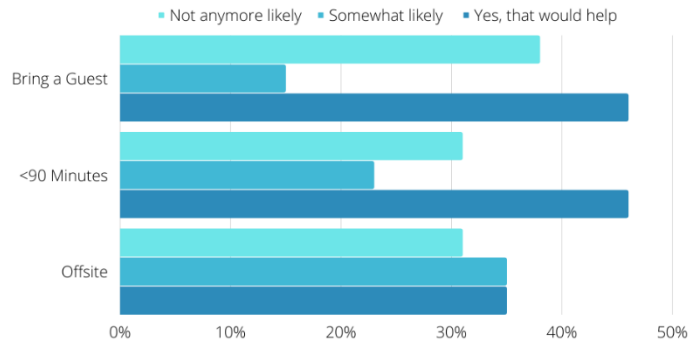
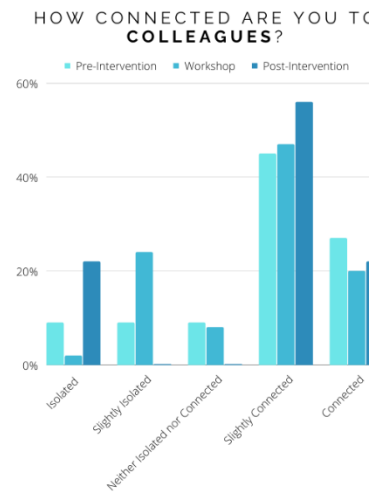
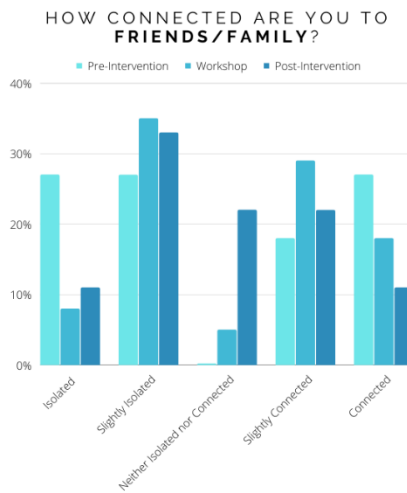
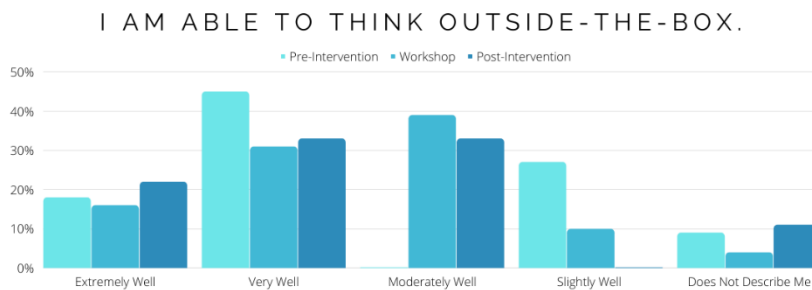
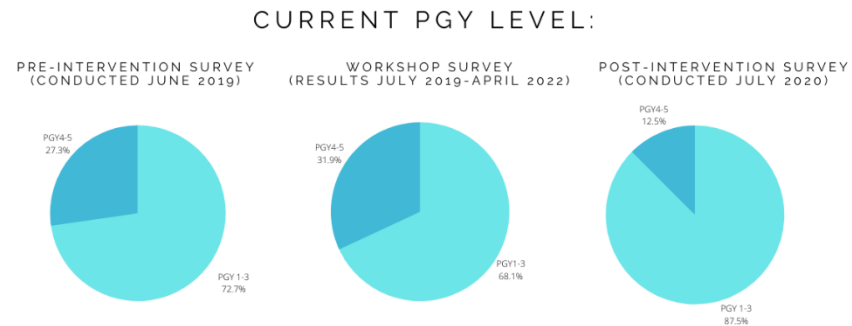
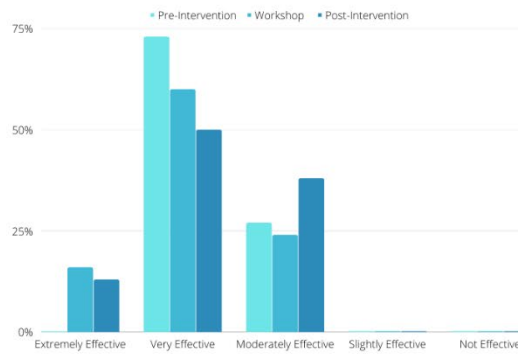


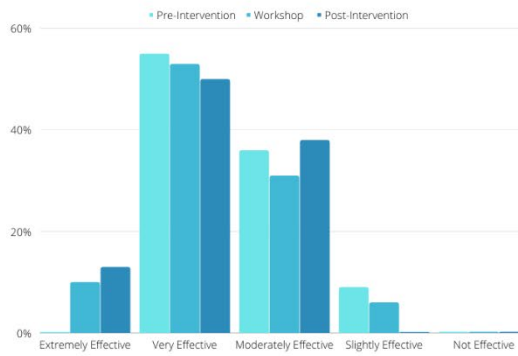
Figure 2. Collated Survey Responses



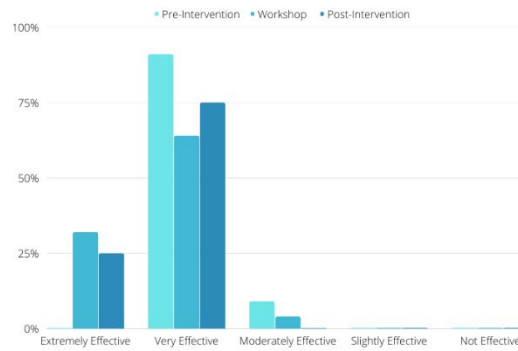
HOW WOULD YOU RATE YOUR COMMUNICATION SKILLS WITH YOUR **COLLEAGUES**?



HOW WOULD YOU RATE YOUR COMMUNICATION SKILLS WITH YOUR **ATTENDING**S?



HOW WOULD YOU RATE YOUR COMMUNICATION SKILLS WITH YOUR **PATIENT**S?



LIKELIHOOD TO ATTEND/ ATTEND AGAIN

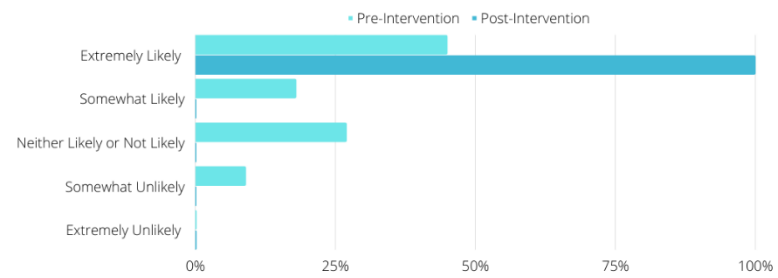


Figure 3. Workshop Participant Word Cloud



Figure 4. Residents viewing artist studio (Lennon Michalski).



Figure 5. Resident attendees during ceramics session led by Bobby Scroggins.



Figure 6. Resident art created during ceramics session.



Figure 7. Resident art created during linocut printmaking session.



Figure 8. Guest artwork created during watercolor session.



Figure 9. Resident work in progress during mixed media session.



CHAPTER 5. DISCUSSION

Through providing arts instruction to surgical learners and their guests, the ArtsCAFE pilot study gained insight into the benefits and challenges of art education in medical education settings. The discussion that follows serves three main purposes: to reflect on the information gained by the pilot; to review limitations present; and to pose potential implications for similar studies.

5.1 Key Findings

Response to the experiential visual art pilot was positive. As was evident in the ArtsCAFE pilot, response to arts programming for GME learners has been positive (Harrison & Chiota-McCollum, 2019; Hyun et al., 2020). Looking to the new normal includes respecting that the pandemic has challenged the closeness required for clinical training teams (Rakowsky et al., 2020). Within ArtsCAFE participants, shifts in connectivity were apparent amongst colleagues. Incorporating active arts offerings is a reasonable method to enrich the trainee experience and reinvigorate this community. Given the nature and time constraints on this community, implementing curricular arts programs is difficult.

An additional expansion of arts education in medical education settings should be performed deliberately to best impact growth in the field. In our study cohort, the improvements in the likelihood of attendance suggested a baseline interest. This response suggests that residents who attended found it to be valuable. Further study may allow review of modalities beyond the groups used in the pilot. Engaging arts organizations or art educators would be a way to capitalize on the needs and interests, as well as diversify the content accessible to medical education programs.

A macro limitation of the study was the pandemic. For programs seeking to implement similar interventions, limitations such as non-validated tools, survey fatigue, and potential for bias should be addressed early in the planning phases. Utilizing institutional or program-level teams would be well-poised to aid in the future

effectiveness of similar programs.

Engagement and Motivation

Unique time constraints present within the GME cohort suggest that incorporating programs into the curriculum may improve engagement. One academic neurology program delivered a 45-minute arts-based block each month during dedicated conference time. The researchers then found that the 91% of residents responded with an increased understanding of the value of art to medical education after participating (Harrison & Chiota-McCollum, 2019). The correlation of engagement with the art activity followed by increased understanding of the value of the art activity may also be gleaned from the ArtsCAFE pilot. The likelihood to attend another workshop session or recommend it to other residents was commonly found in survey responses.

Incentives were limited to the inclusion of meals and art created during the workshop. Though often met with skepticism from residents, the intrinsic advantages provided by a creative environment free of medicolegal consequences are valuable (Shapiro & Rucker, 2003). Specific to this cohort, attendance is met with numerous barriers. Modest attendance is not isolated to arts activities. A review of voluntary laparoscopic skills simulation training sessions found that the events were poorly attended overall. Session duration ranged from several weeks to several months. Of the nine international studies that met review criteria, external motivators such as awards or public recognition were not believed to impact the overall outcome. The review adds that the “personal enjoyment in the educational activity and its perceived relevance” proved most inspiring for participation (Gostlow et al., 2017). The relationship between an intention to participate and an ability to participate in program interventions needs further study in GME populations.

Application to Learning

Active learning has gained popularity amidst GME training programs

(Volerman & Poepelman, 2019; Wolff et al., 2015). Incorporating program leadership and faculty into arts programs can engage the potential for robust, multimodal education. Residents may also use art programs to aid in improving their self-awareness. Self-awareness has been identified as a helpful stress management technique and a key to maintaining a growth mindset for active learning (Goldberg et al., 2018; Ranney et al., 2021).

Surgical learner preferences have been found to differ from the general population. Using the VARK survey, which categorizes learner preferences into visual, aural, read/write, kinesthetic, and multimodal styles, surgery residents were found to be predominantly unimodal. The surveyed residents were most frequently categorized as kinesthetic learners (Kim et al., 2018). Specific kinesthetic approaches include relevant examples, hands-on activities, or other realistic applications (VARK Learn Limited, 2022). These approaches are congruent with active art education strategies. One example of this overlap was present during the ArtsCAFE drawing workshop. Courtesy of the simulation lab, 3D-printed organs were used as objects in a still life. Residents were challenged to depict objects as they were, a relevant skill for communicating with patients. This active session included one-on-one reflections led by the artist instructor.

Critical Humanities

As art has always provided creative nourishment, it has also been an area of safe discussion for challenging topics. Therefore, in the structural development of the ArtsCAFE pilot, instructor diversity was of equal importance to content. Examples of this include attention that the instructor demographics were comparable to that of the residency population and the hospital's patient population, directly inspiring the workshop focused on Appalachian craft.

Small-scale groups were well positioned for these intimate, critical discussions. Visual art activities that consider health equity issues or other social advocacy topics should be included in program delivery. Many instances of this exist even before the pandemic.

Cases included photographs used as a conduit for cultural sensitivity training at the University of Cincinnati or the painting of dermatologic conditions in medical students' skin shades in a course covered during The Pulse of Art at the Icahn School of Medicine at Mt. Sinai (Elder et al., 2006; Mukunda et al., 2019; The Pulse of Art, 2022).

Suggestions for Implementation

Small sample sizes limit data collection in many GME studies (Lefebvre et al., 2019; Lin et al., 2016; Goldberg et al., 2018). It remains crucial to attempt to incorporate enrichment activities for GME learners as well as to strive for appropriate measurement and assessment of efforts. Clinical training environments are challenging to maneuver. As a chief resident in our program stated, "There is no good time. Just pick and see who shows."

Program leadership support, faculty buy-in, and modest funding provide a solid foundation for projects of this kind. Clinical faculty inclusion in planning groups may also increase the direct connection to clinical care. Support from these individuals is not an immediate indicator of success (Barnard, 1994). Residents should have a voice in the development of wellness or enrichment. In addition, targeted efforts for female or single residents should be considered as they represent potential at-risk groups within programs (Lin et al., 2016).

Assessment tools proven as valid and psychometrically sound should be prioritized. Appropriate instruments include the population-specific Brief Resident Wellness Profile (BRWP), or field standards such as the Maslach Burnout Index (MBI) or Beck Depression Inventory (BDI) (Beck et al., 1988; Keim et al., 2009; Leiter & Harvie, 1996; Shanafelt et al., 2012). As a malleable trait, self-efficacy is a common focus of GME educational research (Lefebvre et al., 2019; Pena et al., 2015; Risucci et al., 2009; Smeds et al., 2019). One viable option to review self-efficacy within the cohort is the Trait Emotional Intelligence Questionnaire-Short Form or TEIQue-SF (Petrides, 2009).

5.2 Links to Other Research

Art engagement is not a fad. International articles have highlighted the usefulness of art to surgical practice throughout history and the prolific nature of medico-artists since the Renaissance (Weisz & Albury, 2010; Winderbank-Scott, 2010). Many modern healthcare professionals return to creative endeavors after practice or post-career (Cohen & Cohen, 2021; Sardiwalla & Morris, 2019). ArtsCAFE provided a brief preview of the interest within training and demonstrated teaching new skills in a socially supportive environment. Social support is a crucial element of physician well-being at all levels (Schwartz et al., 2019).

ArtsCAFE collected data on an arts education intervention providing active art exercises. Passive art activities developed for healthcare trainees are more often present in literature. It is reasonable to see why Visual Thinking Strategies (VTS) have been the most thoroughly studied approach in the field to date (Chisolm et al., 2020). VTS provides a stimulating way to educate the modern medical learner (Lippi et al., 2019). In a 2010 study, after three 90-minute exercises within a month, medical students at the University of Texas Science Center, San Antonio demonstrated improved tolerance for ambiguity (Klugman et al., 2011). In applying validated instruments such as those used to measure the impact of VTS on undergraduate medical learners, we may improve data collection on active exercises. Passive arts and humanities curricula should be bolstered with active learning exercises, including arts modalities. Deploying art educators on content planning teams increases the efficiency of arts programming to educate medical learners while providing a creative place beyond the bedside.

The use of trained art educators to introduce visual art modalities has also been used to study the mental stimulation of art on adult cognition (Bolwerk et al., 2014). Significant correlations in the intervention arm of Bolwerk's study suggest the existence of resilience through active engagement with visual art. In addition, ArtsCAFE stimulated novelty in the participants, challenging them to tap into their personal experiences and forms of expression. Following Bolwerk's work with older adults, this could suggest

programming may have an impact on participants in a comparable manner.

5.3 Contribution to Fund of Knowledge

The pilot used art educators, surgical residents, and visual art creation to accomplish the study objectives. Streamlined efforts provide proof of concept for this cohort and a generalized structure from which to build. Intervention structure reviewed much of the existing literature in anticipation of challenges. Gleaned information contributes to the larger field related to incorporating arts specialists (art organizations and educators) and presents a program at the graduate medical level in an extensive surgery program. The intervention was met with both challenges and benefits, which should be anticipated with any attempt in this field.

With the recent release of The Prism Model as a framework, arts programming moves forward as an impactful method to reach learners (Tracy et al., 2021). This framework provides suggestions for prism lenses including Social Advocacy, Perspective Taking, Personal Insight, and Mastering Skills. The ArtsCAFE intervention successfully delivered activities to engage personal insight and tangentially covered the other three lenses. Development of the art intervention since 2019 has included additional exercises in perspective-taking, with plans to fold in social advocacy and health disparities education moving forward. Armed with this structure, partnerships between medical educators and arts specialists can more swiftly move the field.

Utilizing frameworks present in medical education, in tandem with experienced art educators and validated instruments, will improve the overall assessment and exploration of the relationship between art education and graduate medical education.

CHAPTER 6. CONCLUSION

Arts and humanities continue to gain footing in medical education settings. As UME programs embed such topics into their curriculum, trainees in the pipeline may benefit from continued support within GME training.

Objectives of the pilot included impacting communication skills through active arts engagement and building upon social support networks in the surgery residency. To this end, the series achieved that goal. Throughout the timeline, relationships were forged amongst colleague participants, including the researcher. In one workshop, the mother of a resident was in town and attended with her. It inspired the others to share stories of their families, which were then embedded into the artworks created during that session. She expressed gratitude for the series, stating it 'gave her peace to know her child was well cared for during her training'.

Additionally, the potential collaboration with medical education learners grew amongst the art educators involved in the project. Many of the educators expressed interest in returning if other opportunities became available. Art educators in training or communities should be made aware of these alternate career pathways. There are over six thousand hospitals and eighteen million healthcare workers in the nation (Centers of Disease Control & National Institute for Occupational Safety and Health, 2017; Health Forum, 2022). Trends in healthcare professions include interprofessional development, as well as increased emphasis on continuing education and well-being efforts (Thibault, 2020). To align with these trends, this sector of our population seeks to gain increased access to intentional arts programming and creative arts therapies.

The art workshops fostered creative decision-making approaches, encouraged non-clinical problem solving to overcome knowledge gaps, and built camaraderie within the community it served. Subtle hints of the arts were also found in discussions over the year – including faculty interest in having similar offerings for programming tailored to families of healthcare workers. Evidence has found that social group interventions

mitigate depression (Dingle et al., 2021). Arts programming has also been connected to enhanced learning through deep inquiry in nursing education (Nguyen et al., 2016).

Social support in medical education can be a protective factor. Burnout risk is thought to be decreased with access to support networks (Rogers et al., 2016). Arts events promoting deeper inquiry can provide more substance to social support efforts. Consider the vast difference in intended outcomes between socially-driven painting classes and studio workshop sessions led by an experienced art educator. Intentional facilitation of knowledge and infusion of culture further builds upon the benefits of social gatherings. Offerings provided to postgraduate medical learners must be relevant and nimble enough to adapt to their unique timing restrictions.

Providing creative space for medical trainees of all levels can also benefit patient care. One such individual, a Penn State College of Medicine Professor of Medicine and Humanities, encourages creative nourishment in trainees. Daniel Wolpaw, MD, also an esteemed 2020 Alpha Omega Alpha Robert J. Glaser Distinguished Teacher, has reflected often on art's role in medicine. "We generally seek to avoid surprise and uncertainty-they are often perceived as spotlighting our own inadequacies. What we often miss is that while sometimes messy and uncomfortable, surprise and uncertainty shine a broad light on the complexity of our patients. And in doing so make us better, and more fulfilled, doctors. (Wolpaw, 2016)"

Burnout threatened patient care and medical personnel even before the pandemic (West et al., 2018), that only brutalized this group further, as is evident by the exodus of over 600,000 healthcare workers throughout the pandemic. The health sector now faces a drastic need for systematic change (Hartman, 2021). Naturally, arts programming will not be a magic wand to this wicked problem. Arts will always provide salve to worldly woes. Increased access to cultural activities may aid us all in our transition to a new normal.

"The close relationship between these systems could explain how art that stimulates our

reward system (Nadal, 2013) can promote well-being, social inclusion and support mental health recovery and resilience. Art can help express complex feelings or sensations, avoiding verbal interpretations while allowing for diversion and emotional escape, as has been shown, even during extremely challenging situations, like imprisonment (Gussak, 2007). Given the psychological parallels that can be drawn between imprisonment and COVID-19 lockdown policies (Dhami et al., 2020), art could also, therefore, provide a coping mechanism to counter the negative consequences of this form of confinement (Gallo et al., 2021).”

Art and art educators can make a difference in the education of healthcare professionals. The arts should be considered for further study in postgraduate medical education programs and as part of adapting to a post-pandemic healthcare field. The overall benefits to individuals are worth every challenge.

CHAPTER 7. RECOMMENDATIONS

Research suggests the benefits of art education in medical education settings. The pilot study, ArtsCAFE (Arts Connect Around Food and Enrichment), demonstrated how doing so might be both rewarding and challenging. However, the field needs further study to investigate demonstrable ways that postgraduate medical education can achieve clinical and non-technical objectives through arts education.

After reviewing interventions in the field and the experience at the study site, the following target areas are recommended:

1. The ArtsCAFE study structure may provide a baseline to deploy needed curricula, including topics in humanism, critical humanities, or identity formation.
2. Studies and programming in overlapping fields of education need reliable, validated tools to collate data best. Doing so would equip study teams and programs with actual data to self-advocate.
3. Healthcare institutions and arts organizations should consider collaboration to provide arts events as an accomplice to creative arts therapies within their communities.
4. Art educators should be informed of non-traditional areas of career opportunity, including within the healthcare sector. Additionally, healthcare professions education should strongly consider the inclusion of art educators or art organizations to review or assist in arts interventions.

APPENDICES

APPENDIX 1. IRB APPROVAL (PREFERENCE SURVEY)

Institutional Review Board (IRB) Approval Letter

IRB Approval
12/18/2018
IRB # 48170
ID # 90554

Dear Resident,

The General Surgery Residency is considering development of an arts-based activity program to broaden the scope of social and wellness options during training.

You are receiving this survey in order to gauge the level of interest and the scheduling preference of the residents within the program. Information obtained will allow the program to consider the benefit of the implementation of activities beyond the existing curriculum.

Participation is voluntary and consent is implied by the completion and submission of the survey. No identifying information will be collected. You are free to skip any questions or discontinue at any time. If you have questions about the study, please contact us. If you have complaints, suggestions, or questions about your rights as a research volunteer, contact the staff in the University of Kentucky Office of Research Integrity at 859-257-9428 or toll-free at 1-866-400-9428.

The survey consists of 10 questions and will take less than 5 minutes to complete. If you are willing to complete the survey, please follow the provided link.

https://uky.az1.qualtrics.com/jfe/form/SV_eapEh40NIGLL5op


Thank you for your participation.

Sincerely,

Sandra Beck, M.D.
University of Kentucky
Department of Surgery

APPENDIX 2. IRB APPROVAL (PILOT)

Institutional Review Board (IRB) Approval Letter

 University of Kentucky	<small>Office of Research Integrity IRB, RDRC</small>
EXEMPTION CERTIFICATION	
IRB Number: 50618	
IRB 000 FU	
TO:	Sandra Beck, MD Surgery/General PI phone #: 3236346 PI email: sandra.beck@uky.edu
FROM:	Chairperson/Vice Chairperson Medical Institutional Review Board (IRB)
SUBJECT:	Approval for Exemption Certification
DATE:	4/22/2019
<small>On 4/21/2019, it was determined that your project entitled "<i>ArtsCAFE (Arts Connect Around Food and Enrichment): A Pilot Study in the use of Art Education as a Tool to Improve General Surgery Resident Experience</i>" meets federal criteria to qualify as an exempt study.</small>	
<small>Because the study has been certified as exempt, you will not be required to complete continuation or final review reports. However, it is your responsibility to notify the IRB prior to making any changes to the study. Please note that changes made to an exempt protocol may disqualify it from exempt status and may require an expedited or full review.</small>	
<small>The Office of Research Integrity will hold your exemption application for six years. Before the end of the sixth year, you will be notified that your file will be closed and the application destroyed. If your project is still ongoing, you will need to contact the Office of Research Integrity upon receipt of that letter and follow the instructions for completing a new exemption application. It is, therefore, important that you keep your address current with the Office of Research Integrity.</small>	
<small>For information describing investigator responsibilities after obtaining IRB approval, download and read the document "PI Guidance to Responsibilities, Qualification, Records and Documentation of Human Subject Research" available in the online Office of Research Integrity's IRB Survival Handbook. Additional information regarding IRB review, federal regulations, and institutional policies may be found through ORIT's web site. If you have questions, need additional information, or would like a paper copy of the above mentioned document, contact the Office of Research Integrity at 859-257-9428.</small>	
Section 1 Page 1 of 1	

APPENDIX 3. STUDY MARKETING TOOLS


Recruitment poster distributed in print format.

This month:
CERAMICS with Jill Coldiron

SATURDAY NOVEMBER 23
11 AM - 2 PM
SCHOOL OF ART & VISUAL STUDIES
236 BOLIVAR STREET


LIMITED SPACE!
RSVP to SaraBrown@uky.edu

Guests, family & colleagues over 18 welcome
Lunch & all materials
provided by UKHC Arts in HealthCare






Instructor Bio:
Jill Coldiron is a graduate of the University of Kentucky with a degree in ceramics and has been a professional clay artist for over 30 years. She was an adjunct ceramics instructor at UK for 13 years and has given private clay lessons for over 25 years.

Currently, she has been the art & art history instructor at Lexington Montessori School for over 25 years in addition to instructing in the Fine Arts Institute, which she has done since its inception in 1993 (formerly known as Community Education). In 2002, Jill was commissioned with sculptor Richard Stofer to design a 47-foot stainless wall with tile inlay created by her art students at Lexington Montessori School; this wall is featured in the reception area of the UK Children's Hospital. Jill has owned Main Cross Gallery, a fine art gallery in Victorian Square featuring local artists, since 2000.



ARTS CAFE
ARTS CONNECT ARTISTS FOOD & ENRICHMENT

ArtsCAPE is a pilot study supported by UK General Surgery, UKHC Arts in HealthCare and UK Fine Arts Institute.
Programming is aimed at examining the possible effects of regular art-making workshops on the General Surgery resident experience.

Recruitment calendar event distributed to cohort.

Brown, Sara K.

Subject: ArtsCAFE - Session 5
Location: SA/VS - 236 Bolivar St Lexington KY 40508

Start: Sat 11/23/2019 11:00 AM
End: Sat 11/23/2019 2:00 PM

~ADDITIONAL OPENINGS ADDED! ~

Due to interest, we've added a 4 extra spots! Guests are welcome – be sure to add them when you RSVP.

We'll enjoy some Thanksgiving-themed appetizers before getting our hands dirty with clay & wheel-throwing with [Jill Coldiron](#). Career surgeons Cliff Lee and Harry Steinberg found ceramics especially enjoyable – links to video interviews and work can be found below. Also interesting is the surgical approach Beccy Ridsdel took in her approach to the ceramic installation "[Art/Craft](#)".

Cliff Lee:

<https://www.voanews.com/usa/brain-surgeon-finds-inspiration-ceramic-art>

<https://americanart.si.edu/artist/cliff-lee-6795>

<https://www.youtube.com/watch?v=EjYh1fwvy4A>


Harry Steinberg:

<https://www.lamag.com/culturefiles/a-breakout-artist-at-103-years-old-surgeon-wwii-vet-and-sculptor-harry-steinberg/>

https://www.youtube.com/watch?v=r-DDr0iDN_A

APPENDIX 4. SURVEY INSTRUMENTS

Pre-intervention Survey



English ▾

I am a ...

PGY 1 - 3
PGY 4 - 5

I am able to think 'outside the box'.

Describes me extremely well Describes me very well Describes me moderately well Describes me slightly well Does not describe me

How connected do you feel with family/friends **outside of residency**?

Isolated Slightly isolated Neither isolated nor connected Slightly connected Connected

How connected do you feel with colleagues/other residents **in residency**?

Isolated Slightly isolated Neither isolated nor connected Slightly connected Connected

How would you rate your communication skills **with your colleagues**?

Extremely effective Very effective Moderately effective Slightly effective Not effective at all

How would you rate your communication skills **with your attendings**?

Extremely effective Very effective Moderately effective Slightly effective Not effective at all

How would you rate your communication skills **with patients**?

Extremely effective Very effective Moderately effective Slightly effective Not effective at all

Our program has a pilot intervention offered monthly, ArtsCAFE (Connect around Food & Enrichment). How likely are you to attend this visual arts workshop?


Extremely likely Somewhat likely Neither likely nor unlikely Somewhat unlikely Extremely unlikely

Colleagues, significant others, and friends are welcome to attend the ArtsCAFE Workshops as well. How likely would you to bring someone with you?

Extremely likely Somewhat likely Neither likely nor unlikely Somewhat unlikely Extremely unlikely

Please list any dietary restriction or allergies that we should be aware of:

Workshop Survey –Resident



English

I am a ...

PGY 1 - 3

PGY 4 - 5

I am a new resident. Think 'outside the box'.

Describes me extremely well

Describes me very well

Describes me moderately well

Describes me slightly well

Does not describe me

How connected do you feel with family/friends **outside of residency**?

Isolated

Slightly isolated

Neither isolated nor connected

Slightly connected

Connected

How connected do you feel with colleagues/other residents **in residency**?

Isolated

Slightly isolated

Neither isolated nor connected

Slightly connected

Connected

How would you rate your communication skills **with your colleagues**?

Extremely effective

Very effective

Moderately effective

Slightly effective

Not effective at all

How would you rate your communication skills **with your attendings**?

Extremely effective

Very effective

Moderately effective

Slightly effective

Not effective at all

How would you rate your communication skills **with patients**?

Extremely effective

Very effective

Moderately effective

Slightly effective

Not effective at all

How many ArtsCAFE sessions have you attended?

0

This is my first

1 - 3

4 - 6

7 - 9

10 - 12

Did anyone accompany you today?

No

Yes, my significant other

Yes, my friend

Yes, a colleague (please list program/PGY)

How would you grade your experience today?

Location ☆☆☆☆☆

Instructor ☆☆☆☆☆

Activity ☆☆☆☆☆


Food ☆☆☆☆☆

Conversation ☆☆☆☆☆

What three words best describe your experience with today's workshop?

Any additional feedback you'd like to offer?

Workshop Survey – Non-Resident



English

What is your relation to the Resident attendee?

My significant other

A friend

Family

Colleague (please list program/PGY)

How would you grade your experience today?

Location ☆☆☆☆☆

Instructor ☆☆☆☆☆

Activity ☆☆☆☆☆

Food ☆☆☆☆☆

Conversation ☆☆☆☆☆

What three words best describe your experience with today's workshop?

Any additional feedback you'd like to offer?

Post intervention Survey



I am a ...
PGY 1 - 3
PGY 4 - 5
I am able to think 'outside the box'.

Describes me extremely well
Describes me very well
Describes me moderately well
Describes me slightly well
Does not describe me

How connected do you feel with family/friends **outside of residency**?

Isolated
Slightly isolated
Neither isolated nor connected
Slightly connected
Connected

How connected do you feel with colleagues/other residents **in residency**?

Isolated
Slightly isolated
Neither isolated nor connected
Slightly connected
Connected

How would you rate your communication skills **with your colleagues**?

Extremely effective
Very effective
Moderately effective
Slightly effective
Not effective at all

How would you rate your communication skills **with your attendings**?

Extremely effective
Very effective
Moderately effective
Slightly effective
Not effective at all

How would you rate your communication skills **with patients**?

Extremely effective
Very effective
Moderately effective
Slightly effective
Not effective at all

How many ArtsCAFE sessions have you attended?

0
1
1 - 3
4 - 6
7 - 9
10 - 12

How easy or difficult was it to attend the ArtsCAFE Workshops?

Extremely easy
Somewhat easy
Neither easy nor difficult
Somewhat difficult
Extremely difficult

What factors caused difficulty?

Day of week was not conducive to my schedule

Time of day was not conducive to my schedule

Location was inconvenient

Parking was inconvenient

Workshop topic was not of interest to me

Other (please list)

The Artist Educator(s) were engaging.

Strongly agree
Somewhat agree
Neither agree nor disagree
Somewhat disagree
Strongly disagree

The ArtsCAFE staff were welcoming.

Strongly agree
Somewhat agree
Neither agree nor disagree
Somewhat disagree
Strongly disagree

How satisfied or dissatisfied were you with the ArtsCAFE activities?

Very Dissatisfied
Dissatisfied
Somewhat Dissatisfied
Neutral
Somewhat Satisfied
Satisfied
Very Satisfied

Overall, what words would you use to describe your experience with ArtsCAFE?

Items
Purposeless
Meaningful
Valuable
Boring
Unpleasant
Satisfying
Productive
Not useful
Thought-provoking
(Enter response)
(Enter response)
(Enter response)

My experience with the ArtsCAFE was:

How likely would you attend the ArtsCAFE next year?

Extremely likely
Somewhat likely
Neither likely nor unlikely
Somewhat unlikely
Extremely unlikely

How likely are you to recommend ArtsCAFE to friends or colleagues?

Extremely likely
Somewhat likely
Neither likely nor unlikely
Somewhat unlikely
Extremely unlikely

APPENDIX 5. SURVEY RESPONSES

Pre-Intervention Survey

N (30)

How would you classify your artistic experience?		
No experience	26.66%	8
Beginner	33.33%	10
Intermediate	23.33%	7
Expert	16.66%	5

If experienced, what media are you confident in?				
Pastels	Oil Pastels	Pencil	Drawing	
Writing	Colored Pencil	Woodcut	Ceramic	
Music	Mixed Media			

How would you gauge your level of interest in the humanities?		
Not at all interested	3.85%	1
Minimal interest	11.54%	3
Somewhat interested	30.77%	8
Interested	42.31%	11
Very interested	11.54%	3

If interested, is your interest in visual arts aimed at:		
Social interaction	38.10%	16
Personal growth & experience	38.10%	16
Gaining proficiency	14.29%	6
Creating art for display	7.14%	3
Other	2.38%	1
<i>Other: Mindfulness Development</i>		

What visual art mediums do you find appealing?			
Drawing	Painting	Ceramics	Printmaking
18.4% (12)	26.2% (17)	23.1% (15)	12.31% (8)
Sculpture	Fiber	Other	
15.4% (10)	3.1% (2)	1.5% (1)	
<i>Photography</i>			

When considering your schedule, what day of the week would be optimal to attend a 90 minute workshop?

Sunday 23.8% (5)	Monday 4.8% (1)	Tuesday 4.8% (1)	Wednesday 0% (0)
Thursday 9.5% (2)	Friday 4.8% (1)	Saturday 52.4% (11)	

	Not any more likely.	Somewhat more likely.	That would help.
Would you be more likely to attend if given the option to bring friends, significant others or children?	38.5% (10)	15.4% (4)	46.2% (12)
Would you be more likely to attend if the workshop was shorter than 90 minutes?	30.8% (8)	23.1% (6)	46.2% (12)
Would you be more likely to attend if the workshop was located somewhere other than the hospital?	30.8% (8)	34.6% (9)	34.6% (9)

Pre-Intervention Survey

N (11)

Post Graduate Level			
	PGY 1-3	73%	8
	PGY 4-5	27%	3
I am able to think ‘outside the box.’			
	Describes me extremely well	18.18%	2
	Describes me very well	45.45%	5
	Describes me moderately well	0.00%	0
	Describes me slightly well	27.27%	3
	Does not describe me	9.09%	1
How connected do you feel:	with friends / family	with colleagues	
	Isolated	27% (3)	9% (1)
	Slightly isolated	27% (3)	9% (1)
	Neither isolated nor connected	0% (0)	9% (1)
	Slightly connected	18% (2)	45% (5)
	Connected	27% (3)	27% (3)
How would you rate your communication skills:	with colleagues	with surgical faculty	with patients
	Extremely effective	0% (0)	0% (0)
	Very effective	73% (8)	55% (6)
	Moderately effective	27% (3)	36% (4)
	Slightly effective	0% (0)	9% (1)
	Not effective at all	0% (0)	0% (0)
How likely are you to attend a visual arts workshop?	to attend	to bring a guest	
	Extremely likely	45% (5)	18% (2)
	Somewhat likely	18% (2)	27% (3)
	Neither likely nor unlikely	27% (3)	18% (2)
	Somewhat unlikely	9% (1)	18% (2)
	Extremely unlikely	0% (0)	18% (2)

Workshop Survey – Resident

N (54)

Post Graduate Level				
	PGY 1-3	68%	32	
	PGY 4-5	32%	15	
I am able to think ‘outside the box.’				
Describes me extremely well	16.00%	8		
Describes me very well	31.00%	16		
Describes me moderately well	39.00%	20		
Describes me slightly well	10.00%	5		
Does not describe me	4.00%	2		
How connected do you feel:	with friends / family	with colleagues		
Isolated	8% (4)	2% (1)		
Slightly isolated	35% (18)	24% (12)		
Neither isolated nor connected	10% (5)	8% (4)		
Slightly connected	29% (15)	47% (24)		
Connected	18% (9)	20% (10)		
How would you rate your communication skills:	with colleagues	with surgical faculty	with patients	
Extremely effective	16% (8)	10% (5)	32% (16)	
Very effective	60% (30)	53% (26)	64% (32)	
Moderately effective	24% (12)	31% (15)	4% (2)	
Slightly effective	0% (0)	6% (3)	0% (0)	
Not effective at all	0% (0)	0% (0)	0% (0)	
How many ArtsCAFE sessions have you attended?				
0	1-3	4-6	7-9	10-12
30% (15)	32% (16)	14% (7)	16% (8)	8% (4)
Did anyone accompany you today?		No	Yes, S/O	Yes, Non-S/O
		72% (36)	24% (12)	4% (2)
How would you grade your experience?				
1 (Worst) through 5 (Best)				
Location	Activity	Instructor	Conversation	Food
5	4.86	4.92	4.88	4.88

Overall, what words would you use to describe your experience at ArtsCAFE?*

**Open text responses.*

Top Responses Fun (24 times) Challenging (9 times)
Relaxing (11 times)

Additional Responses Creative, Educational, Unique, Different, Engaging,
New (5-9 times)

Out-of-the-Box, Colorful, Innovative, Dirty, Peace,
Enjoyable, Serene, Hard, Soft, Multiple, Cathartic,
Interactive, Free, Therapeutic, Tech-y, Informative,
Revitalizing (<5 times)

Any additional feedback you'd like to offer?

Do more watercolor and ceramic sessions!
Maybe less instruction and just let us mess around
Keep doing these! They are awesome
Great session!
I had a great time and look forward to the next one
Keep them coming, very fun
More time for relief work.

Workshop Survey – Non-Resident

N (22)

Relation to Resident		
Significant Other	67%	10
Friend	13%	2
Family	7%	1
Colleague	13%	2

How would you grade your experience?

1 (Worst) through 5 (Best)

Location	Activity	Instructor	Conversation	Food
4.94	4.94	5	4.88	4.81

Overall, what words would you use to describe your experience with ArtsCAFE?*

**Open text responses.*

Top Responses Fun (7 times)

Educational, Energizing, Relaxing (4 times)

Additional Responses Creative (3 times)

Calming, Challenging, Convenient, Unique, Lively, New,
Inspiring, Encouraging, Enjoyable, Conversation, Great,
Good (1 time)

Any additional feedback you'd like to offer?

Loved this activity! Would do it again!

Amazing! Had a fantastic time

This workshop gave me a great background of printmaking.

Great program. I really appreciate the invite. Bonding as well.

Very nice

Good mix of media and technique.

Great to be invited to a surgery resident event. I appreciate getting to know the co-residents

Less time demonstrating please, more time participating.

Post-Intervention Survey

N (8)

Post Graduate Level			
	PGY 1-3	88%	7
	PGY 4-5	13%	1

I am able to think ‘outside the box.’		
Describes me extremely well	22.00%	2
Describes me very well	33.00%	3
Describes me moderately well	33.00%	3
Describes me slightly well	0.00%	0
Does not describe me	11.00%	1

How connected do you feel:	with friends / family	with colleagues
Isolated	11% (1)	22% (2)
Slightly isolated	33% (3)	56% (5)
Neither isolated nor connected	22% (2)	0% (0)
Slightly connected	22% (2)	0% (0)
Connected	11% (1)	22% (2)

How would you rate your communication skills:	with colleagues	with surgical faculty	with patients
Extremely effective	13% (1)	13% (1)	25% (2)
Very effective	50% (4)	50% (4)	75% (6)
Moderately effective	38% (3)	38% (3)	0% (0)
Slightly effective	0% (0)	0% (0)	0% (0)
Not effective at all	0% (0)	0% (0)	0% (0)

How many ArtsCAFE sessions have you attended?				
0	1-3	4-6	6+	
25% (2)	50% (4)	25% (2)	0% (0)	

	Extremely Easy	Somewhat easy	Neither easy nor difficult	Somewhat difficult	Extremely difficult
How easy or difficult was it to attend the workshop?	17% (1)	17% (1)	33% (2)	33% (2)	0% (0)
What factors caused difficulty?	Day 100% (2)	Time 0% (0)	Location 0% (0)	Parking 0% (0)	Topic 0% (0)

Reflect on workshop quality:	Artist educators were engaging.	ArtsCAFE Staff were welcoming.
Strongly agree	67% (4)	100% (6)
Somewhat agree	17% (1)	0% (0)
Neither agree nor disagree	0% (0)	0% (0)
Somewhat disagree	17% (1)	0% (0)
Strongly disagree	0% (0)	0% (0)

How satisfied or dissatisfied were you with the ArtsCAFE activities?

Very Dissatisfied	0% (0)
Dissatisfied	0% (0)
Neutral	0% (0)
Satisfied	33% (2)
Very Satisfied	67% (4)

How likely are you to:	Attend again	To Recommend
Extremely likely	100% (6)	83% (4)
Somewhat likely	0% (0)	17% (1)
Neither likely nor unlikely	0% (0)	0% (0)
Somewhat unlikely	0% (0)	0% (0)
Extremely unlikely	0% (0)	0% (0)

Overall, what words would you use to describe your experience at ArtsCAFE?*

**Word bank available. Italicized words were open text responses.*

Valuable	18% (3)	Satisfying	29% (5)
Thought-Provoking	12% (2)	Unpleasant	0% (0)
Purposeless	0% (0)	Productive	18% (3)
Meaningful	24% (4)	Boring	0% (0)
Not useful	0% (0)	<i>Relaxing, Stimulating</i>	

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S. M., & Verghese, A. (2020). Practices to Foster Physician Presence and Connection With Patients in the Clinical Encounter. *JAMA*, 323(1), 70–81.
<https://doi.org/10.1001/jama.2019.19003>

VITA

Sara Kaitlyn Brown, C-TAGME

EDUCATION

December 2020

Certified Training Administrator,
Graduate Medical Education

May 2009

Bachelor of Arts in Art Education, Art Studio
Cum Laude
University of Kentucky, Lexington, KY

PROFESSIONAL EXPERIENCE

December 2021 – present

Medical Education Specialist
University of Kentucky, Lexington, KY

June 2009 – present

Freelance Instructor
Kentucky Historical Society, Frankfort, KY

August 2017- December 2021

Graduate Medical Education Program Coordinator
University of Kentucky, Lexington, KY

July 2011 – August 2017

Office Manager
Bone Dry Roofing, Lexington, KY

June 2009 – July 2011

Medical Records Administrator Assistant
Central Internal Medicine, Lexington, KY

August 2009 – May 2011

Freelance Instructor
Bluegrass Home School Cooperative, Lexington, KY

August 2009 – June 2010

Substitute Teacher
Fayette County Public Schools, Lexington, KY
Clark County Public Schools, Winchester, KY
St. Elizabeth Ann Seton School, Lexington, KY