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COVID-19 Pandemic: A Mixed-Methods Study Investigation of a Health Science System Faculty's Adaptations to an Online (Non-Traditional) Teaching Environment for Health Professional Students

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COVID-19 PANDEMIC: A MIXED-METHODS STUDY INVESTIGATION OF A HEALTH SCIENCE SYSTEM FACULTY'S ADAPTATIONS TO AN ONLINE (NON-TRADITIONAL) TEACHING ENVIRONMENT FOR HEALTH PROFESSIONAL STUDENTS

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ABSTRACT

The purpose of this mixed method study was to explore the transition to an online educational platform for future health professional students at a southern health sciences system due to Severe Acute Respiratory Syndrome (SARS-CoV-2) virus. The majority of health professional students received their education via face-to-face prior to the pandemic. The pandemic altered their traditional pedagogical method of face-to-face to online instruction. The health professional school faculty offer the best instruction in a lecture hall not on a computer screen using Zoom. This study was designed to analyze how the faculty adapted in moving to an online instructional method, the support offered by administration, and what method carried over to the spring semester. The research study participants consisted of faculty members from six health profession schools/programs within one health sciences system. A survey consisting of a Likert-scale, multiple choice, and open-ended short answer questions was emailed to all faculty members. Following the survey, one-on-one, face-to-face interviews with six of the faculty members were conducted to gain insight and understanding of their experiences transitioning to an online platform. The results of this study suggest that the transition to an online instructional environment, created within the health sciences system due to the pandemic, was not as seamless as it could have been. The faculty described their experience as one without administrative support, technology training, or guidance. The transition to online instruction caused a disconnect and inability to mentor the healthcare professional students. The faculty were, however, optimistic about the online transition and plan to incorporate this method into future courses in a hybrid method. Pre-pandemic, the United States healthcare professional schools were moving at a snail's pace with regard to the progression of an online educational method. The pandemic thrust the healthcare professional schools/program into using online pedagogical

instruction. The COVID-19 virus has changed the educational approach for future healthcare student training. Only time will tell what affect this will have on global education.

CHAPTER 1. INTRODUCTION

Introduction

The SARS-CoV-2 novel coronavirus (COVID-19) pandemic has altered every aspect of daily human life from the economy to education. COVID-19 is an infectious disease caused by the most recently discovered coronavirus. This new viral disease was unknown before the outbreak began in Wuhan, China, in December 2019. COVID-19 reached pandemic status in March 2020, according to the World Health Organization (WHO). COVID-19 has infected over 2 million individuals worldwide and resulted in over 100,000 deaths (WHO, 2019). The World Health Organization (WHO) defines a pandemic as "an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people" (Last,1993, p. 151). The United States Government followed the recommendation of the WHO and issued a stay-at-home directive. According to Moreland et al. (2020) report, the mandatory stay-at-home for 42 states was from March 1-May 31, 2020. The first state to issue this stay-at-home order within the continental United States was California, on March 19, 2020. This directive resulted in many businesses closing and higher educational institutions to cease training across the United States and world for a short time (1-2 weeks). During this period universities and colleges around the world temporarily close so they could transition from a face-to-face (F2F) lecture format to an online format. This resulted in health professional universities and colleges creating and implementing plans to transition from F2F lectures and labs to distance learning (online). Prior to the pandemic, universities and colleges had started the transition to online training and it has continued to grow throughout the United States and the world. Hixon, Gazal, and Alkattan (2012) reported that the United States is behind with online learning with

many educators just starting the transformation from their face-to-face style of lecturing to an online learning environment.

Problem Statement

COVID-19 has changed the educational methods of training healthcare professionals, who are the ones that will be caring for ill patients in the near future. With only a week or so of planning, this southern health sciences center for healthcare professional schools/programs, was committed to achieving continuity of instruction through non-traditional pedogeological methods of course delivery by their administration. On March 5, 2020, the U.S. Department of Education provided approval for institutions to offer online instruction for students affected by closure of campuses. A social distancing requirement was the driving force to put a temporary halt for face-to-face learning in all educational environments. As campuses were closing, faculty members were forced into a steep learning curve to shift their lecture methods of delivery to a distance (online) instructional format. To make this transition easier, some institutions allowed faculty members to relax their grading methods and offer a pass/fail grading option for individual courses. These instructional methods altered the traditional training of healthcare professional programs throughout the United States. Healthcare professional schools traditionally train students using a face-to-face method. Face-to-face training provides an opportunity for the faculty to work directly with the learner, provide professional guidance (mentoring), and offer direction during patient healthcare encounters. The healthcare professional schools that participated in this research study were allied health programs (nursing, respiratory therapy, physical and occupational therapy, and physician assistant), dental school (dentist and hygienist), and medical school. When healthcare professional students are interacting with the sick in a clinical setting, faculty members look to educate and evaluate the ability of the student to

collaborate with other health professionals, converse with patient and other team members, and show specific clinically relevant skills (critical thinking) as they care for the ill. Online training makes it challenging for healthcare faculty to evaluate these skills.

The COVID-19 pandemic effects start with the school admission processes. Prior to the pandemic, most of these healthcare professional schools passed over student applications if they submitted required courses that were taken in an online format. One example of how COVID-19 has altered the traditional health educational method is that no medical school in the United States allowed students to earn a MD online prior to the pandemic. Also, many medical schools within the continental United States were unwilling to except any online prerequisite courses for admission.

Statement of Research Problem

In March 2020, COVID-19 reached pandemic status according to the World Health Organization (2019). Since that time, COVID-19 has swept through the United States and the world, altering the personal and professional lives of hundreds of millions of people, including students at all levels of education. As COVID-19 surged in the U.S., it forced the educational systems to halt on-campus teaching in order to minimize the spread of the virus. As a result of the recommendation of the World Health Organization for social distancing, all face-to-face educational platforms in the United States were suspended on March 16, 2020. Educators across K-12 grades and post-secondary education dealt with this unprecedented challenge due to social distancing requirements. These educators, under constantly shifting conditions, tried to ensure a high-quality student online learning environment while having students remain on track to move to the next grade level, to graduate or to finish their professional training program.

The World Health Organization (WHO) officially named the disease causing the pandemic as the Novel Coronavirus (COVID-19) on February 11, 2020. The WHO reported that Wuhan, China was ground zero for this viral pandemic. The United States Center for Disease Control (CDC) and Prevention reported (http://www.cdc.gov), that the WHO offered an abbreviation for the novel coronavirus as COVID-19. COVID-19 stands for the following: "CO" stands for "corona," "VI" for virus, "D" for disease and 2019 for the year in which it appeared. COVID-19 is a severe acute syndrome that can cause fever, cough, headaches, blood clots, and other symptoms like influenza (flu). This airborne virus is easily transmitted from person to person by air droplets from an infected individual's cough or sneeze. Hence the reason for the governmental decision to follow the CDC recommendations of asking everyone to wear face coverings to minimize the spread; to keep six feet between people (social distance) and to regularly wash hands for a minimum of 20 seconds with soap.

Before the COVID-19 outbreak, healthcare professional schools required students to finish a rigorous, structured curriculum with face-to-face lectures and labs that prepare the students for their clinical training. Prior to COVID-19, no medical school within the United States borders offered any online courses to meet these requirements for medical students. COVID-19 altered the educational environment in healthcare professional schools due to the highly contagious nature of this illness. Healthcare professional schools' traditional means of education (lecture and labs), face-to-face and hands-on training, were switched to online courses for the health and safety of staff, faculty, and students.

Rationale

United States universities and colleges have been increasing their online course offerings for two decades. Higher education institutions are certain that online course and degree offerings

are essential for the future growth in education (Allen & Seaman, 2014). The availability of online education has offered students more flexibility, management of courses, and has become a central part of higher education (Kebritchi et al., 2017; Luyt, 2013; Lyons, 2004). Despite this, online education offerings have not grown in all higher educational arenas. In particular, healthcare professional schools have continued to offer only the traditional face-to-face style of teaching.

Traditional education in the undergraduate healthcare professional schools has been predominately face-to-face. The undergraduate healthcare professional schools are apprenticeship-based and require the learner to interact with the staff, faculty, and other members of a healthcare team. According to the two accrediting bodies for medical schools, the Liaison Committee for Medical Education (LCME) and the Accreditation Council for Graduate Medical Education (ACGME), healthcare professional programs must have a structured curriculum that requires preclinical and clinical events to occur at specific stages in the students learning. According to Wayne, Green and Neilson (2020), the requirements called for by these accrediting bodies have proven outcomes, "Competent physicians are not born; they are taught to integrate the language of science with recent concepts of disease, diagnosis, treatment, and empathy" (p. 1). The governmental stay-at-home directive changed the traditional pedagogical training. Due to the stay-at-home directive, "students and trainees have experienced considerable loss – loss of routines and traditions, expertise, educational opportunities, and social connections" (Gallagher & Schleyer, 2020, p. 2). Healthcare professional education is based on a formidable tradition of collaboration and of one generation supplying knowhow to the next (Gallagher & Schleyer, 2020). The COVID-19 pandemic is testing the strength and efficacy of online training for healthcare professional students.

Unfortunately, COVID-19 has caused rapid changes in many situations: personal, economical, and educational for students and faculty. The rapid changes in the educational environment can exacerbate faculty feelings of frustration. There are a number of reasons for this. Firstly, faculty members had to devote additional time to transition their face-to-face courses to online. Secondly, online courses can result in a decrease of communication and interaction with students (Dhawan, 2020). Thirdly, courses that depend on in-person interaction and/or coaching between faculty and students have proven difficult to move online.

According to the 2019 *Inside Higher Ed* article, "Faculty Attitudes on Technology," by Jaschick and Lederman, only 46 percent of faculty members had taught online. That is shown to be an increase from the 39 percent that was reported by faculty in 2016. Faculty members are being asked to use a method they may not be fully comfortable with, or competent in, to deliver lecture content. Understanding of these educational methods and how to best evaluate student performance in an online environment is lacking. On the other hand, students also find the online format challenging, as they are being asked to adapt to the educational changes, sometimes with short notice. When discussing student online challenges, the healthcare professional community and students are adapting to things they never had to before. Using medical schools as an example of how COVID-19 has challenged their students, as stated earlier, no medical school in the United States offered a medical student the opportunity to obtain their Doctor of Medicine (MD) online. Some other healthcare programs, like physician assistant, are transitioning their in-person lecture courses to an online method, only requiring the student to take part in their clinical experiences.

Purpose of Study

This research project plans to assess how faculty determined the best method to effectively teach their online courses to healthcare professional students during the COVID-19 pandemic. The study will examine, retrospectively, how faculty acutely changed in March of 2020 to an online educational format and to look at the prospective impact of the online education pedagogy for the courses taught in Fall of 2020. In addition to those findings, the study hopes to identify which selected online educational methods best met the healthcare professional faculty members' need to train students for future patient encounters.

Research Questions

1. Online Method(s)
   - A. What was the most common online (non-traditional) teaching method(s) used in the health professional schools during the initial transition in March 2020 that was brought on by the COVID-19 pandemic?
   - B. What method(s) carried over to the Fall 2020 semester?
2. Online Selection
   - A. How did your health professional school/program determine the best online (non-traditional) method to instruct learners?
   - B. What modifications did the instructors make to the pedagogy to move their courses online?
   - C. How did the administration support these method(s)?
3. What educational challenges did the health sciences center faculty overcome when transitioning from traditional face-to-face instruction to online instruction during the COVID-19 pandemic?

Method

This research study employed a mixed method study design, using a survey and semi-structured interviews. This mixed method study is weighted more towards a quantitative study design with a smaller qualitative element. The quantitative component was obtained by a survey composed of Likert-scale questions, multiple choice, and short answers (a part of the qualitative element) that were developed using the Qualtrics Survey (lsu.qualtrics.com) platform. The qualitative portion of the study was aimed at understanding each individual faculty member's processes used in selecting online teaching, the faculty member's prior experience with an online teaching platform, software and technology, and thoughts regarding future online health care professional education. This component was derived from short-answer questions in the Qualtrics survey, as well as a limited number of faculty interviews that formed the mixed method study component of the research.

The participants in the study are faculty members within a health sciences center that consists of six professional healthcare schools: allied health, dental, nursing, medical, public health, and graduate. The health sciences center faculty population consists of basic and clinical faculty members numbering approximately 500 individuals. All faculty survey responses are voluntary and anonymous.

The survey items consisted of Likert-scale, multiple choice, and open-ended short answer questions. The survey invitation was sent out via email to each faculty member by a designated office administrator within the Dean's office from each professional school. A cover letter was provided, offering a short explanation of the study and requesting their participation. The survey link was provided to each faculty member in the first invitational email. If a faculty member or instructor clicked on that link, they were consenting to take part in the study. A reminder email

was sent out by each school's dean, two weeks after the first request, asking all of those who did not complete the survey to consider participating in the study.

The second part of the research study was qualitative design. This part of the mixed method study aimed to enhance the quantitative portion. In addition to the short-answer questions embedded in the Qualtrics survey, the final question in the survey asked the participants if they wished to take part in a semi-structured interview. If "yes," they were to click on the below link to provide their contact information: name, email, and phone number. For those participants that responded "yes" to this question, an additional email was forwarded to them. The additional email was to request that they take part in a short (30-45 minute) semi-structured interview. The interview was semi-structured in design and digitally voice recorded. The interview recording transcription utilized was Otter.ai, and all of the recordings were confidential and held in a secure location.

All data collected was anonymous except for the interviews and was kept on a secure server in a secure location. The quantitative data was analyzed using IBM's Statistical Package for the Social Sciences (SPSS) software. The qualitative data was coded, and themes were identified using ATLAS.ti software.

Significance of Study

Prior to this pandemic, healthcare professional schools/programs were based solely on a traditional instructional method of face-to-face instruction. This method of education has been a tried-and-true evidence-based education for the apprenticeship method of instruction. The transitioning to a non-traditional online instructional method is a substantial change for the healthcare professional educational setting.

Definitions of Key Terms

Basic Science Professor – Are faculty members holding a Master, PhD, MD or DO with no patient interaction.

Clinical Science Professor – Are faculty holding a Master, PhD, MD or DO with a clinical practice. Patient interaction.

Evidence-based Education - educational practice based on the results of well-designed scientific studies indicating which education methods work best.

Flipped Classroom – a pedagogical method that uses asynchronous instruction (video) and independent learning (homework) outside of the classroom and then a return to the classroom for an active learning problem solving activity in small groups (Samuel, 2019).

Online Learning - "Online education is defined as education being delivered in an online environment through the use of the internet for teaching and learning. This includes online learning on the part of the student that is not dependent on their physical or virtual co-location. The teaching content is delivered online and the faculty develop teaching modules that enhance learning interactivity in the synchronous or asynchronous environment." (Singh & Thurman, 2019, p. 302)

Problem-based Learning - student-centered pedagogy in which students learn about a subject through the experience of solving an open-ended problem found in trigger material. Work in groups to solve open-ended problems. Problems are what drives the learning.

Summary

Colleges and universities worldwide have faced manmade disasters, natural disasters such as earthquakes, hurricanes, and forest fires, and pandemics that have resulted in educational disorder. COVID-19 was not the first time the world has seen a pandemic. According to History.com, pandemics date back to 430 B.C. with the plague in Athens during the

Peloponnesian War. It then swept through Libya, Ethiopia, and Egypt. That pandemic was either smallpox or measles and resulted in an estimated death total of 5 million people. One of the more recent pandemics was human immunodeficiency virus (HIV), or acquired immunodeficiency syndrome (AIDS), that was first reported in 1981 and grew to a pandemic as defined by the CDC (https://www.cdc.gov). Though pandemics are not new, governmental interventions and guidance through mandates, like stay at home, are new and different for the American population. The request for social distancing and the stay-at-home order has altered all aspects of human daily life in the United States. It resulted in the inability of people to perform their daily activities such as going to work and school.

The goal of this study was to better understand the educational disruption to the faculty and their challenges within a health sciences center during this pandemic. The research study findings look to offer conclusions and insight for the administrators and faculty members and offer better ways to prepare and respond to future pandemics or natural disasters at the college/university level of healthcare professionals. Providing this type of information to administrators and faculty could offer better options to weather future storms like COVID-19.

CHAPTER 2. REVIEW OF LITERATURE

Introduction

COVID-19 has altered our entire educational community. For students in most schools and colleges in the United States face-to-face learning ended on March 16, 2020 when the WHO declared COVID-19 a pandemic. Traditional means of education for K-12 and post-secondary education programs came to an end for two reasons: pandemic and social distancing requirements (The US Centers for Disease Control and Prevention, 2020). To maintain educational progress for students during the COVID-19 pandemic a switch to distance or online education occurred. Hixon, Burkenmeyer, Barczyk, et al., (2012) reported, many of the United States educators were transitioning their current teaching style from face-to-face to online teaching prior to the pandemic. It is thought that the younger generation, millennials (students born from 1981-1996) would adapt to this method of education faster than the faculty. Millennial students have grown up using technology: computers, tablets, and smartphones and have always had their fingertips on some form of technology. Informational technology has been readily available to answer any questions they wish to ask with just a few clicks of a button. When looking at the faculty transition to online instruction, they had to re-think the way they lectured, use new tools while lecturing (software and web camera) and learn the online instructional culture. This differs from student online transitioning in that the faculty members needed to learn and adapt to the technology.

Theoretical Framework

Constructivist Theory involves the learner to gaining knowledge by actively constructing their own understanding from their experiences (Steffe & Gale, 1995). Constructivism works best when the learner concentrates on thinking and understanding rather than rote memorization.

Constructivism is seeded in both psychological and philosophical theories and shares mutual expectations about comprehension and education (Swan, 2005). Constructivism theory is generally divided into three classifications: Cognitive Constructivism, Social Constructivism, and Radical Constructivism (Doolittle, 1999).

- Cognitive Constructivism is associated and essential with information management and intellect. This allows individuals the ability to decipher reality and reconstruct other natural reality. The natural reality is in the real world.
- Radical Constructivism is opposite of constructivism. According to Doolittle (1999), it feels like it incorporates the three epistemological tenets, knowledge acquisition and inquisitive mind. Larochelle, Bednarz, and Garrison (1998) offer a fourth epistemological tenet and that is social interaction, offering knowledge gained.
- Social Constructivism is somewhere between cognitive and radical constructivism and results in knowledge gained through shared social interaction and verbal conversation (Prawat & Floden, 1994).

Constructivist Theory can be utilized with online education. Constructivist is a theory of comprehension attainment. Huang's (2002) article reported, Piaget (1973), Vygotsky (1978) and Bruner (1996) proposed that constructivist theory provides an opportunity for active learning and constructing new knowledge on their own prior learned experiences. Comprehension is gained when leaners have an active experience. The method of constructivism works with the healthcare professional community, due to students being required to solve real life complex problems.

When designing an online course that relates to healthcare professional learners there needs to be an active learning environment to keep the learners attention. Health professionals are data gatherers. These students need to be able to ask short, pointed questions, to obtain

information needed to best diagnose and treat the patient. Constructivist model offers the learner more control by using a hands-on approach to learning, which leads to confidence in questioning and encourages their natural curiosity. This model encourages communication with others to advance learning. Today's student population interacts with technology every day, and this ability to access information at any-time/any-place allows for direct control of their learning as it relates to constructivist theory in education (Palocsay & Stevens, 2008). Patrons of online learning indicate that constructivist theory can offer a favorable framework for students using an online platform (Bennett & Green, 2001; Dabbagh, 2000; Summers et al., 2005).

Smith, Hayes, and Shea (2017) believe social constructivism theories work well with online and blended methods courses in higher learning. Keating & DeBoor (2018) found that Constructive theory applies well to online learning since it "centers on the ability of the learner to build on previous knowledge, assimilate new knowledge, and interpret the knowledges gained to the surrounding environment" (p. 193). Synchronous online learning requires participation, thinking, and collective collaboration with professor and peers (Kala et al., 2010).

Below are eight pedagogical bullets (Doolittle, 1999) that support and meet the constructivist needs for online courses,

- Learning should take place in genuine and true environment.
- Learning should involve communication among learners and be regulated.
- Information and skills should be practical to the leaner.
- Content and skills should be absorbed within the content of the learners' prior experience.
- Learners need to be evaluated to support future learning.
- Learners should be able to independently regulate, mediate, and be aware of their surroundings.

- Professors or instructors need to offer guidance and mediation of learning.
- Professors or instructors should offer support from multiple sides and its application.

Summers et al. (2005) defined constructivism as "the "co-construction" of knowledge that develops as a product of student-student and student-instructor interaction" (p. 236). The constructivist learning model disseminates from expert to learner. Knowledge is gained when the learner is in control of learning and discovering things on their own. This model provides a foundation for life by developing the concept of lifelong learning (Masic, 2008; Schell & Janicki, 2012).

The Cooperative (aka collaborative) learning model is an offspring of the constructivist model (Schell & Janicki, 2012). Schell and Jenicki believe that the cooperative model works well for online courses at the college level through learner-to-learner dialogue. Furthermore, Leidner and Jarvenpaa (1995) believe that learning occurs as learners implement, authenticate, congeal, and improve their thought through student-to-student conversation and knowledge sharing. They also showed that when learners find the answers through research and self-reflection the retention of knowledge is greater. These are all components of the constructivist model, which allows the learner to have more control of his or her learning, be more creative, use a hands-on approach to learning, and work as team, thus using critical thinking skills to solve complex problems.

History of Medical Education

United States medical school education in the 19th century consisted of one of three basic systems: the apprenticeship system involving hands-on training and observation with community physicians; the proprietary school system where students attended a medical college where they participated in lectures from physicians; or a university system in which students participate in

on-campus lectures and clinical training in a clinical or hospital setting (Beck, 2004). Traditional medical training is staged at the right time and place within the curriculum and has proven over many decades to be an effective method. The university system is remarkably still like medical school education in the 19th century.

In the 20th century, United States medical schools were abundant and lacked uniformity or standards (Finnerty et al., 2010). The American Medical Association hired Dr. Abraham Flexner, an education scholar, to assess the medical educational system in the United States and Canada (Beck, 2004). His report offered educational consistency and premium standards that lead to new and important revisions in medical education (Finnerty et al., 2010). The report promoted standardization of instruction using quality faculty, thus offering a better training environment. Flexner's report recommended changes in medical education, from training affiliations (locations), to student admission (standardization of admission), all the way through clinical training. Flexner's report suggested that medical education should be affiliated with colleges or universities, not as a stand-alone school. Finnerty et al., (2010) discussed Flexner's espoused model on lecture style: "promoted systematic inquiry, experimentation, and real-life application and experience as the fundamental bases of continuous professional learning and development" (p. 350). Finnerty's article offers a clear understanding of how medical education works in its traditional format. He understood that an illnesses can appear differently in different patients, so a "cookbook" method of medical education, which relies on imitation of a model, will not result in a competent physician. From their perspective the Flexnerian model developed a strong knowledge base before moving on to more advanced learning. The Flexner education recommendation has endured multiple reforms over the past 100 years, however, it is still the standard for medical education within the United States.

Since 2015 the medical school, used in this study, has been evolving in their educational methods in five important ways. They have been decreasing the number of hours spent in class lectures. The administration is transitioning from face-to-face lectures to "flipped classroom model" which requires students to complete a reading assignment and possibly view a short lecture prior to face-to-face participation. Face-to-face offers time for the instructor and students to discuss course material, resulting in a meaningful learning exercise. These steps have moved them to a more active learning method.

Self-directed learning is another avenue the southern health sciences center medical school has worked towards with their medical education. The self-directed learning approach gives the opportunity for the students to be responsible for their learning through management and organization of their learning. In addition to the above techniques, the School of Medicine pedagogy has expanded its small group sessions so the students can interact with each other to develop better communication, research, and professionalism skills. Nearly all of the medical school courses have assignments that include a focus on critical thinking skills. Sharples et al. (2017) identify critical thinking as "the ability to think clearly and rationally about what to do or what to believe, is essential for the practice of medicine" (p. 15). Team-based learning methods are another aspect to curricula changes that have been added. This southern medical school's system follows the recommendation of the Association of American Medical Colleges (AAMC), Liaison Committee on Medical Education (LCME), and other national trends across the United States when making changes to their educational methods.

History of Nursing Education

In the 19th century, nursing education began in the United States as a result of the Civil War and the Industrial Revolution (Keating & DeBoor, 2018). United States nursing education

was modeled from a British nurse named Florence Nightingale. This was a hospital-based nursing program. During World War I and II, the importance of professionally trained nurses in caring for wounded soldiers became evident. Nursing programs started to evolve from a hospital-based program to a three year on the job training with physicians teaching courses. The traditional components of a nursing program curriculum include: mission and vision using active learning approaches; philosophy of teaching and learning; critical thinking and evidence based practice (Keating & DeBoor, 2018).

Baccalaureate nursing programs began to thrive between the 1930 through the 1950s (Keating & DeBoor, 2018). The baccalaureate programs require the learner to take 2 years of general college education and basic science courses prior to entering a nursing program. The nursing programs worked on communication, professionalism, and competence skills for graduation. In the 1950's master's and doctoral nursing programs were available and being developed.

History of Physical Therapist Education

Physical therapy education began due to two historical medical events: The poliomyelitis epidemic in 1916 was the first with more than 9000 cases and the second were the consequences of war on the United States citizens (Moffat, 2012). In World War I, there were more than 200,000 soldiers' injuries that need therapy. The United States dictated plans to physiotherapist to meet the needs of injuries obtained in battle (Moffat, 2003). Prior to 1920, "physical therapy" were named "physiotherapist" (Moffat, 2003, Moffat, 2012). The United States physical therapy educational programs were initially hospital-based and then moved to an academic setting due to education and clinical requirements. This educational transition occurred from the 1950's to the late 1970s (Moffat, 2012). In 1978, physical therapy programs progressed to a bachelor degree,

then in 1996 advanced to a master's degree, and finally to a Doctor of Physical Therapy (DPT) in 2001 (Moffat, 2012).

History of Dental Education

The dental profession is one of the oldest healthcare professions dating back to 5000 B.C. (Dreyer, 2000). For the last 150 plus years, dental education in the United States has been through apprenticeship, primarily self-trained and self-declared ability, until World War II. Dental education was showing a need as several the draftees were rejected due to dental defects. The government provided land-grants in 1862 for development of education institutions, paving the way for the development of university-based schools of dentistry (Dreyer, 2000). Fields (1995) reported the Baltimore College of Dental Surgery was launched in the United States in 1840. They reported that Harvard offered the first university program in 1867. The Flexner's Report of 1910, affected dental school curriculum in the same manner as medical schools. The report recommended that schools needed to be affiliated with a university or college and not have the ability to be in a stand-alone position. The main mission of all US dental school is to educate practitioners, conduct research, and offer patient care (Dreyer, 2000). Once all the dental school's required courses were completed, the degree of Doctor of Dental Surgery (D.D.S) was granted to its graduates.

In 2001, Fincham and Shuler (2001), implemented a change in dental education with the launch of problem-based learning (PBL). Barrows (1998) suggested that PBL offer three meaningful educational objectives: the understanding of the quick recall with direct application, self-directed and interpersonal skills, and an appetite for lifelong learning. Thammasitboon, et. al. (2007) conducted a study at Harvard School of Dental Medicine on PBL and reported that

students had increased abilities in “independent learning, communication and cooperation skills” (p. 1080).

Prior to 2006, the dental school pedagogy used in the United States was built on a model that was a half century old. Since the late 1900’s, advances in oral health science and advancements in technology transformed oral healthcare and student training (Pyle, et al., 2006). In 2006 the American Dental Education Association (ADEA) Commission on Change and Innovation in Dental Education (CCI) offered educational strategies to include problem-solving, critical thinking and self-directed learning (Hendricson, et al., 2006) in curriculum. The CCI intention was to improve dental education through educational access, thus improving the overall dental community, in turn improving overall oral health of the general public.

Traditional Teaching Methods for Healthcare Professionals

Traditional teaching of healthcare professionals like allied health (physical therapist, occupational therapist, respiratory therapist), nursing, dental school, medical school, and school of public health was in a face-to-face format and primarily through lectures. In fact, the traditional method of lecturing in medical education survived for 2000 years. The transition from in-class lectures started to an online format started in the 1990’s with the development of personal computers that offered students a new tool to meet their personal educational needs (Guarino et al., 2014; Piemme, 1988). Moving from face-to-face to online training led to a substantial and extreme turning point in the a student’s healthcare education due to the decrease in collective experiences (Ferrel & Ryan, 2020).

COVID-19 pandemic has forced the healthcare professional educational community to seek out alternative methods and strategies for teaching the student population. Before the COVID-19 global quarantine no one thought that faculty would be teaching from home and the

students learning from home. The pandemic forced the higher educational community to be more flexible in offering alternative modes of instruction. The majority of healthcare professional educators are new to the online mode of teaching, and many are apprehensive about teaching in this format. According to Pomerantz and Brooks (2017) prior to the COVID-19 pandemic only 9% of faculty members at universities and colleges preferred online to face-to-face teaching. There are many different terms in the literature that identify and define online teaching. According to Singh and Thurman (2019) research, they identified 46 definitions for "online" learning in 37 resources. Singh and Thurman also identified 19 terms used to define online learning, in their article in *American Journal of Distance Education*, titled "How many ways can we define online learning? A systematic literature review of definitions of online learning (1988-2018)" Table 1 (p.294). The sheer number of online terms can be nerve-wracking to these professors and faculty members trying to transition to online instruction.

Table 1. Terms Used to Define Online Learning.

Terms used to define online learning	# of articles using the term
Online Learning	15
E-Learning	11
Blended-learning	8
Online Education	6
Online Course	6
Distance Education	4
Distance Learning	4
Web-based Learning	3
Computer-assisted Instruction	2
Web-based Training	1
Web-based Education	2
Web-based Instruction	2
Computer-based training	2
Web-enhanced Learning	1
Resource-based Learning	1
E-tutoring	1
Computer-based learning	1
Distributed Learning	1
Computer-assisted learning	1

Online Learning Defined

When talking about online training, it is certainly not a new phenomenon. According to Andrews' and Demps' (2003), quote of Farrell's *Current International and Domestic Status of Online Delivery in Post-Secondary Education* "distance education delivery has evolved from postal mail (correspondence courses), to one-way broadcast and point-to-multipoint broadcast technologies, to today's online asynchronous access" (p. 428). Online training can offer self-paced learning to all types of learners.

Allen and Seamen (2014) state that online education has increased in the United States over the past twenty years, and it is the future of post-secondary education. The worldwide development of the Internet has provided a means of offering online courses for post-secondary education (Li & Irby, 2008; Luyt, 2013; Lyons, 2004).

Singh and Thurman (2019) offer three different definitions with critical elements to define online learning. The definitions are provided in the following bullet points:

- "Online learning is defined as learning experienced through the internet/online computers in a synchronous classroom where students interact with instructors and other students and are not dependent on their physical location for participating in this online learning experience" (p.302).
- "Online learning is defined as learning experienced through internet in an asynchronous environment where students engage with instructors and fellow students at a time of their convenience and do not need to be co-present online or in a physical space" (p.302).
- "Online education is defined as education being delivered in an online environment through the use of the internet for teaching and learning. This includes online learning

> on the part of the student that is not dependent on their physical or virtual co-location. The teaching content is delivered online and the instructor develops teaching modules that enhance learning interactivity in the synchronous or asynchronous environment." (p.302)

For this study, we used Singh and Therman's third definition for online education, "education being delivered in an online environment through the use of the internet for teaching and learning" (Singh & Thurman, 2019, p. 302).

Online learning can be further broken up into the timing of learning material delivery. Synchronous online learning is a traditional style in which a faculty member meets and interacts with their students at a designated time and day of the week. The online version of this teaching method requires the use of video conferencing software such as Zoom, WebEx, or Microsoft Teams. Zoom, WebEx, and Microsoft Teams. All of these user-friendly, video conferencing software is useful for online teaching. Online courses often use additional online software, like a learning management system (LMS), which is designed to deliver and manage course content in a central location; track learners; and assess learner knowledge. Samples of these LMS are displayed in Figure 1. Online teaching requires the student to have a computer, tablet, or smartphone that connects to the Internet at class time and is best supported by a high-speed Internet connection. The class meeting platforms listed above offer students direct, real-time engagement with faculty and fellow students. They also include features such as "chat" and a "raise hand icon" so the students can ask questions in a low-risk manner and allow the faculty to reply verbally or via text. Instructors using video conferencing and LMS with students in a synchronous lecture are intentionally trying to incorporate active learning into their lectures to ensure that students are truly understanding the material.

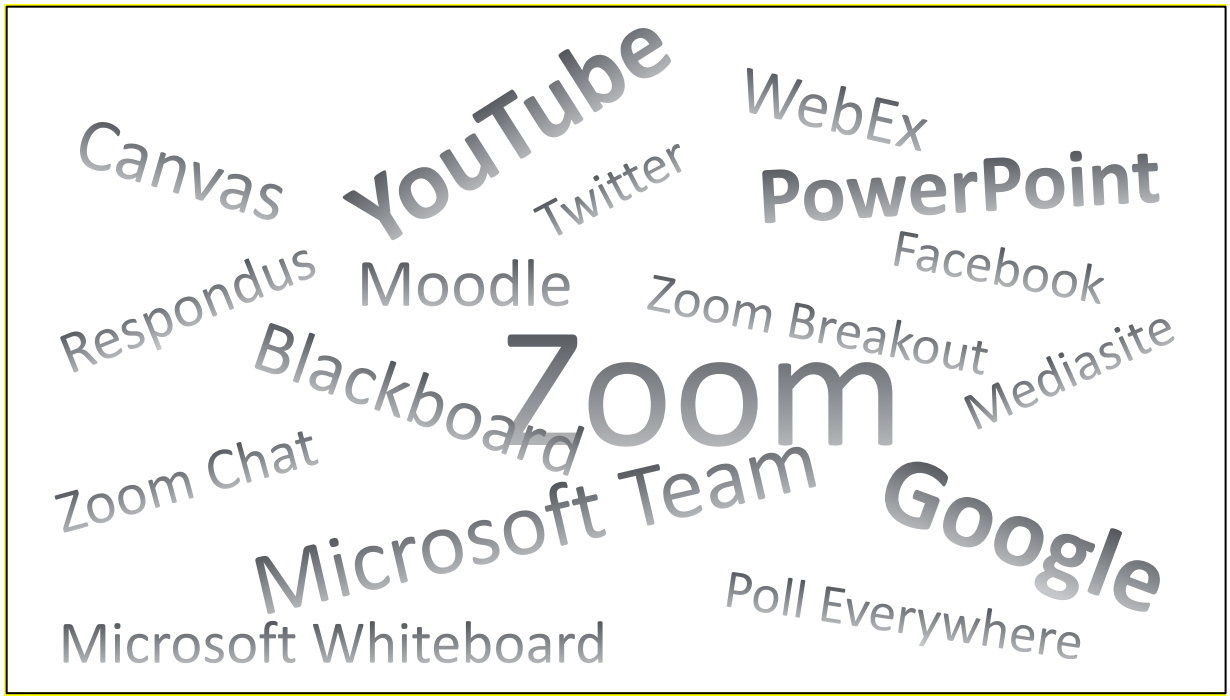


Figure 1. Common learning management system and video conference software used for teaching online

Note: The researcher does not endorse or recommend a product or software.

Online or distance learning method supplies a strength to the instructors through its flexibility, so that it meets the needs of learners. Dhawan (2020) refers to the strength of this online feature as anywhere-anytime instruction for any disaster event. When discussing weaknesses with online instruction, technical challenges with software and equipment resulted in frustration during the transition process (Favale et al., 2020). With opportunities come challenges with online instructions for both the instructor and learner. It is thought that with the implantation of online instruction learners might be encouraged to develop critical thinking and reasoning skills (Dhawan, 2020). Instructors found it challenging to develop courses that addressed the learning objectives as well as pleasing online learners. The Strengths, Weaknesses, Opportunities, and Challenges (SWOC) can be used to offer a step-by-step guide for the healthcare faculty to transition to an online instruction method with minimal challenges. The SWOC model layout can be found in Figure 2.

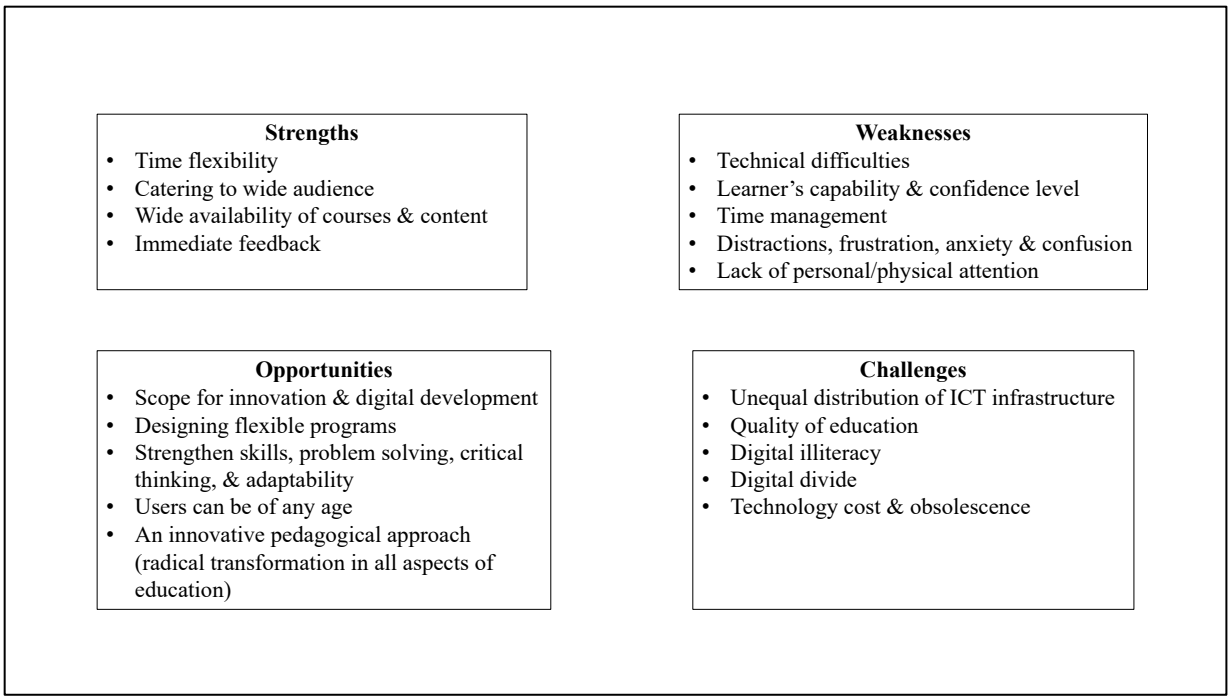


Figure 2. Strengths, Weaknesses, Opportunities, and Challenges with Online Teaching. Adapted from Dhawan (2020).

Asynchronous online learning implies that the learner has the choice to participate in learning at any given time of the day and from any location (Jaggars & Bailey, 2010). Asynchronous instruction includes multiple delivery methods: recorded lectures, recorded PowerPoints, bulletin boards, Moodle, websites, etc. Asynchronous instruction provides the learner open accessibility to the material. The learner is not required to meet at scheduled times to participate. For some courses, asynchronous learning may offer the best advantages for course delivery (Parsad & Lewis, 2009). Both the leaner and faculty have the flexibility to access the course material whenever it is convenient. The leaner has access to the course material 24/7. With Mediasite video technology, the learner has the opportunity to alter the rate (fast or slow) that they watch asynchronously, giving students control of the rate in which they need to learn and master the material. In this way, LMS software offers an open access for learning. Some examples of LMS are Moodle, Blackboard, and TalentLMS. These LMS software packages offer

the instructor the ability to create a secure course website that provides the learner with course learning goals, course assignments, videos, and testing. The southern health sciences center in this research study uses Moodle as their LMS.

Hybrid, or blended online learning, offers both synchronous and asynchronous delivery of the course material. The Bowen, Chingos, Lack and Nygren (2014) study used a hybrid format and reported that the student pass rates were the same as traditional instruction courses. They also found that students spent 18% less time absorbing the course information. Chingos et al. (2017) study on hybrid online learning of college courses also reported that students in traditional and hybrid sections yielded the same academic performance. They also found a higher pass rate in a hybrid science course (biology) (Chingos, et. al. 2017). The asynchronous part in a hybrid online learning course can consist of pre-recorded lectures and assignments, while the synchronous component offers a designated meeting time for faculty and learner interaction either through online or in-person meetings. Video conferencing tools now offer faculty the ability to record a synchronous class or exercise that can later be accessed by those learners not present.

Laboratory courses are far more difficult to deliver online. Most healthcare professional programs take pride in their patient simulation centers for leaning activities. All healthcare professional programs have a substantial number of interactive laboratory sessions (patient simulation) for training learners on things such as patient assessments (physical exam), urethral catheterization, IVs, venipunctures, and intubations. These laboratory courses are a significant part of healthcare professional hands-on training and an important part of a student's competency assessment. To keep the learners' attention, faculty members develop online laboratories that are as interactive as possible (Radcliffe, 2020). It is important to note that "while online training is

not recommended as a sole method of instruction, in the absence of available hands-on training it may be a suitable alternative method" (Winder et al., 2017, p. 739)

Prior to the COVID-19 pandemic, most online healthcare professional education was used for continuing education (CE). All healthcare professions offer some form of online continue education courses online for purpose of professional recertification or re-licensing. The online courses provided a nominal way for healthcare professionals to advance their learning and clinical practice with convenience. Online courses offer comprehensive education that meets the continuing education requirements for all 50 states in each profession. Each healthcare professional is required to participate in lifelong learning that advances his or her own professional career while improving patient safety. The U.S. Education System states that CE differs from academic credits in the following ways: CE does not offer any academic credit and is designed to have measurable, supervised sessions with a beginning and a measurable end point (https://www2.ed.gov). CE helps the healthcare professional maintain their professional license. Each professional organization requires a set number of CEs per year to maintain licenses in healthcare professions. CE courses use several means to deliver the course content: video lectures, reading material, online conferences, and quizzes. These CE programs offer the convivence of working at one's own pace and timeline.

Challenges with Online Teaching

Healthcare professional education research reports the biggest challenge to teaching online is time management, technology utilization, student evaluation, communications and minimal student faculty interaction (Esani, 2010; Rajab et al., 2020). The online pedagogy needs to be harmonious with the school or program mission, targeted student body, organizational structure, and learner's learning objectives of the face-to-face courses (Keating & DeBoor,

2018). Online formats must meet the same learning objectives and offer the same content as traditional face-to-face classroom learning. Converting a face-to-face course into an online one can be difficult for healthcare professional faculty, especially for the those that are not familiar with LMS, technology, and techniques of engaging students in online instruction. Proper training needs to be offered to the faculty as the transition from a traditional lecture style of face-to-face to an online environment is not just a simple matter of copy and paste (Koehler et al., 2002). Faculty must think about which approach to online learning and technology along with their course activities, will keep the learners engaged in learning the material. Here are a few online engagement tips: keep it simple, keep it interesting by being creative, know and leverage the technology in which you are using, and design a learning model that will keep the learner engaged (Dong et al., 2021).

Testing and Assessment

Assessing student knowledge of the subject or a skill is one of the hurdles educators faced when moving a traditional classroom-based course to online. Learners are often in an unsupervised location with total access to the world wide web. This is daunting when it comes to testing the learners knowledge (Radcliffe et al., 2020). The abrupt changes from on-campus and in-person testing to off-campus testing due to COVID-19 gave instructors little time to determine their best options for assessment.

There are ways to ensure that students are supervised and less likely to cheat while taking exams. For instance, some courses require students to pay for ProctorU, a service that monitors students while they are engaged in taking an exam. Online testing will now and in the future, continue to pose a challenge to online courses.

Clarity from the administration on campus status and online format is critically important to the faculty and students. When the administration offers uncertainty, it adds to the challenges causing confusion to the overwhelmed and time constraint faculty. The COVID-19 pandemic offered a fast-track look into the future of virtual classrooms for universities and colleges, and also raised many questions. Will this makeshift transition brought on by COVID-19 influence on higher education online courses? Is an online education for healthcare professional as good as a traditional education? What are the long-term effects of teaching these healthcare professional students using an online method?

Communication with Students

Communication with online courses is a main challenge. An instructor can communicate with students in a number of ways: email, text, social media, Zoom or Microsoft Teams. Evans et al. (2016) noted in their study that email offered the strongest form of interacting with their student body. Other methods used to communicate with students are the LMS and set office hours.

Online Lecture

Online course lecture length has an effect on students. Even, Baker, and Dee (2016) researched the Mass Open Online Course (MOOC) instruction and found that lectures should be concise and to the point. They summed up their research with two recommendations: shorter videos (5-20 minutes) are known to be best practice at keeping the students engaged, and the first course video of the week should include all the important information for that week. Even et al. also reported they did not evaluate the time duration that students watched nor the speed in which they watched video lectures. However, their study did not show any relationship to longer video lectures and student engagement.

Even et al. (2016) also suggested that students were influenced to watch asynchronous lecture videos with particular titles and time published. They suggested having video lectures titles with words as “intro,” “overview,” and “welcome” were watched more often than these titles, “review,” “conclusion,” and “optional.” Instructors can implement these video lecture recommendations to better engage online students.

Online Learning and Outcomes

Over the past two decades, online education has become a standard among postsecondary students. In 2009 the U.S. Department of Education meta-analysis results: “Students in online conditions performed moderately better, on average than those learning the same material through traditional face-to-face instruction” (Means et al., 2010, p. xiv). Several researchers have suggested that students who take part in online courses receive the same knowledge gain as those in face-to-face courses (Jaggars & Bailey, 2010; Jahng et al., 2007; Phipps et al., 1999; Sitzmann et al., 2006; Zhao et al., 2005). Other research has stated full online courses in the higher educational community are considered conflicting due to a considerable number of research studies with mixed results (Jaggars & Bailey, 2010). It has been documented that online students are unlikely to fulfill their course requirements to completion due to daily life inconveniences (Beatty-Gueter, 2003; Carr, 2000). Research has found that online students have a higher percentage of withdrawal rates than those found in face-to-face courses (Boston & Ice, 2011; Morris & Finnegan, 2008; Tyler-Smith, 2006). A minimal amount of research exists specifically for healthcare professional students taking online courses, however the information that is offered suggests online courses may hinder student’s academic performance (Wladis et al., 2015). Wladis et al. study analyzed online Science, Technology, Engineering and Mathematics (STEM) courses and found that females yielded a statistical difference with online course

delivery. They academically performed better. A result of a meta-analysis of online courses verses face-to-face courses indicated neither a positive nor negative effect on academic performance assessed by course grades (Bernard et al., 2004; Jaggars, 2011). Morris et al (2002) stated that the development of online instruction requires additional time, up to 50% as compared to face-to-face instruction. A reference to Gaud (1999) in their article stated that faculty reported that an average online course burns up 22.5 additional hours per course per week. Bender et. al study reported similar findings. The faculty time commitment was substantially higher for online course delivery than in face-to-face. Morris, et al., (2002) suggested that the added hours for online preparation could take away time from scholarly activities.

Summary

The review of the literature demonstrated that online or distance learning is increasingly important within the healthcare educational college setting. The traditional face-to-face instructional method for healthcare professional faculty and students has been challenged by the COVID-19 pandemic. Healthcare faculty are being required to change a traditional lecture format that has been around for hundreds of years, to an online format in a very short time. Faculty decided the best methods (synchronous, asynchronous, or hybrid) of online instruction to offer healthcare professional students. Once the faculty determined the best method, proper training may have been advantageous.

In order to help faculty transition from face-to-face to online instruction, they should understand the terminology used in online courses, use of technology (LMS and video conference software), and best methods to assess student academic performance. The review of literature discussed the challenges with online instruction. When offering online courses, the

faculty was presented with the following challenges: student communication, decreased faculty student interaction, assessment, and testing.

Based on the review of the literature, there is a gap in healthcare professional faculty selecting online or distance instruction for their students thus justifying additional research opportunities. To understand how faculty determined their online instruction method and how administration supported them, a mixed method study approach focused on the issue of selecting instructional methods could help fill the gap in the literature.

CHAPTER 3. METHODOLOGY

Introduction

The impact of the COVID-19 pandemic on healthcare professional education schools has been extraordinary. It has profoundly changed how healthcare professionals are educated at present and perhaps far into the future (Rose, 2020). COVID-19 presents challenges at all healthcare professional levels of education, from student lectures to clinical rotations, as well as concerns for patient and student safety. The abrupt shift in educational pedagogy is worthy of research as these pedagogical decisions and their resulting outcomes are important both to faculty members, students, and patients.

This research study examines the pedagogical decisions and changes made by professional faculty members during the abrupt movement in March 2020 from traditional face-to-face courses to distance learning due to the onset of the COVID-19 pandemic. Among the elements examined in this study are the instructional and assessment methods used by healthcare faculty members and how they chose to instruct students. This study also examines how these instructional methods shifted from spring 2020 to the fall 2020 semester as the faculty became more familiar to with teaching online.

Research Questions

The main research goal of this study was to investigate key decisions made by healthcare faculty to meet the required online teaching methods and assessment of healthcare professional students brought on by the COVID-19 pandemic. To achieve these research goals the following questions were asked:

1. Online Method(s)
    A. What was the most common online (non-traditional) teaching method(s) used in the health professional schools during the initial transition in March 2020 that was brought on by the COVID-19 pandemic?
    B. What method(s) carried over to the Fall 2020 semester?
2. Online Selection
    A. How did your health professional school/program determine the best online (non-traditional) method to instruct learners?
    B. What modifications did the instructors make to the pedagogy to move their courses online?
    C. How did the administration support these method(s)?
3. What educational challenges did the health sciences center faculty overcome when transitioning from traditional face-to-face instruction to online instruction during the COVID-19 pandemic?

Research Design

An explanatory sequential mixed methods research design was selected for this study (Creswell & Plano Clark, 2018). This design offers a deeper understanding into the healthcare faculty's pedagogical choice and the administrative support (faculty development) for transitioning to an online platform. The study also explored challenges with adapting to new technology. The explanatory sequential mixed method design was used, as the quantitative portion of the study received priority over the qualitative portion of the study. Quantitative and qualitative data assessments were both used in this study to provide adequate details for this research project. In particular, a pragmatic lens was used to ground the logic of this study,

offering a more robust support to the findings. Using mixed methods research offers the participants a greater voice than using one method, thus allowing the researcher to obtain different information about particular occurrences (Giddings & Grant, 2006). Appendix J provided is a diagram of this studies explanatory sequential mixed method design.

In this study the quantitative component was composed of survey questions. The respondents answered questions via an online survey using Qualtrics software licensed to the university. The survey was composed of eighteen Likert-scale questions, twenty multiple choice questions, and respondents were asked to answer six open-ended questions. For the qualitative portion of the study, interviews were conducted. The interviewee's selected were six respondents out of 19 that responded "yes" to the last question in the Qualtrics survey. They were randomly selected from that pool of volunteers that indicated willingness to participate in an interview. The semi-structured interview took 30 to 45-minute to complete and was done in-person.

Population and Sample Selection

The population of this study was either preclinical (nonclinical and basic scientists) or clinical faculty members employed by a health sciences system. The health sciences system (HSS) is the southern United States. The faculty members are affiliated with one or more (i.e., they hold dual appointments) of the six healthcare professional schools within this health care system: Allied Health Professional, Dental School, College of Graduate Studies, Nursing School, Medical School, and School of Public Health. The total number of preclinical and clinical faculty members is 500-600 individuals. These faculty members educate nearly 3000 future healthcare professional undergraduate and graduate students per academic year. All preclinical and clinical faculty were invited to participate in this research project. A formal email letter (Appendix A) containing a hyperlink to the survey was sent to the dean of each healthcare professional school

asking them to forward the email invitation to their master faculty listserv (Table 2). The email invited them to participate in this voluntary and anonymous survey.

Table 2. Participants of the Survey

School	Number of Faculty Members (n)
Dental School	98
School of Allied Health*	46
School of Graduate Studies*	10
School of Medicine*	230
School of Nursing*	68
School of Public Health	48

**Note*: Several faculty members have dual appointment.

Preclinical faculty members are professors or instructors who teach healthcare professional core courses prior to students entering the clinical (patient) setting. Core courses vary based on the curriculum used at each health professional school. These faculty teach the following core courses: anatomy, biochemistry, genetics, human behavior and development, pulmonary, physiology, pharmacology, and pathophysiology. The preclinical faculty were involved in discussing, developing, and transitioning the traditional lecture-based instruction to an online format in the Spring and Fall semester of 2020.

Clinical faculty members are clinicians (MD, DDS, RN, DPT, RRT, etc.) that work in the healthcare setting with the patient population. Their core responsibility is to work directly with the students and teach them clinical reasoning. These faculty members also teach the students how to interact with the patient population, perform patient assessments and clinical procedures. The health sciences system administration, on March 16, 2020 suspended all of the student clinical rotations for several weeks once COVID-19 was declared a pandemic. These clinical faculty members needed to manage patient care while developing alternative clinical interactions (curriculum) for the healthcare student clinical rotations. Telemedicine provided an instructional method and offered the students an opportunity to learn and practice medicine in a safe and

"appropriately distanced" environment. It has always been challenging to create online procedural and patient oriented interactive curriculum for healthcare professional faculty. Due to the COVID-19 pandemic, this challenge has pushed clinical faculty members beyond their comfort levels.

The southern health science system (HSS) of this study employs over 500 faculty members, classified as either non-clinical (basic scientist) or clinical faculty (patient oriented). All of the HSS faculty members that met the eligible age (>18 and <80 yrs.) requirement were asked to participate in the quantitative portion of the study. For the quantitative portion of the study, a response rate of 50% was desired. This response rate of 50% meant a total of 250 faculty members out of 500 was preferable. The higher the response rate, the higher the potential to offer a more meaningful conclusion.

While all HSS faculty were invited to take part in the qualitative portion of the study, only six HSS faculty were selected from volunteers willing to take part in the qualitative part of the study. The six HSS faculty members were randomly selected from the list of volunteers to be interviewed. These faculty members were interviewed using a semi-structured format. The desired response rate for the qualitative part of the study was six out of six, 100%. Six participants for the interview were the quantity recommended by all committee members.

Instrumentation

Survey – Quantitative aspect

The survey instrument (Appendix G) consisted of a total of 31 questions which included demographic questions, multiple choice, simple closed-ended and multi-selection questions, and several open-ended questions. The demographic part of the instrument consisted of check boxes for fixed responses. Survey questions response selections included optional responses of single-

choice, multiple-choice, and a free text section to expand responses. The questions in the survey were grouped in the following sections: demographic, retrospective, or prospective questions. The total number of questions in the survey was 31 (Appendix G). There were 26 closed-ended and five open-ended questions. The original survey was developed and validated by Babson Survey Research Group. An email was sent to Dr. Jeffery Seaman, co-director of the Babson Survey Research Group, requesting permission to review and use the survey he authored and deployed. Dr. Jeffery Seaman granted permission for the use of his survey in this study. The original survey results were published in *Inside Higher Ed*, "How Teaching Changed in the (Forced) Shift to Remote Learning" by Doug Lederman on April 22, 2020. The survey examined the move to remote courses due to COVID-19 in the Spring 2020 for United States Colleges. Dr. Seaman was very receptive in offering permission to use their survey (Appendix K). He offered to send additional surveys to help with better understanding of pedagogical impact of COVID-19 in a health science system community. I have received several validated surveys used in the United States and Canadian at this time from Dr. Seaman (Johnson, 2020; Johnson, et al, 2020). A committee member and I worked on determining the best questions to implement in the HSS survey.

The original survey instruments were pilot-tested and validated by Babson Survey Research Group. The study survey instrument was assessed for readability. After assessing the survey, it was created in Qualtrics and tested. Qualtrics was setup to decline multiple submissions for the same email or IP address for the purpose of eliminating duplicate submissions. No incentive was offered to the participants who chose to participate in the survey. The survey took about 15 minutes for the participants to complete and was distributed via an email containing a hyperlink of the six school's faculty listservs.

The survey was deployed via email to all health science system preclinical and clinical faculty/instructors in January of 2021 using Qualtrics. The study data was collected and stored on a secure server. Demographic data was the only possible identifiable information being collected associated with participants. A limited number of members, specifically the researcher and committee chair, had access to the research data. These data security measures meet the university "Security of Data" policy requirements.

A meeting was requested with all six healthcare professional school deans. The fifteen-minute meeting gave the researcher an opportunity to review the research study plan with each dean in order to gain their approval and assistance with obtaining faculty participation. Each dean had an office staff member distribute the cover letter that summarized the research, requested participation and included the survey link (Appendix B) via their listserv to their faculty in January 2021. The email provided information on the purpose of the study, participant expectations, time requirement, risk potential, confidentiality and anonymity, identity of principal investigator, and institutional review board contact information. By clicking on the link and continuing the survey participants indicated that "I have read the description of the study" and "I agree to participate in this study" (Appendix C). Two weeks after the first email, the faculty received a follow-up email asking for them to complete the survey if they had not done so already. A sample of the cover letter is in Appendix D.

Survey and Interview - qualitative aspect

Within the survey instrument were six open-ended questions for participants to answer. The six open-ended questions (Appendix H) offered participants the opportunity to describe events and experiences in their own words to the researcher. The qualitative aspect of this research design offered a meaningful insight to instructors' feelings and beliefs regarding their

pedagogical choices during the COVID-19 pandemic. The last question in the survey asked the participants if they were interested in taking part in an interview discussing the educational changes made within their school due to the pandemic.

The interview was a secondary portion of this mixed method study. The names of participants that provided contact information were written on pieces of paper and placed in a cup. Six names were randomly selected from the cup. An email was sent out to the those six HSS faculty members asking them to take part in a 30 to 45-minute interview. Once the participants confirmed their willingness to participate, the interview was scheduled. If the faculty member failed to respond to the email or failed to show up for the interview, another name was randomly selected from the remaining pool of interested participants.

The interview was designed to follow a semi-structured design. The semi-structured interview consisted of 31 open-ended questions (Appendix G), asking the participant to reflect on their experience transitioning from traditional face-to-face (F2F) lecture to online teaching. Prior to initiating the interview, the participants were given an overview of the interview format. After the overview, the participants were asked to read over the IRB-approved consent form (Appendix F) and to sign the form if they agreed to participate. After signing the consent form, they were asked to select their own pseudonyms.

A one-on-one, semi-structured interview was conducted with each participant using the recommended social distancing protocol. Each interview lasted approximately 30 to 45 minutes. The interviews were digitally voice recorded and then transcribed later for analysis. The semi-structured interview questions focused on the following areas:

- Demographics: Age, gender, ethnicity, profession, and year teaching.

- Retrospective: Method of teaching prior to pandemic, experience with online instruction, instruction selection method, learned events, and testing methods.
- Professional Development: Offered by institution, thoughts about online instruction, administration communication, and method of support training.
- Institutional Preparedness: Fall 2020 instructional preparedness, faculty development offered, and it support.
- Teaching Online: Instructional offered, communication and connection with students, and thoughts about instruction offered.
- Future Education: Health care professional training in the future and what would they do differently.

The interviews were held in a conference room located in the HSS building. The conference room has a large table in the center and fourteen comfortable chairs around it. Two of the walls have dry erase boards. The other two walls have windows, one for natural light and the a view of the hall. This space is usually used for small group teaching. The conference table and chairs were wiped down prior to and after each interview. The Center for Disease Control and Prevention (CDC) recommended a social distancing protocol and IRB-approved COVID-19 mitigation strategies were maintained. During the interview all participants wore face coverings and were a minimum of six feet away from the interviewer. Throughout each interview the researcher checked for regularity in interview responses to help increase trustworthiness of the analysis (Lincoln & Guba, 1985).

Data Collection

Once this research study topic of COVID-19 was determined, a meeting with the Vice Chancellor (VC) of Academic Affairs for the HSS was requested. Permission was requested to survey the faculty members within all six schools in the HSS. The VC was interested and supportive in studying the impact of COVID-19 within the health science system. Within the meeting, we discussed the next steps needed to do a faculty survey of the health science community. The VC recommended meeting in person with all health professional school deans to seek permission and support. It was also recommended for the researcher to meet with the Executive Director of the Office of Research Services, in the university Internal Review Board (IRB), to review the study materials and the requirements for implementation.

IRB application was submitted through *GeauxGrants*. The application was completed and submitted for exempted review. When submitting the application, the primary investigator on the study was the committee chair as required by LSU IRB. The study received approval on December 16, 2020, by the LSU IRB (IRBAM-20-0733). Since this study was not being conducted on the LSU main campus, a second IRB approval was needed. The second IRB application was completed for HSS External Reliance IRB and submitted for approval. The External Reliance IRB (IRB #1567) approval was granted on January 13, 2021 (Appendix I).

Survey

Table 3 offers a detailed summary of the timeline of this research study. This research proposal was given to my committee chair for approval in early October 2020. On November 9, 2020 the research study proposal was presented to all committee members and received approval with committee edits. The IRB application was submitted to multiple sites and received final approval. The Qualtrics survey kicked off on January 14, 2021 and ended February 12, 2021.

The HSS participates received the initial invitational email on January 14, 2021 (Appendix B) and a follow-up email (Appendix D) on January 28, 2021. The survey closed on February 12, 2021.

Once the survey data collection was completed, the survey was closed, and the information was downloaded and exported to a spreadsheet. The quantitative part of the research data spreadsheet was cleaned of missing and irrelevant entries and imported into SPSS program for analysis. The following descriptive analyses were preformed: means, trends, frequency counts, and patterns within the data using cross-tabulations. The open-ended questions within the survey were separated from the quantitative data and then imported into ATLAS.ti software for analysis. These open-ended questions were then codes and analyzed for themes.

Table 3. Study Timeline

<table>
<tr><th>Month</th><th>1st Week</th><th>2nd Week</th><th>3rd Week</th><th>4th Week</th></tr>
<tr><td>October 2020</td><td colspan="3">Work with Committee Chair – Chapter 1-3</td><td>Send Chapters 1-3 to Committee</td></tr>
<tr><td>November 2020</td><td>Dissertation Proposal (Nov. 9th at 1-3pm)</td><td>Committee's Edits (Nov. 10th – 15th)</td><td>Submit: IRB Application (Nov. 15th)</td><td>Meet with School Deans – Approval</td></tr>
<tr><td>January 2021</td><td></td><td>Deploy Survey 1st email: Initial Invite (Jan. 14st)</td><td></td><td>Deploy 2nd email (Jan. 28th) and Semi- Structured Interviews</td></tr>
<tr><td>February 2021</td><td colspan="2">End Study – February 12th</td><td colspan="2">Download and Clean up Data / Transcribe Interviews / Start Data Analysis</td></tr>
<tr><td>March 2021</td><td colspan="2">Data Analysis</td><td colspan="2">Chapter 4 – Findings</td></tr>
<tr><td>April 2021</td><td colspan="4">Chapter 5 - Discussion, Implications, and Recommendations</td></tr>
<tr><td>May 2021</td><td></td><td colspan="3">Work with Committee Chair - Chapters 4-5</td></tr>
<tr><td rowspan="3">June 2021</td><td></td><td colspan="2">Week of 14th - Schedule an appointment with Editors.</td><td></td></tr>
<tr><td>Copy of completed dissertation to chair – June 7th</td><td colspan="2">Send Dissertation to Committee Members (2 weeks prior to defense) – June 14th</td><td></td></tr>
<tr><td colspan="3">Final Edits for Graduate Office</td><td>Dissertation Defense – June 28th</td></tr>
</table>

Interviews – semi-structured

Prior to the interviews conducted for this study in Spring 2021, the survey was administered to the HSS faculty. The HSS faculty who completed this survey served as the study population invited to participate in qualitative interviews. The week of January 28, 2021, the semi-structured interviews were started. The interviewees were randomly selected from a pool of volunteers that answered "yes" to participating in an interview. The randomly selected interviewees were then emailed a summary of the interview and asked to confirm their willingness to participate. Of the 18 participants, six indicated "yes" to being willing to participate and were randomly selected to be interviewed. Once the researcher received an email confirmation, the participant's interviews was scheduled and held in an HSS conference room. The last interview was completed on February 26, 2021. After each recorded interview, the audio recordings were transcribed using Otter.ai software and then checked against the recording for accuracy. The transcription from the interviews were uploaded into ATLAS.ti software for analysis. Transcripts were checked for consistency in responses to verify trustworthiness of the analysis (Lincoln & Guba, 1985). The following qualitative analyses were compiled, looking for codes and themes within the faculty interviews. More information on the method used in the analyses will be discussed next.

Researcher Positionality

In qualitative research it is important for the researcher to discuss their own personal beliefs, biases, and experiences prior to conducting the study to encourage trustworthiness (Creswell, 2014). The position of the research in the qualitative process is vital to data collection for the qualitative portion of the mixed method study (Lincoln & Gaba, 1985). It is important that the researcher acknowledge their own bias, viewpoint through the data collection process

and limitations. When working in qualitative research, it is assumed that the researcher's own beliefs, values, and biases can alter the studies outcome (Merriam, 1998). For this research study, it is important that I offer full disclosure.

My current position within the HSS is a faculty member at the research site. My primary position focuses on teaching hands-on procedures and assessment skills to future physicians. I have nineteen years of experience in working in HSS teaching undergraduate medical students and work closely with faculty members and students throughout the HSS.

As a faculty member, my methodological approach may offer some level of bias. Being one of the faculty members personally experiencing the impact of COVID-19 on the HSS educational system that may constitute some form of bias. However, as noted by Locke, et al. (1987) "as the researcher contributes in a research setting, they can yield a positive and useful outlook." I believe my position and personal experiences offer an enhanced understanding to the massive challenges faced by the HSS faculty throughout the pandemic.

Data Analysis

Quantitative analysis

The quantitative part of the survey data analysis was done using SPSS. The quantitative analysis looked for trends, frequency counts, and patterns within the data. The data was also evaluated using cross tabulation, a statistical analysis that looks for relationships between variables in the six HSS schools, such as gender, institutional affiliation, etc. Table 4 offers a summary of each of the components of the survey, the number of questions in each component, and indicates if the elements were quantitative or qualitative. Table 4 provides a layout of how each research questions corresponded to identify data and answer the study's questions.

Table 4. Survey Summary

No.	Survey Question	Question Type	Analysis	RQ
Demographics Information				
1-8	Gender, Ethnicity/Race, Institutional Affiliation, Program, Faculty Position, Terminal Degree, Experience, Teaching at a University Level	Closed-ended: Check box	Quantitative Descriptive Cross Tabulation	
Retrospective: When answering the next few questions, please refer back to your mindset in March of 2020, when you had to acutely move your face-to-face lecture to a remote instructional format.				
9	The pandemic is having a profound impact…	Closed-ended: Check box	Quantitative Descriptive	3
	Please explain why you gave the rating that your provided.	Open-ended	Qualitative: code, themes	
10	What was your experience with online…	Closed-ended: Check box	Quantitative Descriptive	
11	What online instructional techniques…			
12	Did you teach some or all of your courses…			
Professional Development: When answering the next few questions, please refer back to March of 2020, what form of professional development did your institution offer for teaching online courses.				
13	My institution has recommended…	Closed-ended: Check box	Quantitative Descriptive	2c
14	What type of professional development…			
15	How useful or effective were these professional…			
16	Which format would you prefer…			
17	I felt prepared to teach partially or fully online this Fall 2020…			
18	What would help you to feel more prepared?	Open-ended	Qualitative: code, themes	
Institutional Preparedness				
19	To what extent are you concerned about your…	Closed-ended: Check box	Quantitative Descriptive	3
	Please explain why you are concerned about your institution's…	Open-ended	Qualitative: code, themes	
20	Does your institution provide or support…	Closed-ended: Check box	Quantitative Descriptive	2c
Teaching Online				
21	How did you communicate with your students…	Closed-ended: Check box	Quantitative Descriptive	3
22	What is your current situation?			1b
23	What techniques are you using in the classes…			1a

table cont'd.

No.	Survey Question	Question Type	Analysis	RQ
24	How did your school/program select the online…	Closed-ended: Check box		2a
25	What modifications did you make to your…			2b
26	In this rapidly evolving situation please let us…	Open-ended	Qualitative: code, themes	
27	What is the value of partnerships with the…	Closed-ended: Check box	Quantitative Descriptive	
Future Education				
28	Considering the current pandemic are you…	Closed-ended: Check box	Quantitative Descriptive	3
29	In a few sentences, please describe your…	Open-ended	Qualitative: code, themes	
30	Looking in your own crystal ball, what…			

Note: RQ – Refers to this study's research questions. For full survey questions, please refer to Appendix G.

Qualitative Analysis

This qualitative section of the research study may offer the researcher an in-depth understanding of the faculty thought processes, thus offering a better understanding of faculty issues and concerns. When considering qualitative data analysis, the analysis starts when the collection process starts, whereas quantitative analysis does not start until all the data is collected (Creswell, 2014). For the qualitative part of the survey analysis, ATLAS.ti software was used to identify codes and categorize those that could reveal dominant themes. Qualitative researchers analyze the data while collecting and identifying themes (Creswell, 2014). The interview part of the study was recorded and transcribed using Otter.ai software. Once the transcriptions were complete, the data was imported into ATLAS.ti software. During the transcription process from both the interviews and survey short notes were taken to be used at the end when formulating the final report narrative. The researcher used interpretivist analysis to identify the presence of certain words and themes with a given text. The researcher relied on the participants view of the pandemic to offer an in-depth understanding into the transitioning from a face-to-face instruction to an online method.

Once the data was uploaded into the software, the coding process began with the open-coding approach. Data was arranged by general topic area - online instruction, student connection, and faculty development - then each topic was assessed to find common themes. This part of the process provided the researcher time to reflect on interview and survey data for complete meaning and an understanding of what the participants were experiencing. An initial list of codes was created by the researcher, revised, then recoded again (Creswell, 2014). The preliminary codebook was developed with definitions. After multiple reviews, the codebook was finalized (Appendix I).

Limitations of Research

This study was conducted at a single, southern health sciences system site. While the faculty population at this health sciences center was diverse within health professions (six schools) and considered a representative of many types of faculty members nationally, it is possible that institutional factors could result in bias. Caution needs to be exercised when drawing conclusions about the results in all health science system education populations. Another limitation that needs to be considered is retrospective questioning on faculty members' thoughts from six to nine months ago. This duration of time could affect the results. Each faculty members situation should be considered, too. Did they have financial hardship? Did they lose one or more family members due the COVID-19 pandemic? Results should be evaluated for trends and not absolute results.

Not all faculty members offer the same perspective to online course instruction. Faculty knowledge of online instruction could affect the results. Future research that investigates some of the factors found in the survey could be essential for better understanding of these findings.

Another potential limitation of this study is the use of convenience sampling. As convenience sampling involves non-probability sampling and non-random choice of participants which could yield targeting bias. As in all surveys, participation response rate could be low. The healthcare professional faculty members may not wish to take part in the study due to time limitations and fear of data breach.

Summary

The aim of this study was to determine the impact of the COVID-19 pandemic, with online instruction at a Health Science System. COVID-19 resulted in the physical closing of schools and universities and required healthcare professional faculty to deliver high quality education in an online format. Healthcare professional schools traditionally held face-to-face lectures and clinical student rotations with human patients. Due to COVID-19, these colleges and universities have moved to an online format for lectures and have shut down clinical rotations. Switching to distance teaching allowed healthcare professional schools to circumvent health challenges brought on by COVID-19. Faculty face-to-face lectures were quickly changed to an online format using various platforms such as Zoom, which has been proven to offer a high level of educational engagement with healthcare professionals (Kay & Pasarica, 2019).

Online education methods presented challenges to students and faculty. Some challenges included finding a location that was quiet for Zoom lectures and test taking and personal time management in the home setting (Strielkowski, 2020). The administration offered some faculty training, with goals of helping them transition face-to-face lectures to an online delivery method. Only a same number of faculty chose to participate in this online training. In addition to these challenges, there is still a large amount of uncertainty about when education will be back to a face-to-face setting and what the future of healthcare professional education will look like.

Mid-March 2020, all United States healthcare professional student's labs and clinical rotations stopped. When training healthcare professional students, they have to "develop interpersonal skills and confidence to speak to patients, discuss patient care with colleagues, and present academic work" (Raymond-Hayling, 2020, par. 3). The COVID-19 pandemic has impacted this type of healthcare clinical professional training by causing clinical lab training sessions to move to a virtual method.

The goal of the healthcare professional faculty was to offer the same learning experience to the online students as they did with face-to-face lectures offered prior to the pandemic. The faculty did their best with selecting an online instructional method that offered the same learning environment for these future healthcare professional students. One of the final evaluations of the faculty online instruction offered, will be in the clinical setting and how these students apply their critical thinking skills in the patient environment.

CHAPTER 4. FINDINGS

Introduction

The purpose of this mixed method case study was to explore a Health Science System (six schools) and their faculty adaptation methods to an online teaching environment for health professional students due to a the COVID-19 pandemic. This descriptive research study aims to identify the methods that the faculty used to transition from traditional face-to-face instruction to an online format. The research protocol reflects a sequential mixed method design (Appendix J) to help guide this research study and answer these questions:

1. Online Method(s)
   A. What was the most common online (non-traditional) teaching method(s) used in the health professional schools during the initial transition in March 2020 that was brought on by the COVID-19 pandemic?
   B. What method(s) carried over to the Fall 2020 semester?
2. Online Selection
   A. How did your health professional school/program determine the best online (non-traditional) method to instruct learners?
   B. What modifications did the instructors make to the pedagogy to move their courses online?
   C. How did the administration support these method(s)?
3. What educational challenges did the health sciences center faculty overcome when transitioning from traditional face-to-face instruction to online instruction during the COVID-19 pandemic?

To answer these questions, data was gathered through a survey, and then semi-structured one-on-one interviews were utilized with six faculty members in the Health Science System (HSS). The survey process was initiated on January 14, 2021, and the interviews started on January 28, 2021. The survey was constructed in Qualtrics, and a self-generated link was provided to the participants via the invite and in a follow up email. The interviewees were randomly selected from the small pool of participants that selected "yes" to taking part in a semi-structured interview. The interviews were transcribed and coded to develop concepts and ideas and then organized and grouped into themes.

Participants

Participants that responded to the survey were faculty members of a HSS from the southeastern part of the United States. The survey was emailed to all of the HSS faculty members which totals approximately 500. The Qualtrics survey had a total of 220 responses. Three of the respondents selected to not participate in the survey, thus only 217 initiated the survey. However, only a total of 161 participants completed the entire survey, thus the completed response rate was 32%.

The largest number of survey responses were from the HSS School of Medicine at 116 (n=230), which equals a response rate of 50%. The Dental School followed with 33 (n=98) and a response rate of 34%. The School Allied Health had 23 faculty survey responses resulting in a response rate of 50%. Public Health faculty totaled 17 (n=46) responses, yielding a 35% response rate. The School of Nursing also had 17 (n=68) faculty responses to the survey, resulting in a response rate of 25%.

To provide additional context on the participants, the following demographic information is presented: gender, ethnicity/race, duration of teaching, and program affiliation. The demographic data with detailed breakdown can be found in the following Tables: 5-8.

Data Summary

The survey had 220 participants access Qualtrics. The majority of this southern Health Sciences System faculty members was composed of 58% females (122), while the male faculty members were at 42% (87). However, only a total of 209 participants identified gender as either female or male. The School of Medicine had the largest number of female (63) participants and the Dental school had the largest number of male (20) participants. Table 5 offers a detail breakdown on participants gender.

Table 5. Demographic Information: Gender and School Affiliation

School	Female	Male	Total
Dental School	13	20	33
School of Graduate Studies	3	0	3
Public Health	11	6	17
School of Allied Health	16	7	23
School of Medicine	63	53	116
School of Nursing	16	1	17
	Total: 122 (58%)	Total: 87 (42%)	Total: 209

The faculty participant survey breakdown by ethnicity/race: Caucasian (86.1%), Hispanic (4.8%), Asian (3.4%), African American (2.9%) and other (2.9%). The greatest number of faculty members selected Caucasian, while the smallest number identified as African American. According to the Association of American Medical College (AAMC, 2019), medical schools within the United States have the following ethnicity/race breakdown: Caucasians made up 63.9%, Asian 19.2%, Hispanic 5.5% and African American's was 3.6% (www.aamc.org). African American population within the studied HSS sits below the national average. This

southern HHS is currently working to recruit and improve faculty diversity throughout the campus. Table 6 offers a summary of ethnicity/race by school affiliation.

Table 6. Ethnicity/Race and School Affiliation

	African – American	Asian	Caucasian	Hispanic	Other
Dental School	0	1	31	1	0
School of Graduate Study	0	0	2	1	0
Public Health	1	2	14	0	0
School of Allied Health	0	1	22	0	0
School of Medicine	2	3	96	8	6
School of Nursing	3	0	14	0	0
Total (n)	n=6	n=7	n=179	n=10	n=6
Percentage	2.9%	3.4%	86.1%	4.8%	2.9%

The Health Science System faculty members reported that 37.6% had greater than 20 years of teaching experience. The greatest number of those faculty worked in the School of Medicine. The second largest number of teaching years was 4-9 years at 22.7% and the greatest number of faculty were also in the School of Medicine. Of the faculty members that reported having 10-15 years most worked in the School of Medicine and of those at 15-20 years of experience the majority worked in the Dental School. These were both at 14.4%. The 1-3years experience was at 11.1%. The School of Medicine is the oldest school within the southern HSS. See Table 7 for complete breakdown of years of faculty educational experience.

Table 7. HSS Experience as an Educator (Years)

	1-3 yrs.	4-9 yrs.	10-15 yrs.	15-20 yrs.	➢ 20 yrs.
Dental School	4	4	6	9	10
School of Graduate Study	1	0	0	0	0
Public Health	0	4	3	5	4
School of Allied Health	3	5	3	2	9
School of Medicine	9	21	12	8	42
School of Nursing	3	7	2	2	3
Total (n)	n=20	n=41	n=26	n=26	n=68
Percentage	11.1 %	22.7 %	14.4 %	14.4%	37.6 %

The next table provides the percentage breakdown of participants that took part in the survey with respect to school affiliations. The Health Sciences Medical School had the largest percentage of participants at 55.7%, followed by the Dental School with 15.7%. The School of Allied Health Professionals had a faculty participant percentage of 11%, while the School of Nursing and Public Heath were both at 8.1%. See Table 8 for more details.

Table 8. HSS School Affiliation

	Responses	Respondents (total faculty)
School	%	n
Dental School	15.7	33
School of Graduate Studies	1.4	3
Public Health	8.1	17
School of Allied Health	11	23
School of Medicine	55.7	117
School of Nursing	8.1	17
Total	100	210

The most often selected online teaching method used in March of 2020 by the HSS faculty was “synchronous with video recordings” at 78.6%. The second often online teaching method used was the “Learning Management System” (LMS) (e.g., Moodle, Blackboard, Canvas, etc.) at 36.8%. The third most used online teaching method was “asynchronous recoding video of lectures” (i.e., Mediasite) at 31.4%. The remaining methods listed in the survey tapered off, ranging from 13.2% down to 2.6%, which were pre-recorded external sources and social media respectively. Table 9 offers a summary of online teaching methods used by the HSS faculty in March of 2020.

When examining the HSS online teaching methods being used by faculty in March 2020, the most frequently used method was “synchronous video (i.e., Zoom, GoToMeeting, Google Hangout, etc.)” at 52% (90 of 174 respondents) in the School of Medicine. The Dental school used this method of online instruction the second most at 17.3% (30 of 174 respondents).

Table 9. Online Teaching Method used in March 2020

Faculty responses	%	n
Synchronous video (Zoom, GoToMeeting, Google Hangout, etc.)	78.6	174
Asynchronous recorded video of lectures (Mediasite)	31.4	69
Institutional conference/chat function	9.1	20
Communicating via social media (blogs, wikis, Twitter, Facebook, etc.)	4.1	9
Pre-recorded videos from external source (YouTube, etc.)	13.2	29
Distribution of material via institution's learning management system (LMS) (e.g., Moodle, Blackboard, Canvas, etc.)	36.8	81
Other	4.5	10

Note: n = number of survey respondents for each category. Respondents could choose more than one answer which is why the total percentage is greater than 100%.

The second most frequent online teaching method selected was "Distribution of material via institution's learning management system (LMS) (e.g., Moodle, Blackboard, Canvas, etc.)" at 39.5% (32 of 81 respondents) by the School of Medicine. This teaching method of online instruction was selected by the Dental and Nursing School at 19.8% (16 of 81 respondents) and 16% (13 of 81 respondents) respectively. The third most often online instructional method selected per HSS school was "asynchronous recorded video of lectures" at 44.9% (31 of 69 respondents). Asynchronous recorded video of lectures was used throughout the following HSS school: School of Medicine (44.9%), School of Allied Health (18.8%), and the School of Nursing (14.5%). The ones that followed were, "institutional conference/chat function" at 60% (12 of 20. respondents) in the School of Medicine, then Pre-recorded videos from an external source (YouTube, etc.) at 34.5% (12 of 29 respondents). The summary of this information on the HSS online teaching method by school, can be found in Table 10.

Table 10. Online Teaching Method used in March 2020 by School

	Percentage and Frequency Selected (n)					
Responses	Dental School	Graduate School	Public Health	School of Allied Health	School of Medicine	School of Nursing
Synchronous video (Zoom, GoToMeeting, Google Hangout, etc.)	17.3% (30)	0.6% (1)	8.1% (14)	12.1% (21)	52% (90)	9.8% (17)
Asynchronous recorded video of lectures (Mediasite)	7.2% (5)	1.4% (1)	13% (9)	18.8% (13)	44.9% (31)	14.5% (10)
Institutional conference/chat function	15% (3)	0	10% (2)	5% (1)	60% (12)	10% (2)
Communicating via social media (blogs, wikis, Twitter, Facebook, etc.)	11.1% (1)	0	11.1% (1)	11.1% (1)	55.6% (5)	11.1% (1)
Pre-recorded videos from external source (YouTube, etc.)	13.8% (4)	0	3.4% (1)	24.1% (7)	34.5% (10)	24.1% (7)
Distribution of material via institution's learning management system (LMS) (e.g., Moodle, Blackboard, Canvas, etc.)	19.8% (16)	1.2% (1)	12.3% (10)	11.1% (9)	39.5%. (32)	16% (13)
Other	40% (4)	0	10% (1)	10% (1)	20% (2)	20% (2)

Prior to the COVID-19 pandemic only 9% of faculty member at universities and colleges preferred online to face-to-face teaching globally (Pomerantz et al., 2017). After March, when analyzing the question about online teaching methods used in March 2020, 78.6% of the HSS

faculty took their current face-to-face lecture and presented it in an online synchronous format (Table 9). According to the interviewees, this was due to the short turnaround needed to keep the healthcare professional students on track. Each healthcare professional program had a structured curriculum with set benchmarks that need to be achieved within a certain timeline. For example, in the School of Medicine, courses are offered in set blocks that range from two to twelve weeks in length, and students must successfully pass all blocks before advancing to the next academic year. Ferrel and Ryan (2020) reported that in transitioning from face-to-face to online training can lead to a considerable and drastic turning point in the healthcare student progression due to loss of collaborative experiences needed for apprenticeship.

HSS faculty were surveyed about teaching methods they used in the Fall of 2020. The percentage of faculty who reported that their course(s) were partially or fully online were 82.2%. This is a considerable change in instructional method for healthcare professional students. Prior to the COVID-19 pandemic, online required courses were not accepted as a means of fulfilling the application process for medical school and other healthcare programs. The percentage of faculty members who reported not teaching in the Fall of 2020, face-to-face or online, were both at 5.6%. In the "other" category, two faculty members (2.8%) reported teaching face-to-face in a small groups format. The summary of this information can be found in Table 11.

Table 11. Teaching in Fall 2020

Answer	%	n
Yes, I taught at least one partially or fully online course during Fall 2020	82.2	148
No, I did not teach any online courses during Fall 2020	5.6	10
The decision about teaching online is still pending	0.6	1
I did not teach during Fall 2020	8.9	16
Other	2.8	5

When surveying the Fall of 2020 online teaching by the HSS faculty members, the: School of Medicine did the most teaching online at 50.7% (75 of 148 respondents). The Dental School followed at 18.2% (27/148), School of Allied Health at 12.2% (18/148), and School of Nursing at 10.8% (16/148). After analyzing the survey responses, it was noted that ten of the School of Medicine faculty members, 62.5% (10/16), did not teach during the fall of 2020. Also, four of the Public Health faculty members, 25% (4/16), did not teach online. The remaining reported minimal online teaching. The summary of this information is offered in Table 12.

Table 12. Teaching online in the Fall 2020 by HSS School

	Percentage and Frequency Selected (n)					
Answer	Dental School	Graduate School	Public Health	School of Allied Health	School of Medicine	School of Nursing
Yes, I taught at least one partially or fully online course during Fall 2020	18.2% (27)	0	8.2% (12)	12.2% (18)	50.7% (75)	10.8% (16)
No, I did not teach any online courses during Fall 2020	20.0% (2)	0	0	30% (3)	50% (5)	0
The decision about teaching online is still pending	0	0	0	0	0	100% (1)
I did not teach during Fall 2020	6.3% (1)	6.3% (1)	25.0% (4)	20% (1)	62.5% (10)	0
Other	40% (4)	0	0	0	40% (2)	0

The HSS faculty were questioned on how their school or program selected the online instructional method used to teach their future health care professional students in March 2020. Most of the HSS faculty, 35.3%, selected their own online instructional format. The idea of Healthcare Professional faculty selecting their own online instructional format can raise alarm. With this freedom of selecting their online instructional method, it removes administrative regulations and allows the faculty to personalize material that students need to learn, without

oversite. Prior to the pandemic, only 10% (n=22) faculty reported developing a new online course and 18.6% (n=41) has experience converting a face-to-face course to online. Several faculty members selected "other," 24.5%, reporting that it was either a university decision, information technology (IT), unknown or unsure of the method. Some faculty reported using a committee for selecting online technique, 19.4%. 18.7% of the health professional faculty followed the recommendation of their governing body or national academic organizations (Association of America Medical College (AAMC), Accreditation Commission for Education in Nursing (ACEN), Commission on Collegiate Nursing Education (CCNE), Accreditation Review Commission on Education for the Physician Assistant ARC-PA), and The National Board for Respiratory Care (NBRC). A small percentage worked with nearby community or state agencies, 1.4% and 0.7% respectively. It appears that the HSS did not use a systematic nor standardized method in the selection process for an online instructional method for their students. The summary can be found in Selection Process for Online Instruction, Table 13.

Table 13. Selection Process for Online School

Answer	%	n
I was able to select my own online instructional method	35.3	49
Committee selection	19.4	27
Recommended by the schools/program governing body/national academic organizations (e.g., AAMC, ACEN, or CCNE. ARC-PA, NBRC, etc.)	18.7	26
Partnership with other institutions in your community	1.4	2
Partnership with other institutions within the state	0.7	1
Other: university decision (n=3); IT (n=1); unknown/unsure (n=23)	24.5	43

The participants who were questioned about their selection process used to decide the online instructional method within their school. From the survey data, the results appear to be varied. Several the HSS schools allowed their faculty members to select their own online instructional method, including the School of Medicine (44.9%), School of Allied Health

(24.5%), Dental School (14.3%) followed by Public Health with 12.2%. When looking at "committee selections" for figuring out online instructional methods, 48.1% the School of Medicine faculty reported that this was selected by committee. The School of Nursing reported 18.5% and the School of Allied Health reported 14.8%, followed by the Dental School at 11.1%. Results from the "recommended by the school governing body/national academic organization" section were School of Medicine 46.2%, Dental School 30.8%, School of Nursing 19.2% and School of Allied Health was 3.8%. Public Health did not report consulting nor following the recommendation of any governing organization. The "other" category (university decision, IT, unknown, and unsure) was selected by a considerable number of participants: the School of Medicine at 48.8%, Dental School at 18.6%, Public Health at 16.3%, then School of Allied Health at 9.3%. These results are summarized in the "Selection Process for Online Instruction by HSS School," in Table 14.

Table 14. Selection Process for Online Instruction by HSS School

	Percentage and Frequency Selected (n)				
Answer	Dental School	Public Health	School of Allied Health	School of Medicine	School of Nursing
I was able to select my own online institutional method	14.3% (7)	12.2% (6)	24.5% (12)	44.9% (22)	4.1% (2)
Committee selection	11.1% (3)	7.4% (2)	14.8% (4)	48.1% (13)	18.5% (5)
Recommended by the schools/program governing body/national academic organizations (e.g., AAMC, ACEN, or CCNE. ARC-PA, NBRC, etc.)	30.8% (8)	0	3.8% (1)	46.2% (12)	19.2% (5)
Partnership with other institutions in your community	0	0	0	100% (2)	0

table cont'd

Answer	Percentage and Frequency Selected (n)				
	Dental School	Public Health	School of Allied Health	School of Medicine	School of Nursing
Partnership with other institutions within the state	0	0	0	100% (1)	0
Other: university decision (n=3); IT (n=1); unknown/unsure (n=23)	18.6% (8)	16.3% (7)	9.3% (4)	48.8% (21)	7.0% (3)

In the professional development teaching online section of the survey, the HSS faculty were questioned about their pedagogical changes made due to the pandemic. Twenty-seven percent of faculty reported using a new teaching method. When questioned about modifications to assignments or exams, 26.4% reported making one or more of the listed modifications. Several faculty members (17.3%) made other modifications to their instructional methods not listed: clicker questions, more practice quizzes, dropped active learning, online exams, Moodle exams, recorded lectures, changed attendance policy, and no changes. A considerable percentage of faculty, 12.3%, dropped assignments or exams. Less than 10% of the HSS faculty lowered their expectations about the quality of work and amount of work their health professional students could do, 10.5 % and 10% respectively. Less than 1% of the faculty changed their grading scale, 0.9%. See Table 15.

As represented in the survey results, a list of pedagogical changes were made school wide in this HSS. The greatest number of faculty reported that “I am using/used new teaching methods.” The School of Medicine reported that 40% of their faculty were using new teaching methods. The remaining schools reported using new teaching methods: School of Allied Health at 21.7%, Dental School at 18.3%, School of Nursing at 13.3%, and Public Health at 6.7%. Several faculty members selected “other” as an answer in the survey for this question. Under

"other," the faculty listed the following changes: no real change, attendance policy, decrease patient interaction, recorded review, exams on Moodle or online, clicker questions and chat line. Faculty that selected "other" broke down in the following manner: 55% (21 of 38 respondents) of the School of Medicine selected this response, while the Dental School had 18.4%, the Nursing School reported 10.5%, and both Public and Allied Health schools were 7.9%.

Table 15. Pedagogical Changes made due to the Pandemic (Please check all that apply.)

Answer	%	n
I dropped some assignments or exams	12.3	27
I dropped some of the reading that I was originally asking students to do	3.6	8
I changed the kinds of assignments or exams I am asking students to do	26.4	58
I (or my institution) allowed students to option to choose pass/fail instead of A-F grades, Honors, High Pass, Pass or Fall for this semester	0.9	2
I lowered my expectations about the amount of work that my students would be able to do	10.5	23
I lowered my expectation about the quality of work that my students would be able to do	10	22
I am using/used new teaching methods	27.3	60
Other nothing listed here, yet n=38	17.3	38

The second most reported instructional change was "changed the kinds of assignments or exams I am asking students to do." The School of Medicine faculty that made changes to assignments or exams was 27.6% (16/58), followed by the School of Allied Health at 22.4% (13/58), the Dental School at 20.7% (12/58), the School of Nursing at 15.5% (9/58), and Public Health at 13.8% (8). A number of schools results showed that the faculty "dropped some assignments or exams." The Dental School, School of Allied Health, and School of Medicine analysis showed that 25.9% (7/27) of their faculty dropped some assignments or exams. The

summary can be found in Pedagogical changes made due to the pandemic by school, see Table 16.

Table 16. Pedagogical Changes made due to the Pandemic by School

	Percentage and Frequency Selected (n)				
Answer	Dental School	Public Health	School of Allied Health	School of Medicine	School of Nursing
I dropped some assignments or exams	25.9% (7)	18.5% (5)	25.9% (7)	25.9% (7)	3.7% (1)
I dropped some of the reading that I was originally asking students to do	25.0% (2)	12.5% (1)	12.5% (1)	50.0% (4)	0
I changed the kinds of assignments or exams I am asking students to do	20.7% (12)	13.8% (8)	22.4% (13)	27.6% (16)	15.5% (9)
I (or my institution) allowed students to option to choose pass/fail instead of A-F grades, Honors, High Pass, Pass or Fall for this semester	50% (1)	0	0	50% (1)	0
I lowered my expectation about the quality of work that my students would be able to do	27.3% (6)	13.6% (3)	9.1% (2)	50.0% (11)	0
I am using/used new teaching methods	18.3% (11)	6.7% (4)	21.7% (13)	40% (24)	13.3% (8)
Other: no real change, attendance policy, decrease patient interaction, recorded review, exams on Moodle or online, clicker questions and chat line.	18.4% (7)	7.9% (3)	7.9% (3)	55.3% (21)	10.5% (4)

The HSS faculty were asked to answer the following statement: My school has recommended and/or provided the following types of professional development to help faculty teach online. The school offered several methods of online professional development to faculty. The results of this professional development showed that “Live or recorded webinars” were most often used throughout the HSS at 38.2%. This was followed by “None of the above” at 23.6%,

and “Formal or informal faculty mentoring program at 23.2%. The remaining ranged from 15% with “In-person training” down to “Other” with 5.9%. Table 17 offers a summary on the professional development training used throughout the HSS by its faculty.

Table 17. List of Faculty Development Training Offered to Faculty

Answer	%	n
In-person training	15.0	33
Live or recorded webinars	38.2	84
Self-paced training	8.6	19
Provision of and training for an online resource hub	12.3	27
Formal or informal faculty mentoring program	23.2	51
Online faculty community	10.5	23
Other: no training offered, minimal, online tutorials, IT support	5.9	13
None of the above	23.6	52

The survey data was analyzed to see how the HSS, as an institution, offered professional development training to the faculty members and their rankings. After analyzing the data, 84 of the HSS faculty members selected “live or recorded webinars” for their professional development. These results by institution are: School of Medicine 39.9% (33 of 84 respondents), Dental School 23.8%, School of Nursing 19.0%, Public Health 9.5%, and School of Allied Health 8.3%. The second most selected professional development training option, selected by 52 faculty members was “none of the above.” These results were as followed: School of Medicine 69.2% (36 of 52 respondents), School of Allied Health 15.4%, Dental School 9.6%, Public Health 3.8%, and School of Nursing 1.9%. The third most selected method for faculty professional development was “formal or informal faculty mentoring.” This choice was selected by 51 HSS faculty members, with the breakdown by school as follows: School of Medicine 39.2% (20/51), Dental School 19.6% (10/51), Public Health 15.7% (8/51), School of Nursing 13.7% (7/51), and School of Allied Health 11.8% (6/51). A summary of the faculty development by school, see in Table 18.

One survey question inquired specifically about how their program or school offered professional development to help them transition to an online platform due to the pandemic. When the faculty were questioned about professional development, 38.2% of them selected the following answer "Live or recorded webinars." Several faculty members (23.6%) reported participating in other forms of faculty development, that were not listed. A few HSS faculty members (23.2%) had the opportunity to take part in a "formal and informal faculty mentoring" when transitioning to an online instruction method. In-person training was offered to the HSS faculty, however only 15.0% of the faculty members reported participating. Other HSS faculty members chose to participate in either an online resource hub (12.3%), online community (10.5%), self-paced training (8.6%), and other forms of trainings not listed (5.9%).

Table 18. List of Faculty Development Training Offered to Faculty by School

	Percentage and Frequency Selected (n)				
Answer	Dental School	Public Health	School of Allied Health	School of Medicine	School of Nursing
In-person training	24.2% (8)	6.1% (2)	12.1% (4)	45.5% (15)	12.1% (4)
Live or recorded webinars	23.8% (20)	9.5% (8)	8.3% (7)	39.3% (33)	19.0% (16)
Self-paced training	15.8% (3)	5.3% (1)	15.8% (3)	36.8% (7)	26.3% (5)
Provision of and training for an online resource hub	14.8% (4)	14.8% (4)	0	40.7% (11)	29.6% (8)
Formal or informal faculty mentoring program	19.6% (10)	15.7% (8)	11.8% (6)	39.2% (20)	13.7% (7)
Online faculty community	13.0% (3)	13.0% (3)	13.0% (3)	43.5% (10)	17.4% (4)
Other: no training offered, minimal, online tutorials, IT support	38.5% (5)	0	15.4% (2)	38.5% (5)	0
None of the above	9.6% (5)	3.8% (2)	15.4% (8)	69.2% (36)	1.9% (1)

The next section of the survey questioned the HSS faculty about the professional development training they needed to effectively teach online. “How to use specific technologies” had the greatest need at 56.8%. The second professional development support need identified by faculty was “strategies for supporting students in learning online” at 52.7%. The third professional development support needed to teach online were “Pedagogical” and “Assessment strategies for teaching online,” both at 44.1%. The HSS faculty identified the following professional development needs for effective online teaching as follows: convert an in-person course to an online format (34.5%); best strategies to access online material (28.6%); strategies for supporting students with accessibility needs (26.4%); how to work effectively from home (18.2%); and “other”: staff with ability in designing and setting up online courses (4.5%). Table 19 offers a summary of this professional development needed to teach effectively online.

Table 19. Professional Development Needed to Teach Effectively Online

Answer	%	n
How to use specific technologies	56.8	125
How to convert or revise your in-person course to an online format	34.5	76
Best strategies to access online course material	28.6	63
Pedagogical strategies for teaching online	44.1	97
Assessment strategies for teaching online	44.1	97
Strategies for supporting students in learning online	52.7	116
How to work effectively from home	18.2	40
Strategies for supporting students with accessibility needs	26.4	58
Other: none, not a problem, online course (OLC) program myself	4.5	10

Looking across all of the HSS schools, the highest area of need selected by faculty was “How to use specific technologies.” The results for each school in the HSS was as followed: School of Medicine at 48% (60 of 125 respondents), Dental School at 19.2% (24/125), School of Allied Health at 12.8% (16/125), Public Health at 10.4% (13/125), and School of Nursing at 9.6% (12/125). The second most selected response related to professional development across

the HSS school was “Strategies for supporting students in learning online.” The result breakdown as it relates to “Strategies for support students in learning online” was the following: School of Medicine 42.2% (49 of 116 respondents), Dental School 18.1% (21/116), School of Allied Health 16.4% (19/116), School of Nursing 12.9% (15/116), and Public Health 9.5% (11/116). “Pedagogical strategies for teaching online” and “assessment strategies for teaching online” were the second most often selected professional development strategy. These results are as follows: School of Medicine 45.4% and 43.3%, Dental and School of Allied Health 16.5% and 17.5%, Public Health 10.3% and 11.3%, and Nursing at 10.3% for both answers. The remaining results with their percentage breakdown and frequency of faculty selection related to professional development across the HSS can be found in Table 20. It offers a detailed summary of professional development needed to teach effectively online throughout the HSS.

Table 20. Professional Development Needed to Teach Effectively Online by School

	Percentage and Frequency Selected (n)				
Answer	Dental School	Public Health	School of Allied Health	School of Medicine	School of Nursing
How to use specific technologies	19.2% (24)	10.4% (13)	12.8% (16)	48% (60)	9.6% (12)
How to convert or revise your in-person course to an online format	22.4% (17)	13.2% (10)	18.4% (14)	40.8% (31)	5.3% (4)
Best Strategies to access online course material	17.5% (11)	7.9% (5)	20.6% (13)	41.3% (26)	12.7% (8)
Pedagogical strategies for teaching online	16.5% (16)	10.3% (10)	16.5% (16)	45.4% (44)	10.3% (10)
Assessment strategies for teaching online	17.5% (17)	11.3% (11)	17.5% (17)	43.3% (42)	10.3% (10)
Strategies for supporting students in learning online	18.1% (21)	9.5% (11)	16.4% (19)	42.2% (49)	12.9% (15)
How to work effectively from home	20% (8)	2.5% (1)	7.5% (3)	52.5% (21)	17.5% (7)

table cont’d.

Answer	Percentage and Frequency Selected (n)				
	Dental School	Public Health	School of Allied Health	School of Medicine	School of Nursing
Strategies for supporting students with accessibility needs	10.3% (6)	13.8% (8)	19.0% (11)	43.1% (25)	13.8% (8)
Other: none, not a problem, online course (OLC) program myself	30.0% (3)	10.0% (1)	0	60.0% (6)	0

Faculty were asked to rate how effective the offered resources were for their professional development using the following scale: useful, not useful, or did not use. The HSS faculty reported the most useful professional development resource offered as "live or recorded webinars" at 53.8%. Faculty selected "formal or informal faculty mentoring program" to be the second most effective resource at 39.2%. The third most useful or effective development resource was "in-person training" at 30.8%. The HSS faculty identified "live or recorded webinars" as being not useful at 8.8%. Many HSS faculty did not take part in any form of professional development and that percentage ranged from 37.5% to 80.0%. Table 21 is a layout of what the faculty thought of the professional development courses offered and their effectiveness.

Table 21. The Effectiveness of the Offered Professional Development

Answer	Useful %	Not Useful %	Did Not Use %
In-person training	30.8	6.3	62.9
Live or recorded webinars	53.8	8.8	37.5
Self-paced training	28.0	7.2	64.7
Provision of and training for an online resource hub	15.1	8.6	76.3
Formal or informal faculty mentoring program	39.2	3.3	57.5
Online faculty community	19.9	6.0	74.2
Other (trial and error, internet search, self- taught)	17.8	2.2	80.0

When looking across the HSS schools at effectiveness of the professional development offered to the faculty, the results are were as follows: School of Medicine and school faculty members recorded "Live or recorded webinars" to be the most effective at 39.3% (33 of 84 respondents), Dental School was 23.8% (20/84), School of Nursing was 19% (16/84), followed by Public Health 9.5% (8/84) and School of Allied Health at 8.3% (7/84). The second most recorded HSS effectiveness of professional development offered was "formal or informal mentoring program." Here is the breakdown: School of Medicine at 39.2% (20 of 51 respondents), Dental School at 19.6% (10/51), Public Health at 15.7% (8/51), School of Nursing at 13.7% (7/51), and School of Allied Health 11.8% (6/51). The third most noted HSS effectiveness of professional development offered was "in-person training." The in-person training results are as follows: School of Medicine 45.5% (15 of 33 respondents), Dental School 24.2% (8/33), School of Allied Health and Nursing both had 12.1% (4/33), while Public Health was 6.1% (2/33). Table 22 offers a summary for effectiveness of professional developmental offered throughout the HSS.

Table 22. The Reported Effectiveness of the Offered Professional Development by School

	Percentage and Frequency Selected (n)				
Answer	Dental School	Public Health	School of Allied Health	School of Medicine	School of Nursing
In-person training	24.2% (8)	6.1% (2)	12.1% (4)	45.5% (15)	12.1% (4)
Live or recorded webinars	23.8% (20)	9.5% (8)	8.3% (7)	39.3% (33)	19.0% (16)
Self-paced training	15.8% (3)	5.3% (1)	15.8% (3)	36.8% (7)	26.3% (5)
Provision of and training for an online resource hub	14.8% (4)	14.8% (4)	0	40.7% (11)	29.6% (8)

table cont'd.

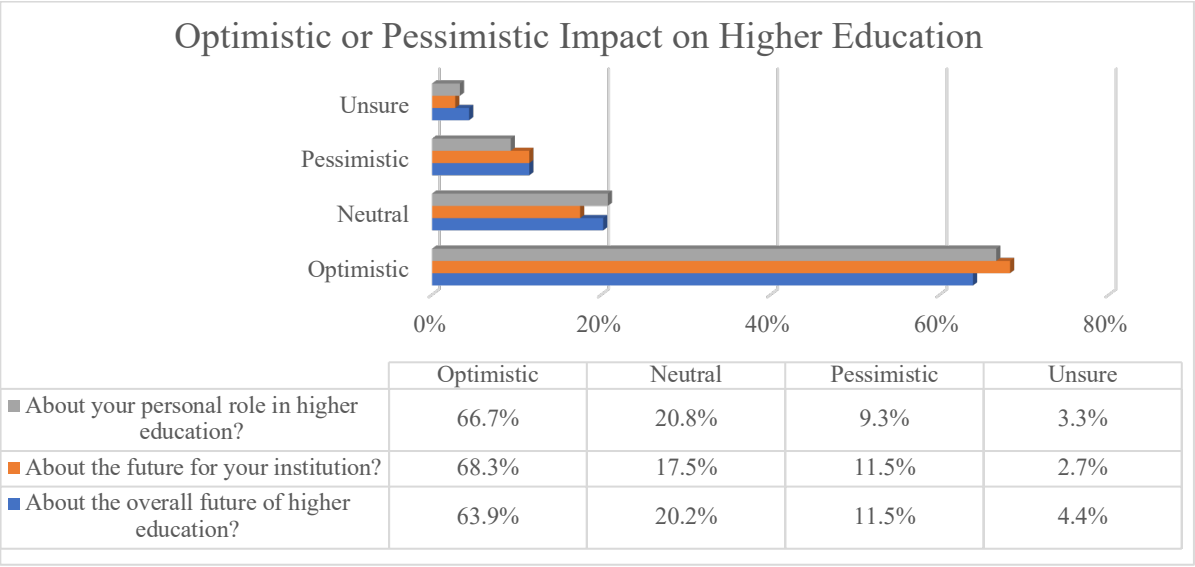
Answer	Percentage and Frequency Selected (n)				
	Dental School	Public Health	School of Allied Health	School of Medicine	School of Nursing
Formal or informal faculty mentoring program	19.6% (10)	15.7% (8)	11.8% (6)	39.2% (20)	13.7% (7)
Online faculty community	13% (3)	13% (3)	0	43.5% (10)	17.4% (4)
Other	38.5% (5)	0	15.4% (2)	38.5% (5)	0

The survey had several open-ended questions offering for the HSS faculty to give feedback in their own words. Below are all participant responses to the following optional statement: “Please explain why you are concerned about your school’s capability to deliver equitable learning opportunities online.” Forty-one faculty members responded to this statement, and the general theme in responses was that students need to have in-person and hands-on training to learn healthcare. Other themes identified in these responses were: dealing with administration that failed to make prompt decisions, offer faculty the opportunity to participate in professional development training prior to implementation of online instruction, and lack of incentive for doing extra work. There were other themes associated with connecting to the students (i.e., real-time feedback with student engagement, head gesture, eye contact), internet connection reliability, and use of new technology within the healthcare professional programs. This question helped to elaborate on the following research question: What educational challenges did the health sciences center faculty overcome when transitioning from traditional face-to-face instruction to online instruction during the COVID-19 pandemic? The HSS faculty coded responses are shown in Table 23. Codebook descriptions are located in Appendix L.

Table 23. Concerns about the School's Ability to Deliver Learning Online

Coded Faculty Responses	Number
Online course development / Training / Instruction	12
No concerns	6
Administration support	4
IT Support / Technology / Access	10
Isolated / Connectivity /	5
Resources / Access	8
Hands-on training	5
Challenges / Rapidness	6

The survey investigated the HSS faculty members' thoughts about the future of educating health professional students during and after the COVID-19 pandemic. The faculty were mostly optimistic about educating future health professional students and this schools's ability to meet their needs, ranging from 63.9% to 68.3%. Several faculty members felt that the COVID-19 pandemic had a neutral effect on educating and the school's ability to offer the same educational experience, 17.5% to 20.8%. A few faculty members thought the school would be unable to meet the educational needs of future health professional students, ranging from 9.3 % to 11.5%. For a better view of this data, see Figure 3.



	Optimistic	Neutral	Pessimistic	Unsure
About your personal role in higher education?	66.7%	20.8%	9.3%	3.3%
About the future for your institution?	68.3%	17.5%	11.5%	2.7%
About the overall future of higher education?	63.9%	20.2%	11.5%	4.4%

Figure 3. Optimistic or Pessimistic Impact on Higher Education, Institution, and Future

In addition to the survey inquiring about optimism of health professional education in the future there was an optional open-ended question asking the faculty to offer meaning to their answer selected. Only 45 out of 217 faculty members across the six HSS schools took the opportunity to respond to this question. The general theme of their "optimistic" comments centered around resilience, use of new technology, ease of clinical faculty to take part in lectures, and positive change. When looking over the "neutral" comment themes, there were comments of no effect, all things will return to normal, or all was the same in spite of the pandemic. Lastly were comments considered "pessimistic," such as online teaching not offering a good faculty-student interaction, inability to challenge the students and loss of administration support with online training or guidance, Figure 3. Optimistic codes are best summed up as: endure, future, online, and technology. The theme was that healthcare professionals have the ability to endure challenges, look to the future, and embrace technology. Neutral codes can be summed up as the following: no change and return to pre-pandemic learning. When developing codes for pessimistic, I identified the following: decreased student encounters, self-fulfillment, ill-prepared, and technology challenges. The theme for pessimistic can be summed up in the following statement: When the faculty lose face-to-face instructor time, they report being less fulfilled and the use of new technology can be challenging. Some of the optimistic, neutral, and pessimistic statements received in the survey are shown below in Table: 24.

Table 24. Optimism of Health Professional Education in the Future

Level of Optimism	Statement	Assigned Code(s)
Optimistic	The pandemic will be "over" within the next year.	Endure
	I feel like higher education will always make it through times like this.	Endure
	Virtual delivery of healthcare is here and current virtual teaching will help students deliver care in the future.	Online, Future

table cont'd.

Level of Optimism	Statement	Assigned Code(s)
Optimistic	I think transitioning to mainly online didactics has been helpful and makes it easier for clinical faculty (like myself) to participate.	Future
	Change always provides opportunity.	Future
	The silver lining of the pandemic has been being forced to find new ways to teach that we can continue to utilize in addition to traditional methods even after the pandemic is over.	Challenge, Future
	The pandemic has brought about technological advances that we would not have implemented as rapidly.	Future, Technology
	We as a unified team came up with solutions to educate during the worst of times with no notice.	Teamwork
Neutral	It is ignorant to say that there has been a "Profound" effect on education.	No change
	It is ignorant to say that there has been a "Profound" effect on education.	No change
	Eventually, the environment will return to pre-pandemic conditions.	No change
	While the faculty and students have said we/they do not care for online learning, students appear to be learning about as well based on test scores.	No change, Same learning
	All progressing well in spite of pandemic.	No change
Pessimistic	Two-dimensional virtual learning lacks the faculty-student engagement of in-person learning, no matter how you slice it. As a consequence, recent coddled graduates are ill-prepared for the rigors of their professions.	Encounter, Ill-prepared
	Enrollment is down in the School of Public Health and with the negative attention to the public health sector, I wonder how that will affect future enrollment.	Lose students, Negative
	The loss of personal contact with students lessens my fulfillment from my teaching duties.	Encounter, Fulfillment
	There has been too much catering to the students and our current technology and policies for those technologies are preventing us from challenging students when compared to in-class lectures and exams.	Catering, Technology, Preventing
	HSS did not adequately support faculty to teach virtually.	Support
	The lack of direction given to the faculty about how the school was going to adapt to the pandemic greatly hampered my ability to develop a curriculum that would fit a virtual learning environment. The slow decision to pursue virtual learning during the curriculum showed me that our school administration had little understanding of the time require to flip from face-to-face learning to a virtual learning paradigm.	Administration, Decision, Work, Commitment

When the HSS faculty were asked about the current teaching environment for their healthcare professional students, 23.2% selected "All of my in-person classes are now or will be transitioned to be delivered online." A considerable number of HSS faculty were in the process of transitioning in-person classes to an online format, 20%. Some faculty reported that their course was "operating as usual, my in-person classes continue to be held" at 12.7%, while others are considering "operating as usual, all my classes are already online" at 12.3%. Faculty offering reduced number of students in a lecture or hybrid classes are being offered in low precent, 5%. Table 25 summarizes the current teaching environment.

Table 25. Current Teaching Environment

Answer	%	n
Does not apply – not teaching this term	5.5	12
Operating as usual, my in-person classes continue to be held	12.7	28
Operating as usual, all my classes are already online	12.3	27
All of my in-person classes are now or will be transitioned to be delivered online	23.2	51
Some of my in-person classes are being transitioned to be delivered online	20.0	44
My in-person classes for this term have been cancelled and are not expected to resume	1.4	3
My in-person classes for this term have not been suspended, but will be soon	0.5	1
My in-person classes for this term are suspended, and are expected to resume at a later date	1.8	4
I've moved some/all of my classes to a distance learning model other than online	2.3	5
Other: Reduced course size – double training; Hybrid classes.	5.0	11

When HSS faculty were questioned about their online educational experience prior to the COVID-19 pandemic, a small number taught online courses, 16.1%. Only 34.9% of the HSS faculty had taken an online course themselves. The faculty discussed their knowledge of converting a face-to-face course to an online format; only 14.0% had done it. When questioned about developing a new online course, only 7.5% had developed one, demonstrating the lack of

HSS online instruction methods prior to COVID-19. Table 26 offers a summary of the faculty's prior educational experience.

Table 26. Prior Education Experience with Online Instruction

Answer	%	n
I have taken an online course	46.4%	n=102
I (alone or with others) developed a new online course	10.0%	n=22
I (alone or with others) converted a face-to-face course to online	18.6%	n=41
I (alone or with others) substantially modified an existing online course	8.2%	n=18
I have taught an online course	21.4%	n=47
Other experience with online courses	6.8%	n=15
None of the above	21.4%	n=47

Another open-ended question in the survey asked HSS faculty to explore what they thought would have helped them be more prepared to transition from a traditional lecture (F2F) to an online instruction. The 55 faculty members that responded to this open-ended question were coded as "training," either as technology utilization or online (virtual teaching) instructional method. The HSS faculty would have felt better prepared with additional administrative and technology support with the online transition. The faculty also inquired about methods on testing students in a distance learning environment. Several faculty members suggested additional time for the transition to an online instructional platform would have been appreciated. Table 27 shows how HSS faculty responses were coded to this opened survey question: "What would help you to feel more prepared?"

Table 27. Online Instruction: Faculty Wish List to Feel More Prepared

Coded Faculty Response	Number
Training / Development	27
Technology	9
Time / Workload	10
Administration guidance	11

When the HSS faculty members (88) responded to the following open-ended survey question: “In this rapidly evolving situation, please let us know what you think will be most helpful for your teaching, in the coming months, and as you continue into Spring 2021?” The open-ended question helped generate a better understanding of what the faculty needed to continue to adjust to teaching online in the Spring 2021. The faculty main themes for this question were, in order of response priority, training with online pedagogy, technology, in person teaching, and administration support. The main theme for this question was “training.” Online pedagogy was what the HSS faculty were looking for from the administration. Based on faculty responses, the administration did not deliver the training that faculty thought essential or the faculty did not take advantage of what was offered. Table 28 offers a sample of the 88 faculty members comments in response to this question: Most helpful for teaching in the spring 2021?

Table 28. Faculty: Most Helpful for Teaching in Spring 2021 (a sample of responses, n=88)

Response	Codes(s)
Allow faculty (and give them time) to enroll in a formal “class” led by colloquies or experts, to assure the developing of the courses. If the institution does not expect, encourage and allow this type of “training” faculty will not be able or interested.	Training
Spring 2021 semester should have started later and not earlier. There are more students out with COVID than before and it places a strain on faculty with all of the make-up work.	Delay classes, Strain
Exam security, having students attend the live online lectures.	Testing
Widespread vaccination and a return to in-person teaching.	Vaccine
Continuing education about the latest online platform for teaching. For example, I recently learned how to use a “whiteboard” on zoom and that has been helpful (using pencil on iPad has been easiest).	Training
Education on effective teaching strategies for online courses.	Training

When the HSS faculty were questioned about their optimism/pessimism with educating healthcare professional students in the next two years, responses included “Somewhat optimistic” at 34.4%. The faculty reported being “very optimistic” about educating their

healthcare professional students at 22.9%. Some faculty reported to be “somewhat pessimistic” about the education of the professional student, 20.4%. A few faculty members were “neutral” about the educational future of their students, 19.1%. Table 29 offers a visual summarization of healthcare professional faculty’s levels of optimism and pessimism for the future in education.

Table 29. Faculty: Optimism/Pessimism with Educating Healthcare Professional Student in the Future

Answer	%	n
Very pessimistic	3.2	5
Somewhat pessimistic	20.4	32
Neutral	19.1	30
Somewhat optimistic	34.4	54
Very optimistic	22.9	36

Interviews

The last question in the survey asked participants if they wished to participate in a 30-to-45-minute interview. If so they were to provide contact information: name, phone number, and email address. A total of 18 participants supplied their contact information to take part in the interview. Of the 18 participants, 10 were randomly selected and contacted for an interview. Only six participated in the interview. Of the remaining four that were approached to take part in the interview two failed to respond to the invitational email, one was unable to schedule a time for the interview, and one failed to report for the scheduled interview. To protect the identities of these participants, they were given the choice to select a pseudonym at the beginning of the interview.

The qualitative part of the study aims to better understand what the faculty endured during the COVID-19 pandemic. The interview may help better understand faculty mindsets that may have failed to be shared or captured in the survey. The semi-structured interview may offer additional meaning to the HSS faculty challenges encountered during this pandemic. To supply

added context on the interview participants the following demographic information is presented in Table 30: age, gender, ethnicity/race, profession, and duration of teaching.

The mixed method study interviews were held in a conference room located within one of the HSS Learning Center. The interviewees were randomly selected from the volunteers that responded to the last question in the survey. The interviews were a semi-structured format with 31 questions. The conference table and chairs were wiped down prior to and after each interview. Approved COVID-19 mitigation strategies were maintained. During the interview all participants wore face coverings and were a minimum of six feet away (physically distanced) from each other throughout the interview.

Table 30. Interview: Demographic Information

Participant (Pseudonym)	Gender	Age (yrs.)	Ethnicity	Profession	Teaching Years
Bella	Female	58	Caucasian	Professor	30 years
Clark	Male	72	Caucasian	Assistant Professor	47 years
Izzie	Female	51	Caucasian	Instructor	13 years
JC	Male	67	Caucasian	Associate Professor	26 years
MO	Male	63	Caucasian	Assistant Professor	3 years
Wendy	Female	57	Caucasian	Associate Professor	12 years
		Average age: 61			Average years: 21.8

When the participants of the interview part of this study were questioned about their instructional method used prior to the COVID-19 pandemic, it was face-to-face. The health professional instructional method for students is more of an apprenticeship. Clark, one of the interviewees stated the reason he prefers face-to-face instruction is that it offers a “informal guidance and mentoring” to the students. The faculty enjoy the opportunity to interact with students in a pre-post lecture setting.

The interviewees were asked about their online instructional experience prior to the COVID-19 pandemic, their responses were "none," "very little," to "zero" involvement. Only one participant had any prior knowledge or experience with online instruction. JC was the only participant with any online instructional experience, and even that was minimal. Clark offered this comment about online instruction, "My big beef with the online platform is, I think, the students miss the information that is provided somewhat informally, in an interpersonal one-on-one environment."

The study examined what changes the instructors did to their face-to-face lectures when transitioning their course or courses to an online format? Below are participant responses to changes made to transition from traditional face-to-face lectures to an online platform. The overall general response related to this question: the faculty took their face-to-face lecture and delivered it over Zoom, prioritizing information students needed to know. This response matched what was shown in the survey. All interviewees transitioned their course to an online synchronous platform using Zoom.

JC: The lectures we kept pretty much the same. We basically just substituted the live lectures in the lecture hall for the "Zoom" session. We kept to the same timetable.

MO: By the seat of our pants, took our in-person class and went to "Zoom."
Izzie: I tailored some of the information to, "What's needed to know versus Need to know." That did a lot of cutting the fat.
Bella: Just took current course and offered it online.
Clark: Went from a live face-to-face classroom type thing to a "Zoom" presentation.
Wendy: Synchronous zoom lectures.

When reviewing these six faculty members' comments about adapting course(s) to an online format, a lack of administrational guidance became clear. The faculty were left to do whatever they believed was best for their course(s) and their programs, though they were offered new technology, "Zoom", and encouraged to move their face-to-face lectures to this virtual

platform. Zoom, in a synchronous lecture method, was used as a virtual platform to educate future health professional students. This method of virtual instruction carried over from Spring of 2020 into Fall of 2020.

The following question was given to the faculty interviewees: How did you or your program select the method of instruction? Below are the participants shared responses to this interview question. The faculty responses show that the majority had the final say in which online method to use for their course(s).

JC: It was me.
Clark: We were advised that we couldn't have the students in the classroom.
Bella: I feel like we were just thrown to the wolves and said, here use "Zoom."
Izzie: Committee and full faculty vote.
MO: I would have to say committee organization.
Wendy: As an individual.

In the interviews, two out of the six faculty members reported having formal discussions and voting to select the instructional method to be used in their programs. The remaining four faculty members selected their method of instruction either by no other choice or individually. This interview faculty response was similar to what was found in the survey portion of this study. The survey reported 33.1% of the HSS faculty individually selected instructional method while either a committee and/or governing body was 18.2%.

As the study interviews continued, the participants were asked about the professional development offered by the Health Sciences System. The professional development back in March 2020 was to help the faculty transition face-to-face lectures to an online platform. This question aimed to uncover what professional development was offered to or lacking for HSS faculty.

JC: Our department didn't really do anything. The nursing school did offer some online training on Zoom.

Clark: They told us to use a zoom platform. When questioned about training, the response was “no.”
Bella: I have no knowledge or memory of there being any outreach, or help provided.
Izzie: They gave us some modules to watch.
MO: I think, there may have been something, I think something was offered. I probably took it. But, obviously, it didn’t stick.
Wendy: Got me a webcam.

When the faculty were questioned about professional development offered by the health science system or individual program, responses showed minimal professional developmental support was offered. Very few programs or schools took the initiative to offer the faculty courses to help with the transition to a virtual platform. The professional development that was suggested was not meaningful based on faculty responses. However, survey responses differed compared to the interviewees. The faculty survey responses are the following: 38.2% of the faculty reported participating in a live or recorded webinar, while 23.2% reported receiving training in a formal or informal faculty mentoring program. The interviewees reported a different picture than the survey data when asked about professional development. The interviewees reported having no memory of participating in any online professional development training and if they did, they did not remember it.

The interviewer questioned the faculty on their thoughts about the future of health professional student education. This question may offer understanding into the faculty thoughts and the direction of the future education of health professional students. Below are faculty thoughts on health professional education after a pandemic.

JC: It's made me rethink what we need to do in the lab. So, I think we might change the lab to be less dissection and more sort of identification on what we call pro sections.
Clark: I’m really worried. A whole cohort of students are missing the opportunity to have, to be engaged with their instructors.
Bella: We need to go back to in-person, lectures, and labs in small group settings.
Izzie: I certainly think this pandemic taught us a lot. How to protect our front-line workers better.

MO: I think this pandemic, as terrible it has been, it's really had a silver lining from a standpoint, that it's made us reach out to other programs and talk to them. The ability to now Zoom, I can bring my colleagues from around the world in, every now and then to talk to them; that we never thought about doing before. So, it makes the world a little smaller.

Wendy: I still think education in-person is probably better for the most part. And I that's, you know just part of my "bias." I think it's a good way of doing it. I mean there are certain things that have to be in person… you know labs, well okay, they don't have to be in person… there are certain things that I think are absolutely better in person. You know, like having our students be able to literally hold the brain in three dimensions and, you know, identify the structures is still, I think, going to be better than them, learning, you know pictures of the brain and identifying the structures that way.

When the interviewees were questioned about the future of healthcare professional education, a few different responses appeared: changes to course design, interaction with instructor (mentoring), and the belief of how it is important to instruct future healthcare providers in a face-to-face format. Faculty believe the students receive better instruction when they can personally interact with faculty (mentorship) and fellow students (peer-to-peer mentoring).

Findings

The HSS faculty members who took part in this study, all completed the survey during the Spring 2021 session. The HSS survey portion of the study was closed on February 12, 2021. The semi-structured interview of six HSS faculty members was completed on February 26, 2021. Conducting the survey and interview with faculty members in the Spring of 2021, nearly one academic year after the start of the COVID-19 pandemic, proved challenging in regards to faculty memory. A few of the interviewee's stated that there were a number of changes over the past number of months and it was difficult to recall all of the sequences.

The descriptive analysis started with the demographic information. The HSS has 58% of faculty identify as females and 42% as males. The largest number of faculty members questioned

about ethnicity/race, 86.1% identified as Caucasian while the remaining identified as Hispanic (4.8%), Asian (3.4%), African American (2.9%) and other (2.9%). When looking at school affiliation, the School of Medicine had 55.7% of the response population, followed by the Dental School at 15.7%.

After completing some descriptive analysis of the survey data, the researcher identified that the most common online, non-traditional teaching method used in this southern HSS in the early portion of the COVID-19 pandemic was "synchronous video" (Zoom, GoToMeeting, Google Hangout, etc.). Those online instructional methods carried over into the Fall of 2020. For both the fall of 2020 and spring of 2021, asynchronous recorded video lectures were the second most commonly used instructional method. When discussing this transformation to an online instructional method due to the pandemic, faculty offered some insight during the semi-structured interviews. Several of the interviewees reported taking their face-to-face lecture and presenting it on Zoom in a synchronous format at its scheduled time. The faculty wanted to offer the students the same course, schedule, and similar format via Zoom platform. However, most of them did not believe it was equivalent to face-to-face due to lack of personal interaction before and after lectures. A number of interviewees stated that face-to-face interaction allows the students to have casual conversation with faculty, thus gaining additional knowledge and mentoring.

The HSS faculty were questioned about the methods used to select their online format to deliver instruction to the healthcare professional students. The survey reported that a considerable number of faculty were able to select their own online instructional method. The interviewees reported similar results when questioned about the online selection process. Committees and/or governing bodies were used 12.3% and 11.8% of the time respectively when

selecting an online instructional method. In the interviews, the faculty shared how it would have been beneficial for the administration to take more of an active role when finding an online method. The faculty felt that they were instructed to do something that had never been done before with healthcare professional students and given little guidance or assistance.

The HSS faculty survey found that several schools/programs made modifications to the instructional method to accommodate the healthcare students and to meet curriculum requirements. What received the most modification based on the survey, was changes to assignments or exams. It is worth pondering if this type of content modification will have a long-term harmful effect on healthcare professional student preparing to take in-person national exams. The HSS schools will have to wait and see if the students have grasped the online material when they take their board exams and their scores are examined.

As the survey data relates to professional development recommended and/or offered by the administration, the HSS faculty reported "live or recorded webinars" were offered most often. However, when the faculty were questioned about the usefulness of "live or recorded webinars" for their professional develop for online instruction only 53.8% selected useful, 8.8% found it not useful, and the remaining did not use it. With the semi-structured interviews, the faculty reported not remembering any professional development for online instruction being offered and if there was, it did not leave an impact.

After completing the final coding process of the open-ended survey questions and semi-structured interviews, it became clear that administrative support with online course development and training would have been beneficial for the faculty, thus improving the student instructional method. Offering software technology training would have provided the faculty with some confidence, at the same time allowing a smoother transition to an online instruction platform.

Due to the lack of this training, “Bella” one of the interviewed faculty members report feeling “thrown to the wolves.”

Summary

The participants in this mixed method study supplied an insight into what faculty experienced at a health sciences system located in the southeast portion of the United States. The faculty transitioned from a traditional (F2F) lecture to an online method of instruction due to the stay at home declaration that resulted from the COVID-19 pandemic. Overwhelmingly, the faculty felt they did what was needed to transition their face-to-face course(s) to a non-traditional online platform. Their goal was to offer their health professional students the best educational experience possible. The HSS faculty worked hard to offer their students a non-traditional online learning environment that mimicked the rigor of traditional, face-to-face instructional methods.

The survey proved to be a helpful tool with assessing the impact of the COVID-19 pandemic in a physically distant government mandated world. The survey and semi-structured interviews explored the instructional methods (face-to-face and online), faculty development, and administrative guidance. The survey and interviews were regarded as a way to evaluate the faculty and help understand their needs in transitioning courses online. Although many faculty experienced challenges, either with pedagogical development and/or technology, the faculty identified a number of resources that would have helped them with the transition. In addition to these challenges, the faculty suggested administration communication and professional development programs that would have offered a more welcoming transitional environment to an online platform. With a directive and supportive administration, the overall faculty challenges in the pandemic may have been less stressful.

Faculty in this HSS were optimistic about the future of educating health professional students. Several faculty members communicated that the pandemic forced them to rethink and implement new methods of teaching and technology earlier than planned. This rethinking was considered a silver lining within the pandemic. Overall, faculty in the Health Sciences System shared a positive outlook on the adaptability and teamwork of their school or program to transition to online, thus offering the health professional students the best learning environment possible during a pandemic.

CHAPTER 5. DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

Introduction

The purpose of this mixed methods study was to explore the educational impact of the COVID-19 pandemic on transitioning from face-to-face (traditional) to online (non-traditional) instruction in healthcare professional schools/programs. As we now know, the Novel Corona Virus (SARS-CoV-2) has been a traumatizing shockwave through the entire world and has affected all levels of education. The World Health Organization (WHO) declared a pandemic in March 2020, resulting in many schools, colleges, and professional health educational schools/programs closing and required a shift to an online instruction. With this declaration, the WHO recommended self-quarantining and social distancing to reduce the spread of this rapidly spreading virus.

In this chapter, a discussion of important findings as related to the literature on healthcare professional schools/programs will be reviewed in relation to online or distance instructional transition, selection processes used when deciding an online or distance instructional platform, faculty professional development, and the future of online or distance training in healthcare professionals. This section also offers a discussion on the limitations of the study and recommendations for future research.

This research project goal was to provide insight into the challenges and experiences of faculty, at a southern HSS, with educating students during a pandemic. These challenges included supplying students with content for critical thinking and development of confidence as caregivers. This study found “synchronous video” as the main method of online/distance selected for use in the HSS as a result of the pandemic. This online lecture method was selected by faculty and/or administrators in the HSS. The study researched the processes in which the faculty

underwent to select an online/distance instructional method and the challenges they faced in offering this method. By addressing the above statements, this study exposed the challenges the faculty overcame to meet academic needs and the requirements of the accrediting body and agencies that keep a schools and programs accredited.

Discussion

Each southern HSS faculty member offered a unique background and experience that contributed to their transition from face-to-face instruction to an online distance instructional method. The 200 plus survey responses from the faculty members, from six different schools/programs, communicated their experiences in transitioning to an online instructional platform. Out of 200 plus faculty members 6 were randomly selected to take part in a semi-structured interview. These interviews offered faculty an opportunity to share, in their own words, their challenges with moving to an online platform during a pandemic.

When the southern HSS faculty were questioned about the impact of this pandemic on the healthcare educational system, many of them offered optimism about the future of higher education, their school's future, and with their own personal role. This optimism showed that healthcare professional faculty members embraced challenges and worked to achieve the best possible outcomes. A quote from the survey of a faculty member stated, "We are a unified team, came up with solutions to educate during the worst of times with no notice." Many of the faculty members plan to adapt distance instructional methods into their future courses. The pandemic has also reminded that faculty to be flexible. One faculty member survey response relayed that, "It has taught us to be resilient, creative and innovative. The faculty also report having to let go of what we always knew (tradition) and explore new ideas." However, other questions arose as to how the students adapted. It was questioned if students received the same, less, or better

instruction online as in traditional face-to-face lectures? Future review of these healthcare professional students' board scores, once they become available, will give feedback to these questions.

Online Instruction

When discussing online instruction for healthcare professional students prior to the pandemic, online or distance instruction was considered undesirable. This pandemic has changed healthcare professional schools into considering online instructed courses as an acceptable means to educating future professional students. According to an article by Mark Lieberman, "Students aspiring to medical school who took key prerequisite courses online are often ineligible to apply to the postgraduate programs" (Lieberman, 2019). Prior to the COVID-19 pandemic Stanford University School of Medicine, John Hopkins University, and Pittsburgh School of Medicine admissions requirements declared that online coursework and degrees would not be considered (Lieberman, 2019). Preceding the COVID-19 pandemic, no medical school in the United States allowed students to earn a MD online. COVID-19 has changed the pedogeological process. The pandemic has redefined medical school admission, an example is John Hopkins School of Medicine admission requirements. As a result of the pandemic, the applicant's prerequisite courses taken online are now considered acceptable as long as the course was taken from an accredited university (Lieberman, 2019).

Research Question #1a was: "What was the most common online (non-traditional) teaching method(s) used in the health professional schools, during the initial transition in March 2020, that was brought on by the COVID-19 Pandemic?" The results from this survey found that the most common method of online or distance instruction (78.6%), used at this health science system, was "synchronous video lectures" using either Zoom, GoToMeeting, Google Hangout,

etc. The HSS faculty offered synchronous lectures with small groups via Zoom breakout room, clicker questions and utilizing polling question to create an online active leaning environment. Kala et al., (2010) reported that synchronous online learning required student involvement, imagining, and collaboration with professors and peers. Synchronous online offered a similar instructional method to traditional face-to-face. A quote from "JC" in a semi-structured interview: "We basically just substituted the live lecture in the lecture hall for the Zoom session." This is contrary to Koehler et al. (2002), who reported that moving to an online format was not just a simple copy and paste situation. Several faculty members did their best to offer the course instruction at the same time and length as face-to-face with the addition of active learning features like "clicker" questions. Clicker questions offer an anonymous way for students to respond to questions and they serve as a method to keep the learner actively engaged. Another reason that faculty selected the synchronous online method was due to the short turnaround time for transitioning at the beginning of the pandemic. One faculty member stated that "The institution does not understand the time nor effort that is required to teach a virtual class." These are the same challenges reported in the literature (Esani, 2010; Rajab et al., 2020). The simple act of transitioning a face-to-face instructional material to an online platform is not recommended for effective online teaching in the healthcare profession (Dong et al., 2021). Dong et al.'s (2021) research also offered recommendations on how to best offer online instruction through preparedness, presentation method using active learning principals, challenges of dealing with a large number of students in online lectures, methods to engage students in learning, and offering a secure online course to be used in a healthcare professional school environment.

The second most common online or distance instructional method used in the HSS was "distribution of material via a school learning management system (LMS)" at 36.8%. LMS

offered the faculty a central place to provide the student with instructional material to review prior to taking part in an active learning environment. The HSS faculty were familiar with using the LMS before the pandemic. The HSS faculty were able to upload asynchronous video lectures for students to review at their convenience. Asynchronous lectures were used by 31.4% of the HSS faculty when supplying instruction. Based on the survey results, several of the faculty members used both asynchronous and synchronous lectures. In survey and interview results, faculty mentioned missing the valuable face-to-face interaction with students and the difficulty in replicating this connection with students in an online platform. The HSS online instructional methods used during the pandemic would benefit from an evaluation to ensure all six healthcare professional schools offered adequate student preparation for their future patient training encounters. Ferrel and Ryan (2020) reported that healthcare professional students with online or distance instruction lost the collaborative student experience that can result in a significant detriment with this method of education due to the pandemic (para. 2). The pandemic has made for a challenging time with instructing students at all levels of education. The faculty members were called upon to implement new educational modalities, while learning new methods, new technology and maintaining course integrity in an online or distant environment.

Research Question #1b was: "What method(s) carried over to the Fall 2020 semester?" The HSS faculty survey results to which instructional method(s) carried over to the Fall 2020 and Spring 2021, 67.7% reported using "synchronous videos (Zoom, GoToMeeting, Google Hangout, etc.)." The second most reported method of online instruction was Distribution of material via LMS at 31.4%. The remaining faculty members reported using asynchronous recorded video of lectures and that response was 24.5%. The survey also had an open-ended question: In this rapidly evolving situation, please let us know what you think will be most

helpful for you teaching, in the coming months, and as you proceed into Spring 2021? The response ranged from additional time for training, to starting the semester later; additional methods for online instruction; having all of the students vaccinated; and to bring everyone back to campus. The results indicated that the majority of the HSS faculty maintained their initial online lecture method throughout the pandemic. Did the faculty believe that the online instructional method they selected during the pandemic was the best choice? Was method selected playing it safe because they felt comfortable using it? No one knows the answer to these questions. Additional research is needed.

Online Selection Process

Research Questions #2a was: "How did your health professional school/program determine the best online (non-traditional) teaching method to instruct learners?" According to survey results, the HSS schools used no standardization when selecting online pedagogic methods. Of the survey respondents, 33.1% selected, "I was able to select my own online instructional method," as shown in Table 13. This showed HSS faculty members independently selected their course instructional methods. The survey also questioned faculty on teaching online prior to the pandemic and only 10% reported that they had developed and taught online courses. When this question was asked to the six interviewees, their responses varied slightly. Two identified selecting the method independently, two others stated that a committee selected online methods, and the remaining two responded with, "that was what was offered". When questioned during the interview, "JC" responded with "It was me." These results show that administration lacked in offering clear direction as it related to online methods of instruction for the HSS faculty.

The study also analyzed the survey responses to instructional methods used by schools. The results were as follows: 44.9% for the School of Medicine, 24.5% for School of Allied Health, 14.3% for the Dental School, 12.2% for Public Health, and 4.1% for School of Nursing. All of this data can be found in Table 14. This table clearly shows the majority of the schools did not reach out to local or statewide schools for recommendations or collaboration. In a time of crisis, the HSS may need to consider consulting with other local colleges, and universities or with colleges and universities statewide for help and recommendations for instructional methods. Whether there be another pandemic, hurricane, or other disaster neighbors may offer immediate assistance to help overcome challenges.

The largest reporting group in the HSS study was the School of Medicine, the data showed that 44.9% of the faculty were able to select their own online instructional method. When analyzing by the individual schools/programs, 48.8% of the School of Medicine faculty selected their online methods by one of these processes: either by a university decision, IT department – software offered, or an unknown method. When reviewing the data from this question, it is possible that the IT department yielded the greatest influence on faculty members selecting an online or distance learning platform. A finding from the 6 interviews revealed that 33.3%, 2 out of the 6 faculty, had voted on an online or distance instructional method. The remaining four faculty reported selecting an online or distance method themselves after being informed that students were no longer allowed on campus.

Faculty Online Experience

The traditional method for training healthcare professional students was face-to-face instruction with an apprenticeship-based training. If online instruction going to be the future of healthcare professional training than the HSS administration has a large amount of training to do

for its faculty. Prior to the pandemic, only 21.4% of the current HSS faculty that responded in the survey reported teaching an online course. Another 21.4% of the faculty participants reported not taking part in any of the following: taking, developing, or transitioning a face-to-face course to an online one. Administration might consider developing and offering training sessions for the faculty. This would provide the faculty with the knowledge to fill their gap in online or distance instruction. The majority of this HSS faculty would most likely be considered as novices when discussing online or distance instruction. The HSS faculty needed training on how to offer effective online instruction. Dong, Lee, and Aw (2019) discuss the components needed for effective online instruction in the healthcare professions. Their recommendations are summarized as follows:

- Online instruction that best fits learners
- Development for online instruction
- Method of delivery: synchronous or asynchronous
- Management of learners: setting online rule
- Learner and instructor interaction
- Online class size management
- Minimize the risk of online hacking or video bombing

If and when online or hybrid instruction is offered, the instruction needs to provide the healthcare professional student with resources to comprehend and develop psychomotor skills during training, that result in a positive patient caring experience (Masic, 2008).

Several faculty members answers to this interview question: “What are your thoughts about the future of educating healthcare professional students?” implied that they were planning on keeping a form of the online or distance instructional delivery for future courses. The online

format offered them more instructional time, thus allowing them to cover more material. These faculty members are planning to offer a hybrid method of instruction: face-to-face with an online component. The faculty are planning to offer asynchronous instruction in a flipped classroom format. The online portion of a flipped classroom provides the learner with an anytime/anyplace learning opportunity. The healthcare profession educational platform prior to COVID-19 was based on a formidable tradition of collaboration and knowhow offered down to the next generation (Gallagher & Schleyer, 2020). If online instruction is being considered for healthcare professional students, the best recommendation would be in the hybrid format, because it offers the opportunity for learners to learn independently online. When the learner comes to a skills lab or clinical setting the instructor can directly observe patient interaction and performed skills.

When discussing the instruction of healthcare professional students, prior to the pandemic, their instruction/training has been in an apprenticeship style. Health professional schools require their students to participate in lectures, hands-on training, and direct observation in a clinical setting while interacting with patients. Prior to a healthcare professional student receiving any in-clinic or hospital assignments/experience, the student needs to have taken and successfully passed all of their required basic science courses. These courses are usually offered in a traditional face-to-face lecture style and in a simulation center offering hands-on lab training.

Over the past few years, healthcare professional schools have been adjusting their educational instruction methods to include small group sessions and flipped classrooms. This form of instruction is supportive of the constructivist theory, which offers the students the opportunity for active learning and developing new knowledge through prior learned experiences (Huang, 2002). As mentioned in the literature review, constructivist pedagogical framework

works well for online healthcare student training. This ties well with the apprenticeship type learning these students experience. In the constructivist theory, the major role of lecturer is to function as a facilitator to learning, which fits well with online and in-person learning.

Pedagogical Modifications

When HSS faculty were questioned (Research Question #2b) about pedagogical modifications made to their healthcare professional school/program prior to transitioning to online or distance instructions, several modifications were reported. The faculty reported using a modified or new instructional methods for their course(s) at 27.3%. The greatest concern was reported with course assignments or exams at 26.4%. When examining the changes made to assignments or exams for each individual schools/program, all reported making these types of changes: School of Medicine 27.6%, School of Allied Health 22.4%, Dental School at 20.7%, School of Nursing at 15.5%, and Public Health at 13.8%. All of the reported changes in schools' and programs' exams or assignments were the result of the faculty's own reasoning or selection processes. No clear directives were provided from the administration to help guide the faculty to identify and/or strategically modify their assignment or testing strategies.

Keating and DeBoor, (2018) recommend that healthcare professional online curriculums need to be harmonious with the mission and organizational structure of traditional courses. Based on this research study, the HSS faculty selected their own online instructional method for course delivery and did their best to adhere to the standard within the schools' mission and course requirements. There was no harmonious curriculum within the HSS.

The Louisiana State Board of Nursing (LSBN), released a letter on March 16, 2020, offering some guidance to the Louisiana's nursing programs. LSBN stated they were: "committed to remaining fluid and flexible in partnering with nursing education programs that

are developing innovative approaches to accommodate education and workforce needs" (LSBN, 2020, para. 2). They recognized that some revisions would be needed to transition traditional face-to-face instructions to an online instructional method to meet the educational needs for nursing students. The letter for the LSBN sums it up well with this statement, "The ultimate goal is in preparing graduates to practice competently and safely in the provision of quality care" (LSBN, 2020, para.4).

The Liaison Committee on Medical Education (LCME), which is the accrediting body for medicine in the United States, released a letter on March 20, 2020: "LCME Update on Medical Student, Patient, and COVID-19: Approaches to the Clinical Curriculum March 20, 2020" (LCME, 2020). In this letter the LCME stated that each individual medical school needed to hold themselves to standards. The LCME stated that it did not support all clinical rotations being converted to online or virtual courses. However, they did not offer any recommendations as to the acceptable hours that could be earned via an online or virtual training. That control was left up to each medical school's curriculum committee.

Administrative Support

When discussing administrative support and influence on healthcare schools/programs pedogeological methods, some of the Deans had total control. The Association of American Medical College (AAMC) released the following statement on August 14, 2020, in a letter titled, "Guidance on Medical Students' Participation in Direct In-person Patient Contact Activities" (AAMC, 2020). "This guidance document is intended to add to, but not supersede, an academic medical center's independent judgement of the immediate needs of its patients and preparation of its students. The medical school dean has the authority and responsibility to make such decisions regarding medical students" (AAMC, 2020, para. 3). This AAMC letter offered medical school

deans the authority to change their curriculum independently from any global requirements. This letter did not offer or provide any curriculum suggestions or guidance to the medical school's deans for standards of practice. This letter offers a greater understanding of why the administration was vague with faculty guidance on choosing their online or distance instructional methods. The administration guidance lacked true standards and structure from the AAMC.

Online – Faculty Development

Research Question #2c was: "How did the administration support these methods?" When asked about the HSS administrative support for online or distance instruction as it related to faculty development, responses implied that it was unclear to the faculty what training was offered and how they would access the training sessions. The survey question that was directed towards faculty development for online or distance instruction, "live or recorded webinars" was the most frequently selected method at 38.2%. Another subset of faculty members reported that 23.2% of them "preferred formal and informal faculty mentoring program" for their professional development. It was also noted that 23.6% of the faculty selected "none of the above" response, meaning that faculty may have chosen not to participate in any online instruction training. These finding are similar to Cook and Streinert (2013)who reported in their research that faculty development for online learning within the healthcare profession participation rate was low and inconsistent. During interviews, there was no recollection in the HSS schools or programs, of the administration offering nor doing anything for their online or distance faculty training. This means that close to a quarter of the faculty members did not take part in any formal online or distance learning training. Healthcare faculty members understand the importance of proper training and that their student instruction directly affects patient lives. According to Scarbecz et al., (2011) a study on faculty development in health professionals reported that full professors

displayed minimal interest in taking part in any training activities. Their research results may help answer why 23.6% of the HSS faculty selected “none of the above” when question about faculty development. According to our survey response to the question about educational experience, 31% of the HSS faculty selected having greater than 20 years of educational experience. Future research may wish to focus on if faculty members did not feel the need for online training or did they not want to start a new endeavor. That question will need to be answered in another study.

The study survey questioned faculty about their preparedness. Did the faculty feel prepared? What would have helped them feel better prepared? What would be most helpful for teaching? The results of the faculty feeling prepared showed that only 30.5% of them strongly agreed, while 40.7% somewhat agreed. The remaining faculty responses are 13.2% neutral, while 10.8% somewhat disagree, and 4.8% strongly disagreed on preparedness for online instruction. Only one-third of the healthcare faculty felt fully prepared. What could have the administration done to improve these responses to strongly agree? This survey question was a follow up question in an open-end question format: What would help you to feel more prepared? The HSS faculty responses ranged from needing more directive instructions from administration, more professional development training for online courses, technology training, and exam security. The interviewees offered similar responses; based on these mixed methods responses the HSS online training was dismal at best. The faculty development offerings varied by school and the data reflected that there was minimal to no lasting impact on the faculty.

When the HSS faculty were questioned about online instruction using technology, 56.8% reported that training in this area would have been beneficial. The use of new technology (Zoom, GoToMeeting, etc.) and lack of training increased the demand on healthcare faculty to offer a

more tailored learning environment. In the interview with "MO" they referred to this form of instruction as "going to the movies and trying to make this an interactive online event to get the students to purchase a movie ticket". The faculty were required to think outside of their comfort zone in different pedagogical methods. Both pedagogical and assessment strategies for teaching online were a concern for the faculty at 44.1%. These were challenging areas for healthcare faculty since most instructors did not have an educational background.

This study showed that in the HSS, faculty felt ill prepared for online instruction and the administration did not offer sufficient training and support to help them feel prepared. The HSS administration needed to provide the faculty with online instruction training and technology so they could offer the best possible instruction for future healthcare professional students.

Challenges Encountered

Research Question #3 was: "What educational challenges did the health sciences system faculty overcome when transitioning from traditional face-to-face instruction to online instruction during the COVID-19 pandemic?" There were several challenges due to the COVID-19 pandemic in the healthcare professional schools/programs setting. One that challenged HSS faculty the most initially was student testing. Testing the HSS student's knowledge through an online source, while using new technology, and time limitations made it challenging. These findings were similar to finding in to a number of studies in the literature (Esani, 2010; Radcliffe et al., 2020; Rajab et al., 2020). In this 21st century technology advanced world, most of the health professional students have smart devices. Everything is just a few keystrokes away from finding the answer to a test question. Several schools used lockdown browsers, while others selected to divide the class up and have faculty Zoom proctor the exams. The Zoom proctor method was not the most efficient method. Using the medical school as an example, 16 faculty

members were needed to oversee 200 medical students at one time. Each faculty member proctored 12-14 medical students for 2 to 4 hours. This takes time away from their other faculty responsibilities like research.

Other challenges the faculty met were communication, social interaction, and mentoring of the healthcare students. One faculty member provided this comment in an open-end survey questions about their concerns: “Educational support of students including emotional/mental challenges of isolation and lack of connectivity with classmates.” A Dental School faculty member made the statement that “Teaching dentistry as theory without practical application is troubling.” One interviewee, “Bella” said that she had “A feeling of disconnect with the students” and felt that online instruction was not able to replicate the same interaction as an in-person instruction. The missed informal interactions with students, before and after class, has created a void in both the faculty and student social connectivity. Dong et al., (2021) stated that if you are going to just lecture, record it. Dong et al. (2021) also recommend that active online sessions need to be interactive, for example, discussion on the session topic between the faculty, students, and peer-to-peer.

Implications

Online/distance instruction exposed a vulnerability within the healthcare professional schools and programs. Advancement in medical technology used in the clinical setting has been progressing while the method of instruction of future healthcare professional has remained the same. The COVID-19 pandemic required the health professional community to embrace changes in instructional methods with the use of new technologies and it forced them to put these methods into practice. Most of the healthcare faculty adapted to a hybrid instructional method for teaching future healthcare professional students.

The HSS use of online instructional methods created new partnerships across the country and world. Several faculty members reported recruiting colleagues worldwide to partake in one or more of their online lectures. The faculty think this outreach has improved course content by showing the students the use of consultation and teamwork. One of the interviewees reported that, “it feels like this makes the world a little smaller.” The faculty and consultants ended up working in collaboration to help develop new ideas.

Online instruction makes it difficult for faculty to instruct HSS students in hands-on patient assessment and procedure skills. These assessments and procedures require the student to use psychomotor skills, such as learning the environment in which they are working, the manner the procedures should be done in to minimize any risks to the patient, and refinement through practice while being supervised by a faculty member. An example would be nursing students being taught how to insert and intravenous (IV) catheter. These students need to work within the typical environment and practice using the equipment in a safe manner when learning how to work with a patient. Continued online instruction without the ability to perform direct patient assessment and procedures will leave a considerable deficit in future healthcare professional psychomotor skills.

The method of online instruction also interferes with HSS students’ ability to interact with their peers and their schools’ upper-level students. In addition, online instruction makes in challenging to develop social groups and to learn from each other. The generalization of knowledge gained from lecture to patient interactions is lost. The lack of these peer social interactions may result in student inability to clearly communicate with other healthcare workers and the patient population to yield proper care.

Limitations of Research

This study, like all research studies, has limitations beyond the control of the researcher. One of the biggest limitations was the survey response rate. The goal of this study was to obtain a response rate close to 45-50%. Faculty time may have been limited, leading to a lack of participation. The faculty members may not have been willing to take part due to questions about their ability to teach online and their comfort level. They may also have felt that their job could be in jeopardy if their responses were known. In addition, some participants may have a double role: administrator and faculty member. Thus, the questions related to administrators may be answered in a biased manner. The timing of the survey was at the beginning of the spring 2021 semester, just after the fall semester and winter holiday break, which could have affected response rates. At the beginning of each semester, faculty have limited time and a number of responsibilities to their students. Unfortunately, the survey timing was slightly delayed due to the external reliance of IRB approval, resulting in the survey being delivered after the academic winter break.

Recommendations for Future Research

The HSS administration has an obligation to offer better support with online instructional training, communication, and guidance for their faculty. Offering online professional development training sessions for faculty that addresses their specific needs would be helpful. The training needs to address best instructional methods for online or distance instruction. Once the faculty learns about online pedagogy, they should be able to determine which online instructional delivery - synchronous, asynchronous, or hybrid works best for their individual course(s). These training sessions could provide the faculty with confidence and pedagogical knowledge to efficiently deliver their course content. A clear vision from administration could

improve online instruction methods and improve faculty buy-in (Mishra et al., 2020). The advancements in teaching technology are progressing to a large number of online or distance tools that could assist faculty in creating an interactive and effective online instructional environment. According to Dhawan (2020) many colleges and universities sought help with the training process for online instructions. Dhawan offers a Strengths, Weaknesses, Opportunities, and Challenges (SWOC) model of e-learning and it shown in figure 3. Online instruction in the healthcare professional system can be helpful because they are life-long learners and early exposure to this method of instruction could develop and encourage on-going learning.

Faculty members can be resistant to change, especially if they have been teaching the same traditional course(s) for an extended period. A recommendation to get faculty buy-in is to incentivize them financially. The buy-in would encourage and financially compensate for the time needed to embrace different teaching methods and technologies to be used in lectures. Financial incentives, for their time with training and redevelopment of their course material (lectures and test), would encourage faculty during necessary change. The administration needs to be considerate of the faculty time. The learning curve in transitioning to online instruction is steep for most HSS faculty, as this is a new instructional concept for the majority of them. Once the HSS faculty have participated in online training, the administration should do a follow-up assessment via end of semester course evaluation. This is a direct way of targeting the best faculty online instructional practices.

An important recommendation that comes from this research study is for HSS administration to conduct a self-review of the HSS teaching faculty to identify the strengths, weakness, opportunities, and threats (SWOT) of how educational instruction changes were handled within their school. The results of this analysis should yield valuable information and

help identify which training options worked best for the faculty. Some questions to ask when conducting the self-review could include: Why the faculty selected that online training option? How to best improve faculty online instructional training? How to determine what instructional training options faculty deemed challenging? By answering these questions of online faculty training the overall educational experience should improve.

Another recommendation would have the faculty use the recommended online or distance active learning for Zoom lectures. The Columbia University Center for Teaching and Learning offers a list of strategies for active online instruction: clicker or polling questions (multiple choice questions), breakout rooms (offers opportunity to peer interaction and small group discussion), and PowerPoint or short story through screen sharing (reflection of course content) (https://ctl.columbia.edu/). These active learning methods should work well in the healthcare professional schools due to having students apply the information presented in the lecture. When these active learning methods are added to a Zoom lecture, the lecture becomes more interactive and encourages student collaboration. These principals offer students and faculty an online learning experience that mimics face-to-face instruction.

When considering online instruction for a healthcare professional school we should keep in mind that this is new to the HSS faculty members. Online training is something that the HSS faculty should offer in a learning environment that is engaging to students. This training takes practice and patience to be most effective. As faculty reminds students, practice is the only way to improve outcome.

Contribution

As of today, no research study examines the abrupt changes of a health sciences system transitioning education of preclinical healthcare professional students from a face-to-face lecture

format to an online (non-traditional) method. Everything found to-date in the literature examines the general education of students at colleges and universities transitioning from face-to-face teaching to online. This research study examined instructional methods selected and implemented by six healthcare professional schools within a health sciences system due to a pandemic. Identifying the shifts in instructional methods brought on by the COVID-19 pandemic fills a gap in the literature and will help educate future healthcare schools to better enable and support faculty in teaching online courses.

Future Research

COVID-19 pandemic offered several areas for future research within the health sciences system. An area of interest would be in assessing which online instructional method of these three (synchronous, asynchronous, hybrid) the faculty determined worked best for the healthcare professional school by evaluating the current student progression. A study like this could offer the faculty and administration information on how to invest time and financial resources to maintain or improve student instruction.

One could consider investigating how COVID-19 altered the interaction between the faculty and their students. This study would delve into the psychological impact of online training in healthcare professional schools and what impacts the physical distance and online training had on faculty and student bonding. The research could investigate what online technology helped faculty mimic the pre and post lecture, non-solicited social interaction between faculty and student conversations. This simple social interaction between faculty and student are important for sharing knowledge and psychological wellbeing of both the faculty and student. In this study, a few faculty members reported having little social interaction, resulting in

little to no attachment to their students. One could assume that this feeling of detachment affected student to faculty perspective and student to student perspectives, too.

When considering other research studies, one could examine the autonomous method of online training for the healthcare professional student. Another study, looking into the online training of healthcare professional students and the affect on social interaction with peers and faculty members. One more research suggestion could look at online trained healthcare professional students and how they perform as opposed to face-to-face students. Were their critical thinking and communication skills within the patient setting as well as students that received face-to-face instruction? With a well-defined research study, these questions could investigate and guide healthcare professional schools.

All future research studies mentioned should be considered and many more. The future of the healthcare professional student is in a state of flux and needs to be investigated. The healthcare professional schools need to know what is working within their education system and what is not.

Summary

This study examined how faculty determined the best methods to effectively instruct online courses for healthcare professional students during the COVID-19 pandemic. The goal was to examine which methods the faculty changed to in March of 2020 and what the influence on the online pedology used for Fall of 2020 courses. The study examined how the administration supported and prepared their faculty for the transition from a traditional F2F to an online instructional pedagogy.

Did the SARS-CoV-2 virus have an impact on the education of future healthcare professionals in the southern health science system? The answer is yes. The extent of the

pandemic's impact is still unknown. It remains to be seen whether the decrease in face-to-face instruction and loss of clinical hours will result in lowered clinical performance by HSS students. Several of the healthcare professional governing bodies recommend adding additional training for graduates and extending orientations once they are employed.

A sizable number of HSS faculty plan to adopt lessons learned with online/ distance instruction in their future educational training. Most of the faculty are considering transitioning their instruction to a hybrid instructional method of training. Many have plans to use this newfound online instructional method when possible. When face-to-face is not necessary, they will use an online or distance instruction format to help to maximize the faculty and student learning time and focus on hands-on skills needed in order to deliver good healthcare to patients.

Web-based instructional platforms like Zoom, GoToMeeting, etc. have impacted the course pedagogical method of instructing healthcare professional students due the pandemic. The impacts of these changes in instructional methods start with schools/programs admission and go all the way through to graduation. Prior to the pandemic, healthcare professional schools frowned upon applicants taking online courses. The pandemic has transformed the tried-and-true standard for health educational systems by making online courses an acceptable means for course credit and when applying for healthcare professional schools.

This same southern HSS was affected by a disaster in 2005. That disaster was Hurricane Katrina. This event cause tremendous destruction to the brick and mortar of New Orleans, but the HSS continued to teach their students as they had in the past. However, COVID-19 has been a healthcare disaster in more than one way. Besides the tremendous loss of life and illness and the exhaustion of healthcare workers, COVID-19 has caused a tremendous upheaval in terms of its effect on how HSS school had to teach their students.

This pandemic has resulted in another serious impact, that I am personally witnessing, on faculty retention. Several of the HSS long term faculty selected to retire. The retirement of these experienced faculty members will affect the HSS as a whole. One of the ways faculty retirement may affect HSS education is in grant funding. These faculty members are researchers that receive grants in their areas of study. When they retire, their ability to bring in grants is gone. Another way faculty retirement can affect the HSS is in recruitment. Well know educators and researchers not only bring in funds, they have the ability to recruit students and new faculty members for employment.

The overall effect from this invisible disaster in the healthcare educational setting needs additional research. The full impact for current and future HSS students is presently unknown. Their educational experience has been altered in many ways, from the instructional format to the clinical interaction and bedside training. Future research studies should follow up on how these students perform on national board exams and how they interact with the patient population.

The HSS community at the center of this study has dealt with a number of natural disasters and pandemics and has historically shown a unique ability to adapt and overcome these challenges. The United States healthcare professional schools/programs, including the HSS in this study, were moving at a snail's pace in regards to transitioning to online educational methods. The pandemic has thrust these healthcare schools/program into using this type of pedagogical instruction. The Severe Acute Respiratory Syndrome (SARS-CoV-2) virus has changed the educational approach for future healthcare student training. Only time will tell us about its global affect and long-term effects this pandemic will have on education.

APPENDIX A. DEAN PERMISSION AND SUPPORT LETTER

Letter: Dean Permission and Support

Letter to School Dean requesting permission and support for research study.

Dr. *Dean of School*,

My name is Daryl Lofaso. I am currently the Skills Lab Course Director for HSS. I have been working towards obtaining a PhD in Educational Leadership and Research: Higher Education Administration from LSU - Baton Rouge for the last 4 plus years. It is time for me to do a dissertation. After working with my committee chair, we decided on a dissertation studying the impact of COVID-19 on the HSS. The study will focus on the faculty of all six schools.

The faculty research project will focus on the challenges needed to overcome transitioning from traditional face-to-face methods of teaching to distance teaching. If approved by your office and IRB, I am planning to deploy the survey in January 2021.

I have met with Dr. X Vice Chancellor for Academic Affairs, and he recommended that we meet and discuss this project, and that I obtain your support in person. A meeting should not last more than 15 minutes. When would you be available to meet?

Sincerely,
Daryl Lofaso
Ph.D. Candidate
Email: xx@xxx.xxx

APPENDIX B. COVER LETTER AND INITIAL INVITE

Dear Health Sciences Faculty,

The coronavirus (COVID-19) pandemic has led to a disruption in the education sector of frontline education in healthcare professional schools and programs. You have been selected to take part in a research study to assess the impact of COVID-19 has had on your school or program. The research data will be used to describe how faculty adapted their in-person classes to an online educational platform, their use of available educational resources to accomplish this transition during the first nine months of the COVID-19 pandemic and to help define stress points that the healthcare education community may have experienced during this pandemic. This survey is part of my doctoral dissertation research. The survey is anonymous and should take a maximum of 15-20 minutes to complete.

All information collected in the survey will remain confidential and will have identifying markers removed. The study has been summitted to the IRB at both LSU-Baton Rouge and HSS for approval. This study has been approved by the LSU IRB / HSS IRB (IRBAM-20-0733/1567). For questions concerning participant rights or other concerns, contact Alex Cohen, Chairman, LSU Institutional Review Board, 225-578-8692, or email irb@lsu.edu. Additional information can be found at:

https://www.lsu.edu/research/resources_for_faculty/research_compliance/irb.php

The next page contains specific information on this research. At the bottom of the page is a link to the on-line survey. By clicking on that link and continuing on to complete the survey, you are indicating that you have read the consent form for the study and agree to participate in this research.

Link: (redacted)

Thank you for taking time out of your day to take part in this research study.

Sincerely,

D. Lofaso
Ph.D. Candidate
Email: xx@xxx.xxx

Dr. Pamela B Blanchard
Doctoral Committee, chair
Email: xx@xxx.xxx

APPENDIX C. SURVEY CONSENT

Survey Consent Form

Study Title: One Health Sciences Center Pursuit in Selecting an Online Educational Platform for Their Students Due to the COVID-19 Pandemic

Purpose of the Study: This research project plans to investigate how faculty and instructors determined the method used to determine effectively teaching online courses to healthcare professional students (six schools: allied health, dental, nursing, medical, public health, and graduate) during the COVID-19 pandemic. The plan is to examine, retrospectively, how the faculty acutely changed in March of 2020 to an online educational format and to look at impact of the online education pedagogy for the courses taught in Fall of 2020. In addition, the study hopes to identify which selected online educational methods best met the healthcare professional faculty members need to train students for future patient encounters. The study will be conducted online through Qualtrics and you will spend approximately 20 minutes completing one questionnaire about your online selection process.

Participant Inclusion Criteria: Individuals between the ages of 18 and 80 who do not report psychological or neurological conditions. Faculty and instructors of the LSU Health Sciences Center – New Orleans who taught classes in the Spring of 2020 and/or the Fall of 2020. To participated in this study you must meet the requirements of both inclusion and exclusion criteria.

Participant Exclusion Criteria: Individuals under the age 18 or over age 80. If you have psychological or neurological conditions.

Risks: There are no known risks associated with this study. Please contact the IRB office if you have questions.

Investigators: The following investigator is available for questions pertaining to this study:

Dr. Pam Blanchard, LSU School of Education, email: xx@xxx.edu.

Daryl Lofaso, XXX School of Medicine,
(XXX) XXX-XXXX, email:xx@xxx.edu.

Right to Refuse: Participation may choose not to participate or to withdraw from the study at any time without penalty or loss of any benefit to which they might otherwise be entitled.

Privacy: Results of the study may be published, but no names or identifying information will be included in the publication. Participant's identity will remain confidential unless disclosure is required by law.

Approved: This study has been approved by both LSU IRB / HSS IRB. For questions concerning participant rights, please contact the IRB Chair, Alex Cohen, at 225-578-8692 or irb@lsu.edu.

Consent: By continuing to this survey, you are giving consent to participate in this study.

____ Yes, I give permission.
____ No, I do not give permission.

APPENDIX D. FOLLOW-UP EMAIL

Second Request (Two weeks after first email)

Dear Health Sciences Faculty,

If you have completed the survey already, "Thank You." If you have not done so, your participation in this research study would be greatly appreciated.

The coronavirus (COVID-19) pandemic has led to a disruption in the education sector of frontline education in healthcare professional schools and programs. You have been selected to take part in a research study to assess the impact of COVID-19 has had on your school or program. The research data will be used to describe how faculty adapted their in-person classes to an online educational platform, their use of available educational resources to accomplish this transition during the first nine months of the COVID-19 pandemic and to help define stress points that the healthcare education community may have experienced during this pandemic. This survey is part of my doctoral dissertation research. The survey is anonymous and should take a maximum of 15-20 minutes to complete.

All information collected in the survey will remain confidential and will have identifying markers removed. The study has been summitted to the IRB at both LSU-Baton Rouge and LSU Health New Orleans for approval. This study has been approved by the LSU IRB / HSS IRB (IRBAM-20-0733/1567). For questions concerning participant rights or other concerns, contact Alex Cohen, Chairman, LSU Institutional Review Board, 225-578-8692, or email irb@lsu.edu. Additional information can be found at:

https://www.lsu.edu/research/resources_for_faculty/research_compliance/irb.php

The next page contains specific information on this research. At the bottom of the page is a link to the on-line survey. By clicking on that link and continuing on to complete the survey, you are indicating that you have read the consent form for the study and agree to participate in this research.

Link: (redacted)

Thank you for taking time out of your day to take part in this research study.

Sincerely,

D. Lofaso
Ph.D. Candidate
Email: xx@xxx.edu

Dr. Pamela B Blanchard
Doctoral Committee, chair
Email: xx@xxx.xxxu

APPENDIX E. STUDY COVER LETTER

Dear Heath Sciences Faculty,

As you know, the coronavirus (COVID-19) pandemic has led to a disruption in the education sector of frontline education in healthcare professional schools and programs. By taking part in the interview portion of this research study, you will help assess the impact that COVID-19 has had on your school or program. The research data will be used to assess administration and faculty use of resources and to help define stress point that the healthcare education community may have experienced during this pandemic. This research study is being used for a Ph.D. dissertation. The interview should take a maximum of 45 minutes to complete.

All information collected in the interview will remain confidential and no information will have any identifying markers attached. The study has been submitted to the IRB at both LSU A&G and LSU Health New Orleans for approval. This study has been approved by the LSU IRB / HSS (IRBAM-20-0733/1567). For questions concerning participant rights, please contact the IRB Chair, Alex Cohen, 225-578-8692, or irb@lsu.edu or www.lsu.edu/research.

Thank you for taking time out of your day to take part in this research study.

Sincerely,
Daryl Lofaso
Email: xx@xxx.xxx

Please provide the following information if you wish to participate in the interview portion of this study.

Name: _____
Email: _____
Contact Number: _____

We will be in contact with you shortly. Thanks for your interest in taking part in this portion of the study. Your participation is greatly appreciated.

APPENDIX F. INTERVIEW CONSENT FORM

Study Title: One Health Sciences Center Pursuit in Selecting an Online Educational Platform for Their Students Due to the COVID-19 Pandemic

Purpose of the Study: To determine how the health sciences center addressed the abrupt change from face-to-face lecture to an online platform. The study will take place over a period of 1 month. This study will entail a 45-minute, audio recorded interview of participants.

Risks: The only study risk is the inadvertent release of sensitive information found in the second questionnaire. However, every effort will be made to maintain the confidentiality of your study records. The audio files will be kept secure on a password protected computer to which only the investigator has access. Please contact the IRB office if you have questions.

Benefits: This study will reveal valuable information about LSU Health New Orleans experience transitioning to an online training and its impact on educating future healthcare professionals.

Investigators: The following investigator is available for questions pertaining to this study:

Dr. Pam Blanchard, LSU School of Education, email: xx@xxx.xxx)

Daryl Lofaso, HSS School of Medicine,
(XXX) XXX-XXXX, (email: xx@xxx.xxx).

Performance Site: HSS

No. of Participants: 6 participants

Participant Inclusion Criteria: Individuals between the ages of 18 and 80 who do not report psychological or neurological conditions. Faculty of the HSS who taught classes in both the Spring of 2020 and the Fall of 2020. To participate in this study you must meet the requirements of both inclusion and exclusion criteria.

Participant Exclusion Criteria: Individuals under the age 18 or over age 80. If you have psychological or neurological conditions. Faculty of the HSS who did not teach course during both the spring of 2020 and the Fall of 2020.

Right to Refuse: Participation may choose not to participate or to withdraw from the study at any time without penalty or loss of any benefit to which they might otherwise be entitled.

Privacy: Results of the study may be published, but no names or identifying information will be included in the publication. Participant's identity will remain confidential unless disclosure is required by law.

I understand I may direct additional questions regarding study specifics to either of the investigators. If I have questions about subjects' rights or other concerns, I can contact Dr. Alex Cohen, Institutional Review Board, (225) 578-8692, irb@lsu.edu, or www.lsu.edu/research.

I agree to participate in the study described above and acknowledge the investigator's obligation to provide me with a signed copy of this consent form.

Subject Signature: _____ Date: _____
Printed name of subject: _____

APPENDIX G. FACULTY SURVEY

COVID-19 Health Science System – Faculty Survey (Qualtrics Software)

Survey Flow

Standard: Consent Form (1 Question)
Block: Demographics (8 Questions)
Standard: Impact on Higher Ed (2 Questions)
Standard: Retrospective (4 Questions)
Standard: Professional Development: (7 Questions)
Standard: Institutional Preparedness (3 Questions)
Standard: Teaching Online (7 Questions)
Standard: Future of Education (4 Questions)
Standard: Interview (1 Question)

Survey Consent Form

Study Title: One Health Sciences Center Pursuit in Selecting an Online Educational Plat form for Their Students Due to the COVID-19 Pandemic

Purpose of the Study: This research project plans to investigate how faculty and instructors determined the method used to determine effectively teaching online courses to healthcare professional students (six schools: allied health, dental, nursing, medical, public health, and graduate) during the COVID-19 pandemic. The plan is to examine, retrospectively, how the faculty acutely changed in March of 2020 to an online educational format and to look at impact of the online education pedagogy for the courses taught in Fall of 2020. In addition, the study hopes to identify which selected online educational methods best met the healthcare professional faculty members need to train students for future patient encounters. The study will be conducted online through Qualtrics and you will spend approximately 20 minutes completing one questionnaire about your online selection process.

Participant Inclusion Criteria: Individuals between the ages of 18 and 80 who do not report psychological or neurological conditions. Faculty and instructors of the LSU Health Sciences Center – New Orleans who taught classes in the Spring of 2020 and/or the Fall of 2020. To

participated in this study you must meet the requirements of both inclusion and exclusion criteria.

Participant Exclusion Criteria: Individuals under the age 18 or over age 80. If you have psychological or neurological conditions.

Risks: There are no known risks associated with this study. Please contact the IRB office if you have questions.

Investigators: The following investigator is available for questions pertaining to this study:
Dr. Pam Blanchard, LSU School of Education, email: xx@xxx.xxx.
Daryl Lofaso, HSS, (XXX) XXX-XXXX, email:xx@xxx.xxx.

Right to Refuse: Participation may choose not to participate or to withdraw from the study at any time without penalty or loss of any benefit to which they might otherwise be entitled.

Privacy: Results of the study may be published, but no names or identifying information will be included in the publication. Participant's identity will remain confidential unless disclosure is required by law.

Approved: This study has been approved by the LSU IRB / HSS IRB (IRBAM-20-0733/1567). For questions concerning participant rights, please contact the IRB Chair, Alex Cohen, at 225-578-8692 or irb@lsu.edu.

Consent: By continuing to this survey, you are giving consent to participate in this study.

- ○ Yes, I give permission
- ○ No, I do not give permission

Skip To: End of Survey If Survey Consent Form Study Title: One Health Sciences Center Pursuit in Selecting an Online Educat... = No, I do not give permission

End of Block: Consent Form

Start of Block: Demographics

Survey Link:

Q1 **Gender**

- ○ Female
- ○ Male

Q2 **Ethnicity/Race**

- ○ African - American
- ○ Asian
- ○ Caucasian
- ○ Hispanic
- ○ Native American
- ○ Other: _____

Q3 **Institutional Affiliation**

- ○ Dental School
- ○ School of Graduate Studies
- ○ Public Health
- ○ School of Allied Health
- ○ School of Medicine
- ○ School of Nursing

Q4 **Program**

- ○ Audiology
- ○ Cardiopulmonary (Respiratory/Sonography)
- ○ Clinical Laboratory Science
- ○ Clinical Rehabilitation & Counseling
- ○ Dentistry (DDS, Dental Hygiene, etc.)
- ○ Occupational Therapy
- ○ Physical Therapy
- ○ Physician Assistant
- ○ Medical
- ○ Nursing (BSN, NP, CRNA)
- ○ Public Health
- ○ Graduate
- ○ Speech-Language Pathology

Q5 **Faculty Position**

- ○ Non-Clinical (Basic Science/Professor) Faculty
- ○ Clinical Faculty
- ○ Both: Non-Clinical and Clinical Faculty

Q6 **Terminal Degree**

- ○ Bachelors
- ○ Masters
- ○ PhD
- ○ MD
- ○ Other: _____

Q7 **Experience as an Educator** (years)

- ○ 1-3 yrs.
- ○ 4-9 yrs.
- ○ 10-15 yrs.
- ○ 15-20 yrs.
- ○ > than 20 yrs.

Q8 **Duration of Teaching at the University Level**

- ○ 1-3 yrs.
- ○ 4-9 yrs.
- ○ 10-15 yrs.
- ○ 15-20 yrs.
- ○ > than 20 yrs.

End of Block: Demographics

Start of Block: Impact on Higher Ed

[1]Q9 The pandemic is having a profound impact on higher education. Based on your experience to date, your view of your institution's past and future prospects, and your overall opinion of higher education is general, how optimistic or pessimistic are you…

	Optimistic	Neutral	Pessimistic	Unsure
about the overall future of higher education?	○	○	○	○
about the future for your institution?	○	○	○	○
about your personal role in higher education?	○	○	○	○

Q10 *(Optional)* Please explain why you gave the ratings that you provided above. _____

End of Block: Impact on Higher Ed

Start of Block: Retrospective

Retro **Retrospective:** When answering the next few questions, please refer back to your mind set in **March of 2020**, when you had to acutely move your face-to-face lecture to an remote instructional format.

[2]Q11 What was your experience with online learning **PRIOR** to the current COVID-19 situation? *(Please check all that apply)*

- ☐ I have taken an online course
- ☐ I (alone or with others) developed a new online course
- ☐ I (alone or with others) converted a face-to-face course to online
- ☐ I (alone or with others) substantially modified an existing online course
- ☐ I have taught an online course
- ☐ Other experience with online courses _____

⊗None of the above

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[1] Johnson, N., Veletsianos, G., & Seaman, J. (2020). U.S. faculty and administrations' experiences and approaches in the early weeks of the COVID-19 pandemic. *Online Learning. 24*(2), 6-21.

[2] Jaschick, S., & Lederman, D. (2019). *The Inside Higher Ed 2019 survey of faculty attitudes on technology: A stud by Inside Higher Ed and Gallup.* Gallup, Inc. 1-62.

Q12 What online instructional techniques did your program select in **March 2020** for your courses? *(Please check all that apply)*

- ☐ Synchronous video (Zoom, GoToMeeting, Google Hangout, etc.)
- ☐ Asynchronous recorded video of lectures (Mediasite)
- ☐ Institutional conference/chat function
- ☐ Communicating via social media (blogs, wikis, Twitter, Facebook, etc.)
- ☐ Pre-recorded videos from external sources (YouTube, etc.)
- ☐ Distribution of material via institution's Learning Management System (LMS) (e.g. Moodle, Blackboard, Canvas, etc.)
- ☐ Other (Please describe or list): _____

Q13 Did you teach some or all of your courses partially or fully online in the Fall 2020 term?

- ○ Yes, I taught at least one partially or fully online course during Fall 2020
- ○ No, I did not teach any online courses during Fall 2020
- ○ The decision about teaching online is still pending
- ○ I did not teach during Fall 2020
- ○ Other: _____

End of Block: Retrospective

Start of Block: Professional Development:

Q14 **Professional Development:** When answering the next few questions, please refer back to **March of 2020**, what form of professional development did your institution offer for teaching online courses.

Q15 My institution has recommended and/or provided the following types of professional development to help faculty teach online. *(Please check all that apply)*

- ☐ In-person training
- ☐ Live or recorded webinars
- ☐ Self-paced training
- ☐ Provision of and training for an online resource hub
- ☐ Formal or informal faculty mentoring program
- ☐ Online faculty community
- ☐ Other, please specify _____
- ☐ None of the above

[3]Q16 What type of professional development do you need to prepare you to teach effectively in an online format? *(Please select all that apply)*

- ☐ How to use specific technologies
- ☐ How to convert or revise your in-person course to an online format
- ☐ Best strategies to access online course materials
- ☐ Pedagogical strategies for teaching online
- ☐ Assessment strategies for teaching online
- ☐ Strategies for supporting students in learning online
- ☐ How to work effectively from home
- ☐ Strategies for supporting students with accessibility needs

Other: _____

[3] Johnson, N. (2020). *Digital learning in Canadian higher education in 2020.* Canadian Digital Learning Research Association.

Q17 How useful or effective were these professional development resources for you?

	Useful	Not Useful	Did Not Use
In-person training	○	○	○
Live or recorded webinars	○	○	○
Self-paced training	○	○	○
Provision of and training for an online resource hub	○	○	○
Formal or informal faculty mentoring program	○	○	○
Online faculty community	○	○	○
Other	○	○	○

Q18 Which format would you prefer for your own professional development? *(Please select all that apply)*

- ☐ Synchronous online sessions designed as a part of an ongoing series or course
- ☐ Asynchronous online sessions designed as a part of an ongoing series or course
- ☐ Standalone synchronous online sessions on a topic of interest
- ☐ Standalone asynchronous online sessions on a topic of interest
- ☐ An online resource hub with links to different trainings
- ☐ Other: _____

Q19 I felt prepared to teach partially or fully online this **Fall 2020**, if necessary.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Neutral
- ○ Somewhat Disagree
- ○ Strongly Disagree

Q20 What would help you to feel more prepared? _____

End of Block: Professional Development:

Start of Block: Institutional Preparedness

Q21 To what extent are you concerned about your institution's capability to deliver equitable learning opportunities when courses are delivered online?

- ○ Very concerned
- ○ Somewhat concerned
- ○ Neutral
- ○ Somewhat unconcerned
- ○ Unconcerned

Q22 *(Optional)* Please explain why you are concerned about your institution's capability to deliver equitable learning opportunities online. _____

Q23 Does your institution provide or support the use of the following techniques for online courses? *(Please check all that apply)*

- ☐ Online discussion boards
- ☐ Have students complete interaction exercises online
- ☐ Have student's complete lab activities online
- ☐ Have students give speeches or presentations online (e.g. Zoom)
- ☐ Online polling or quizzes to check progress and keep students engaged
- ☐ Small group asynchronous exercises
- ☐ Small group exercises online (e.g. Zoom breakout rooms)
- ☐ Formal tutoring or peer-to-peer learning program
- ☐ Other: _____

End of Block: Institutional Preparedness

Start of Block: Teaching Online

Q24 How did you communicate with your students outside of class sessions in the **Fall 2020**? *(Please check all that apply)*

- ☐ Conference system in the Learning Management System (LMS) (e.g. Moodle)
- ☐ One-on-one video conferences
- ☐ Small group video conferences
- ☐ Text Messaging
- ☐ Email
- ☐ Social Media (Facebook, Twitter, LinkedIn, Tok-tok, etc.)
- ☐ Phone calls
- ☐ Other: _____
- ☐ I did not have out of class communications with students

Q25 What is your current situation? *(Please check all that apply)*

- ☐ Does not apply – not teaching this term
- ☐ Operating as usual, my in-person classes continue to be held
- ☐ Operating as usual, all my classes are already online
- ☐ All of my in-person classes are now or will be transitioned to be delivered online
- ☐ Some of my in-person classes are being transitioned to be delivered online
- ☐ My in-person classes for this term are canceled and are not expected to resume
- ☐ My in-person classes for this term are not suspended, but will be soon
- ☐ My in-person classes for this term are suspended, and are expected to resume at a later date
- ☐ I've moved some/all of my classes to a distance learning model other than online
- ☐ Other: _____

Q26 What techniques are you using in the classes you have just moved to online? *(Please check all that apply)*

- ☐ Synchronous video (Zoom, GoToMeeting, Google Hangout, etc.)
- ☐ Asynchronous recorded video of lectures (Mediasite)
- ☐ Institutional conference/chat function
- ☐ Communicating via social media (blogs, wikis, Twitter, Facebook, etc.)
- ☐ Pre-recorded videos from external sources (YouTube, etc.)
- ☐ Distribution of material via institution's Learning Management System (LMS) (e.g. Moodle, Blackboard, Canvas, etc.)
- ☐ Other (Please describe or list): _____

Q27 How did your school/program select the online instructional technique used in previous question?

- ○ I was able to select my own online instructional method
- ○ Committee selection
- ○ Recommended by the schools/programs governing body/ national academic organizations (e.g. AAMC, ACEN or CCNE, ARC-PA, NBRC, etc.)
- ○ Partnership with other institutions in your community
- ○ Partnership with other institutions within the state
- ○ Other (Please describe): _____

Q28 What modifications did you make to your curriculum and/or teaching in the classes you moved to online? *(Please check all that apply)*

- ☐ I dropped some assignments or exams
- ☐ I dropped some of the reading that I was originally asking student to do
- ☐ I changes the kinds of assignments or exams I am asking students to do
- ☐ I (or my institution) allowed students to option to choose pass/fail instead of A-F grades, Honors, High Pass, Pass or Fail for this semester
- ☐ I lowered my expectations about the amount of work that my students will be able to do
- ☐ I lowered my expectations about the quality of work that my students will be able to do
- ☐ I am using new teaching methods
- ☐ Other: _____

Q29 In this rapidly evolving situation please let us know what you think will be most helpful for your teaching, in the coming months, and as you proceed into Spring 2021. _____

Q30 What was the value of partnerships with the following in preparing for the Fall 2020?

	Not valuable	Valuable	Not sure / N/A
Partnerships with other institutions in our state	○	○	○
Partnerships with other institutions in a different state	○	○	○
Partnerships with Online Program Management companies (for-profit companies that help institutions move learning online)	○	○	○
Partnerships with national academic organizations (e.g. AAMC, ACEN or CCNE, ARC-PA, NBRC, etc.)	○	○	○
Partnerships with technology and service providers	○	○	○
Other:	○	○	○

End of Block: Teaching Online

Start of Block: Future of Education

Q31 Considering the current pandemic are you optimistic or pessimistic about the overall future of healthcare professional education over the next 2 years?

- ○ Very pessimistic
- ○ Somewhat pessimistic
- ○ Neutral
- ○ Somewhat optimistic
- ○ Very optimistic

Q32 In a few sentences, please describe your reasoning for your choice in above question.

_____

Q33 Looking in your own crystal ball, what long-term impacts do you think this pandemic will have for healthcare professional education? _____

Q34 Are you interested in participating in a interview for this study?

- ○ Yes, I'm interested in participating in an interview.
- ○ No interest in participating in an interview.

Skip To: End of Survey If Are you interested in participating in a interview for this study? = No interest in participating in an interview.

End of Block: Future of Education

Start of Block: Interview

Q37 Since you selected "yes", please click on the below link and provided your name, email, and phone number. Thanks.

Link:

End of Block: Interview

COVID-19 Health Science System - Faculty Interview

Start of Block: Default Question Block

Dear Heath Sciences Faculty,

As you know, coronavirus (COVID-19) pandemic has led to a disruption in the education sector of frontline education in healthcare professional schools and programs. By taking part in the interview portion of this research study, you will help assess the impact that COVID-19 has had on your school or program. The research data will be used to assess administration and faculty use of resources and to help define stress point that the healthcare education community may have experienced during this pandemic. This research study is being used for a Ph.D. dissertation. The interview should take a maximum of 45 minutes to complete.

All information collected in the interview will remain confidential and no information will have any identifying markers attached. The study has been submitted to the IRB at both LSU A&G and HSS for approval. This study has been approved by the LSU IRB / HSS IRB(IRBAM-20-0733/1567). For questions concerning participant rights, please contact, Alex Cohen, Chairman, Institutional Review Board, (225) 578-8692, or irb@lsu.edu or www.lsu.edu/research.

Thank you for taking time out of your day to take part in this research study.
Sincerely, Daryl Lofaso Email: xx@xxx.xxx

Please provide the following information if you wish to participate in the interview portion of this study.

- ☐ Name: _____
- ☐ Email: _____
- ☐ Contact Number: _____

We will be in contact with you shortly. Thank for your interest in participating in this portion of the study. Your participation is greatly appreciated.

End of Block: Default Question Block

APPENDIX H. STUDY INTERVIEW INSTRUMENT

Interview Questions

Study Title: One Health Sciences Center Pursuit in Selecting an Online Educational Platform for Their Students Due to the COVID-19 Pandemic

Below are questions asked during the semi-structured interview.

Overview:

- Welcome, introduction, "thank you" for participating.
- Describe interview process: My name is Daryl Lofaso and I will be doing the interview. The interview will take approximately 30-45 minutes and you will be asked a series of open-ended questions. Your name will not be disclosed on any published material. To ensure your privacy, I would like for you to select a pseudonym. I will utilize a digital audio-recorder for your interview to ad with the transcription process.
- Clearly describe the focus of the interview: The focus of this interview is to ask about your experience with. COVID-19 pandemic and transitioning from a traditional face-to-face to an online instructional format.

Demographic Information

1. What is your current age?
2. What is your gender?
3. What is your ethnicity?
4. What is your current profession?
5. Duration in that profession (number of years teaching)?

Retrospective: When answering the next few questions, please refer back to your mind set in March of 2020, when you had to acutely move from face-to-face lecture to a online instructional format.

6. Before March 2020, which method of instruction did you use for your course(s)?
7. Before March 2020, what was your experience with online/distance teaching?
8. What changes did you make in your face-to-face course(s) to transition it to an online course? Examples: synchronous, asynchronous lectures; decreased information, increase information; open book testing.
9. How did you or your program select the method of instruction? Example: individual, committee, accreditation organization.
10. Tell me about something you learned during the abrupt change to an online format in March 2020 that was meaningful for you?
11. How did you deal with testing your students knowledge in March 2020?
12. What method(s) was used?
13. Did it work?

Professional Development: When answering the next few questions, please refer back to March of 2020.

14. What form of professional development did your institution offer for teaching online courses.
15. Prior to COVID-19, had you ever taught an online course?
16. What were your thoughts about online teaching?
17. Please describe the method your school/program used to inform you of the change from a face-to-face to online lecture method.
18. Was that method beneficial?
19. Describe how and what your administration did to support this abrupt transition to online/distant instruction?
20. Was any support training offered? If so, what was offered? If no, why not?

Professional Development: When answering the next few questions, please refer back to the professional development offered by your institution for Fall 2020 online courses.

21. Did your school/program offer any online training for you over the summer? If yes, what training was offered? If not, why not?
22. What did you find was beneficial?

Institutional Preparedness: When answering the next few questions, please refer back to the institution's preparation for Fall 2020 online courses.

23. Do you think your school/program was prepared for the Fall 2020 online training?
24. What did your school/program do to prepare you for the Fall 2020 semester?
25. Did this training help you prepare for the Fall 2020 semester?

Teaching Online: When answering the next several questions, please reflect on the Fall 2020 semester and how you communicated and instructed your students.

26. Do you think you offered the same learning experience online as face-to-face? Please explain?
27. How did you communicate with your students during the semester?
28. Was it a good method?
29. How connected did you feel to your students? Please share your thoughts.

Future Education: When answering the next few questions, please reflect on your healthcare professional program/school and how the pandemic may affect the future.

30. What are your thoughts about the future of educating healthcare professional students? Your program?
31. Tell me about anything that you would suggest doing differently?

APPENDIX I. INSTITUTIONAL REVIEW BOARD APPROVAL FOR SURVEY AND INTERVIEWS

LSU | Office of Research & Economic Development

TO:	Blanchard, Pamela Borne LSUAM	Col of HSE	Education
FROM:	Alex Cohen Chair, Institutional Review Board
DATE:	16-Dec-2020
RE:	IRBAM-20-0733
TITLE:	One Health Sciences Center Pursuit in Selecting an Online Educational Platform for their Students Due to the COVID-19 Pandemic
SUBMISSION TYPE:	Initial Application
Review Type:	Exempt
Risk Factor:	Minimal
Review Date:	16-Dec-2020
Status:	Approved
Approval Date:	16-Dec-2020
Approval Expiration Date:	15-Dec-2023
Exempt Categories:	
Requesting Waiver of Informed Consent:	No
Re-review frequency:	Three Years
Number of subjects approved:	400
LSU Proposal Number:	
By:	Alex Cohen, Chairman

Continuing approval is CONDITIONAL on:

1. Adherence to the approved protocol, familiarity with, and adherence to the ethical standards of the Belmont Report, and LSU's Assurance of Compliance with DHHS regulations for the protection of human subjects*
2. Prior approval of a change in protocol, including revision of the consent documents or an increase in the number of subjects over that approved.
3. Obtaining renewed approval (or submittal of a termination report), prior to the approval expiration date, upon request by the IRB office (irrespective of when the project actually begins); notification of project termination.
4. Retention of documentation of informed consent and study records for at least 3 years after the study ends.

RELIANCE: INSTITUTIONAL REVIEW BOARD APPROVAL FOR SURVEY AND INTERVIEWS

From: xx@xxx.xxx on behalf of Kuali Notifications <xx@xxx.xxx>
Date: Wednesday, January 13, 2021 at 8:17 AM
To: Daryl Lofaso <xx@xxx.xxx>
Subject: Protocol #1567 External Reliance Determination: Initial IRB Application

EXTERNAL EMAIL: EVALUATE

Hello,

The **Initial** submission of the following protocol was reviewed using the **External Reliance** procedure and approved by the HSS IRB on **Wednesday, January 13th 2021**.

Protocol #: 1567

Study Title: One Health Sciences Center Pursuit in Selecting an Online Educational Platform for Their Students Due to the COVID-19 Pandemic

Principal Investigator: Lofaso, Daryl

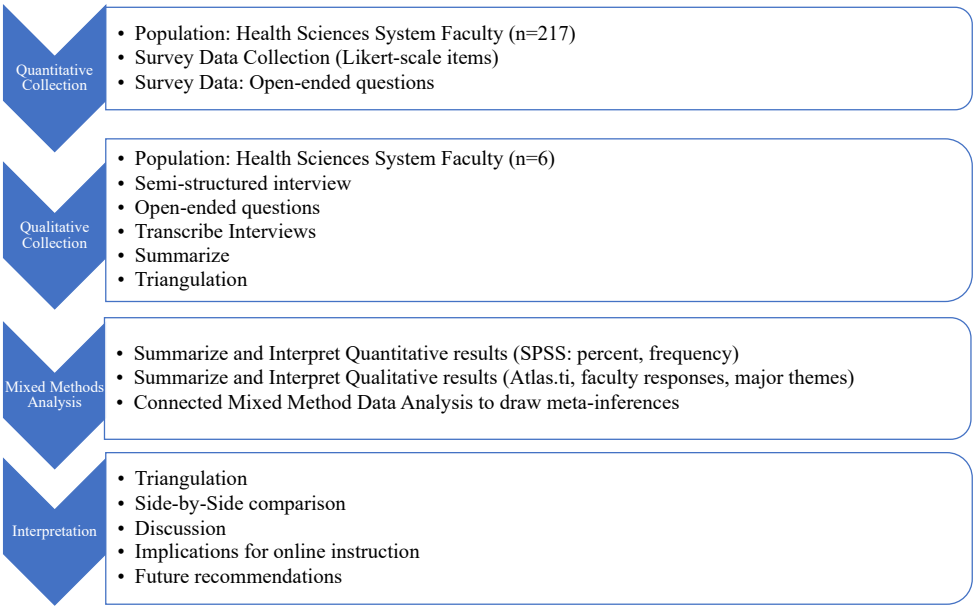
This protocol is approved until: Friday, January 12th 2024. To continue research beyond this date, a *Renewal* application must be submitted and approved by no later than this date. Please consult the HSS IRB website for submission deadlines for *Renewal* applications.

The determination letter for this submission is listed as a "Correspondence Generated" at the bottom of the page in the "Activity Log" section of the protocol.

Click here to access the protocol and associated determination letter: Link: removed.

Thank you.

APPENDIX J. EXPLANATORY SEQUENTIAL MIXED METHODS DESIGN DIAGRAM



APPENDIX K. SURVEY REPRINT REQUEST

June 7, 2021

Dr. Jeff Seaman
Bay View Analytics
Quahog Research Group, LLC
6924 Thornhill Drive
Oakland, CA 94611

Dear Dr. Seaman,

I am completing a doctoral dissertation at Louisiana State University entitled "COIVD-19 Pandemic: A Mixed-Methods Study Investigation of a Health Sciences System Facultys' Adaptation to an Online (Non-Traditional) Teaching Environment for Health Professional Students."

I would like your permission to reprint questions from the following survey material in my dissertation, which is in preparation for my graduation in August 2021.

COVID Pulse Survey
COVID Faculty Survey
COVID2 US OLC Survey

Please contact me if you have any questions or need additional information.

Sincerely,

Daryl Lofaso
LSU College of Human Sciences and Education
Baton Rouge, Louisiana
Phone number: [redacted]
Email: [redacted]

Bay View Analytics

June 13, 2021

Dear Daryl Lofaso,

I hereby grant permission for you to use any and all portions of the following surveys in your dissertation:

COVID Pulse Survey
COVID Faculty Survey
COVID2 US OLC Survey

I wish you the best for your research.

Sincerely,

Dr. Jeff Seaman
Director
Bay View Analytics

Bay View Analytics, LLC
6924 Thornhill Dr
Oakland, CA 94611 USA

APPENDIX L. CODEBOOK

Concerns about the School's Ability to Deliver Learning Online

Code	Description
Administrative support: Positive	Faculty indicated that they had administrative support
Administrative support: Negative	Faculty indicated that they had no administrative support.
Challenges	Faculty indicated it was challenging to lecture due to not seeing student faces.
Hands-on training	Faculty indicated it was challenging to teach hands-on skills
Rapidness	Faculty explained the insufficient time for development and delivery of course material.
IT support / Technology / Access	Faculty indicated that they failed to learn available technology: use and function.
Isolation / Connectivity	Faculty struggled with connecting with students over online instruction. Personal interaction with students.
Online course development: Training	Faculty explained how online course development required a substantial number of hours outside of lecture for preparation.
No concerns	Faculty felt that students were prepared due to having computers.
Resources / Access	Faculty felt that not all students have reliable internet access: WIFI or bandwidth to support online courses.

Online Instruction: Faculty Wish List to Feel More Prepared

Code	Description
Administrative guidance	Faculty indicated that administrative direction was minimal.
Technology	Faculty indicated that they needed additional technology support, example Zoom training.
Time	Faculty indicated it was challenging to transition to an online platform with short notice.
Training / Development	Faculty said they would have felt better if they took advantage to the training offered or additional online training.

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VITA

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