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Factors Influencing Award-Winning Faculty's Instructional Decisions

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Abstract

The COVID disruption fueled the frequency of instructional decisions. The purpose of this grounded theory study was to investigate award-winning faculty's instructional decisions and corresponding factors that influenced their instructional decisions. The study was conducted at a private research university in New York State during the COVID pandemic.

The investigation employed a qualitative grounded theory approach, using interviews and document analysis of course syllabi. The research generated a grounded theory model explaining instructional decisions during disruption and its relationship with influencing factors. Award-winning faculty members were selected because of their extensive experience in teaching and exemplary innovations in teaching, as recognized by the institution, through their awards. The study was conducted in three semesters Spring 2021, Fall 2021, and Spring 2022 when instruction was fully online, hybrid, and face-to-face respectively due to changing university guidelines during the ongoing pandemic. Each semester, three different faculty members from different disciplines participated in 3-4 interviews and shared their course syllabi. During interviews, individuals were asked to discuss one course that they were teaching at the time of interviews.

The study found that the nine participating faculty made various choices, including course design, instructional goals, selection of topics, instructional strategies, and student learning assessments, in designing their courses. Faculty followed a linear or iterative course design process and reported choices they made before and during the implementation of the courses. Faculty's personal values, expertise, and background were reflected in their instructional decisions during the COVID pandemic. Changes in instruction during the COVID pandemic were made by instructors individually without receiving much support from their departments

and the institution at large, suggesting the need to examine the availability and visibility of professional development services offered through the teaching and learning center at the university. Further studies are suggested to explore the relationship between instructional decisions, teaching behaviors, and the effectiveness of instructional decisions.

FACTORS INFLUENCING AWARD-WINNING FACULTY'S INSTRUCTIONAL DECISIONS

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Dissertation
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Doctor of Philosophy in Instructional Design, Development, and Evaluation.

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I dedicate this work to MHI, whose wisdom and guidance have inspired me to enter the teaching profession and fueled my passion to pursue this doctorate.

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Chapter One

Introduction

Instruction includes "all the events that may have a direct effect on the learning of a human being, not just those set-in motion by an individual who is a teacher" (p. 3) (Gagne, Briggs, Wager, 1974). Ideally, instruction needs to be a purposeful and systematically planned sequence of events intended to address a performance gap (defined as a learner's lack of skills and knowledge) or achieve the desired instructional goals (Dick, Carey, & Carey, 2005). Instructors, learners, materials, instructional activities, delivery system, and learning and performance environment interact with each other to achieve the desired instructional goal(s), and changes in one component of the instructional system affect other components of a system (Dick, Carey, & Carey, 2005). Instruction can be delivered by teachers, computer software, self-help manuals, job aids, workbooks, and through other media. Instruction may include arrangement and use of printed manual job aids, pictures, television programs, or a combination of physical objects.

In most higher education institutions, tenured faculty plan, implement, and evaluate instruction. Tenure is an employment status earned by faculty after they complete their probationary period. Tenured higher education faculty possess academic freedom and autonomy to make instructional decisions before, during, and after the implementation of instruction (American Association of University Professors, 2006; Hora, 2014). The tenure status protects faculty's employment as they do intellectual work (teaching, research, and service), reducing job security concerns. Only extreme circumstances such as the closure of the program, department, or institution, and academic dishonesty can result in the expulsion of tenured faculty (American Association of University Professors [AAUP], 2006). This study focuses on tenured award-

winning faculty members' instructional decisions in three semesters impacted by the Coronavirus Disease (COVID) pandemic and factors that influenced their instructional decisions.

Instructional decisions include determining learning goals, content, activities, assessments, instructional tools, and resources (Gordon et al., 2020; Johnson & Matthews, 2020; Lattuca & Stark, 2011). Examples of instructional decision-making include determining learning goals, content, sequence of activities, instructional processes, resources, assessment, and evaluation strategy, and adapting the instruction to the student feedback (Lattuca & Stark, 2011). While faculty make these instructional decisions, the likelihood of decisions increases significantly when internal or external forces such as a pandemic disrupt the instructional context. Additional examples of disruptions include the availability of new technology, decline in institutional funding, change in labor markets and resulting fluctuations in demands for graduates, and emergence of new fields of study or system-level disruptions caused by wars and pandemics. It is, therefore, necessary to investigate instructional decisions in these exceptional circumstances and draw lessons to prepare for unforeseen future events (Baldwin & Blackburn, 1981; Izumi et al., 2020; Usher et al., 2021).

Faculty may employ systematic formal instructional design processes to sequentially plan and implement instruction or plan instruction while implementing it, depending on their understanding, workload, and experience in designing instruction. The systematic instructional design process includes analyzing learner needs and prior knowledge, tasks, and environment, setting objectives, designing assessments, determining instructional strategy, identifying delivery system, developing and implementing instruction, and evaluating the effectiveness of the instruction by examining the extent to which instruction closed the performance gap (Dick et al., 2005; Gagne & Briggs, 1974; Gagné et al., 1992).

Decisions undertaken to design instruction can be divided into three categories: pre-implementation, during-implementation, and post-implementation of the instruction (Borko & Shavelson, 1990). Pre-instructional decisions are undertaken to analyze the needs of the learners and plan the instruction suiting to the content and context; during-instruction decisions are moment-to-moment decisions taken during the implementation of instruction; and post-instruction decisions include the decisions taken after the implementation of instruction, including evaluation and revision of the instruction (Gagne & Briggs, 1974). Pre-instruction decisions usually require systematic planning of events to understand and close performance gaps, which are defined as a lack of skills and/or knowledge. Decisions undertaken during the implementation of the instruction include day-to-day and moment-to-moment decision-making during the implementation of instruction to adapt to the learner and the context. These include adjustments and adaptations in pre-instructional decisions to meet instructional goals (Borko & Shavelson, 1990). Post-implementation decisions are undertaken after the completion of the instructional episode, determining the adjustments to be made for the next iteration of the instruction.

On March 11, 2020, the Coronavirus Disease (COVID) outbreak caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2), was declared a global pandemic because, at that point, the widespread virus had infected 118,000 people in 114 countries and had resulted in 4,291 deaths (Centers for Disease Control and Prevention, 2022). COVID disrupted multiple dimensions of human life, including health, industry, economy, politics, education, personal, professional, social life, and education. To halt the transmission of COVID in the classroom, many higher education institutions switched to remote instruction mid-semester and

later implemented on-campus public health safety protocols such as mask mandates, social distancing, testing, and quarantine requirements.

Many faculty members were forced to change their instruction to online and/or blended formats despite differences in preferences, skill sets, and knowledge about recent technologies, such as online conferencing software like Zoom and MS Teams (Gallagher & Palmer, 2020). During this significant disruption, faculty made rapid instructional decisions to adapt to the unanticipated online teaching, followed by hybrid and socially distanced face-to-face instruction, though often unplanned in advance (Gallagher & Palmer, 2020). Examples of instructional decisions included changes in the content of teaching, technological tools, instructional activities, and assessments (Crawford et al., 2020; Gordon et al., 2020; Johnson & Matthews, 2020). The rapid changes in the medium of instruction provided a unique opportunity to investigate award-winning faculty decisions and factors influencing faculty decisions as they adapted their instruction to suit the rapidly changing demands of the disruptive times during COVID. Capitalizing on the unique situation of the COVID pandemic, this study investigated award-winning faculty's instructional decisions as they planned and implemented their instruction during Spring 2021, Fall 2021, and Spring 2021 semesters. The spring 2021 semester started nine months after the first COVID outbreak (March 2020).

Faculty who were acknowledged by their university with an institutional award for excellence in teaching were selected as participants in this study. The teaching award given to the faculty members recognized their demonstration of good instructional practice, an innovative instructional project, and a complementing teaching portfolio reviewed by the Vice Chancellor's appointed academic committee, which included award-winning senior faculty, administrators, and a student representative. Selection criteria for the award have evolved over time given the

institutional priorities and change in institutional leadership. However, two key criteria remained similar across the years: (a) teaching excellence to date and (b) an innovative instructional project proposal. The most recent evaluation worksheet for the award at the time of this research was collected from the university's Centre for Teaching and Learning and is appended (see Appendix I). The selected awardees were provided a financial grant to pursue their proposed innovative idea to improve the scope and quality of instruction at the university.

This descriptive study aimed at enhancing understanding of the decisions and corresponding factors influencing instructional decision-making in a disruptive environment and generated a grounded theory model of instructional decisions and influencing factors, suggesting inquiry questions that warrant further investigations. Moreover, the study presented lessons learned from inquiring about award-winning faculty's instructional decisions and influencing factors during the COVID pandemic and suggested areas where instructors needed more help and support. Improved understanding of instructional decisions through a line of studies would suggest faculty and administrators to develop conditions necessary for faculty to undertake good instructional decisions and support faculty developers and instructional designers to design context-informed and evidence-based professional development activities, responding to future instructional disruptions.

Statement of the problem

Prescriptive instructional models are available in instructional design literature to guide instructional decisions of faculty and instructional designers (examples include Dick, et al., 2005; Gerlach et al., 1980, Heinich et al., 2002; and Newby et al., 2000); however, "real" instructional contexts are "messy," therefore it is necessary to gain a better understanding of instructional decisions made in "real" contexts, to devise support mechanisms and professional

development for university faculty. Sudden changes that impact instructional contexts include emerging technology, pandemics, wars, and insurgencies.

During the COVID pandemic, faculty made “on the fly” decisions. They taught in varying instructional mediums to adapt to the varying university guidelines on instructional mediums such as online, hybrid, and face-to-face (with masking policies) (Khamis, Naseem, Khamis, & Petrucka, 2021). Empirical studies reported that faculty made changes in instructional strategies, assessment and feedback strategies and provided informal support to the students (Palmer et al., 2021; Stecula, & Wolniak, 2022; Zhu et al., 2021). A detailed account of instructional changes made by faculty during COVID is discussed in the second chapter. However, it was unknown how faculty members who were awarded for their expertise in teaching and innovation in teaching, made their instructional choices during the COVID pandemic, and what factors influenced their choices.

This study was conceptualized in Spring 2020, when COVID was declared a global pandemic, physical campuses were closed, and instruction was delivered through online mediums. The data were collected from award-winning faculty at an R-1 university during Spring 2021, Fall 2021, and Spring 2022—when the faculty delivered instruction online, hybrid, and face-to-face with masking policies, respectively. The research investigated the instructional decisions of the nine award-winning faculty members at a research university - three faculty members per semester. This study, therefore, adds to the literature by explaining the choices made by award-winning faculty and the factors that influenced their decisions while teaching a sixteen-week course at a research university in the United States during the COVID pandemic.

Purpose of the Study

The purpose of this grounded theory study was to investigate award-winning faculty's instructional decisions and corresponding factors that influenced their instructional decision-making. The study was conducted in Spring 2021, Fall 2021, and Spring 2022 at a private research university in New York State. The investigation employed a qualitative approach, using interviews and document analysis. The research generated a grounded theory model explaining instructional decisions during the COVID pandemic and its relationship with influencing factors. Grounded theory "explains" and "describes" instructional decisions and influencing factors. The explanation in grounded theory "implicitly give some degree of predictability, but only regarding specific conditions" (Corbin & Strauss, 1990). The term "model" implies a conceptual illustration that "explains patterns of behavior used to address a main concern or issue of the people within the topic area" (Soulliere, Britt, and Maines, 2001). Thus, this grounded theory model implies a conceptual illustration of factors influencing instructional decisions developed from the data and finds the relationships between instructional decisions and corresponding factors. The next section explains my personal approaches and experiences that influenced the development of this study.

Study Development

The development of this study is rooted in my interest and commitment to understanding teaching and enhancing its quality. I started teaching as an elementary math teacher in Karachi, Pakistan, and have been continuously engaged with the teaching profession. When I started teaching, I had not undergone any training. I drew on techniques and tools from both my past teachers and those I found engaging.

My school was affiliated with a university's professional outreach department that organized workshops for schoolteachers. Every month, only two teachers from a particular content area had the opportunity to take part in training workshops. Whenever the opportunity came, I attended workshops to learn about teaching and improve my practice. However, there was no pressure of any kind from the school to improve teaching practice.

While attending professional development sessions, I realized that my practices of scolding and berating students to make them study, needed to be revised. I learned about diverse ways to manage the classroom and make learning interesting for the students. As a result, I saw my students getting more engaged and starting to learn better as I applied those tools and techniques. Subsequently, I decided to undertake formal training in teaching and completed my bachelor's and then masters in math education. These professional development opportunities taught me about theories and good practices and made more conscious, data-driven, evidence-based, and learner-centered instructional decisions. Learning from these theories and best practices, I considered learners' needs, responses, questions, etc., while teaching. Then, I realized that instructors must learn to make better decisions to plan and implement instruction that closes the performance gap while considering the learner's needs, content, and context.

Later, I worked as a faculty developer at a university and worked with faculty at campuses in Pakistan, East Africa, and the United Kingdom. I realized that academia's hidden curriculum is " anyone with a Ph.D. can teach." I also discovered that many Ph.D. curricula did not embed formal teacher training. With a team of faculty and faculty developers, I designed and conducted workshops for faculty members on instructional strategies and tools without necessarily considering the larger picture of the instructional goals, the learners, the resources, and constraints that are in the learning environment, etc.

Upon joining the Ph.D. program in instructional design at Syracuse University in the United States, I was curious to see what faculty training looked like at a North American university. To my surprise, and through my informal conversations with multiple faculty members and the teaching and learning centers at different faculty development conferences, I realized most of the faculty in higher education, other than those in the education discipline, rarely have formal training in educational theories and practice. They pre-dominantly learn about teaching through trial and error, workshops, and conferences. While interacting with faculty members, however, I realized that most of these instructional workshops and conferences offer different instructional strategies, tools, and models from instructional design, and teacher education is often distanced from discipline content and faculty's daily teaching practices. Thus, the workshops and conferences offered theories and tools for faculty to improve instruction; however, rarely were faculty provided opportunities to situate these theoretical underpinnings and tools in the context of what they were teaching, and rarely were they prompted to reflect on their instructional decisions.

Simultaneously, I was introduced to the Analyze, Design, Development, Implement, and Evaluate model, often abbreviated as ADDIE, during my Ph.D. program. It was an "aha" moment because this framework synthesized my understanding that instruction is a systematic, planned, and purposeful process of filling the performance gap. ADDIE framework underpins the necessity of analyzing learners, context, and content before designing instruction (Branson, 1978). Subsequently, it suggests the design of the learning events, development of the learning materials, implementation of the learning events, and evaluation of instruction to gauge if the performance gap was closed. While theoretically, this framework presents the structured process,

like others discussed in Chapter 2, it was important to examine how individual faculty plan, design, and implement instruction in “real” contexts.

Given today’s world, where disruptions like COVID, wars, budget cuts, emerging technologies, and other events are common, and my interest in understanding faculty decision-making, especially during uncertainties, I took the opportunity to situate my dissertation study on instructional decision-making during the COVID pandemic. This study helped enhance my understanding of instructional decisions made by faculty in “real” and “messy” contexts during a pandemic. The grounded model of instructional decision-making in disruptive times resulting from this study will help faculty and instructional designers to understand the dynamics of the disruptive context of the pandemic and how it influenced instructional decisions (Waller et al., 2019). The next section explains the findings from the preliminary analysis conducted on the data collected in the first semester of data collection and presents my reflection on the pilot study.

Significance of the Study & Potential for Contribution

Decision-making is a complex psychological process informed by various personal, organizational, and global factors. Instructional decisions that faculty undertake while designing or redesigning courses in higher education during a pandemic, planning for the course, and teaching the courses are complex and require more research in instructional design literature. Hence, this study advocated the importance of examining current teaching faculty members’ decisions to adequately support the faculty professional development initiatives. Study findings and a proposed grounded theory model help explain instructional decision-making in the context of the COVID pandemic and can be further developed to guide future faculty, faculty professional development specialists, and instructional designers in examining instructional

decisions and the factors that influence the faculty decision-making process in situations like the COVID pandemic and other global or local disruptions.

The current study resulted in the generation of a grounded theory to explain faculty's instructional decision-making in higher education during a major disruption. The grounded theory informs the instructional design literature by adding how award-winning faculty at one R-1 university made instructional decisions during a pandemic and what factors influenced their instructional decisions. The study calls for building a comprehensive understanding of the individual faculty and their situations before prescribing or developing instructional solutions, especially in disruptions. Disruptions may include changes that disturb the equilibrium in the education system; examples include public health crises situations, wars, economic inflation, and the influx of modern technologies such as Generative Artificial Intelligence.

Conclusion

This chapter describes the rationale for the study, the research problem, reflection on the pilot study, the relationship with the instructional design discipline, and the study's significance. The next chapter reviews relevant literature and presents the research questions for the study.

Chapter Two

Literature Review

Chapter 2 reviews relevant literature on instructional decisions and instructional decision-making. The chapter explains the term decision-making and identifies approaches to decision-making. Building on the literature on decision-making approaches, the chapter describes instructional decision-making and explains its relationship with design literature and instructional design models. Subsequently, the chapter summarizes the empirical studies conducted on designer's decision-making, pre-service teachers' decision-making, instructional design students' decision-making, and higher education faculty decision-making. Next, the chapter illustrates the factors influencing higher education faculty's instructional decision-making. The chapter then presents empirical evidence on the instructional decisions of faculty during a pandemic and identifies the need for the current study on award-winning faculty's instructional decision-making during COVID.

What is Decision-making?

Decision-making is the process by which individuals make a choice from a set of alternatives. The phenomenon of decision-making has been studied in the disciplines of psychology, economics, business, education, and mathematics (Edwards, 1954). We face many choices in both our personal and professional lives. Examples of decisions in personal life include: What to have for dinner today? What music shall I hear? Which car should I buy to meet my needs? Examples of decisions in professional life include: what car insurance should I select? Which stocks should I invest in? What media channel do I rely on for scientific news? Whose work should I read on a topic of interest? Which paper should I prioritize writing? (Jonassen,

2012). Numerous personal and professional decisions are made by individuals in their lifetime. The following section discusses the kinds of decisions individuals make.

Kinds of Decisions

Choosing one or more advantageous or gratifying options from a larger collection of options is the essence of decision-making. Major types of decisions include (Yates & Tschirhart, 2006):

- Choices: Selection of an alternative from a broader set of alternatives (e.g., choosing an internet package) (Yates & Tschirhart, 2006).
- Acceptances/rejections: Use of binary construction to accept or reject an idea (e.g., admission to graduate school, membership in a reading club, or issuance of a driver's license) (Yates & Tschirhart, 2006).
- Evaluation: Determine value of an act or on object using a criterion and demonstrate willingness to take an action (e.g., how much are you willing to bid on a house) (Yates & Tschirhart, 2006).
- Constructions: Generate the best solutions with the resources at hand (e.g., deciding an instructional strategy considering the availability of human and technological resources). These are undoubtedly difficult issues that demand several choices (Yates & Tschirhart, 2006).

Often problems are the triggers for resulting decisions. Problems are classified as ill-structured and well-structured. Ill-structured problems “possess multiple solutions, solution paths, fewer parameters which are less manipulable and contain uncertainty about which concepts, rules, and principles are necessary for the solution or how they are organized, and which solution is best”. However, well-structured problems are “constrained problems with

convergent solutions that engage the application of a limited number of rules and principles within well-defined parameters" (Jonassen, 1997, p. 65). Well-structured problems require individuals to make fewer decisions and require a limited number of factors to be considered. In contrast, ill-structured problems require individuals to consider various factors and make multiple decisions at different points of solving the problem (Jonassen, 1997). Examples of ill-structured problems include designing instruction to teach decision-making, developing a course on teaching a complex topic, and deciding on a career choice. For example, an individual makes multiple choices while developing instruction on a topic. Some examples of decisions include: What needs to be taught? What are the needs of the learners and context? What content needs to be added to the existing instructional unit? How to structure and sequence the content? How should the instruction be delivered to ensure the achievement of learning outcomes? What systematic variables are needed to be considered while developing the instruction (Jonassen, 2012)? In contrast, well-structured problems provide all the information about the context, content, and learners, and the designer devises an instruction to solve performance problems with available information, in the given resources. For this dissertation, the instructors made instructional choices to teach in an ill-defined and changing environment and had to consider numerous factors such as content topics, needs of the learners, pedagogy, assessments, resources available, university guidelines, accreditation guidelines, changing instructional mediums, and pandemic infused stress and health issues.

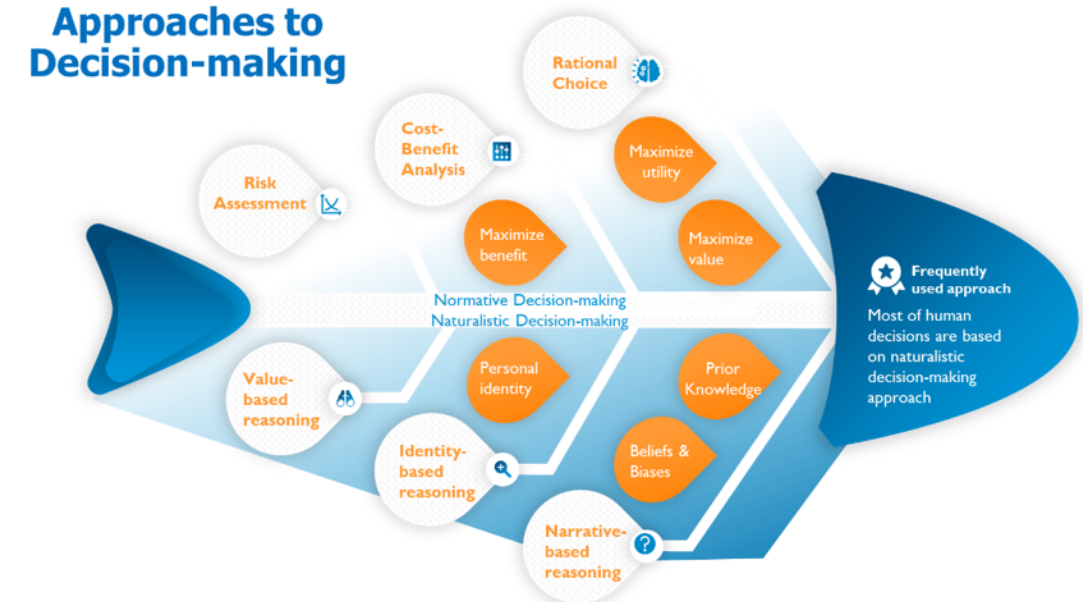
Approaches to Decision-making

Decision-making approaches can be classified into two: (a) normative (rational) and/or (b) naturalistic approaches (Jonassen, 2012; Kahneman & Klein, 2009) (see Figure 1). An individual is taking a normative approach to decision-making if their choices are informed by

step-by-step procedures weeding out alternatives through logical and systematic thinking processes. In contrast, an individual is taking the naturalistic approach to decision-making if their choice is more intuitive and informed by personal preferences and feelings. Kahneman popularized the logical and systematic thinking process as "thinking slow," and intuitive and emotional decision-making as "thinking fast," to signify that systematic thinking often takes longer than intuitive and emotional thinking (Kahneman & Tversky, 2013b; Kahneman, 2011). Kahneman concludes that "thinking slow" leads to better outcomes, especially for complex problems, instead of "thinking fast;" however, Klein argued that not all intuitive thinking would lead to inappropriate outcomes (Klein, 1989). Despite their disagreement, both Kahneman and Klein agree that experts accumulate years of experience and feedback from the environment, which help them rely on their intuitions to make decisions faster and yet achieve better outcomes (Kahneman & Klein, 2009).

Figure 1

Approaches to Instructional Decision-making



Conceptualization is generated based on the work of Jonassen (2012)

Normative approach to decision-making

Normative approaches assume that humans are rational beings, and therefore, they make decisions after evaluating utility, costs/risks, and benefits (Jonassen, 2012). The normative decision-making approach is predicated on maximizing the expected value and benefit in a situation. Normative approaches are classified into three categories: (a) rational choice, (b) cost-benefit, and (c) risk assessment.

(a) **Rational choice:** Individuals identify options, choose criteria for evaluating the options, weigh each evaluation dimension, rate options, and select the option that has maximum benefit and utility. Several rational choice models are developed to guide decision-making including decision matrices, Strengths-Weaknesses-Opportunities-Threats [SWOT] (Leigh, 2009), and force-field analysis (Lewin, 1943). Strength-Weakness-Opportunities-Threats [SWOT] matrices are often arranged in 2x2 matrix where strengths are internal conditions that enhance performance, weaknesses are internal conditions that inhibit performance, opportunities are external conditions utilized to improve performance, and threats are external factors that inhibit current and/or future performance. Force field analysis is a visual tool to (a) analyze proposed change, (b) forces that contribute to change, and (c) forces that resist change. By analyzing these forces, one can make an informed decision. General rational choice models follow the following steps: identify a set of possibilities, determine an evaluation method or criteria, weigh each option using the criteria, assess the value of alternate options, and choose the option with the best rating (Jonassen, 2012). Rational choice models generally include analysis of the current context and performance and help individuals identify a set of choices based on available information and analysis. For example, a faculty member conducted a SWOT analysis of three different polling tools and used an open-source and accessible tool with a maximum

number of multiple-choice questions. Thus, the faculty's choice of using a polling tool was informed by a careful analysis of the options available.

(b) **Cost-benefit analysis:** Cost-benefit analysis is an analytical process for evaluating the costs and benefits of choices. Cost-benefit analysis is classified as the normative approach because it compares benefits and costs when analyzing decisions situated in a social context (Jonassen, 2012; Mishan & Quah, 2021). Cost-benefit analysis measures each decision's value after deducting its costs. Cost-benefit analysis is employed to make acceptance/rejection decisions and evaluations. Each option (or choice) must be evaluated and the option with the most benefits-to-costs margin is advisable. The cost-benefit analysis is influenced by the type of decision to be undertaken in given circumstances (Jonassen, 2012). For example, making a choice around using a learning management system at the university involves multiple interconnected variables such as system training, finances, student preparation, instructor preparation, student, teacher, administrator preferences, and corporate goodwill. Measuring the values of each of the variables is complicated. For example, training and equipment update expenses are straightforward to estimate, but student and instructor preparation, preferences, and corporate goodwill are not.

(c) **Risk assessment:** Individuals analyze the consequences of choices with the dimensionalities of risks and benefits and select the one that yields maximum benefit and reduced risks (Jonassen, 2012). In medical decisions, for example, the best choice may be the one that reduces risk while having the greatest curative impact. However, it would be necessary to estimate that uncertainty permeates varied options, specially, in situations where risks are greater. For example, in the context of instruction, a faculty member utilized a virtual simulation of nursing in emergency situations in a nursing class to acclimate students to critical situations,

thereby reducing the first-time shock associated in dealing with real patients in an emergency scenario.

Naturalistic approach to decision-making

In contrast to normative approaches, naturalistic approaches assume "decisions are often made or influenced by unconscious drives and emotions as well as previous experiences" (Jonassen, 2012, p. 333). From a naturalistic perspective, humans make intuitive decisions and "construct explanations of decisions in the form of stories about possible outcomes" (Jonassen, 2012, p. 344), instead of judging the alternatives or options quantitatively. The comprehensiveness of the story influences the direction of the decision (Jonassen, 2012; Stefaniak, 2021). There are three subclassifications of naturalistic approaches to decision-making: (a) narrative-based, (b) value-based, and (c) identity-based decision-making. The examples of each of the subclassifications are presented below.

(a) Narrative-based decision-making Individuals use narrative explanations to justify their decisions based on their knowledge, beliefs, and biases (Jonassen, 2012). For example, multiple reports were received in a teaching hospital about newly inducted residents misbehaving with the patients. The department chair chose to review the training module on the "code of conduct" delivered during the induction process. Evidence from reports suggested that there is no specification of a code of conduct. Therefore, department chairs decided to address the performance gap by developing a code of conduct manual and a training.

(b) **Value-based decision-making**: Individuals engage in the development of justification based on their preferred personal or societal values (Jonassen, 2012; Sturtevant & Wheeler, 2019). These may include customs, lifestyles, social movements, and values that characterize a society. For example, consider a case of a faculty member who provided added flexibility on an

assignment deadline to a student facing a medical issue. When asked, faculty justified their decision, by stating that by providing a disadvantaged student with additional time considering their needs and health conditions, they ensured the provision of equitable educational experiences.

(c) **Identity-based decision-making:** Individuals can explain their decision-making through their perceived identity characteristics and prompt their thinking by asking questions such as: Who am I? What would a person like me do in a comparable situation? For example, a faculty member valued authentic cases in understanding public health ethics and, therefore, proposed a new case-based module on public health ethics.

Which approach is more suitable? For whom? In what situations?

Decision-making can be formally defined as a process of making a choice using a step-by-step cognitive process of weighing the risks and benefits of the choice in a context (normative decision-making). The definition of instructional decisions is a "formal construction" of how decisions are made, however, individual's choices can be based on individual's personal identity, values, and narratives and contextual factors (such as available information, perceived risks, perceived benefits, instructional, organizational, and sociocultural factors) (naturalistic decision-making) (Jonassen, 2012). Individuals' decisions can also be based on intuitions, feelings, and presumptions (Heumann, Jaslove, Zhou, & Cassak, 2019), which can later be reconstructed and justified to 'fit" the formal narrative.

Normative approaches are particularly useful for novice decision-makers, as it provides them with the necessary structure for thinking; however, normative approaches may not reflect the decision-making of experts and experienced individuals, but rather impede their decision-making processes (Dick, 1996; Jonassen, 2012). Experts are likely to develop intuitive expertise

through experimentation and feedback through their careers and are able to intuitively adapt to given situations (Kahneman & Klein, 2009). Naturalistic approaches save experts time and resources that they would otherwise spend if they relied solely on a normative process for all their decisions. Therefore, experts are inclined to use naturalistic approaches to instructional decision-making and use narrative-based, value-based, or identity-based reasoning to justify their decisions (Jonassen, 2012).

Classic decision-making studies focused on normative approaches to decision-making. Normative approaches identify the following steps in a decision-making process: create a range of possibilities, establish assessment criteria, evaluate each option on every criterion, compute the results, and select the option with the maximum ranking. Step-by-step normative models assist people in making better choices and suggest better techniques than those individuals typically employ. The focus of normative approaches is to streamline decision-making process resulting in implementation and impact, regardless of the subject matter (Klein, 2015).

Naturalistic decision-making movement's initial driving force is to characterize what experts in various fields do in a given situation. These studies focus on the reasoning and justifications behind the decisions of individuals with expertise, instead of prescribing processes of making effective decisions. As a result, naturalistic decision-making research can be compared with basic research because it helps to understand reasonings and justification, instead of focusing on improving decision-making to suit real-world applications (Klein, 2015).

Decision-making in Design Disciplines

What is Design?

Design is producing something new to make functional and meaningful contribution to the existing world (Krippendorff, 2006; Nelson & Stolterman, 2012). It is amongst the first

human traditions to create new meaning, forms, and realities. Humans have constantly engaged in development of current ideas, technologies, organizations, processes, interfaces, discourses, and systems (Krippendorff, 2006; Nelson & Stolterman, 2012). Design is the process of engaging in inquiry, reflection, and action to construct, deconstruct, and reconstruct ideas, products, and systems (Nelson & Stolterman, 2012).

Designers engage in identifying and solving problems. Problems can be classified into tame problems (well-structured problems) and wicked problems (ill-structured problems). Tame problems can be solved with a well-developed problem-solving process (understand the problem, gather information, analyze information, generate solutions, assess the solutions, implement, test, and modify); however, wicked problems cannot be solved using simple procedures because of the unknown contextual factors (Nelson & Stolterman, 2012). Wicked problems are unique, contingent, unpredictable, and complex. There is often no right framing of the problem and clearly not one right answer to these problems. The "design way" of understanding and solving the problems is to understand the problem in its full complexity, in the given system, and draw upon human faculties of imagination, intuition, creativity, logical reasoning, and making decisions to solve problems that contribute to the world (Nelson & Stolterman, 2012).

Design thinking or design judgment is not merely the product of logical thinking or imagination, it is more than that—it includes reason with observation, reflection, imagination, action, production, feedback, and re-iteration (Nelson & Stolterman, 2012). In addition, design thinking involves understanding of the complexity of the people and systems, constantly changing nature of the world and its problems, and constantly changing nature of the world we live in. In other words, it uses normative as well as naturalistic decision-making models to reach optimum value (Nelson & Stolterman, 2012).

Decision-making in Design Disciplines

Many disciplines (such as architecture design, interior design, industrial design, structural design, software design, graphic design, fashion design, information system design, and instructional design) use a design approach to solve problems. Design is popularly claiming to be a discipline or "third culture" with its own principles, processes, and systems, and is inclusive of approaches in arts and sciences such as reasoning and creativity but also engages intuition and imagination (Cross, 2006; Nelson & Stolterman, 2012). Designers consider the possibility of creating "new" ideas or advancing old ideas. Methodologies for creating new ideas and products include modeling, pattern-formation, synthesis, and design values, including practicality, ingenuity, and empathy. In contrast, the phenomenon for science is the natural world and for humanities is human experience; the scientific methods include controlled experiments, classification, and analysis and methods in humanities include analogy, metaphor, and evaluation (Cross, 2006). Design disciplines draw phenomenon and inquiry methods from sciences and humanities; however, it also has it aims at solving problems by using inductive, iterative, and participatory processes while understanding the situation, its affordances and constraints, developing solutions, and accomplishing the goals within timelines (Nelson & Stolterman, 2012).

A qualitative interview-based study was conducted with 20 participants in multiple design fields, including architecture design, interior design, graphic design, and instructional design. The participants were asked to recall a designer to elaborate on a design project that they had recently completed and provide answers to the questions regarding the process and nature of decisions made (Stefaniak & Tracey, 2014). Stefaniak & Tracey (2014) found that the designers in multiple fields predominantly use custom-made solutions [n=19] instead of ready-made

solutions. Designers considered constraints of the situation and context and used a discovery process [n=17] (where designers experiment with different solutions and determine what works after several iterations) instead of idea imposition (where designers use known steps and procedures to solve the problems). Only three designers followed an idea-imposition approach to decision making, implying that they found the provided information to be sufficient and did not probe for the additional information from their clients. Many factors influenced designer's decision-making, including designers' experience, schedules, constraints of time, funding, staffing, managing client's requirements, and the nature of the problem (structured or ill-structured) (Stefaniak & Tracey, 2014).

Decision-making in Instructional Design

The instructional decision-making literature draws heavily on foundational literature in decision-making. Instructional decision-making is a complex "mental dialogue" of determining learning goals, instructional activities, flow and sequence of content, instructional tools, and resources, and modifying these decisions as needed. These decisions are made before, during, and after the implementation instruction (Hunter, 1979; Shavelson, 1973; Stefaniak & Tracey, 2014). However, instructional design models and theories align well with normative approaches to decision-making. Prescribed processes are antithetical to good design, because prescriptions do not corroborate with the key values in design such as understanding the problem and context, and development of meaningful and practical solutions to solve the problems (Wiggins & McTighe, 2005). Similar to other design disciplines, scholars in instructional design are seeking to understand the full complexity of the system and how to best use both normative and naturalistic decision-making approaches, to design solutions to performance problems (Boling et al., 2017; Lachheb & Boling, 2021; Smith & Boling, 2009).

Instructional Decision-making and Models of Instructional Design

The purpose of instruction is to create learning experiences that facilitate learners' attainment of intended learning goals through the interaction of components (learners, instructor, instructional materials, learning environment) (Gagne & Briggs, 1974; Gagné et al., 1992). As noted earlier, instructional decisions are made to achieve performance goals (Smith and Ragan, 2005).

Scholars in instructional design suggest multiple models to guide instructional designers through the decision-making in instructional design process. An instructional model is a static and illustrative figure that helps in visualizing the dynamic process of instruction in "simplified fashion." Three examples of instructional design models—including the Dick and Carey model, the Gerlach and Ely Model, and the Tripp and Bichelmeyer's rapid prototyping model—were selected here as they are examples of the various instructional design models in the literature. Instructional models do not capture all the subtle movements between elements of instruction (such as content, instructional methods, and assessments) and interactions that occur in the instructional design process (Gerlach et al., 1980).

Dick and Carey's model is a prescriptive model (step-by-step proposition of how to design instruction), Gerlach and Ely's model is prescriptive and discipline focused (step-by-step process of how to design instruction in the teaching context), and Tripp and Bichelmeyer's model is a heuristic (a quick description of what designers need to devise solution in a disruption) (Dick et al., 2005; Gerlach et al., 1980; Tripp & Bichelmeyer, 1990). These models were selected for discussion, as they exemplify diverse functions that instructional models serve, for example, the Dick et al. (2005) model illustrates systematic process of instructional design. The Dick et al. (2005) model pre-supposes the availability of time and resources available for designing

instruction, and therefore, is more suitable to guide instructional designers in stable academic and corporate settings. The Gerlach et al. (1980) model is specially focused on instruction in academic settings, such as K-12 schools. The rapid prototyping model is more suitable to settings with a shortage of time and human resources (Tripp & Bichelmeyer, 1990). In the context of this dissertation study, all three models serve as theoretical background, because the systematic process of instructional design (as explained by Dick and Carey) describes the instructional design process in detail and applies to different instructional settings. However, this dissertation was conducted during the rapidly changing circumstances (as explained by Tripp and Bichelmeyer) during COVID, and therefore, instead of applying one of these models, the dissertation used the grounded theory method to generate a model to identify the types of instructional decisions and explain the factors that influence instructional decisions.

Instructional design models serve varied audiences: Some models guide through the step-by-step process of instructional design (such as Dick and Carey's model of instructional design and Gerlach and Ely's model), while others are intended to serve as a heuristic for experts (for example, Tripp and Bichelmeyer's model) (Edmonds et al., 1994). The models that serve as heuristics have more room for experimentation and expert intuition, while the step-by-step process models have less room for experimentation and are intended to guide the novices through the process of designing instruction in a systematic manner (Edmonds et al., 1994). The next section describes three models of instructional design, to present an account of theoretical underpinnings in the instructional design field, which were used in the discussion chapter to present its connections with the findings of this study and discuss the contribution of this study to the literature.

Dick, Carey, and Carey's Instructional Design Model

Dick, Carey, and Carey define instruction as a systematic approach including several steps interconnected with each other. Dick, Carey, and Carey's model does not include the implementation phase of instruction; however, the dissertation study has adapted the model to describe implementation of instruction to capture the full spectrum of instructional planning, implementation, and evaluation. The steps in instructional design model include:

- identify instructional goals.
- conduct instructional analysis.
- analyze learners and contexts.
- write performance objectives.
- develop assessment instruments.
- develop instructional strategy.
- develop and select instructional materials.
- design and conduct formative evaluation,
- revise the instruction based on the feedback received.
- implement the lesson plans, and assessment, adjust delivery with respect to students and learning environment, and students' learning.
- conduct summative evaluation of the instruction and instructor and use the obtained information to inform revision (Dick, Carey, Carey, 2005).

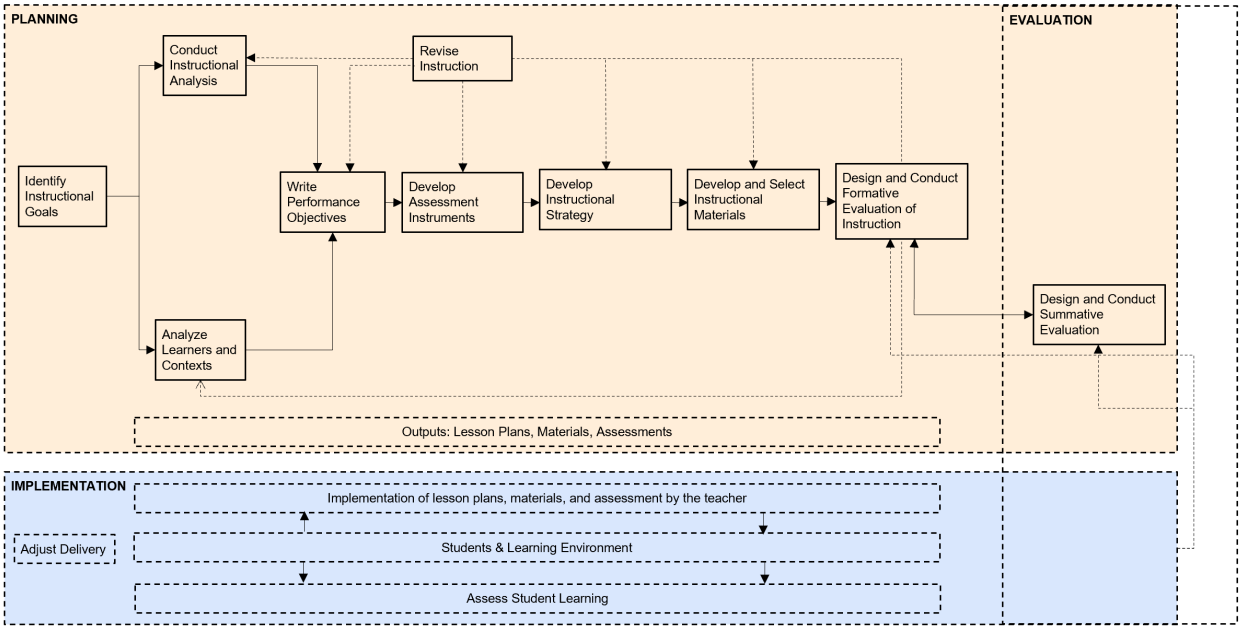
These activities are classified into three phases of instruction: planning, implementation, and evaluation (Figure 3). Instructional decisions begin with an analysis of needs and goals and end with an evaluated system of instruction demonstrating the accomplishment of goals. Instructional decisions are undertaken based on empirical evidence, to the extent that such evidence allows

(Dick et al., 2005). Instructional decisions are undertaken based on the knowledge of how humans learn and learning conditions (Gagné et al., 1992). Instruction can be designed by teachers, committees, curriculum planners, textbook writers, scholars in disciplines, accreditation bodies, and/or instructional designers (Gagné et al., 1992). The decisions can be classified into three categories:

- Decisions taken during the planning of instruction, where a carefully thought plan is laid out involving multiple instructional decisions, such as selection of content, sequencing of content, development of learning resources, etc. (Gagné et al., 1992);
- Decisions taken during the implementation of instruction based on the data about the success of implementation is collected to inform future instruction, termed as formative assessment (Dick et al., 2005); and
- Decisions taken post implementation of instruction to collect and consolidate the evidence to inform the future design of the instruction, termed as summative evaluation (Gagné et al., 1992). Dick, Carey, and Carey consider the process of instruction as dynamic and systematic, and the model describes how each of the steps are interconnected with each other.

Figure 2

Instructional Design model adapted from Dick et al., (2005)



Gerlach and Ely Model

The Gerlach and Ely model uses a systematic approach to teaching where 10 steps to design are sequenced and interlinked with each other. This model was developed in 1971 to explain the process of teaching and learning and its relationship with instructional media. In this model, the teacher is considered as a central agent who plans, implements, and evaluates the instruction (Gerlach et al., 1980; Grabowski & Branch, 2003). This model includes the following steps:

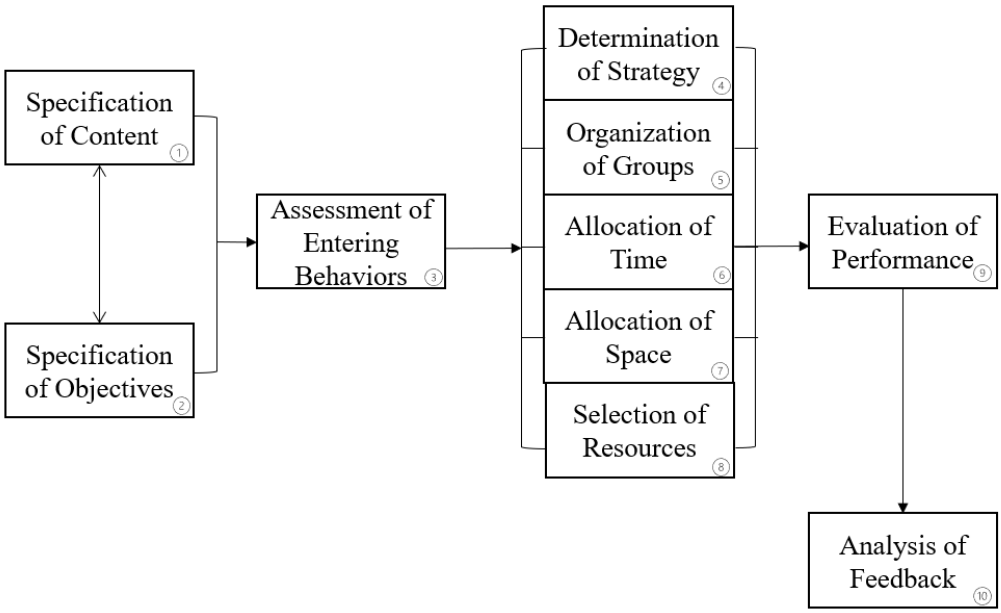
1. Specification of content
2. Specification of objectives
3. Assessment of entering behavior
4. Determination of instructional strategy
5. Organization of student groups
6. Allocation of time to each activity
7. Allocation of space to each activity

8. Selection of resources
9. Evaluation of performance, and
10. Analysis of feedback from the instructional implementation.

In step one and two, the teacher determines objectives and select the content. However, in K-12 settings, often teachers are assigned the content and curriculum, and therefore, authors recommend developing objectives using the content specifications (Gerlach et al., 1980). In step three, the teacher assesses the knowledge and skills that students have prior to the implementation of instruction. In step four, the teacher decides the instructional strategy, such as a traditional expository approach or an inquiry approach (Gerlach et al., 1980; Grabowski & Branch, 2003). In step five, the teacher decides if the students learn the concept individually, in small groups, or with the entire class. In steps six and seven, the teacher decides on the time and space given to each activity decided in the approach and the resources that need to be arranged and allocated. The selection of approaches, groups, allocation of time and space, and resources are all dependent on the content, objectives, and entering behaviors. In step eight, the teacher selects the resources, instead of developing newer resources, given the time limitations in organizing and implementing their instruction. For steps nine and ten, the teacher evaluates the performance and gauge if the learning objectives are met and uses student feedback to determine next course of action (i.e., specification of content and learning objectives for the subsequent instruction) (Gerlach et al., 1980; Grabowski & Branch, 2003).

Figure 3

Gerlach and Ely Model (Gerlach et al., 1980)

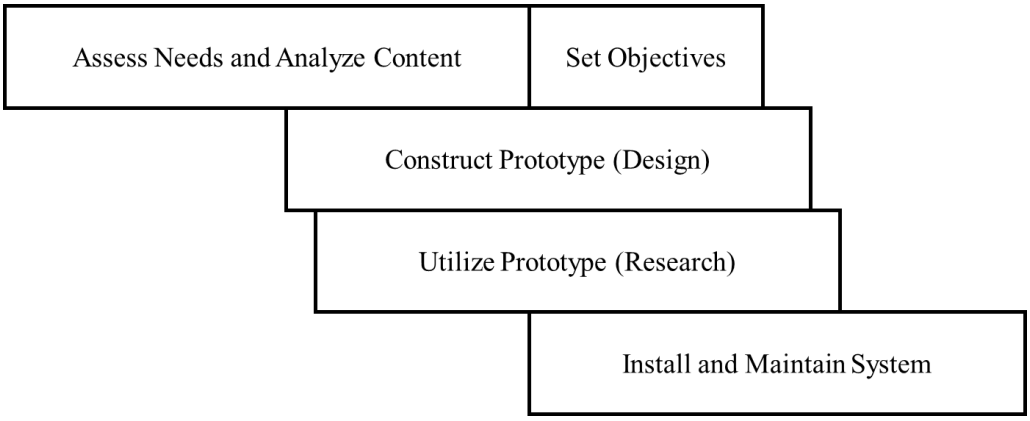


Rapid Prototyping

The rapid prototyping model is inspired from the software design process and is argued to be applicable to instructional design, because of the similarities of software and instruction design processes. Rapid prototyping in instructional systems design involves prescription of steps in designing a system. Like most classic instructional design models such as Gerlach and Ely, and Dick, Carey, and Carey, rapid prototyping begins with a needs and content analysis and a description of preliminary goals. Goals communicate the purpose of instruction and outline the tasks that the learner will complete (Dick, 1996; Dick et al., 2005; Gerlach et al., 1980). Rapid prototyping continues with concurrent design and research, or production and application processes (Figure 4) (Tripp & Bichelmeyer, 1990).

Figure 4

The Rapid Prototyping Model (Tripp & Bichelmeyer, 1990)



A comprehensive understanding of needs, content, and objectives is a consequence of the design process and not an input to design. The design and evaluation/research are parallel processes, and a designer who is conversant with theory develops instruction and examines the process and efficacy during implementation of instruction. The rapid prototyping model differs with other instructional design models because rapid prototyping acknowledges the complexity of the system and intersecting variables (such as time, budget, social interaction, expertise of the designer), and prescribes minimum steps that are necessary to solve the problem at hand. Rapid prototyping is pragmatic in nature and is particularly useful where the designer has to make decisions promptly to respond to the contextual variables while designing the instruction to close the performance gap (Tripp & Bichelmeyer, 1990). For example, in emergency situations such as wars and political conflicts, the instructional environments may not provide enough time and resources for instructional designers to undertake front-end analysis of the problems. Lack of time and resources force the instructional designers to rely on prior experiences in similar situations and intuition, instead of detailed front-end analysis of content, context, and existing performance (Hoard et al., 2019; Visscher-Voerman & Gustafson, 2004).

Instructional design models and instructional decision-making

Instructional design models guide design workflow and develop effective products and processes (Hoard et al., 2019). Considering the above three models, three main phases of instructional design are common across these three models. The phases are Planning, Implementation, and Evaluation. Regardless of the differences in the models, instructional development, implementation, and evaluation are common features of most instructional design models (Hoard et al., 2019).

Many instructional designers use instructional models (workflows) to guide their design process, however, they may skip or modify the stages given the contextual constraints (Kenny et al., 2005; Rowland, 1992; Visscher-Voerman & Gustafson, 2004). Most of the instructional design models, except the rapid prototyping model, represent normative ways of decision-making, because most of these models prescribe step-by-step instructional design processes for novices to guide their decision-making. Instructional design, being a design discipline, requires both normative and naturalistic decision-making, because decision-making agents (faculty, school-teachers, and/or instructional designers) are functioning in complex and fluid environments with limited information, resources, and time (Stefaniak et al., 2022). The complexities of the environment and how it affects the design process are not included in the normative instructional design models. The next section explains early works and current work in instructional decision-making.

Early Works in Instructional Decision-making

The term instructional decision-making was used initially in the early 1970s, by three different scholars—Bishop, Shulman, and Shavelson—who advocated for an improved understanding of instructional decision-making to understand the link between the theory of

instruction and real-time instructional situations in which instruction takes place (Borko et al., 2008).

Teachers receive training in instructional theories like learning objectives, instructional models, instructional techniques, and student developmental stages, however, they rarely receive training in the actual delivery of instruction and incident-to-incident instructional decision-making (Bishop, 2008). Bishop (2008) emphasized the need to understand the decision-making processes of teachers as they create and implement lesson plans. He described the importance of using a decision-making lens to investigate instruction because it can illuminate how decisions are adapted under pressures such as time constraints, consistency expectations (such that their approaches to all pupils are fair and just), and status demands (because they are the ones in charge of planning and implementing the instruction) (Bishop, 2008). Bishop's examples of instructional decision-making were limited to the decisions that are undertaken during the instructional episode (e.g., in the classrooms). Planning and evaluation of instruction were not discussed.

Shulman and Elstein (1975) investigated physicians' clinical reasoning and found the potential relevance of their research methods in investigating instructional decision-making and problem-solving and used that methodological framing to advocate for more studies on instructor decision-making. They compared the role of a teacher to that of a doctor because both actively process information to plan, anticipate, judge, diagnose, prescribe, and solve problems. In contrast, the difference between an instructor and a doctor is explained, specially, because a teacher works with numerous students at a time, while a doctor treats one patient at a time. In addition, an instructor may have an extended relationship with students for months and years, whereas a doctor may have a brief and infrequent relationship. However, both professionals

create plans for individuals and analyze their effects over time, adjusting based on feedback. While drawing these parallels between the professions, Shulman and Elstein (1975) argued for the importance of studying the intellectual processes of problem-solving and decision-making, instead of only overt behavior, to learn more about how individuals make decisions and solve problems given the real-world constraints and develop adequate models for professional development (Shulman & Elstein, 1975).

Shavelson drew from his studies in psychology and econometrics of human decision-making to study how decision theory can help in investigating the relationship between instructors' technical skills and student outcomes (Borko et al., 2008). Shulman and Shavelson studied teachers' reasoning and decision-making drawing upon cognitive and behavioral psychology. Borko and Shavelson defined instructor decision-making as "choices among alternative courses of action that were affected by their subjective estimates of the teaching situation, the actions available to them, and the likely outcomes all bounded by the limitations of human cognition in complex, ongoing teaching situations" (Borko et al., 2008). Their work underpinned the importance of instructional decision-making and explains how the following aspects influence instructional decisions.

- Antecedent conditions such as information about students (student ability, participation, behavior issues), nature of instructional task (goals, subject matter, students, and activities), and classroom environment and resources (seating arrangements, educational resources, external pressures).
- Teacher characteristics such as beliefs and values, conceptions of subject matter, cognitive abilities.
- Teacher cognitive processes such as choice of content for a course, perceived constraints, affordances, conflicts, and stress.
- Consequences for teachers such as planning instruction and interacting with students.

- Consequences for students such as achievement, motivation, and emotion.
- Teachers' evaluation of their own routines, decisions, and judgments.

Whilst all three authors focused on decision-making in the school settings, they underpin the importance of studying instructional decisions in all the settings where instruction is planned and implemented (Borko et al., 2008). Given the differences in the contexts of higher education and K-12 schools, it is necessary to synthesize the evidence on how instructional decision-making takes place in the higher education contexts and what factors influence instructional decisions in higher education (Edmonds et al., 1994). The next section presents studies on instructional decision-making of pre-service teachers, instructional designers, and faculty members in higher education settings.

Current works in Instructional Decision-Making

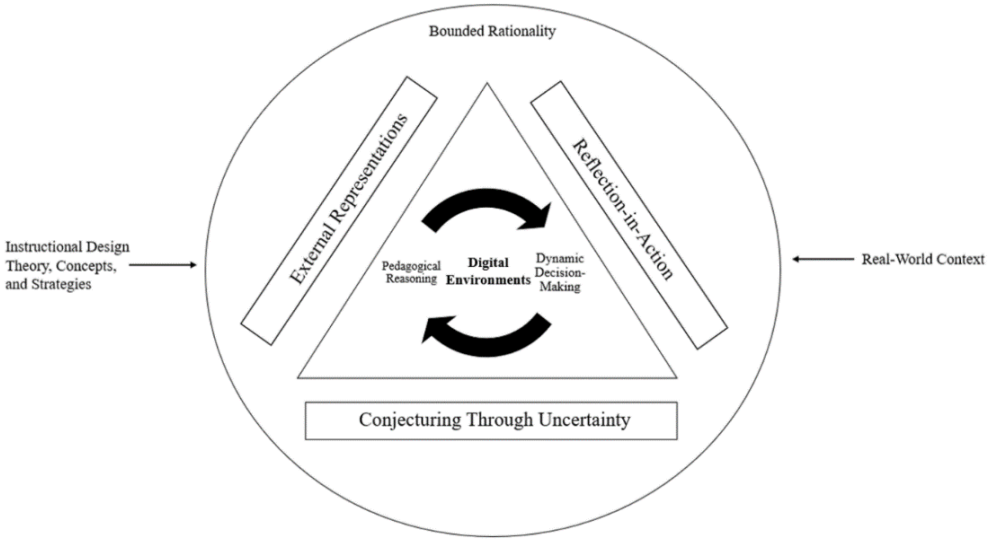
Individuals make a variety of decisions to design instruction, often drawing upon the models of instructional design (Nelson & Stolterman, 2012; Smith & Boling, 2009). They select models appropriate to the context of instruction, design instruction by applying instructional principles, and adjust instruction considering the variables in the environment (Lachheb & Boling, 2018, 2021) such as client's expectation, culture of the design team, role or position of the instructional designer in the team (Gray et al., 2015). Ability to make decisions within the knowledge, resources, and time constraints is known as bounded rationality (Simon, 1972). Individuals must design training solutions to performance problems considering the external (performance problem, instructional goals, contextual factors such as availability of resources, time, and human resources) and internal factors (approach to design and values).

Instructional design theories and models guide designers to create instructional systems where they engage learners in meaning-making within a situated context, however, they do not explain how instructional designers coordinate contextual factors to make instructional decisions

(Stefaniak, Luo, and Xu, 2021). Bounded rationality framework underpins that human make decisions that depart from perfect rationality because they are limited by their mental capacity, information available to them, and the time available for making decisions. Individuals develop internal and external representations during the design process. Internal representation (referred to as conjecturing through uncertainty) implies understanding the design problem, situation, and phenomenon through internal dialogue. For a designer to design a solution that is time sensitive, and context informed, it is necessary that instructional designer is aware about the extent to which they can collect the information about the context before designing the solution. This is to bound the instructional system so that the instructional design task is manageable. It is important to be aware of and acknowledge the designers' personal characteristics (knowledge, beliefs, and values) that bound their view of the system. While getting the purview of the instructional problem situated in an environment, they develop internal and external representations. Examples of internal representation include thoughts, pictures, sounds, and feelings that contribute to their understanding of design process. External representation is the expression of a mental model assisting problem-solving and decision-making and can be useful to capture the continuously evolving nature of design. Examples of external representations include concept maps, simulations, lists, wireframes, storyboards, etc. The internal and external representations of design help design to engage in "reflection in action" to further develop the design considering internal and external factors and improve the design through multiple iterations (Stefaniak, Luo, and Xu, 2021). Figure 5 presents how instructional designers can make instructional decisions in an environment while being aware of the design space and limitations as they design instructional products.

Figure 5

Framework of instructional decision-making (Stefaniak et al., 2021)



Empirical Studies on Instructional Decision-making

Design is an "iterative process of decision-making." K-12 teachers, instructional designers, and faculty members engage in instructional design work, to a degree. K-12 teachers are generally implementation-focused, where the curriculum is prescribed; trained instructional designers work in a variety of settings—including corporate, academic, government, non-profit, and military settings—to design, develop, and evaluate instruction, which often stakeholders implement. However, faculty members have some autonomy to design, develop, implement, and evaluate the instruction, considering the disciplinary, licensing, and accreditation requirements.

Articulation of preliminary constraints and functional specifications is essential to design instruction. Subsequently, decisions about the object or process are made (instructional materials, functionality, medium, etc.) based on the given problem, contextual constraints, prior experiences of solving similar problems, intuition, and personal biases (Jonassen, 2012; Stefaniak & Tracey, 2014). During the instructional design process, numerous complex decisions

are made. The number and complexity of instructional decisions undertaken in each step of instruction is reduced to the design need (Jonassen, 2012). This is because instructional decisions are often made in unstructured environments that are influenced by dynamic factors (Stefaniak & Tracey, 2014). Therefore, the foregoing section highlights the current studies on instructional decision-making conducted with pre-service teachers, trained instructional designers, followed by the studies conducted with the higher education faculty.

Pre-service teachers

Design-based research was carried out to understand preservice teachers' engagement in instructional design decision-making process. The study was conducted with 24 pre-service teachers of varied majors studying at a public university in United States. The participants completed a formative instructional design project to meet the course requirements. The study found that teachers' instructional design decision-making was an unstructured, contextualized, and dynamic process characterized by negotiations and valuations of various design challenges (e.g., prioritizing between student engagement and simplicity) and contextual variables (e.g., finding effective solutions while encountering technical issues). Several pre-service teachers found technical navigation and technology usage to be challenging and this may have influenced their alignment between content and instructional strategies. Tools such as needs assessment and user personas (representations of users' needs, prior knowledge, and skills) were found to be supporting teachers design decision-making processes. Nevertheless, teachers needed active coaching and real-time feedback during instructional decision-making processes (Xu et al., 2022).

Instructional designers

Initial empirical studies conducted with instructional designers examined if the instructional designers follow all the instructional activities that the instructional design models prescribe. In one study by Wedman and Tessmer (1993), a survey was conducted with seventy-three professional course developers to identify how often they employed eleven instructional design activities in their design projects and, when applicable, to explain why certain projects did not include a particular activity. The eleven activities included: perform a needs assessment, decide whether the requirement can be met through instruction, establish learning goals, conduct task analysis, define learning outcomes, assess trainee's prior knowledge, skills and characteristics, construct evaluation items, choose instructional techniques, identify media format, pilot test instruction before completion, and conduct a summative evaluation of instruction. The results of the survey revealed that design activities occur irregularly in practice, with certain activities happening more often than others. Only one of the 73 respondents claimed to have completed every design activity for every project. Only two responders completed more than half of each project's tasks (6 of 11 activities). The remaining 70 responders completed less than half of the instructional design tasks in each project. Almost nobody employed prescribed all instructional activities in every project. Diverse explanations were provided for not using all activities including decisions made by other stakeholders, lack of time and resources (Wedman & Tessmer, 1993).

Gradually, instructional design scholars are transitioning from a rationalistic model of instructional design, to investigate how learning environments are designed in natural settings (Gray et al., 2015). For example, Kirschner et al. (2002) found that designers in both the university and commercial contexts roughly followed the following instructional principles:

definition of problem, need analysis for the population, task analysis, creating buy-in and participation of relevant stakeholders, development of project plan, develop and sequence learning tasks, and create and test prototypes—the most significant being that a design enterprise should begin with the requirements of the learners, rather than the content structure of the learning domain. The fundamental distinction between the two groups was that academic designers placed a high value on considering alternative ideas throughout the design process, as compared to their corporate counterparts. Corporate designers are far more client-focused and emphasize the need of "buying in" the customer early in the process, and university designers are more concerned with the project strategy and the intended attributes of the instructional blueprint.

Instructional design practitioners in varied settings were surveyed on the “methods, tools, techniques, and approaches, as well as design models, design and learning theories, and principles” they use in their practice, and interviewed discussing the rationale behind their tool selection. A study of one hundred instructional designers (recruited from listservs, social media, and the author’s personal contacts) revealed that instructional designers use a vast variety of digital (e.g., learning management system, adobe suite), methodological tools (e.g., brainstorming, meetings) and analog tools (e.g., paper and pencil, pair of scissors), many of which are not confined to design and development of instruction, but more used in the implementation phase (Lachheb and Boling, 2018). Subsequently, interviews were conducted with ten instructional designers to understand the reasoning behind their choices. The analysis of the interviews revealed two categories of themes: rationalist and situational explanations. In the rationalistic explanation, participants’ explanation included appropriateness of the tool, suitability of the tool to the instructional design process, and cost effectiveness of the tool.

Situational explanation included individual preference, influence of peer designers and clients, and cultural norms prevalent in the designer's team or employment agency. In addition, the designers also used instrumental explanations, i.e., the choices of the tool were made to complement existing tools. For example, one participant indicated the use of flowcharts in complement to a brainstorming exercise. Situational explanations were most frequently used explanations, followed by rationalist and instrumental explanations (Lachheb & Boling, 2018).

Boling et al. (2017) conducted a multiple case study using an interpretive phenomenological perspective, with eleven instructional designers, recruited through listserv and social media posts. The instructional design practitioners working in public universities were from three different countries, held at least two years of experience in instructional design, and held an undergraduate or graduate degrees in instructional design (n=2) and other areas of study such as English, elementary education, economics, computer science, and microbiology. A 60-minute semi-structured audio interview was conducted with the participants. The interviewer asked participants to think about a strong and weak design and explain why they considered this design as strong or weak. The instructional designers believed that the design is a rational process and deterministic, implying, good design results in good results. In addition, a popular view about design, was it should do "least-harm," implying that it should be flexible and adaptable to the situation to meet its goals. Participants' explanations revealed that designers' views are invariant in their behavior, however, the authors indicated that their methods could perhaps not solicit the tacit beliefs that designers bring to their design work. Nevertheless, authors argued that designers undergird their beliefs when explaining the effectiveness of design. However, they rationalize their explanations via instructional principles and theoretical underpinnings, to subconsciously conceal aspects of one's personality that influenced their

choices during the design process (Boling et al., 2017). This is not surprising because instructional design literature purports rationalization of the design process, and pays less attention to influence of designer's personality on design (Smith & Boling, 2009); perhaps this is why the interview respondents concealed the influence of their identity and philosophy on design process.

The studies that oft refer to instructional theories and models from the field of instructional design, have primarily focused on pre-service teachers and instructional designer's decision-making. However, the studies focusing on higher education faculty's instructional decision-making are conducted by other education researchers who often do not refer to instructional design models and theoretical underpinning. Nevertheless, given the role of faculty mostly as primary designer of instruction, specially in higher education settings, I investigated literature that focused on higher education faculty's instructional decisions and the factors that influence their instructional decision-making. The next section examines higher education faculty's instructional decision-making.

Higher Education Faculty's Instructional Decision-making

Faculty make decisions while planning the instruction and during the implementation of instruction, as they observe contextual nuances such as student reaction, student feedback, and student understanding as assessed through formative assessments. Faculty members are often the lead designers of the instruction in higher education settings, and therefore this study focuses on faculty's instructional decision-making. It is assumed that faculty engage in making reasonable decisions in complex and uncertain settings by using the amount of information they can access and process in the given situation, and faculty's instructional decisions are guided by their thoughts and judgments (Borko & Shavelson, 1990).

Planning instructional activities itself is a complex "mental dialogue" of choosing and creating instructional activities and determining their flow, which faculty engage with round the clock, and most of the process remains undocumented. McCutcheon (1980) noted:

> "Mental planning is probably the part of teaching that has the potential for being the most professional activity of teaching, for it gives teachers the opportunity to relate theoretical knowledge to particular cases" (pp. 8-9).

The empirical studies on pre-service teacher's and instructional designer's decision making are well discussed in the chapter earlier, however, the following section summarizes the literature on faculty's instructional decision-making in higher education. Following the adapted Dick, Carey, and Carey's model, there are three segments of instructional design process, including planning, implementation, and evaluation (Dick et al., 2005). Examples of decisions taken during each of the phases in instructional design segment are discussed next.

Decisions taken during instructional planning.

Planning decisions are defined as decisions made by faculty during the planning phase, prior to the implementation of instruction. Examples of pre-instructional decisions made by higher education faculty include:

- Choice of instructional strategies, such as use of lecture or interactive pedagogies (Fernández-Cruz & Rodríguez-Legendre, 2021; Hora & Anderson, 2012; Hora, 2012), or culturally appropriate strategies (Barnes & Brownell, 2018), formative assessments (Asghar, 2012) or re/designing the instructional tasks (Santos et al., 2011).
- Deciding the extent to which students should be provided with the autonomy versus support in instruction (Santos et al., 2011).

- Choice of instructional medium such as replacing face-to-face instruction with online instruction (Donnelly et al., 2021; Khoza & Mpungose, 2020; Milic & Simeunovic, 2021; Terantino, 2020), blended learning (Antwi-Boampong & Bokolo, 2021; Porter & Graham, 2016) and flipped learning mediums (Long et al., 2019).
- Choice of digital tools such as proctoring software to assess students' learning (Slade et al., 2021), WeChat (a mobile social media) in courses for instruction (such as administering learning, distance teaching, representational tool), community building and motivational purposes (Xue & Churchill, 2020), computer supported collaborative learning (Zhu, 2015), and technological tools to support student learning (Bennett et al., 2015; Macharia & Pelser, 2014; Zhu, 2015).
- Development and modification of a curriculum including learning goals, instructional strategies, assessments, and digital tools and resources, and student and faculty relationships (Khefacha & Belkacem, 2014; Lee & Shieh, 2015; Roberts, 2015; Shieh & Reynolds, 2021).

Decisions taken during implementation of instruction.

Implementation-related instructional decisions include decisions that instructors undertake while they are implementing the instruction and are modifying their plans based on their observation of students and context. Bishop has considered these "fluid" decisions to be part and parcel of the implementation of instruction and have argued that these decisions have not been paid considerable attention in the literature (Bishop, 2008; Borko et al., 2008). In our review, we did not find the studies that focused on the decisions that were undertaken during the implementation of the instruction.

Decisions taken during evaluation of instruction.

Evaluation decisions are undertaken during and/or after the implementation of instruction. For example, in an instructional system, a quiz was taken to determine student achievement of learning outcomes. The information collected from the students, environment, and faculty reflection can be used to make improvements in the system. It acts as blood sugar readings in diabetes care setup (Dick et al., 2005). These decisions include evaluation of the ongoing instruction, conducting the evaluation post-instruction, and/or plan for the upcoming instruction. The purpose of evaluation decisions is to identify successes and challenges in achievement of instructional goals, efficiency of instructional processes, and plan for the next instructional intervention based on. From the literature review, examples of evaluation decisions include use of student data from exit survey (Bolhuis et al., 2016), ongoing student scores on quizzes, assignments, and exams (Bolhuis et al., 2016), instructor's reflection on instructional activities (Sciutto, 2021), and student interaction data at course level (Kaliisa et al., 2021).

Factors influencing instructional decisions.

Empirical literature provides evidence on how faculty define and justify their instructional decisions (Hora, 2012; Hora & Holden, 2012). These factors include personal, instructional, organizational, and societal factors. Empirical evidence suggests that personal approaches, identity characteristics, instructional, and organizational circumstances independently or conjointly influence the choice of instructional content, pedagogy, and assessment. These factors may influence instructional decisions and student learning experience during instruction. After presenting the factors in four broader categories (personal, instructional, organizational, and socio-cultural), an example is presented from Hora's study, to show how

these factors could jointly interact and influence the instructional decision-making of the faculty member (Hora, 2012).

Personal Factors

Personal factors are defined as instructor-related factors including (a) cognitive processes, beliefs, and values, (b) knowledge, skills and experiences, (c) instructor's identity, personality, or demographic characteristics influencing instructional decisions (Borko et al., 2008; Hora & Anderson, 2012; Hora, 2012; Sturtevant & Wheeler, 2019). For example, a faculty member from Southeast Asia teaching in the music school includes South Asian music and shares their lived cultural experiences to help students contextualize where and how the music was produced.

As per our review of empirical literature, examples of personal factors that influenced instructional decision-making are as follows:

Cognitive Processes, Beliefs, and Values

- Belief in their capacity to use instructional strategy and/or technology to improve students' learning experiences (Long et al., 2019).
- Beliefs regarding the effectiveness of instructional strategies (Asghar, 2012; Bennett et al., 2015; Hora, 2012; Xue & Churchill, 2020) technological tools (Long et al., 2019; Milic & Simeunovic, 2021), and using student data in making decisions (Bolhuis et al., 2016).
- Values such as fairness, honesty, respect, and integrity (Khoza & Mpungose, 2020).
- Reflection on instruction (Hora, 2012; Xue & Churchill, 2020), specially when encountered with problems (Khoza & Mpungose, 2020).

Knowledge, Skills, and Experiences

- Post-graduate training in designing instruction (Shieh & Reynolds, 2021).

- Expertise in designing instruction drawn from individual's experience (Bennett et al., 2015).
- Skills to use instructional resources, technological tools and data (Bolhuis et al., 2016) and ability to handle cognitive and affective conflicts arising from data (Bolhuis et al., 2016).
- Reflection on the previous design experiences, including successes and challenges in designing instruction in the past and similarity of the current problem with the previously encountered instructional problem (Hoard et al., 2019; Sentz et al., 2019; Tawfik & Jonassen, 2013).
- Areas of faculty's research (Roberts, 2015).

Identity characteristics

- Age and experience of the instructor (Fernández-Cruz & Rodríguez-Legendre, 2021).
- Expertise in the subject and in teaching a particular age group (Fernández-Cruz & Rodríguez-Legendre, 2021).
- Cultural and religious affiliation (Barnes & Brownell, 2018).
- Disciplinary affiliation and nature of knowledge in their disciplines (Fernández-Cruz & Rodríguez-Legendre, 2021).
- Adaptability and spontaneity to change instruction, given the circumstances (Khoza & Mpungose, 2020).

These personal factors independently and collectively paint the picture of how an individual sees reality and resultantly would affect individuals' instructional choices.

Instructional factors

Instructional factors are related to students and instruction that influence instructional decisions. For example, students' demographics, students' participation in instructional activities, students' feedback on instructional activities during and after the course, students' performance on the assessments, and available resources (teaching assistants, material resources, monetary provision for field visits, etc.) (Ertmer, 2001; Hora & Anderson, 2012; Hora, 2012). Consider another example, in a large lecture class, a faculty member trains the graduate teaching assistants to complete the grading using the grading scheme, instead of grading it on their own. The choice of developing a grading scheme was to maintain consistency amongst graders. Note that the choice of sharing grading load depends upon the availability of Teaching Assistants in the department assigned for the course. and instruction that influence instructional decisions. Examples of instructional factors found to be influencing instructional decision-making include,

- Student characteristics including identity characteristics (domestic / international, gender, graduate / undergraduate), student interests (Bennett et al., 2015; Roberts, 2015).
- Interactions amongst student-instructor-content, such as:
- Student-instructor interaction (e.g., request for help, gestures, questions, overall understanding of the task, challenges in task comprehension, student-student interaction, student engagement in the task) (Santos et al., 2011).
- Student interaction with content (e.g., student reasoning quality (Santos et al., 2011), language (Santos et al., 2011), emotional state (Santos et al., 2011), and academic dis/honesty (Terantino, 2020).
- Student-student interaction (Santos et al., 2011).

- Instructional goals determined at the beginning of the course (Barnes & Brownell, 2018; Roberts, 2015) and achievement of learning outcomes (Sciutto, 2021).
- Number of students in a classroom (Asghar, 2012; Bennett et al., 2015). For example, in a large lecture class, it might be difficult to do interactive activities (Hora, 2012).
- Student feedback on instruction (Hora, 2012). For example, students may not see value in use of interactive sessions, and request the instructor to revert to lectures (Hora, 2012).
- Scope of the content needs to be covered (Hora & Anderson, 2012; Roberts, 2015). For example, in an introductory course of basic science, there is a lot of content to be covered, making it difficult to use experiential strategies, requiring more time and resources.

Organizational factors

Organizational factors are operational attributes, processes, or conditions within an institution that influences instructional decisions. For example, the university's climate (such as culture, vision, and resources), physical or virtual infrastructure in which instruction is implemented, departmental culture, funding, and resources, work allocation/workload, and faculty reward and promotion structures (Hora, 2012; Shavelson, 1973). For example, an instructor working in the research school may pay more attention to their research and publications, and less to how they support instruction. In this case, the instructor's decision-making is influenced by the organizational reward structures. Examples of organizational factors found to be influencing instructional decision-making included:

- Prescribed teaching responsibilities (course load) and available time. For example, instructors with a lot of students in the course or too many courses to teach, would find difficult to make instructional changes quickly (Hora, 2012; Slade et al., 2021).
- Autonomy to decide instructional medium (Terantino, 2020) and ability of instructor to make decisions such as textbook and content selection (adjunct vs full-time instructor) (Hora, 2012; Shieh & Reynolds, 2021).
- Conversations and collaboration with colleague instructors (Bennett et al., 2015; Khefacha & Belkacem, 2014; Khoza & Mpungose, 2020).
- Availability of instructional and technical support (Milic & Simeunovic, 2021; Porter & Graham, 2016; Terantino, 2020), such as assistance by data coach to use student data (Bolhuis et al., 2016) as well as financial resources (Hora, 2012), such as lack of technological infrastructure to do digital instruction (Bennett et al., 2015; Milic & Simeunovic, 2021; Porter & Graham, 2016; Sciutto, 2021), and lack of data infrastructure for using student data for designing data driven instruction (Bolhuis et al., 2016; Kaliisa et al., 2021).
- Departmental recruitment, tenure, and promotion priorities. For example, some institutions prioritize research over teaching and service, leaving reduced motivation to make instructional innovations (Asghar, 2012; Hora, 2012; Kaliisa et al., 2021).
- Cultural values of the department or organization. For example, instructors in a religious university might use religious scientists' examples to mitigate conflict between scientific concepts and religious beliefs of students and instructors themselves (Barnes & Brownell, 2018).

- Departmental policies such as policies governing student privacy whilst using student data to inform IDs (Kaliisa et al., 2021).
- Department managers' guidance and appreciation for using online resources (Khoza & Mpungose, 2022) .

Societal factors

Societal factors are customs, lifestyles, social movements, and values that characterize a society. Examples of the societal factors that influenced faculty instructional decision-making, found in our review included:

- Requirements laid down by the accreditation bodies (Bennett et al., 2020).
- Employability of the students determined by labor markets (Bennett et al., 2020).
- Global pandemic forcing instructors to change instructional medium (Milic & Simeunovic, 2021; Sciutto, 2021).

Other examples, that are not mentioned in the studies included in the review, include professional organizations in the discipline, social movements (such as feminism; Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ) rights; black lives matter), and social hierarchical structures could inform instructional decisions (Borko et al., 2008; Hora, 2012).

Studies used in this analysis are pre-dominantly self-reported (Hora & Anderson, 2021; Hora, 2012; Santos et al., 2011; Bennett et al. 2020; Asghar, 2021; Barnes & Brownell, 2018; Bennett et al., 2020; Fernández-Cruz & Rodríguez-Legendre, 2021; Kaliisa et al., 2021; Khefacha & Belkacem, 2014; Long et al., 2019; Milic & Simeunovic, 2021; Porter & Graham, 2016; Roberts, 2015; Slade et al., 2021; Sturtevant & Wheeler, 2019; Terantino, 2020); some are independent observations and self-reported (Xue and Churchill, 2020; Bolhuis et al., 2016; Sentz et al, 2019; Shieh & Reynolds, 2021; Tawfik & Jonassen, 2013; and Hoard et al. 2019), and few

of the accounts are authors' reflections on the instruction they designed (Bennett et al., 2020), and advocacy articles (Ertmer, 2001; Borko et. al., 2001).

Confluence of multiple factors informing instructional decisions

It is clear from the review that all the studies present that more than one factors influence instructor's instructional decisions (Hora & Anderson, 2012; Hora, 2012). The confluence of personal, instructional, organizational, and societal factors influenced decisions. For example, in one study, a biology instructor taught a large course with 30 co-instructors and 1000 students, each semester. She chose to use a large lecture format instead of using active and interactive instructional strategies because, existing large lecture format (instructional factor), promotion criteria emphasizing research rather than restructuring of teaching (organizational factor), constant pressure to take part in research grants (personal factor), and amount of administrative and teaching support available (organizational factor). Whilst she acknowledged the benefits of using active learning in the classroom and tried to make a stride towards interactive and active instructional mode, she was not provided with the collegial support by the co-instructors (organizational factor) and the department was not supportive either (organizational factors). In addition, her existing skills in conducting active learning (personal factor) and her personal beliefs that active learning is more difficult as compared to a large lecture format (personal factor) also influenced her choice of continuing the lecture format. Thereby, the instructor decides to continue using lectures, instead of using interactive approaches to teaching (Hora, 2012). It is visible in the case above, that the instructor uses a naturalistic approach to make and justify instructional decisions, whereby, several personal, organizational, and socio-cultural factors are influencing her decision (Jonassen, 2012).

Instructional decision making during COVID.

Hodges, et al. (2020) define Emergency Remote Teaching (ERT) as “a temporary shift of instructional delivery to an alternate delivery mode due to crisis circumstances” (Hodges et al., 2020, para. 13). Hodges et al. (2021) underscore that there are three characteristics of emergency remote teaching, including its temporary phase where the instructional decisions would last for shorter period of time, immediacy to adapt instruction to the circumstances emanating from the emergency, and the “remote” instruction because students and teachers are not in a common physical space and technology is used to mediate instruction. The studies conducted during COVID pandemic on instructional changes, could be viewed from the lens of emergency remote teaching, where the transition to different instructional mediums was temporary, required faculty to adapt their instructional decisions to the given circumstances, and instruction was delivered in remote, hybrid, and face-to-face with social distancing modes to avoid the COVID spread. Empirical studies conducted on instruction during COVID are reported next.

During COVID, faculty members taught online using video-conferencing software such as Zoom, MS Teams, and Google Classroom (Palmer et al., 2021; Stecula, & Wolniak, 2022; Zhu et al., 2021). They reported difficulties in assessing social cues, especially when students turned their video cameras off (Khan et al., 2022; Lapitan et al., 2021; Marshalsey & Sclater, 2020). Some faculty members also noted fatigue amongst students and faculty, and shortened the duration of their synchronous classes, and provided students with asynchronous instructional materials and accompanying tasks (Grimmer et al., 2020).

Faculty members tried and tested various instructional strategies such as annotation of their presentation materials using PowerPoint or digital whiteboards to emulate face-to-face physical classrooms (e.g., Chan et al., 2020; Dietrich et al., 2020; Xiao et al., 2020). Increased use of interactive digital tools such as Nearpod, Padlet, online polling, and breakout room discussions

was reported (e.g., Ali et al., 2020; Gomez et al., 2020). Clinical, field-based, or laboratory settings were not accessible because of increased risks of COVID spread, therefore faculty members emphasized on conceptual aspects. They substituted skills and practice labs with additional theoretical topics, and used online guest lectures, live skill demonstration sessions, video recordings of field trips, and conceptual application exercises in replacement of field-based experience (Chan et al., 2020; de Luca et al., 2021; Dietrich et al., 2020; Dodson & Blinn, 2021; Garcia-Alberti et al., 2021; Gomez et al., 2020; Xiao et al., 2020). Some studies reported faculty members taught field-based lessons using alternative settings such as public parks and replaced lab experiences with creating lab experiments using household items (Dodson & Blinn, 2021; Gerhart et al., 2021; Palmer et al., 2021).

Instructors reported making a variety of changes in the assessment and feedback practices. They replaced in-person final exam with open-book exams, where students completed the exam and sent to the instructor via email or a web-platform (St-Onge, Ouellet, Lakhal, Dubé, & Marceau, 2022; Rizvi et al., 2022; Zagury-Orly, & Durning, 2021). Some faculty members replaced exams with individual assignments, series of quizzes, and one-on-one discussion with the faculty member (St-Onge, Ouellet, Lakhal, Dubé, & Marceau, 2022). Telehealth appointments were also used to observe students in the workplace setting, using a web conferencing platform, and feedback was provided through virtual platforms (St-Onge, Ouellet, Lakhal, Dubé, & Marceau, 2022). Faculty considered potential consequences of changes in the assessment on students' workload and heightened stress, un/availability of the technological equipment, students lacking internet access to complete the assessment, and reported providing additional flexibility in their assessment modes and deadlines (St-Onge, Ouellet, Lakhal, Dubé, & Marceau, 2022).

Cheating was highlighted as the "biggest" issue in online exams (Reedy et al., 2021; St-Onge, Ouellet, Lakhal, Dubé, & Marceau, 2022). Several strategies were put in place to maintain academic integrity, including an increase in number of questions vis-a-vis time allocated to complete the assessment, use of multiple versions of same exam through randomization of questions, or use of different questions for different students so that all students receive a unique version of an exam; and recruitment of additional teaching assistants to investigate similarities in students' answers (Hall et al., 2021; Jaap et al., 2021; Reedy et al., 2021; St-Onge, Ouellet, Lakhal, Dubé, & Marceau, 2022).

Changes made in grading policies included: pass/fail grading and increased weightage to daily work in comparison with the "final" exams (Ali et al., 2020; Dicks et al., 2020). St-Onge, Ouellet, Lakhal, Dubé, & Marceau (2022) reported that many instructors' self-reported alignment between assignments and course objectives. After considering the academic integrity and constructive alignment, faculty also made e-assessment decisions based on their prior assessment design and technological skills, available resources, and perceived impact that these changes would have on their workload.

Fine, Leung, Tonni, & Louca (2022) inquired from dental instructors and other staff members in an annual dental education conference in Europe using a survey and focus-group discussions. Most respondents indicated increasing the amount of feedback to their students using a web-based virtual learning environment (76.1%). In the focus group discussions, following aspects were emphasized: The need for smaller groups for feedback in problem-based learning setup emphasized, greater engagement with students, and focused dialogue related to the outcome of formative assessment, to reduce students concerns regarding studies and support them in their learning. Some participants also reported reducing the amount of feedback because

of the technological challenges that they faced during the pandemic. However, the overall faculty's comfort in using technologies for assessment and giving feedback increased to assist students in succeeding, despite difficult circumstances due to COVID. For the practical and clinical work, participants emphasized the effectiveness of feedback in face-to-face settings, and appreciated traditional clinical teaching over the online clinical teaching (Fine, Leung, Tonni, & Louca, 2022).

Studies also reported that faculty provided informal support to students through connecting with students through virtual office hours, using social media groups or contact after class hours, and sharing their feedback on shared drives (e.g., Khan et al., 2022; Xiao et al., 2020). Faculty also reached out to the students using multiple communication channels based on the students' access to technology devices and found it difficult to manage various technological platforms (Garcia-Alberti et al., 2021; Khan et al. 2022; Marshalsey & Sclater, 2020). Some faculty members reported using messaging applications such as Whatsapp and phone calls to communicate with students and administer viva exams, especially when the students could not access the internet to take part in a virtual meeting (Rizvi, et al., 2022).

The majority of the studies on instructional changes during COVID used self-reported measures such as surveys, on-to-one interviews, and focus group discussions with faculty members (Ali et al., 2020; Chan et al., 2020; de Luca et al., 2021; Dietrich et al., 2020; Dodson & Blinn, 2021; Fine, Leung, Tonni, & Louca, 2022; Gomez et al., 2020; Grimmer et al., 2020; Khan et al., 2022; Marshalsey & Sclater, 2020; Palmer et al., 2021; Reedy et al., 2021; St-Onge, Ouellet, Lakhal, Dubé, & Marceau, 2022; Xiao et al., 2020; Zagury-Orly, & Durning, 2021; and Ali et al., 2020). Two studies used student performance data (i.e., their scores as a measure to investigate the influence of change in instructional medium on students' performance) (Hall, et

al. 2021; Jaap et al. 2021). Two studies reported faculty used reflective accounts discussing the changes they made to their courses during COVID pandemic and challenges they faced (Garcia-Alberti et al., 2021; Gerhart et al., 2021). A few studies analyzed syllabi, course materials, and assignment guidelines and used these as evidence in their research (Rizvi et. al., 2022; Garcia-Alberti et. al., 2021; Gerhart et. al., 2021).

The studies on instructional changes during COVID, did not examine the factors per se, however, some of the studies reported instructional factors and pandemic-related challenges that influenced instructors' decisions. Studies acknowledged that it was difficult to switch overnight to online medium, with limited faculty training in teaching online and lack of digital resources available with students and faculty (Lapitan et. al., 2021; Rizvi et. al., 2022; Garcia-Alberti et al., 2021). Moreover, faculty were concerned regarding academic integrity (Khan et al., 2022; Rizvi et. al., 2022; Hall et. al., 2021; and Reedy et al., 2021), increased cognitive load generated by the assessments (Rizvi et. al., 2022), lack of resources (such as computers and internet) with students and faculty members (Rizvi et. al., 2022), and lack of time in changing design of instruction (Rizvi et. al., 2022; Garcia-Alberti et. al., 2021; Palmer et. al., 2021). Faculty also observed lack of student engagement, cues included, turning off mics and cameras, and felt a loss of "control" that they otherwise felt in physical environment (Marshalsey & Sciater, 2020; Rizvi et. al., 2022; de Luca et. al., 2021). Thus, studies acknowledged the stressful times and noted faculty and students' resilience to adapt to online medium (Ali et. al., 2020; de Luca et. al., 2021; Grimmer et. al., 2020). Most of the instructional and COVID related factors were reported in the study, however, it was unknown how individual faculty members' personal factors (such as prior knowledge, beliefs, and values) interplay in conjunction with the instructional, organizational, societal, and the COVID pandemic related factors. Lack of studies on factors that influenced

faculty decisions during COVID, is an area that requires more attention and work. Thus, this dissertation contributes to the literature by presenting a grounded theory model explaining instructional decisions in conjunction with the factors that influenced instructional decisions during COVID.

Summary

The chapter establishes decision-making as an exercise of making a choice from a set of alternatives. Drawing from the disciplines of cognitive psychology and behavioral economics, two major approaches to decision-making are discussed: normative and naturalistic decision-making. Normative decision-making is a result of formal rationalization process of evaluating pros and cons, minimize or avoid risks, and maximize the benefits defined in terms of utility and value. In contrast, naturalistic decision-making considers that people make decisions using their prior knowledge, beliefs, and identity characteristics. They often develop reasoning for a decision, considering their identity, prior experiences, personal values, and cultural values. Normative decisions often consider deviation from the formalized rational thinking process infuses systematic bias in human reasoning, leading to unfavorable outcomes. However, both normative and naturalistic traditions of decision-making agree that experts often rely on intuition to make decisions in the crunch of time and resources, and these decisions are likely to produce favorable outcomes, because experts have developed these intuitions through extensive experimentation and received feedback to improve their decision-making in the field.

Design disciplines argue that all human faculties including rationalistic, intuitive, and imaginative must be engaged in the design decision-making. Traditional instructional design literature relies heavily on formalized rationalistic instructional design models and examining how these models are applied to practice. However, recently scholars in instructional design are

arguing that instructional design is a “design discipline,” and therefore the conversations in instructional design must expand from normative and formalized processes to include investigations on instructional deicsion-making in real settings–perhaps investigating both naturalistic and normative approaches to decision-making.

This review also discussed the empirical literature on instructional decision-making of pre-service teachers, instructional designers, and higher education faculty. These empirical studies suggest that instructional decision-making is a complex mental process of choosing amongst the alternatives and is affected by individual factors (such as individuals knowledge, skills, beliefs and identity characteristics), instructional factors (instructional goals, scope of content to be covered, student characteristics, class size, interactions between student-instructor-content (student feedback on instruction), organizational factors (peer influence, available support and resources, departmental culture and incentivization, prescribed responsibilities and autonomy to make decisions), and societal factors (requirements of accreditation agencies, labor market demands, and events like global pandemic).

It is clear from the review of empirical literature on faculty instructional decisions during COVID that most studies examine instructional choices such as changes in pedagogy and technology used, however, less attention is paid on the factors that influenced these instructional decisions during COVID. My dissertation study investigates two research questions: (a) What instructional decisions did award-winning faculty make during the COVID pandemic? (b) What factors influenced the instructional decisions of higher education faculty members? The study will contribute to the ongoing discussion on instructional decisions in instructional design literature.

The next chapter explains research methodology used in this research to answer the research questions.

Chapter Three

Methodology

Chapter 3 explains the research design, research participants, ethics review, and data collection process. The chapter also provides information about the data collection tools (interviews and syllabi), instrumentation, data analysis, and ways to establish trustworthiness in the data analysis and interpretation.

Researcher's Positionality

The purpose of this study was to investigate award-winning faculty's instructional decisions and corresponding factors that influenced their instructional decision-making. My continuous curiosity to investigate instructional decision-making informed the design of the study. Based on my experiences of making choices while designing learning experiences for K-12, university students, and higher education faculty, I presupposed that the phenomenon of "instructional decision-making" exists (Bryant, 2003; Mruck & Breuer, 2003). I describe decision-making as a complex mental process of choosing between the alternatives to produce effective outcomes. However, the dimensions of this phenomenon as experienced by award-winning faculty members, and the factors that influenced their instructional decisions during the pandemic-enforced changes in instructional mediums, was unexplored. Therefore, this present study was designed to enhance the understanding of award-winning faculty's instructional decisions during COVID and explored the factors that influenced their instructional decisions.

I believe that realities are subjective and are constructed by people as they interact with people, contexts, and encounter problem(s). Following the qualitative research orientation, I acknowledge that the meanings were constructed by individuals in a context, and therefore, instructor's work and lives, their social and political backgrounds, and their personal values were

central to the understanding of the phenomenon of instructional decisions (Bryant & Charmaz, 2007a, 2007b; Glaser & Strauss, 2017). My approach corresponded to the social construction of reality and constructive grounded theory (Charmaz, 2000; Peter & Luckmann, 1966). Moreover, following the traditions of Bryant and Charmaz (2007b), I presented the reality as it was; without shrinking and "straightening" it to make it look absolute or superimposing existing theoretical framework on the collected data; instead, I chose to use an inductive coding process and report the patterns and complexity of the phenomenon of instructional decisions as described by my research participants.

Analysis of previous research (as discussed in Chapter 2) revealed that most of the studies investigated instructional decisions of pre-service teachers and instructional designers. A few studies examined the instructional decision-making of higher education faculty members using quantitative and qualitative interview-based studies. Research studies on faculty instructional decisions and influencing factors during times of disruptions were limited at the time of the study. Therefore, to explain the phenomenon of instructional decisions and influencing factors, grounded theory was selected (Creswell & Creswell, 2017; Creswell & Poth, 2016). Grounded theory was the best methodological choice because it resulted in a model illustrating the types of instructional decisions and factors that influenced these decisions, as described by the faculty who undertook numerous instructional decisions as they designed and implemented instruction during COVID. Through an inductive grounded theory approach, the study explained the meaning that individuals ascribed to their decisions during the instructional planning, implementation, and evaluation process (Creswell & Creswell, 2017; Creswell & Poth, 2016).

I was actively engaged as a researcher in constructing the meaning of the phenomenon (Willig 2013). Extending Bryant's metaphor for the researcher as a photographer (Bryant, 2003),

while conducting this research, I viewed myself as a videographer (observer of the phenomenon), who is taking a video using a camera (data collection tools: interviews and course syllabi) to capture the video of the phenomenon of faculty's instructional decisions as they evolved during the semester-long process. Interviews and document analysis were conducted with the participants to explore, consolidate, and validate the data, resulting in the design of a model that identifies the types of instructional decisions and influencing factors. My prior knowledge and experience in instructional design and faculty development influenced the choice of the phenomenon of this research, framing, and phrasing of interview questions, interview structure and flow, document collection, analysis of data, findings, and discussion (Bryant & Charmaz, 2007b). For example, the interview guide included probes about teaching philosophy, student feedback, licensing, and accreditation requirements because my previous experience and my understanding suggested that instructional decisions are purported to be influenced by the aforementioned factors.

Study Context

This study was conducted at a private university in New York. The university is a Carnegie Classification R-1 highest research productivity institution. The university has 13 schools and colleges, 14778 undergraduate and 6271 graduate students, 1764 faculty, and 3769 staff members. The university has three units to support faculty including Teaching Learning and Excellence to support faculty with matters related to pedagogy, Online and Digital Learning to support faculty with matters related to online and digital course design (such as using digital tools in a classroom), and Technology Services to support faculty with the technological concerns (such as installation of software, learning management system). The roles of the three

units are inter-related, and all three units were tasked to support faculty during the pandemic as described in the timeline below.

Participating faculty were from various disciplines and their demographics are listed in Appendix 3. Data were collected from nine faculty members through interviews as instructional formats transitioned from online to face-to-face due to revised COVID pandemic isolation and masking protocols, during spring 2021 (Online), fall 2021 (Hybrid with mask requirements), and spring 2022 (Face-to-face with mask requirements). Change in instructional mediums was enforced by the university to limit the spread of the COVID virus during the pandemic. Each semester presented a different set of challenges (as mentioned in the Jan. 12, 2022, message from the university). A history of major events during the COVID pandemic and the university response is detailed below.

COVID Timeline and the University response

The emergence of the COVID pandemic. In December 2019, a few patient clusters in China experienced the symptoms of atypical pneumonia-like illness and did not respond well to the treatments (Centers for Disease Control and Prevention [CDC], Dec 2019). CDC investigated the virus and declared COVID as a new disease and referred to it as the 2019 Novel Coronavirus outbreak. By January 2020, Wuhan, China, a city of 11 million people, was placed under lockdown (CDC, COVID-19 Timeline). By the end of January, a few cases of COVID were reported in Illinois, Arizona, and California. The government ordered all US citizens who traveled from Wuhan to the US to quarantine for 14 days. At that time, the university temporarily restricted travel to China.

Spring 2020 - Rise of COVID Cases in the United States & University's Response. Initially, the international residential programs of the university (understudy) in Europe were

suspended in Feb. 2020, and communication was sent to the community to prepare, coordinate, and plan for the COVID outbreak in New York. Students in the New York campus were advised not to attend class if they experienced fever, cough, or shortness of breath. The university shared CDC guidelines (such as washing hands, use of soap, water, and sanitizers, avoiding contact with people who are sick, staying at home when experiencing flu-like symptoms, and cleaning and disinfecting surfaces using cleaning sprays and wipes) with the community.

On March 11, 2020, the university announced suspending residential instruction in New York until March 30 and transitioning to a "distance-based approach to academic coursework" (March 11, 2020). On-campus students who left campus to visit their friends and family during spring break were recommended not to return to campus until March 30 (March 12, 2020). With the ongoing rise in COVID cases, the university suspended in-person instruction and continued the remaining semester online (March 18, 2020).

Teaching and Learning, Technology Services, and the Online and Digital Learning Units created a "toolkit" for academic continuity (March 10, 2020). Technology Services created a Rapid Online Course Development Guide for the faculty members to guide them to transition to distance modalities (March 10, 2020). The university provided Remote Desktop Services, expanded insurance coverages, including telemedicine appointments, and CareBridge resources to assist faculty and staff in responding to unique challenges posed by COVID (March 18, 2020). Faculty could request course design support by emailing help@organization.edu to redesign their courses for online delivery (March 24, 2020). However, the type of support (e.g., help with developing a video, course design, writing learning outcomes, etc.) that each unit provided to the faculty was not made clear in the news communication. Students were given a choice to take pass/fail grading options for the courses in Spring 2020 (March 22, 2020). Virtual programming

for students was offered, such as group and individual tutoring with the Center for Learning and Student Success; health care, counseling, nutrition, and psychiatry services; support and community building; financial aid and financial literacy counseling; and pastoral care with chaplains (April 1, 2020).

Summer 2020 - Planning for Fall 2020 online/hybrid experience. In the summer of 2020, the faculty were invited to seek course redesign support from Technology Services and Online and Digital Learning units through university communication email. Technology Services emailed "Teaching tips" to the faculty including directions on how to engage in a coordinated design process with the instructional designer to guide through the process. The university communication noted that the university instructors could request support from the Teaching and Learning Unit (June 3, 2020). However, it was clear that the university did not have the number of instructional designers on board, and therefore, hired students who were completing their master's and doctoral studies in instructional design to support the faculty (informal conversation with a Dean of a School and Teaching and Learning Unit staff). Written resources provided by the three units (information technology unit, teaching and learning center, and online and digital learning center) included written guidance about academic integrity, different modes of course design (mixed delivery, hy-flex, hybrid, flipped), building community in an online course, trauma-informed and responsive pedagogy, safe computing for remote users, scaffolding, learning under stress, recording instruction from home, and ways to discuss about pandemic in the classroom and using it as an opportunity to learn from (March 20, June 3, 2020) and on-request consultations regarding course design and digital tools for teaching online.

Fall 2020: In-person with hybrid options available. The university announced that most Fall 2020 classes would be in-person in Summer 2020, however, it was at the discretion of the

instructor to teach online, hybrid or in-person mode. The instructors were guided to make the decision considering the physical space in the classroom vis-a-vis the number of the students in the class, and when it was not possible to safely maintain a six feet distance, hy-flex instructional mode was suggested. In the hy-flex mode, a portion of the students enrolled in a given section attended classes in the physical classroom, while others enrolled in that same section participated remotely via the internet. Written descriptions of instructional guidance for instructors were provided through an internal communication, and instructors were encouraged to consult with the Teaching and Learning Unit when needed (May 13, 2020).

Initially it was decided that the Fall 2020 semester will follow an accelerated academic calendar, where residential instruction would begin on Aug 24 and end on Nov 25 (May 20, 2020). However, residential classes in the Fall were suspended effective Thursday, Nov 12 (Nov 11, 2020). The campus management helped students with pre-departure testing and supported students who remained in on-campus housing facilities. Written guidance was provided by the Information Technology Unit to the faculty about the digital tools and applications that they could use in their teaching (May 13, 2020). Teaching and Learning Unit and Online and Digital Learning Unit were guided by the leadership to offer the workshops on online teaching (May 13, 2020), however no such course offerings were visible in the forthcoming news feeds.

Spring 2021 – Hybrid and online options for all courses. For spring 2021, the university administration requested faculty to ensure remote class participation for students who were not able to join in-person classes. Thus, online and hybrid options for all the courses were requested from the faculty (May 13, 2020). Messages from the leadership stated that the initial few weeks of the semester were difficult for the country and for the region because of the COVID spread. The university announced to begin residential instruction for Spring 2021 instruction on Feb 8 to

be concluded on May 21, 2020. The decision was made in consultation with the local health department (Jan 4, 2021). Masking, social distancing, bi-weekly testing, and quarantine requirements were still in place. Campus planning sessions were conducted online for students and families to seek information, ask questions, and discuss issues such as testing quarantine policy, public health guidance, and other aspects of student academic and on-campus living (Jan 14, 2021). However, faculty who were interviewed in this dissertation study in this semester were all teaching their courses online.

Fall 2021 - Hybrid and online options for all courses. The university requested faculty to teach classes in-person with hybrid options available for those students who cannot attend the classes in-person or for the instructors who are teaching large classrooms. The university recommended wearing masks for all individuals when they are indoors, especially when their COVID alert level was Yellow (moderate level of transmission risk on campus), Blue (elevated level of transmission risk on campus), and Red (high levels of transmission risk). Faculty who were interviewed for this dissertation study in this semester taught their courses in hybrid mode (i.e. the faculty provided options for the students who could not attend in-person to join the class online and use asynchronous exercises to complete the course requirements).

Spring 2022 - Face-to-face with face mask requirements. In Spring 2022, the masking level remained Yellow (March 13, 2022, and May 27, 2022), implying that there was a moderate level of transmission risk on campus, and therefore masks were required for unvaccinated community members, and recommended for vaccinated members indoors. For all community members, masks were required on all public transit, including university shuttles (March 13, 2022). Students were allowed to miss the five days of classes if they were experiencing COVID or related symptoms (Jan 20, 2022). Faculty and staff were told to submit a proof of the COVID

vaccination and the booster dose (Jan 7, 2022) and were asked to notify their supervisors and Human Resources if they experienced symptoms or tested positive. They were allowed to work remotely until five days, from the day of testing positive (Jan 10, 2022). Most of the guidance in Spring and Fall 2022 was regarding managing the COVID spread on-campus and helping students and faculty find the resources (such as availability of COVID vaccines and boosters, testing services, and self-administered testing kits). In this semester, on-campus services for faculty to seek help for teaching face-to-face courses with masks were not found in archive news. The three faculty members who were interviewed in this dissertation study during this semester taught in residential classes with masking requirements in place.

Research Participants

The research participants for this study were award-winning faculty at a private research university in the northeastern United States. The faculty members taught diverse courses and were from various disciplinary fields (See Table 1 for detailed demographics). The faculty participants had won an award and a teaching innovation grant at the university, in the past twelve years (2010-2022). For the award application, participants had submitted a written statement of their teaching philosophy and a written description of why they would like to pursue an instructional innovation project.

The award was given to the tenured faculty whose proposed instructional project was selected by the university-based committee. The awards focused on teaching, classroom-based research, outcome-based assessment, curriculum development, or scholarship of teaching and learning. Award criteria encouraged faculty to demonstrate collaboration with colleagues and mentoring of junior faculty colleagues. The award signaled that the participants have previously articulated their teaching philosophy and practice and have proposed a teaching innovation

project, and therefore would be more articulate in their descriptions of instructional decisions and would be interested in talking about their teaching and would commit time for the interview process.

School or college deans nominated their respective faculty, who then submitted the application packet to the university award committee. The application for the award includes a Curriculum Vitae (CV), nominee's philosophy of teaching statement, and a description of the instructional project. The project was then evaluated for the faculty's approach to teaching as evidenced in their teaching at the university and the proposed project's impact on students, academic community, and society. Nominations were received by the University's center for teaching and learning, reviewed by a committee appointed by the vice chancellor for academic affairs comprising senior faculty members (including previous award-winning faculty), administrators and a student representative. After a careful review of the teaching portfolio, the committee submitted their recommendations to the chancellor, who made the appointments. The selected awardees were given a financial grant to pursue their project with the aim of improving the scope and quality of instruction at the university.

At the time of participants' recruitment, a window of 12 years (2009-2021) was deemed appropriate. Twenty-five tenured faculty had won the teaching award at the university in this period. The selection criteria for this study included only those faculty members who (a) worked at the university during the study (2020-2021) and (b) were teaching a course at the university that they designed/redesigned (as part of the grant or otherwise). Seven (out of 25) faculty members had left the institution or had retired at the time of the participant recruitment period (2020-2021). 18 faculty members who were currently working at the institution were contacted with an email invitation to participate in the study. Seven faculty members denied participation

in the study stating they were burdened with teaching, research, and administrative workload, and one faculty member did not respond to the request. The remaining 10 participants were shared the criteria for participants' selection, of which all consented to participate in the study, however, one faculty member was not teaching a course at the time of interviews and therefore was not included in the study. Participants taught in varied disciplines, including music education, nutrition and food studies, computer science, enterprise risk management, geography, public administration, management, public health, and chemistry.

Faculty who showed interest in participating in the study were sent a recruitment email, and an electronic consent form was distributed through the University's Qualtrics (see Appendix II & III). The consent form explained that the selection criteria, the purpose of study, and the themes under investigation, including instructional decisions undertaken in one or more courses that they have designed/redesigned and were actively teaching during the data collection semester, faculty's award proposal, and if and how their award-winning proposal has affected their current instruction. The content area, level of courses, or mode in which courses were offered (online synchronous or asynchronous, face-to-face, blended) was not an exclusion or inclusion criteria for this research. Faculty participants had a choice to talk about one or more course(s) that they had redesigned/designed and were teaching during the time of the study.

Nine award-winning faculty participated in the study, discussing the courses that they were teaching during the semester. As noted in the COVID related events earlier, the study was conducted when the campus was returning from online to face-to-face instruction, during the phasing out of COVID. Three faculty members participated in the study for one semester duration, implying three faculty members participated in Spring 2021 when the instructional medium was fully online, three different faculty members participated in the study in Fall

2021when instructional medium was hybrid; and three participated in Spring 2022 when instructional medium was face-to-face, with requirements to wear face-masks due to the changing regulations due to the COVID pandemic. There were two reasons for not engaging all nine faculty across three semesters: limited funds to hire research assistants and engage with 9 different faculty at one point in time, and stress and fatigue that faculty faced in changing and stress-inducing situations. See Table 1 for the research participants' demographics. The demographic data does not contain information about gender because the presentation of such information would have compromised the anonymity of the individuals who participated in the study.

Table 1

Participants' Demographics

Participants	Institutional Rank	Discipline	Years of Teaching Experience	Qualifications	Research focus	Teaching award year
Martin Renault (Martin)	Professor	Geography & Environment	21 years	Ph.D. Geography MA Geography BA Environmental Population, and Organismic Biology	Political ecology, Environmental justice, Water governance	2018
Ruth Campbell (Ruth)	Professor	Public Health & Anthropology	29 years	Ph.D. Medical Anthropology MS in Public Health (Epidemiology) MA Anthropology BA African Studies	Refugee health, Lead poisoning prevention, Community Action Research and Education (CARE)	2011
Henry Wilken (Henry)	Professor	Public Administration & International Affairs	30 years	Ph.D. Economics MA Economics BA Physics	Natural resource, Environmental economics, Computable general equilibrium	2016
Charlotte Byrd (Charlotte)	Professor	Information Studies	29 years	PhD Organizational Theory MBA, Policy, and Strategic Management	Strategic and practical integration of information technology IT's role in ERM initiatives.	2018
Steven Chen (Steven)	Professor	Electrical Engineering and Computer Science	22 Years	PhD Computer Science MS Computer Science BS Computer Science	System Security Computer Security Education	2019
Arjun Agarwal (Arjun)	Professor	Management	20 years	PhD, Management MBA, Management BS, Math, and Physics	Corporate Governance, Corporate Strategy International Business	2014
Ethan Dylan (Ethan)	Professor	Chemistry/ Forensic Science	37 years	Post-doc, Organometallic and organoborane chemistry PhD, Chemistry BA, Chemistry	New Designs in Photovoltaic Materials, Ultra-Sensitive and Selective Sensors	2009
Andriana Rodrigues (Andriana)	Professor	Music Education	23 years	PhD, Music Education MM, Choral Conducting B Comm Advertising	Music in Shenzin Culture Music Education	2021

Rita Williams (Rita)	Associate Professor	Nutrition and Food Studies	23 years	PhD Biology MS Environmental and Forest Biology BS Environmental and Forest Biology	Endocrine System Hormonal regulation of metabolic pathways Biology education	2021

Faculty discussed the course they were teaching at the time of study. Out of the nine total courses that were discussed, three courses were graduate level courses, four were undergraduate courses and two courses were open to both undergraduate and graduate students. Seven out of the nine courses were designed by the faculty themselves, and two courses were inherited from a previous faculty who taught the course. In the two courses that were inherited, the faculty reported making substantial changes and rarely retaining anything from the courses designed by the instructors before them. The class sizes varied, ranging from six students (in research design in geography) to 400+ students (in forensic chemistry). Appendix 4 presents a detailed overview of the courses.

Three faculty members participated in data collection in Spring 2021, three in Fall 2021, and three in Spring 2022. While it would be better to follow the same three faculty across the three semesters to study the change in their decisions, participating faculty were fatigued and stressed out due to the changes in instruction during the ongoing pandemic, and therefore only committed for taking part in the study for one semester. One faculty member denied participating, even after agreeing to participate. Others mentioned repeatedly the extensive nature of the study which required them to commit at least 4-5 hours of their time, because each interview prolonged 1-1.5 hours. Nevertheless, five of the nine faculty members who participated for the semester appreciated the researchers' skills in interviewing and acknowledged that their participation in the study made them reflect further on their teaching.

Data collection

Data were collected through multiple methods: semi-structured interviews and document analysis. Documents included course maps and course syllabi. Data were collected in three semesters: Spring 2021, Fall 2021, and Spring 2022.

Data collection sequence

In the first two weeks of the semester, semi-structured interviews were conducted (details of which are described in the interview section). Semi-structured interview questions were regarding faculty's teaching philosophy, award proposal, overall design of a course that they are teaching in the semester, course goals, effects of the pandemic on the course, and the choices made in this iteration of the course. In the first interview, faculty were also asked to sketch the course design map explaining how they designed the overall course. They were asked to identify the components that they considered in the initial design of the course. Faculty were requested to share the syllabi of the course that they were teaching at the time of the interviews.

The second interview was conducted during weeks 8 and 9. The summary of findings from the first interview was presented to the faculty participants as a member-checking exercise. Faculty corrected the interpretations where the ideas needed clarity. Questions regarding key instructional choices made in the past few weeks of teaching of the course, reasons for making these changes, and the factors that influenced the instructional decisions were asked. During the interview, faculty were also asked to explain their thinking when designing this course using a map and/or analogy.

Third and Fourth (when requested from participants) interviews were conducted at the end of the semester, in weeks 16 and 17. A summary of the findings from the first two interviews was presented to the faculty participants as a member-checking exercise. The faculty corrected the interpretations where the ideas needed clarity. The interview focused on asking faculty what

choices were made in the second half of the course, what went well, what could be improved, and how they would improve their courses going forward. Subsequently, faculty were asked if they would make any modifications to their course map and add ideas that they might have missed.

Figure 6

Data collection methods and schedule.

Weeks	Semi-Structured Interviews	Documentary Evidence
W1-2	Interview 1	Syllabi
W8-9	Interview 2	Course Map - Draft
W16-17	Interview 3	Course Map - Finalized

Data were collected for three consecutive semesters. Three distinct faculty members participated in the study every semester. The next section describes data collection methods.

Semi-structured Interviews

The research used semi-structured interviews as the primary data collection strategy. In total, 30 semi-structured interviews, each lasting 60-90 minutes, were conducted via Zoom with nine participants (three-four interviews per participant). The interview protocol was for each faculty member to be interviewed three times. Some faculty members needed additional time to explain and therefore, were provided with an opportunity to do so, in a fourth interview. Zoom was used to conduct the interviews instead of face-to-face campus-based interviews, to minimize the potential spread of the corona virus. The interviews were video and audio recorded and transcribed verbatim. The interviews were conducted during a 17-week semester:

- one interview in the early semester [1.5 hours].
- one interview in the mid-semester [1 hour]; and
- one interview at the end of the semester [1 hour]).

The purpose of the interviews was to investigate the faculty's decisions while planning, implementing, and evaluating the instruction in the classroom. An interview guide was generated to inquire faculty's instructional decisions and corresponding factors that influenced their instructional decisions as they design, implement, and evaluate instruction during the semester. Semi-structured interviews provided me the flexibility to ask probing and prompting questions on the ideas that emerged during the conversation.

The interview guide had a set of questions (see Appendix IV) for each interview. The interview questions were sufficiently general to cover a wide range of decisions and appended probes and follow-ups to investigate the participant's specific decisions in depth (Charmaz and Belgrave, 2010). During the interviews, the questions about the faculty's award-winning proposal and if and how it is linked with their classroom instruction, were also asked. For example, participants were asked to select a course that they were teaching at the time of the interview, identify a recent change that they have made in the course, and explain factors that influenced those choices. The questions were open-ended and prompts for factors included course feedback, reading about a new technique, social media, colleagues, faculty meetings, etc. However, the probes and prompts were used only when faculty themselves did not explain their decisions in detail by themselves in a conversation.

To ensure data trustworthiness, the researcher employed a member-checking exercise in the third interview, whereby, the key findings extracted from the interviews were presented to the participants through screen-sharing of a Microsoft Word document. Participants were asked to

modify or confirm the extracted findings while the researcher made changes suggested by faculty participants. Member checking helps researchers add details and examples to the findings, where needed, and in most cases assure the correctness of the interpretation of the findings.

Document collection.

New/redesigned course syllabi and course maps

The researcher requested access to the course syllabi and reviewed them to corroborate the results obtained through other documentary and interview-based data collection methods. The process of reviewing and generating the codes and categories is detailed in the data analysis section. The researcher also asked faculty to illustrate the course design process through a map or an analogy. During the second interview, faculty were asked to illustrate their decision-making process in a course and explain their illustrations. Faculty were asked if they would like to make any changes to the course maps and were given an opportunity to make those changes to best represent their thought process in designing the course.

Guiding principles

The following guiding principles shaped the data collection and analysis process (Bryant & Charmaz, 2007):

- Data were collected and analyzed simultaneously.
- Codes and categories emerged from the data and were not intended to be mapped to any prescriptive theoretical framework.
- Data obtained from one method of data collection (interviews) were constantly compared with another data collection method (document analysis) (Figure 3). Moreover, constant comparisons were made amongst three interviews of the same

faculty and the various documents that were received. Similarities and discrepancies were noted and discussed (see figure 3).

- The resulting theoretical model evolved as data were collected and analyzed.
- Memos were written continuously as the data were analyzed to establish categories, note the properties and characteristics of phenomenon, trace relationships between the categories and identify areas for further questioning or data collection.

Data collection and analysis process

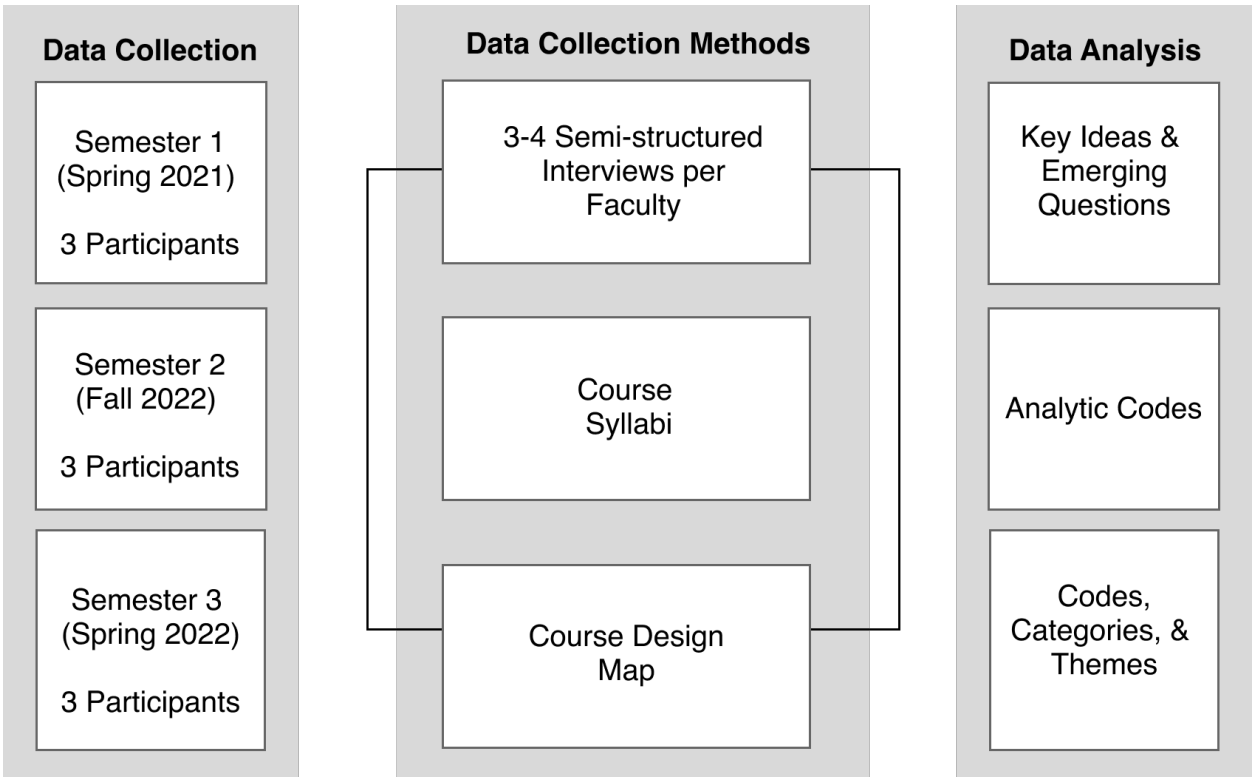
Three research participants were selected per semester to collect the data. The data was continually collected for three semesters, to observe repeated patterns in the data. Repeated patterns were necessary to obtain to reach a saturation stage and a robust understanding the phenomenon under study (Bryant & Charmaz, 2007a; Morse, 2007). Saturation was achieved for individual faculty member in each semester, however, since the data was not collected across three semesters from one single faculty, it was difficult to note that how would they make decisions for another course taught in a different semester. However, given the fatigue and stress faculty underwent due to ongoing pandemic, it was not possible for faculty in the study to participate for more than one semester. This limitation is also discussed in the limitation section of the study.

Considering the principles of grounded theory as guideposts (see guiding principles illustrated earlier), a process flow-chart illustrating the process and methods used in the study was created (see figure 3). After each interview and receipt of the documents, the data were arranged and labelled with faculty pseudonyms into folders, listened to, transcribed, and read. Subsequently, the data were entered into Caplena software. Analysis of interviews, and syllabi were carried out after each interview and key ideas, analytic codes, and questions were extracted

from the raw data soon after they were collected. The key ideas, analytic codes and questions that emerged from these data were collected to direct the questions in the subsequent interviews. For example, after conducting the first interview, the researcher underwent the labeling of "decisions" and "factors" in the transcript and generated questions where there was a need for further clarity. Subsequently, initial coding was revised. Similar codes were clustered to form categories. Dominant codes and the analytic memos collected during data collection and analysis informed the theoretical model presented in Chapter 5.

Figure 7

Illustration of Data Collection and Analysis Process



The process of modifying the subsequent interview guides after each interview was aligned with the grounded theory principles and was central to develop a theoretical frame grounded in the data. The process led to further development of analytic codes. Relationships between the analytic codes were noted and where similar subcategories were organized under categories and

the categorize were organized under themes. Through this, the concepts, properties, and inter-relationships between the concepts (decisions and factors) were revealed over the period and were confirmed in the subsequent interviews. The coding scheme and a list of themes, categories, and codes are appended (Appendix VI and VII).

Memos were written during the analysis phase to facilitate the constant comparison between the codes and categories emanating from the data (an example is presented in Appendix V). Memos were helpful in exploring the progress in understanding of the phenomenon temporally across the semester and guided the questions for the following interviews.

Establishing trustworthiness

The trustworthiness of the study is important to help the researcher and the readers convince themselves about the importance of the findings and its authenticity (Lincoln & Guba, 1985). It helps the researcher ascertain the truthfulness of the findings, applicability to the context and other contexts, consistency with the context and the phenomenon and true reflection of the contexts and participants and not the researcher themself (Lincoln & Guba, 1985). Four criteria assured the quality and trustworthiness of the study findings such as (a) credibility, (b) transferability, (c) dependability, and (d) conformability. The ways through which each of the criteria were applied is stated as below:

Credibility of findings

In naturalistic inquiries, like grounded theory, the assumption is that realities are multiple and are constructed differently by different people and at various places. With a naturalistic perspective, the credibility of the findings lies in genuinely representing the realities as they are viewed by the participants involved in the study (Lincoln & Guba, 1985). To ensure the credibility of findings, the researcher used the five-point criteria stated below:

Prolonged engagement with the participants and the field.

I have conducted the research apprenticeship study at the same university and therefore, have had a yearlong engagement with the participants and the context while conducting a pilot study on faculty's instructional decision-making. Going forward, the data collection spanned a semester, resulting in "active" engagement with participants in the field for one and a half years. Each faculty were interviewed for one semester, only three faculty members in first semester, three in the second, and three in third semester.

Member checking

Through member checking exercise, the interpretation of the data was shared with the participants at the third interview and their feedback incorporated into the findings.

Triangulate data from multiple sources

Data were collected through interviews and document analysis of the syllabi shared by the faculty. Thus, the findings emerged from interviews and were supplemented with syllabi (Lincoln & Guba, 1985).

Peer debriefing

I discussed analysis and findings with critical friends at a dissertation working group, to ensure that the analysis was grounded in the data and were interpreted appropriately (Lincoln & Guba, 1985). Two different instances were planned to get some feedback on the data interpretation (a) data presentation, where the dissertation working group members (n=5) used the preliminary codes to code the transcript and critique on the coding process and outcome, (b) presentation of the results to the dissertation working group with evidence, to seek feedback as to whether the findings were supported by the evidence generated from the interview and document analysis. The chair of the committee had the access to data and several meetings were conducted

with the chair to verify codes and emanating categories. Subsequently, preliminary findings were disseminated through papers at various conferences, including the American Educational Research Association and Associate of Education and Communication Technology, to receive peer feedback.

Negative case analysis

I searched for counterevidence in the data during and after the formulation of theory, to assure inclusion of alternative explanations or contradictory evidence to what has been proposed. The elements that deviated from the postulated theory were discussed and reflected upon to present a full picture of the phenomenon (Lincoln & Guba, 1985; Marshall & Rossman, 2014). For example, Andriana (one research participant) discussed that she included students' choice in her instructional decisions, because of her unique disciplinary affiliation and understanding of critical pedagogy. However, all other instructors who taught skill-based courses mostly front-loaded their before even knowing who the students were.

Transferability

Transferability denotes applicability of one set of findings being transferrable to other contexts by connecting the findings with the concepts and theory.

Rich and thick description.

Participants of the study and the context were described to ensure the credibility of the findings. "Thick description," or the presentation of detailed accounts of the experiences in the field will help the reader to situate the phenomenon as it occurred in the context (Lincoln & Guba, 1985). The in-depth description helped me to present the complexities of variables and their inter-relationships. Constant efforts were made to not simplify the processes to help the readers make judgements around the settings, population, and theoretical samples to which the findings can be transferrable.

Participant's selection

The participating faculty members were recruited from multiple university's schools and colleges, to exemplify the instructional decision-making from variety of disciplines (Marshall & Rossman, 2014). Moreover, I provided sufficient details of the research processes to help the reader make connections, however, it is upon the reader of the study to determine the similarity of the context of the study to the one for wish they wish to apply the findings.

Dependability

I described and accounted for changing codes and categories, circumstances and conditions and the complexity of the phenomenon and described it as it evolved, rather than simplifying the theory presented (Corbin & Strauss, 2014; Lincoln & Guba, 1985). Since the social world is constantly evolving, the researchers might not be able to replicate the findings in other setting but can determine the dependability of the study findings (Lincoln & Guba, 1985).

Confirmability

To confirm that the findings are reflective of subjects and inquiry and not my personal biases or predispositions, I managed an audit trail using Halpern's suggested activities (Lincoln & Guba, 1985):

- Raw data were saved and stored in safe and accessible folders.
- Data analysis and reduction process was detailed in the methodology section and Caplena files were maintained throughout data collection process.
- Memos were written during the data reduction and were stored in text files.
- For data reconstruction, a definition sheet was developed that defined each code (Appendix VI) and provides an example quote that represents the code/ category.

- Process notes for the methodology section were kept regarding rationale, design, strategies, and for trustworthiness and are reflected in the write-up of the methodology section.
- Detailed instrument development information will be provided in the chapter and the data collection tool (i.e., interview protocols) are appended (Appendix IV).

The researcher assured the quality and trustworthiness of the study findings through the four criteria (credibility, transferability, dependability, and confirmability). The following section describes the ethics review and requirements that the study complies with.

Ethics review

The study has undergone human subject review by the University's institutional review board (IRB#21-068). Participation in the study was voluntary, which implied that the faculty consented to participate in the interviews and to share additional resources and course access. The participants' confidentiality was protected using pseudonyms. Further, the gender of the participants was also concealed to protect their identity. Data collection methods included participation in the interviews and collection of documents such as syllabi and course maps. Faculty members participated in interviews and shared their course syllabi, a few of them also shared the artifacts and/or documents that supplement researchers' understanding of the faculty's instructional decisions. The participating faculty were informed that the findings from the study will be disseminated to the academic audience through published paper(s) and professional presentations.

Conclusion or Summary

Chapter 3 described the data collection and analysis processes that the researcher intends to use to answer the research question and rationalizes how the earlier described processes align

with the research questions, the grounded theory approach used for the study, and the researcher's positionality toward research. In Chapter 4, the study's findings are presented.

Chapter Four

Findings

Chapter 4 presents the study's findings by describing the instructional decisions of award-winning higher education faculty members during the COVID pandemic and the factors that influenced their instructional decisions. The chapter reports the research findings, structured around six instructional decisions, including course design, instructional goals, selection of topics, instructional strategies, student learning assessment, and informal support provided by faculty to their respective students. The study's themes were generated using a grounded theory method, applying a coding process to transcribed interviews and syllabi, directly addressing the study's research questions:

- What instructional decisions did award-winning faculty make during the COVID pandemic?
- What factors influenced the instructional decisions of higher education faculty members?

On March 13, 2020, the university transitioned from residential face-to-face instructional medium to online medium. The study was conducted when instructional formats transitioned back from online to face-to-face due to revised COVID pandemic isolation and masking protocols, during spring 2021 (Online), fall 2021(hybrid with mask requirements), and spring 2022 (face-to-face with mask requirements). In total, nine faculty members participated in the study: three in spring 2021, three in fall 2021, and three in spring 2022. Faculty reflected on the courses they were teaching at the time of the interviews and shared their syllabi. Details about faculty demographics and the courses are appended (Appendix VIII & IX). During interviews, faculty discussed their instructional decisions and the factors that influenced these decisions. In

some instances, faculty members recalled examples from previous offerings of the course, and only a few of them were included in this chapter where these anecdotes improved the depth and clarity of the decisions made at the time of interviews. Occurrences from past courses were flag-posted to help the reader identify the context in which decisions were made.

Instructional Decisions

Faculty members made complex instructional decisions, as they designed and taught the courses during the COVID pandemic. Instructional decisions are choices individuals made in designing and implementing instruction. The findings were organized into six major instructional decisions: (a) course design, (b) instructional goals, (c) selection of content, (d) instructional strategies, (e) student learning assessment, and (f) informal support for students. These themes discussed the patterns found in instructional decisions of nine different faculty members, teaching nine different courses, in three different instructional situations (online, hybrid, and face-to-face with face masks). Each semester presented a different set of challenges and was taught in a different modality. Instructional decisions were influenced by the interplay of personal, instructional, organizational, societal, and COVID pandemic factors. The discussion of instructional choice categories also included the factors influencing these choices. Examples of instructional decisions and factors that influenced these decisions are discussed.

Course Design

The faculty members discussed the design of their courses taught during the study period and shared that they had autonomy in re/designing their courses. Ruth, Ethan, Henry, Charlotte, Steven, Arjun, and Andriana developed their courses from scratch. They proposed a set of topics they would teach in their courses, reviewed by their department peers, and approved by their respective school/colleges and the university senate committee. In contrast, Martin and Rita

inherited their courses from senior faculty members but significantly changed their respective courses before teaching. Martin shared, “To be honest, I have totally changed the class from the way that it was taught before. I just built it from scratch… because I looked at the old syllabus, and I did not like it” (Martin, Interview 1). Changes in Martin’s course included replacing existing readings with readings from diverse, current, and seminal authors and including topics such as creativity in designing research, critical analysis of the institutionalization of research ethics, and “workshopping the proposal” as an instructional strategy. Thus, all faculty members who participated in this study had autonomy and flexibility in selecting topics, instructional strategies, and assessments while maintaining department approval, disciplinary standards, and accreditation guidelines. Faculty autonomy in making instructional decisions made this context a unique platform for exploring the complexities of faculty decision-making in the instructional contexts.

Faculty members explained their course design processes using descriptions, metaphors, and illustrations. Their designs coalesced into two approaches: linear and dynamic. Faculty adopting a linear approach explained course design as a sequential flow of course elements (instructional goals, content, assessment, instructional strategies, and resources). The linear progression implied a sequential arrangement, where each element informed the subsequent element. In contrast, those who used a dynamic approach conceptualized course design as a function of continuous interaction among various course elements, suggesting that elements influence and inform each other throughout the design process. However, since this study was focused on the course that faculty were teaching at the time of interviews, it was not inquired whether the faculty used the similar process for designing other courses that they taught, or these

processes were specific to the course under discussion. The following sections describe the faculty's course design process, and Table 2 lists the elements of the course design process.

Table 2

Course design process summarized from participants' interviews.

Participants	Course Names & Number of Students	Metaphors	Nature of Design	Course Design Process (steps)
Martin	Research Design in Geography (6 students)	Soda Ash Tree in Bedrock, Branches of the tree explained the products	Linear Process	Identify foundational **goals** (e.g., critical thinking, ethics, morals, and values) Identify learning **outcomes.** Identify **content areas.** Determine assignments and **instructional strategies**
Ruth	Public Health Ethics (50 students)	Improvisations like making jazz music	Iterative process	Survey the **syllabi** of related courses. Identify what **students need to know.** Develop **modules, readings, short videos, and key ideas.** Diversify **information sources.** Use **planned pedagogical choices** such as flipped classroom, discussions sessions, community-based projects, and guest speaker sessions. Use **in-the-moment pedagogical** strategies. Provide **assessment options** (compulsory group presentation + some options for students to choose from)
Henry	Data Analytics (50 students)	Teaching how to play French horn (scaffolding)	Linear process	Identify **base skills.** Break desired skills into a tree of **components.** Identify **desired skills.** Sequence the **content based on complexity and sophistication.** Scaffold students' learning by providing **exercises and feedback.**
Charlotte	Enterprise risk management for information professionals (35 students)	Presentation development process	Iterative Process	**Determine the purpose of the course (presentation)** Identify my **role as an instructor (presenter)** Consider **audience & setting.** Identify learning **objectives instructional strategies,** and available **learning resources.** Develop **learning materials (syllabi, assignments)** Reflect on **learner feedback.** Revise and repeat.

Steven	Computer security (15 students)	No metaphor	Linear process	Identify what are the key areas that are **important for students**? And What are my **strengths and areas of expertise**? Chart out the **content of the course**. **Connect theory with practice**. Develop materials to engage students in **hands-on tasks.** **Teach the course**. **Reflect** on what needs to be changed, based on **student feedback, student participation, and updates in disciplinary knowledge.**
Arjun	Managing in a global setting (48 students)	No metaphor	Iterative process	**Identify big ideas.** Figure out how to get **big ideas across to students** (break it into smaller pieces) Consider **who are the students** (and what is their status in the program – junior or senior)? Do they have work experience? Adapt the content and examples to suit their needs. Design **assessments** on key ideas. Develop Multiple Choice Questions about the interrelationships of the content. Provide **choice** in **assessments.** Use the **selected** textbooks and **supplemental readings** to get the point across
Ethan	Chemistry (Forensics) (400+ students)	No metaphor	Linear process	**Identify what needs** (concepts, skills, and attitudes) to be covered? Identify what would be **interesting for students** (of different majors taking the course) Determine reasonable flow of content delivery - start from basic principles and go through the detailed application. Ensure availability of **learning resources** to get the point across (guest speakers, cases, graphics, supplemental materials) Determine ways to **assess students' learning.** Design the **syllabi.**
Andriana	Shenzin [pseudonym] Ensemble (6 students)	Venn diagram	Iterative process	Choose a varied **repertoire with music from various parts and traditions.** Choose a very upbeat song that **everyone loves and wants to sing.** Choose a **challenging piece of music** that will challenge all of us, including me, so I, too can think of how to teach it best. **Vary assessments.** Wait to see **who my students** are and what they play for additional repertoire. Provide a **context** (social, cultural, etc.) upon which music we sing happens

Rita	Nutritional Biochemistry (19 students)	No metaphor	Linear process	Organize **content into meaningful chunks (concepts)** Group **concepts together.** Connect it **with assessment.** Figure out how to engage **students in interacting with the materials.** Use low stake **assessments to ensure student-content interaction.** **Sequence exam**s considering information overload. Identify **instructional strategies** and **learning resources** to supplement learning.

Linear design

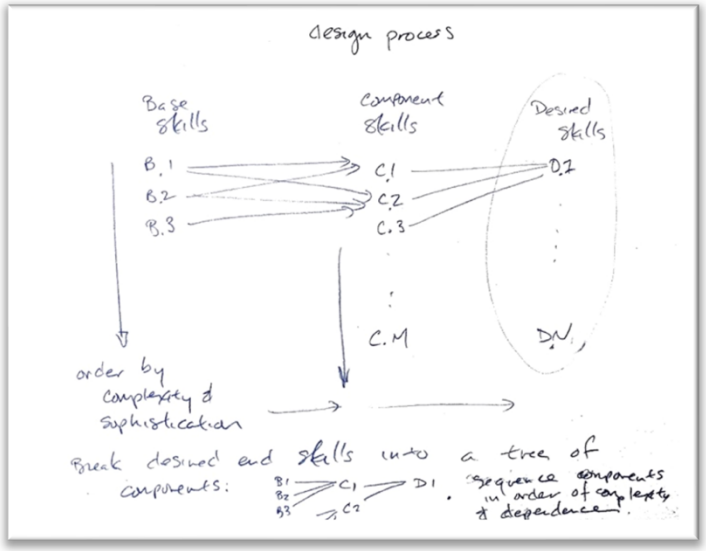
Martin, Henry, Ethan, Rita, and Steven believed designing a course was a step-by-step process of creating course elements (instructional goals, content, instructional strategies, and assessments). The sequence of steps varied across these different faculty members. The courses were designed and developed before meeting individual students and were shared with the students via syllabi. Faculty modified their designs during implementation based on their personal observations of students' performance and participation.

Henry discussed the policy analysis course and sketched a concept map (Figure 1) to explain his course design process. "In some ways, I'm a very linear thinker in that if it makes most sense to me if I can connect the dots between A and B and C," he explained, and this translated into his course design process (Henry, Interview 2). He created a learning roadmap for students, starting with existing (which he called base skills), and identifying the specific skills students need to acquire (component skills) to reach the course's intended learning outcomes (desired skills); second, Henry outlined concepts in order of complexity (i.e., from easy to difficult) and figured out how these concepts connected with each other; third, he designed students' learning experiences to help students achieve desired skills. Subsequently, Henry identified problem solving exercises (assignments) that served as evidence of students' learning

and provided feedback to improve their performance. He designed the course to help students progress from their prior knowledge (base skills) to expected performance (desired skills).

Figure 8

Henry's map illustrating course design process



Legend:

Base skills

(B_1, B_2, B_3…Bn)

Component Skills

(C_1, C_2, C_3…, Cn)

Desired Skills

(D_1, D_2, D_3…, Dn).

Despite having linear step-by-step design for policy analysis course, Henry used his observation of students' participation and performance and made "on the fly" adjustments such as providing feedback and additional explanation of concept to the students based on their performance. Henry explained these adjustments by using a metaphor of "teaching people to play a French horn":

> A better metaphor might be to think about how people are taught to play music. Because if you are taught to play music, the instructor does not just come in once a week and say, here is the theory about how you blow the French horn. [Instead], you need to physically practice it on your own…[I] give them lots and lots and lots and lots

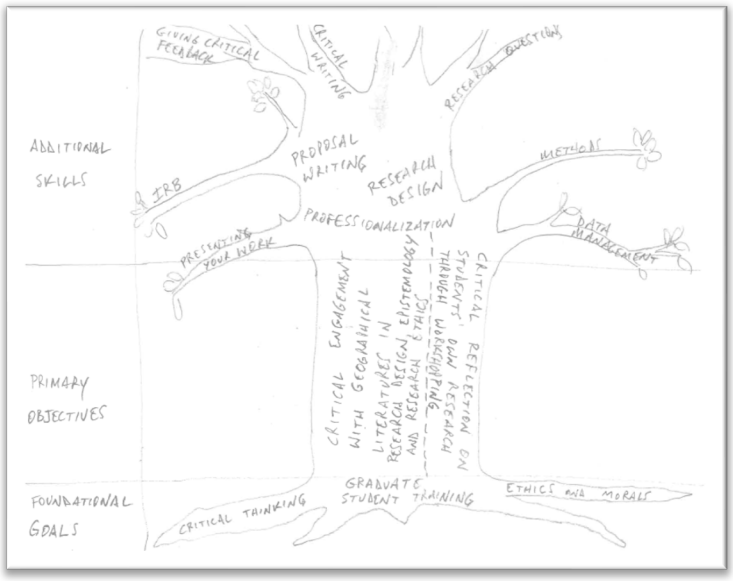
> of feedback with the idea that the person is not going to embarrass themselves if they go [perform in front of] public, later. (Henry, Interview 3)

Through using a metaphor of "teaching to blow French horn," Henry indicated that students' participation in the course and their reactions to the course content influenced the implementation of the course.

Similar to Henry, Martin's course design process followed a step-by-step sequence for research design in the geography course. He sketched a soda ash tree (Figure 2) to explain the instructional goals (that he called, professional goals) led to the development of primary objectives of the course, manifested in the skills taught through the course. Martin also identified that, "I am a very linear thinker. I think in a very logical, you know, you have this beginning, middle, and end." A reflection on his linear thinking was visible in the explanation of his course map. He considered foundational goals, moving on to course objectives, instructional strategies, assessment, and feedback. Through his illustration, Martin explained that the foundational goals (such as critical thinking, ethics, and morals) were translated into primary objectives of the course (e.g., critical engagement with literature in research design and ethics, and critical reflection on students' research proposal). These objectives informed the choice of the content (research design, research questions, research methods, data management, Institutional Review Board processes [IRB]), instructional strategies (presentations and critical writing), assessment, and feedback from peers and instructor. Martin wanted his students to develop critical thinking and a grounded understanding of research ethics by undertaking this course.

Figure 9

Martin's map illustrating course design process



Ethan also outlined a step-by-step design process for his chemistry course. He identified the concepts needed to be taught in the course. He emphasized that his course was the first in a series of four courses that students needed to take when majoring in forensic sciences. Therefore, the introductory course covered basic materials so that students were prepared for the advanced courses. Due to the large class size (200+ students), Ethan could not consider individual students' interests. He considered what he felt students would be interested in and what would connect with their professional pursuits: "what kinds of things I think that they would be interested in, and that would connect with their own majors" (Ethan, Interview 4). He then sequenced the content based on students' typical characteristics, stating:

> We have chemistry majors and biology majors in the course, at the same time, we have people who are really science averse, who just do not want to do it. So, you have to sort of hit the right level [and decide how] the topics [would] flow together. (Ethan, Interview 4)

He explained that in the past, people have taught this course using cases, which he believed, was "very disjointed" approach for an introductory course, making it "hard [for students] to understand" scientific principles in depth. Therefore, he started by introducing the principles of biology, chemistry, behavioral, and physical science, and their potential relationships, so that students were equipped with tools to understand chemical, biological, psychological, behavioral, and physical evidence when the case was presented to them. Ethan also considered, "supplemental things to help get points across and make it interesting," such as "guest speakers, cases that help illustrate the point, graphic, and other supplemental materials that can be used" (Ethan, Interview 4). When I inquired about when he thought about assignments in course design process, he answered,

> I do not think I think about assessments when I am designing the course. It is obviously a necessary component, but I do not think about it… I can figure that part out if the other parts make sense. So, I do not, at least in the initial design, I do not spend a lot of time thinking about that. By the time I get to a syllabus obviously it has all been worked out. (Ethan, Interview 4)

Unlike other faculty members who prioritized assessments and considered it while designing the course, Ethan relegated the assessment design to an afterthought in his introductory chemistry course design. This approach might stem from the belief that the subject's inherent, well-defined structure lean itself to structured quizzes and exams.

Three of the five faculty members' (Rita, Martin, Henry, Ethan, and Steven) course design processes were explained above. The other two followed a similar linear process as outlined in the table above. They believed that course design was a linear process of building course elements and presented them in the syllabi. However, all of them considered student

participation and performance to make “minor” ongoing changes to adjust the design of the course, during implementation. Examples of these minor changes included providing additional explanation of the concept during class and office hours, providing additional learning materials to the students upon request, responding to a student’s question regarding current news relevant to the course materials, and negotiating assignment due dates. None of the faculty members following linear design considered considering the COVID pandemic to be a factor when they were designing the overall course design process, however, adjustments were made in instructional strategies and student learning assessments, which are reported in the instructional strategy and assessment sections, respectively. These faculty members also discussed how they updated the courses after instructing the students, using students’ end-of-course feedback, personal observations, and reflections on course implementation.

Iterative Design

In contrast, Ruth, Charlotte, Arjun and Andriana explained course design as a dynamic and iterative process, deciding the key components of the course, examining the synergy between course elements, and then continuously refining their course elements to include current events such as COVID pandemic and respond to students’ participation during implementation of instruction. Some of these faculty members made more changes than others.

Ruth explained she used iterative design process for a public health ethics course, where course elements were modified during the implementation of the course. She reviewed course syllabi from different universities to draft a syllabus for her course. She then “selected topics that she wanted students to be familiar with,” and explained that her choice of topics was influenced by what she wanted her students to learn and what she had expertise in. Ruth selected learning materials and assignments based on topics:

> I pick the topics. And then I put them into modules with readings, with little, short videos, with the key things. There is nothing they have to memorize. The key concepts in each case, and I fit the course into a table. That has the date, the key concepts, the readings, and any assignments due. And so, the key concepts are what the students have to know. (Ruth, Interview 1)

Ruth emphasized the students' understanding of the key concepts and continued to make changes in her course as she implemented, to ensure the achievement of this goal. Many of these changes in design happened "on the fly" during teaching, examples of which include the use of relevant world events and news pieces as discussion prompts; negotiation with students on the assignment type, criteria, and due dates; sharing of facts and figures using Google search to answer student questions; and adding readings on a recent public health issue that was not initially part of the course. For example, when pandemic-related situations were unfolding, she presented examples of poor communication by university administrators and media professionals regarding public health as a case for discussion in her class. She used the jazz musician's metaphor to explain that she continued to adjust her design based on student participation and feedback and accommodated context related changes. She narrated,

> I pick the topics. And then I put them into modules with readings, with little, short videos, with the key things. There is nothing they have to memorize. The key concepts in each case, and I fit the course into a table. That has the date, the key concepts, the readings, and any assignments due. And so, the key concepts are what the students have to know. (Ruth, Interview 1)

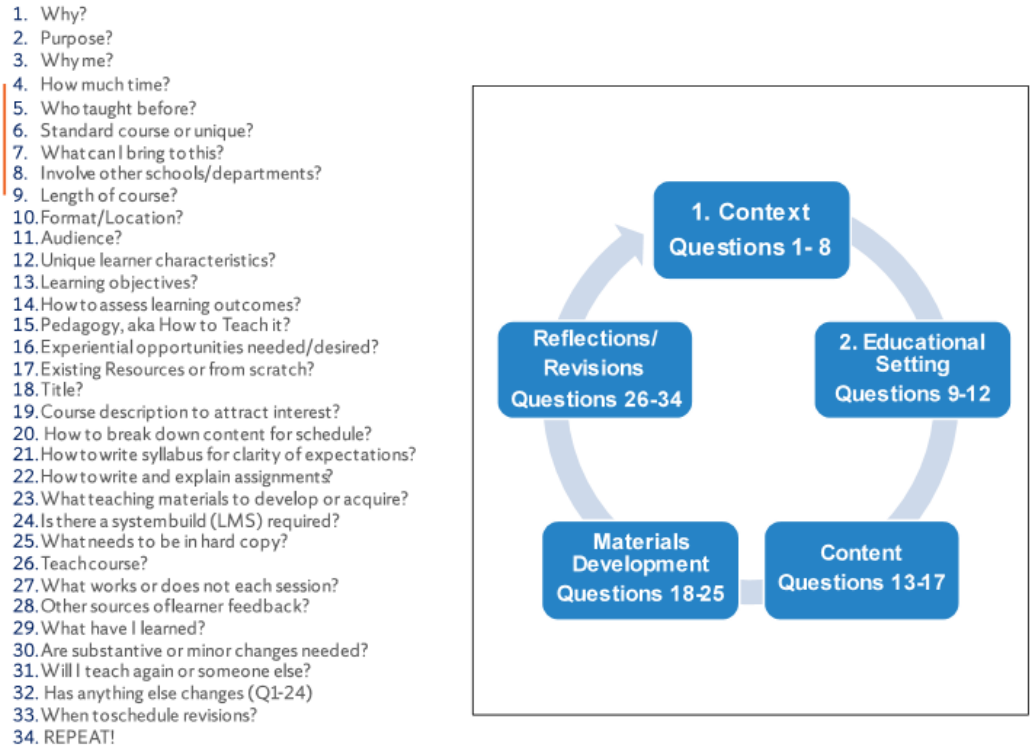
Ruth compared herself to a jazz musician, explaining how she improvised and adapted her synchronous online public health course in real-time to stay relevant to the context. The dynamic

approach allowed her to weave in current events, ensuring the course remained current and engaging.

Charlotte explained her design for enterprise risk management for information professionals course using a cyclical approach (Figure 3). She considered questions related to the context, educational setting, content, material development, and revisions made during and after teaching the course. Charlotte emphasized that changes she made were based on observations of student performance and world events during the implementation of the instruction, in the current as well as next iteration of the course.

Figure 10

Charlotte's course design process



Charlotte's course design process included developing learning objectives. She also thought about questions regarding purpose of teaching this content, her role as a faculty member, collaborations with other departments or schools to teach this course, course characteristics

(length, format, location), audience characteristics, instructional elements (learning objectives, assignments, pedagogy, teaching resources), title of the course, description of the course, scope and sequence of the content, and syllabus that clearly communicated the expectations and assignments. She developed or acquired new materials or resources needed for the course. Charlotte explained that identification of assignments and instructional materials further,

> [For assessments] I think about the types of assessments that would demonstrate they have learned those things… [and for instructional materials] I then look at is there a textbook I start with that almost like I have to figure out is there existing material out there, that I can use versus do I have to do this myself. (Charlotte, Interview 3)

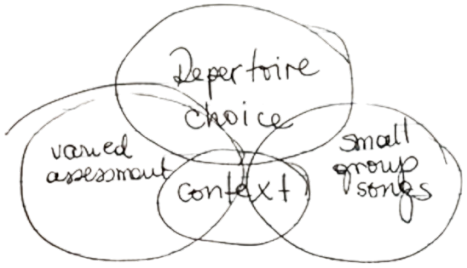
To ensure the course remained relevant for the students and reflected current times, she included discussions on current events, including COVID pandemic and its impact on both small and large businesses. In addition, she discussed emerging ideas in the field that she read from listservs and disciplinary associations relevant to her field. Moreover, she also made continuous adjustments to the course schedule and session plans to accommodate students' field projects during the pandemic. Details of these accommodations were presented in field-experiences subheading in instructional strategies section. After completing the course, she also reflected on what worked for these students and what did not, obtained learner feedback, and made revisions based on what she learned from observation of student interaction with the material, student feedback, and student performance. She scheduled time for revisions before offering the next course.

Andriana sketched a Venn diagram (Figure 4) illustrating the interconnectivity of the course elements (selection of concepts taught, assessment, contexts, and instructional strategies) in her music ensemble course. She called selection of concepts as repertoire choice, where

“repertoire is the combination of music that usually an orchestra, a choir, and ensemble put together” (Andriana, Interview 4). She emphasized that she centered students’ prior skills in the first two weeks of the classes and identified what instruments students played and were good at, so that she could “highlight that and showcase them.” She then charted course outcomes, such that they could create a musical piece that “we are all proud of” (Andriana, Interview 4). She centered students’ interest when selecting content (songs), “So I begin with, I want to find one song that everybody loves, and it is easy to learn” (Andriana, Interview 4). She explained that when selecting the songs, she also wanted challenge herself “as a performer” and students and therefore selected different songs each time to avoid “bored[om].” She then selected several ways of assessing students’ learning and assessed students’ learning such as quizzes, one-minute write-ups on the readings, and video recording of song performances. She further explained that she selected songs that could be performed in “small groups.” Subsequently, she emphasized that Shenzin music [pseudonym used to protect individual’s identity] is generated in a context, “so the context here in the middle is cultural, political, geographical, social, anything upon which music should happen, and it overlaps all of them,” therefore, she added readings to enhance students’ understanding of the context in which that music was created.

Figure 11

Andriana's course design process



Andriana further anchored her choices to two prevalent viewpoints in higher education: decolonization of curriculum and critical pedagogy. She emphasized that she did not decide all components of the syllabus without knowing her students and their skills. For example, she provided a range of songs to the students and asked them to collaboratively select the song that they would like to learn through the course, encouraged students to demonstrate the musical skills using instruments that they played in their communities and share stories behind the music-making in their communities, negotiated assessment types and schedules with students, modified small group activities based on students' interests, and added theoretical components. She reduced the time spent on music-making to abide by regulations imposed by music associations. She reflected that these adjustments in the course content, instructional strategies, and assessments were made to decolonize the syllabus, use critical pedagogy, abide by safety protocols, and reflect the collegiality with which Shenzin music was originally created. Through this exercise, she reported on creating a course "that is rich, varied, exciting, easy at some points, but also very challenging."

Ruth, Charlotte, Arjun, and Andriana's metaphors, diagrams, and explanation of their course design processes signaled that their courses were designed using a dynamic and iterative process of planning and then continuously adapting instruction to suit students' needs and

characteristics (prior knowledge, skills, and interests), reflecting disciplinary updates, current events such as COVID pandemic resulted health and economic crises, and responding to the COVID related circumstances in which the instruction was implemented. The learning outcomes for all the courses remained the same as those identified in the course syllabus. Ruth, Charlotte, and Andriana modified content, instructional strategy, and assessments during the course implementation. However, Arjun adjusted the content and instructional strategies based on global events and student interests, but did not adjust assignment deadlines, even when students requested. He discussed that it is essential for students to plan and develop the discipline to complete assignments on time.

Some faculty members designed their courses using a linear step-by-step design process whereas others followed a dynamic and iterative approach to course design. Faculty who followed linear design process made minor changes based on students' interactions with material, student performance, and global events; however, those with iterative and dynamic approaches made major modifications to the course design. These changes could be a function of the type of course they were teaching. Faculty who used a linear design process taught foundational courses—these courses taught fundamental skills to the students. However, those who used dynamic design processes taught conceptual courses and those that were more closely related to social life. Dynamic design allowed faculty to incorporate discussions on COVID pandemic and resulting health and economic crises. However, Andriana's music ensemble course served as a counterexample to this argument because her course was skill-based and followed a dynamic design process. She also provided the students with an agency to negotiate content, instructional strategies, and assessment. This suggests that there is more "freedom" and agency provided to the instructor teaching music (arts), than they would otherwise have, if they

were teaching skill-based courses in basic sciences. From the data collected in this study, it was observed that the foundational and skills-based courses followed linear design process, and conceptual and stand-alone courses related to social life followed a dynamic design process.

Faculty reported that they learned the course design process through trial and error; none of the faculty members mentioned learning the elements and sequence of course design from any of their faculty members or through reading the literature. Some of them argued that the design reflected their general thinking styles, such as linear or iterative. However, all faculty participants deliberated on the learning outcomes, selection of concepts taught, instructional strategies, resources (such as guest speakers, technology available), and assignments (variety and time of implementation). In courses with linear design process, faculty made decisions prior to meeting the students, getting to know them, and accommodating their interests and needs. However, in courses with dynamic and iterative design process faculty made and adjusted decisions to suit student characteristics and contextual circumstances. Faculty's personal approaches to the course design process, types of courses taught, their disciplinary backgrounds, content of the course that they were teaching, and the number of students enrolled in their courses reflected the extent to which they could accommodate student-related and context-related circumstances by adapting their courses. None of the faculty members following linear design considered COVID related changes when explaining their course design process. However, those who followed the dynamic process of course design mentioned including the discussions related to COVID pandemic and adjusting their instruction to respond to the ongoing crises. This said, instructional strategies and assessment strategies were modified by all faculty to account for the disruptions during COVID.

Instructional Goals

Faculty created instructional goals to guide their teaching and articulate what they wanted students to achieve in their courses. Instructional goals included knowledge, skills, and attitudes that faculty members considered important for their students to develop over the course and for students to be successful professionals and active contributors to society. Faculty's instructional goals were different with respect to the content of the courses that they taught; however, all these goals considered two broad and intersecting themes: (a) students' personal and professional development, and (b) students' disciplinary engagement and social impact. These goals were driven by faculty's personal quests to examine and improve the world, course content, disciplinary requirements, accreditation standards, and current events.

Students' personal and professional development

Faculty designed their course goals to positively impact students' personal and professional lives. Faculty created courses that empowered students on two levels: equipping them with in-demand skills for their careers and fostering a powerful sense of self and belonging within their communities.

Andriana, Steven, Ruth, and Henry used their courses as a venue to develop students' skills needed for their careers, preparing them to confidently navigate and excel in the competitive job markets. Henry, a policy analysis instructor, shared that his instructional goals were to help students to learn coding, computational analysis, model construction, and data management (Henry, syllabus). Leveraging his extensive work experience, Henry sought to cultivate skills students would need in job market, "I want to help, empower people by teaching them how to do something that will be useful to them and help them think more clearly and rigorously," he added (Henry, Interview 1). Similarly, Ruth, a public health instructor, questioned the inclusion of

annotated bibliography exercises in her course. She argued that it did not optimally support her goals of thoroughly evaluating academic sources and fostering active engagement in in-depth research analysis. She stated, “I will not assign something that does not teach a skill. I want our students to be able to pay their bills. I do not want them living in their parent's basements in the future” (Ruth, Interview 3). Examples of Ruth’s and Henry’s instructional goals demonstrate that they were committed to teaching critical thinking and problem-solving skills that helped students secure jobs and financial independence.

Besides professional development, Ruth, Martin, and Andriana recognized the importance of supporting students’ personal growth to foster a “secure sense” of self and cultural identity. In her music ensemble course, Andriana’s instructional goals did not limit to “rhythmic clarity and precision” but included “sing Shenzin songs in indigenous languages in a precise (and safe) way” (Andriana, syllabus). She wanted to honor and elevate students' voices, skills, and cultural backgrounds, culminating in a “music performance that everyone is proud of.” Andriana also highlighted she has students who understood Shenzin culture but did not “read music or play an instrument,” so she adapted the class to engage such students, regardless of experience levels in music. Similarly, Ruth and Martin incorporated discussions on race and identity into their public health and geography courses, respectively. These discussions aimed to enhance students' self-awareness, critical thinking skills, and ability to engage in respectful dialogue on complex social issues.

Disciplinary engagement and social impact

Faculty members expanded their academic course goals beyond personal and professional development, to empower students to create positive societal change through active engagement with their disciplines. Reflecting their instructional goals, faculty integrated real-world projects,

such as Charlotte's enterprise risk analysis project. This fostered a connection between academic knowledge and contemporary social challenges, equipping students to examine and advocate for community development. Ruth, Martin, Arjun, Charlotte, and Ethan also discussed their commitment to use instruction as a tool to create a positive impact in society.

Charlotte, an instructor of risk management in businesses, designed her course to engage students in "research, synthesis, and evaluation of risk management practices at organizations" (Charlotte, syllabus). Students engaged in field-based inquiry projects, interviewed local business owners, co-examined their risk landscape, and brainstormed risk management plans. Charlotte further discussed why she included this objective in the course, "I care about my students. I care about their success, care about their long-term survival and I care about all these folks out there trying to stay in business. It is really hard... during COVID" (Charlotte, Interview 1). Charlotte's passion resonated throughout her course, creating a win-win situation, where students gained practical inquiry skills and an increased understanding of risk management, and local business owners gained valuable insights.

Similarly, Ruth, a public health instructor, used her course to inspire students to partner with community members for community action research and education projects to advocate for public health issues. Moreover, Martin, a geography instructor, aimed to connect students with nature and deepen their understanding of natural and built environments through field trips. Furthermore, Arjun, a management instructor, sought to internationalize students' understanding of and engagement with global businesses by weaving stories of current events across the globe with the topics students were studying.

Ethan and Rita aimed at enhancing students' understanding and appreciation of science. Ethan, a chemistry (forensic science) instructor, employed "science by stealth" approach and

drafted cases to engage students in evidence-based thinking and informed decision-making. Similarly, Rita, a biochemistry instructor, focused on equipping students with a deep understanding of metabolic pathways and their underlying principles and mechanisms, using illustrations and diagrams. Both Ethan and Rita intended students to learn about and engage with scientific experiments to cultivate theory-practice connections, with an increased appreciation of scientific inquiry process.

Faculty members' choice of instructional goals can be summarized into two categories: (a) students' engagement with discipline and contribution to discipline and society, and (b) students' personal and professional development. Instructional goals were guideposts for other elements of the course including content selection, instructional strategies, assignments, provision of support within and outside the classroom, and the overall design of the course. The faculty discussed these goals primarily in the context of courses they were teaching during the study. Faculty preserved their instructional goals despite the challenges of the COVID pandemic and delivering their courses in alternate instructional mediums (online, hybrid, and face-to-face with masks). Beyond the courses discussed, faculty pointed at applying these goals more broadly, to other courses that they taught, suggesting their instructional goals transcended individual courses. While these broad aspirations guided course objectives, faculty meticulously tailored course objectives to the content and context of each course. Each course fostered specific skills, knowledge, and attitudes aligned with the broader goals and unique content at hand. Perhaps, these instructional goals reflected faculty's beliefs about what their courses could help students accomplish. The following section describes another element of course design: the selection of course topics and instructional materials.

Selection of topics and instructional materials

Faculty members identified content topics and relevant instructional materials (such as readings, new articles, and musical pieces) that they shared with the students through syllabi. Through syllabi, students accessed the content identified by the faculty, including readings, music, and videos. The choices of content topic and instructional material selection were influenced by faculty's personal values, expertise in the field, course content, and the type of course they taught. COVID pandemic challenges and alternate instructional mediums (online, hybrid, and face-to-face with masks) did not influence the choices of topics and instructional materials. The following sections present examples narrated by different faculty members in the context of courses taught at the time of the study.

Faculty's values and expertise

Faculty members' individual factors, such as their values and expertise, influenced their choice of topics and relevant instructional materials. When designing learning experiences for students, faculty members used their disciplinary expertise, incorporated the voices of scholars from around the world, and ensured affordability of the learning materials used.

Martin, Ruth, and Andriana valued inclusion of instructional materials (such as readings, new articles, and musical pieces) from various parts of the world, reflecting various perspectives and cultures. Martin's deliberate effort to diversify his syllabi highlights an awareness of and a commitment to critically include diverse voices in traditional academic discourse. He challenged traditional academic discourse by including literature written by scholars living in various parts of the world. In addition to including the work of "classic scholars" who are recognized for their expertise in the study field, he attempted to include scholarship produced by people of color and women:

> I try to include their work in the syllabus. I made a really concerted effort to [include] most of the articles in there by women and people of color. So, I have worked really hard to sort of decolonize the syllabus and to diversify the syllabus. (Martin, Interview 2)

Martin recognized a crucial challenge in diversifying his readings—limited knowledge of other languages. He emphasized that the wealth of non-Eurocentric perspectives remained inaccessible to him and his students because of the limited number of languages they spoke and understood. While it was difficult for him to include texts from different languages because of limited linguistic repertoire, Martin set an example for his students by writing and publishing in Spanish. He explained, this is a "very intentional [effort]… to make my research available in the language and in formats that are available to the people where I do my work." He viewed publishing in Spanish as a powerful tool to engage with the communities where he conducted his fieldwork. Through these publications, he also connected with students and scholars, enriching their learning experiences, and fostering a mutually beneficial exchange of knowledge.

Like Martin, Andriana also decolonized the syllabus not just by adding other scholars' voices, but by centering students' cultural backgrounds and skills. Recognizing students' existing artistic expressions and strengths, she weaved a variety of musical instruments and pieces in the curriculum, including those with whom they were familiar. In her view, decolonizing the syllabus meant amplifying student voices, celebrating their cultural music, learning about and appreciating Shenzin [pseudonym] music and culture, and fostering student ownership and empowerment in preparing for final performance. She shared:

> [We] have Beethoven, Brahms and the Bachs. But you can also have pop music, Rnb, and Hip hop, African traditional drumming, North Indian music, right? because it

> enriches us and our students' experiences… The reality is more sounds that you hear, more instruments that you know about, more kinds of rhythms. All of that enriches who we are and presents a whole picture of what music is as opposed to one side. (Andriana, Interview 2)

Andriana shared that enhancing students' music repertoire was important for building appreciation for diverse musical experiences. She shared that her undergraduate students would teach music in K-12 schools. Financial constraints in some schools limited students' access to Western European instruments, impeding their participation in music courses. She underscored that by decolonizing the curricula and expanding the music repertoire, she would equip her students to design a more inclusive and enriched music experience for K-12 students, expanding their opportunity to learn, participate, and discover the joy of music.

In line with Martin's exploration of diverse scholarly voices and Andriana's commitment to incorporating music from diverse cultures, Ruth, guided by her personal values, proactively included news articles from a wide range of sources, including those perspectives with which she personally disagreed:

> I try to always pick articles from the conservative and the progressive side. One of them was Cable News Network (CNN), I think the other was Fox News articles. I do not really believe in Fox News very much, but I do not want anybody thinking that I do not respect their opinion if they are conservative. (Ruth, Interview 1)

Although Ruth wanted to demonstrate respect from diverse perspectives, she presented a contradictory example by excluding Rousseau's philosophy from her course content. When a guest speaker presented Rousseau's philosophy in her class, Ruth invited students to evaluate his ideas considering his personal life story, highlighting potential contradictions between his

philosophy and actions. She discussed why she deliberately did not include a discussion of Rousseau's philosophy in her course:

> John Jacques Rousseau… He was a scum bag. Do you know he had five babies with his mistress, and he put every one of them in a foundling home where he knew there was 87% mortality, and he was telling other people how to educate their children? I said no, no, no, no, no. John Jacques Rousseau is not anybody I want to hold up as somebody my students should emulate… I said [to] students, would you pay attention to this guy? And they said no, I said, me neither. No, no, no, no, no, no. He might have written interesting theories, and those interesting theories might be studied in our philosophy department, and good luck to them. But I am not like holding up Pol Pot as an example of ethics, right? Don't you agree? (Ruth, Interview 1)

Ruth's personal values and understanding of morality and knowledge about this philosopher's actions in his personal life influenced her attempt to exclude his ideas from the discussion. She did not introduce Rousseau's work to students because she felt he did not exhibit justice in his personal relationships. When the discussion on Rousseau's philosophy was brought by a guest speaker, she invited for critical analysis of the philosopher's personal life, instead of weighing the ideas for their own merit. This is because she signaled that students would build admiration for this philosopher and would regard their personal life actions as morally correct. Perhaps this raises a critical question around the extent to which faculty's personal values influence their selection of content, potentially exposing students to some perspectives while shelving others.

Incorporating diverse voices and perspectives were priorities, but financial accessibility of instructional materials added another layer of complexity to faculty's selection of content and instructional materials. Arjun, Ruth, and Steven selected topics relevant to the course and

searched for relevant and low-cost materials to supplement the students' understanding. They actively sought and used affordable reading materials, demonstrating a strong commitment to removing the financial barriers to student learning. Ruth worked with the librarian to ensure the availability of all necessary reading materials within the library's resources, eliminating the need for individual student purchases. Arjun's course required a textbook to supplement students' learning; therefore, he went an extra mile to negotiate the prices of the book with the publisher and made the textbook available to students at an affordable rate. Chapters from the selected textbooks steered weekly class discussions. Unlike Ruth and Arjun, Steven chose an alternative path of self-publishing the textbook and made it available for students at a lower price. Self-publishing allowed the author to offer the resource directly to students at a significantly reduced cost, eliminating publisher profits and making it affordable. By prioritizing affordability through library resources, publisher negotiations, and self-publishing, these faculty members demonstrated their commitment to making the instructional materials available to their students at a reduced price.

In addition to personal values of inclusivity and accessibility to resources, faculty's disciplinary expertise also influenced the selection of content. Henry, drawing on his industry experience, chose topics relevant to future workplaces: "So, I designed the course to give people the skills that I know they will need. So, this data [policy] analysis course, I spent more than my whole career doing this kind of work." Similarly, Ruth drew upon her work with national and international public health organizations to select public health topics and library resources that were currently relevant. However, in some fields, the faculty did not find comprehensive and relevant textbooks and instructional materials, which motivated them to write their own textbooks. For example, Steven and Ethan authored textbooks, and Charlotte was writing a

casebook for their respective courses. Authoring textbooks showcases content expertise, but also reflects the faculty's commitment to providing students with easy access to relevant sources.

The faculty members' content selection and underlying reasonings presented earlier, reveal that the content selection is a "political" process. Faculty's individual preferences, biases, predispositions, beliefs, values, and expertise influenced their choices of content topics and instructional materials used in the courses. The interplay of values such as financial accessibility and inclusion of diverse viewpoints reveals the complexity of process of selecting content and instructional materials. The selection of content topics and instructional materials has implications for students' learning, as the topics and instructional materials identified by instructors are likely to capture students' attention, effort, and time during their studies. Thereby, students' learning experiences were steered by instructors' content choices, which has implications for their students' personal and professional growth and development. This highlights the centrality of faculty values and expertise in content selection and its subsequent impact on students' learning experiences in the courses and their personal and professional development. The next section discusses how the course content influenced the faculty's content selection.

Content (subject matter) of the course

The subject matter of the course also influenced the selection of course topics and related resources. Major agreements in the field regarding what to teach in a particular course, accreditation, and licensing requirements also influenced the choice of content. Some faculty members had more flexibility in selecting the content that they preferred, while others had less flexibility. For example, chemistry and biochemistry instructors (Ethan and Rita) had less choice in making changes to their courses because their accreditation guidelines were stringent.

However, computer security and music education instructors (Steven and Andriana) were more flexible in choosing content.

Ethan explained, “Over the years it [the chemistry course content] has developed and evolved…However, the face-to-face course is consistent with what is being offered in the live [online] course” (Ethan, Interview 2). The face-to-face course was offered to an undergraduate class of 200 students and an online course was offered to 25 working professionals; however, the course content remained the same, implying that the students’ characteristics did not influence the content of the course. Moreover, the content also remained same across semesters taught during COVID. He explained why it was necessary to have “consistency” in the content, across different courses:

> Chemistry is an old science. And [it] does not mean that there are not new innovations that [we] had to teach [in] chemistry, but generally the way that it is taught, is really pretty good…And it is the process is pretty well believed by all the practitioners in the field. There's very little difference in general chemistry courses across the country. So, it got [has] some tried and true principles, and these are not generally really new classes. So, you can look at it…There is a broad agreement of what needs to be covered and the process on how to do it. (Ethan, Interview 2)

In standard science courses (such as introduction to biology and chemistry), general agreements, accreditation, and licensure requirements dictated the content topics of the course. However, in a newer course, such as computer science, these agreements were not established, providing faculty with more flexibility in selecting the content for their courses. Steven discussed the stringency in standard science courses,

> If you teach a very classic class, you cannot just teach anything that you want to teach or you are comfortable [with]. The topic that needs to be covered is... already decided. And you cannot deviate from that. Because then you are going to get yourself into trouble. (Steven, Interview 3)

By contrasting "classic courses" with his computer security course, he added computer security "is a more recent topic" and there is no "uniform agreement" amongst the professors and the accreditation body regarding what needs to be covered. Therefore, he enjoyed much flexibility in selecting topics. He further added that he always joked with his fellow faculty members, "if you ask 10 Professors how they teach computer security and you're going to get 11 [different] answers" (Steven, Interview 3). Similarly, Andriana, a music education professor added,

> When you have like licensure, you have to have certain skills and those skills need to be there, then it is tricky, right? [Instead], I have the adventure and the advantage of teaching a course [where students do not] have to really show me that you can teach this [music]. (Andriana, Interview 3)

Thus, faculty's agency to select content also depended on recency of the knowledge and structure in the study field as reflected in wider agreements regarding content taught in the field, accreditation, and licensure requirements.

In emerging fields, faculty enjoyed more autonomy and flexibility in choosing the content of their courses, in comparison to those who taught courses in established fields, where there was a wider agreement on course content. Faculty in newer fields may have more opportunities to select content and instructional materials, which could lead to the selection of contextually and personally relevant content, discuss novel innovations in the field, and introduce ideas that are relevant to the faculty's personal research interests and expertise. However, extensive instructor

freedom could also lead to discrepancies across different instructors teaching similar courses, resulting in students learning different content topics across similar courses, leading to uneven preparation, and potential learning gaps. Finally, the trade-offs between flexibility and structure in the selection of course content have several implications for both faculty and students, which need to be examined in a different study. The next section discusses how selection of course topics and instructional materials were also influenced by the type of content faculty taught.

Types of courses

Most faculty who taught foundational skill-based courses (Rita, Martin, Henry, Steven, and Ethan) shared that they front loaded the content topics and made rare modifications in the topics and instructional materials of the course based on students' interest and global events, as compared to the faculty who were teaching conceptual courses (Ruth, Charlotte, Andriana, and Arjun). These skill-based courses also served as a foundation for the advanced courses that the students undertook in their programs; therefore, the topics of the instruction did not vary, even when the courses were offered to different student populations. Keeping the content of foundation courses similar across the semesters helped the faculty in advanced courses to assume the prior knowledge of the students who had attended the foundational courses and build on it.

Ethan, a chemistry (forensic science) instructor, compared the course offerings of a forensic science course taught to two distinct student populations: (a) face-to-face course for 200+ undergraduate on-campus students, and (b) online course for 20-25 students, most of whom were working professionals. Ethan reasoned the "consistency" in content by identifying several factors, including that this course served as a foundation to advanced courses. As he stated:

> We have defined content, a lot of stuff, we have to get through the course of the semester, so it starts really [early], really tight time wise. Anyway, and the reason you

> have to get through, it is because this class and gen-chemistry [that is] another class, that I've taught. They are gateway courses to the next course. And so, you really have to make it through large quantities of information. (Ethan, Interview 4)

Similarly, Rita, a bio-chemistry instructor, stated that her course aimed to teach fundamental biochemical processes and mechanisms. Her students included science and non-science majors; therefore, she discussed an extensive amount of material starting from "something that a fifth grader could understand." She added, "And then you add on the bits to get to that higher level learning…I will provide you the fundamentals." Her course served as a foundation for Nutritional Biochemistry II, which she taught the next semester. She frontloaded the materials into the modules and uploaded them to Blackboard for the students to access the course materials. She noted, "When this module is over, I will open up everything for that second module. Second module opens up. They have all of the notes" (Rita, Interview 1). Rita also made previous years' lecture recordings available to the students so that they could review the materials for exam preparation, "Some students will depend on this. They love those old lectures. So, I leave that material up. They can use them as study guides." (Rita, Interview 1). The availability and relevance of previous lectures and notes on the blackboard indicated that the concepts taught in the course did not vary extensively within or possibly across semesters.

In contrast, faculty members (Ruth, Charlotte, Andriana, and Arjun) who taught conceptual and stand-alone courses and used dynamic design process to course design discussed how their courses reflected current events in society and their students' personal interests. Ruth, Charlotte, and Arjun used examples from current news (including those on public health crises and economic crises) and framed discussions to enable students to achieve learning objectives. Charlotte discussed,

> Of course, no matter how often you have taught a course, there were things that you want to remember to emphasize, but there is news, stories you want to bring to the class. What is current? So, I have a current event assignment in the course that a lot of students throughout the semester bring in articles they find interesting. But also, before every class I will do a little bit; not only do my own review of all the material, but I will do a quick look to see what is going on [in the world]. (Charlotte, interview 2)

In addition to relating the concepts with the examples from current events, Charlotte also shared about the recent developments in the study field through listservs, "risk and insurance management society" and "ISACA," an association focused on IT governance (Charlotte, Interview 2). Among the skill-based courses, Andriana's case was unique because she was teaching music ensemble and therefore, she had more opportunity to infuse individual students' choice and voice. Her examples included, allowing students to select the instrument of their choice, and the songs that they would like to perform for the final performance. When asked if the type of the courses and the external agency requirements could impose difficulties in allowing student agency in the courses, she acknowledged the difficulty in accredited courses and emphasized that she had "adventure and advantage" of teaching courses that had less stringent external requirements. However, she provided an example from her research course which met stringent accreditation requirements, yet she gave students some choice. She added,

> In my research course. Of course, we go through different methodologies, right? So, we try to understand what qualitative methodology entails. It is brief, it is a survey of our introduction to music research, historical research, philosophical, and qualitative. So, we have these big chunks of things in there. Students have the ability to choose, for example, from the very beginning, what is their topic of interest? So, they can guide

> readings, so they can guide everything that they are going to do in that. (Andriana, Interview 2)

The extent to which faculty changed the content after designing their courses, also depended on the type of courses they taught. Faculty who taught foundational and skill-based courses made fewer modifications during implementation (such as responding to students questions, providing additional explanation to the students) to address students interests and include global events; however, faculty who taught stand-alone and conceptual courses, made major modifications during the implementation of the course (e.g., adding new content related to current events, sharing news pieces, updates in the study field, and adding a topic to address students' interests). Amongst the faculty who made major modifications to respond to student and context-related factors, the faculty with more than 30 students were less flexible than the faculty who had less than 15 students.

Faculty's choice of content is influenced by several inter-related factors: faculty's values and expertise, content of the course, and types of course taught. Faculty's values such as incorporation of diverse voices and perspectives, strengthening student identities and community connection, and financial accessibility of instructional materials influenced their choices of content. Moreover, faculty members who taught foundational and skills-based courses with established agreements in the field on what to teach, and stringent accreditation requirements reported having lesser flexibility in modification of content in response to global events and students needs and interests. In contrast, faculty who taught conceptual and stand-alone courses, in relatively new fields, and with fewer students in class had more flexibility to select the content and could also engage students in shared decision-making regarding the choice of the content. Faculty who taught skill-based courses followed linear course design process. They did not

include content on the impact of COVID pandemic in their course content. However, faculty who taught conceptual courses and designed these courses using dynamic processes, included readings of current news and current events in their courses. Examples of such reading include health and financial crises caused by the COVID pandemic.

Instructional Strategies

Instructional strategies are choices of instructional procedures that engage students in activities to achieve the instructional goals. Faculty play a crucial role in shaping student learning through their choice of instructional strategies. Two dimensions of instructional strategies were discussed: (a) types of instructional strategies and (b) multiplicity of instructional strategies. Types of instructional strategies refer to diverse methods employed to achieve instructional goals. The multiplicity of instructional strategies signifies the use of multiple strategies simultaneously. By integrating a range of instructional strategies in lessons, faculty engaged students in learning experiences. The following sections discuss types and multiplicity of instructional strategies in detail.

Types of Instructional Strategies.

Faculty underscored the importance of using various learning strategies to engage students in learning process and facilitate them to achieve instructional goals. By using various instructional strategies, faculty members facilitated students' interaction with the content, with faculty, and with their peers. Faculty members' instructional strategies were classified into various categories: presentation of content (all faculty members), guest-speaker sessions (Martin, Ruth, Ethan, and Arjun), field-based experiences (Martin, Ruth, Charlotte, and Andriana), and exercises (Martin and Henry, Andriana, Ethan, and Rita). The following paragraphs discuss each of the strategies.

*Presentation of Content***.**

Faculty employed lectures as the primary instructional approach, supplementing them with a variety of resources such as slide decks (all), recorded lecture videos (Henry, Ruth) with on-screen presence (Steven, Rita), written notes (Henry, Rita), illustrations and slide annotations (Henry, Steven, Rita), advertisement videos (Charlotte), and puppets (Rita).

Henry, Ruth, Steven, and Rita recorded lecture videos during COVID so that the students could review the material before and after the synchronous sessions, because some students could not attend the classes due to lack of resources and internet bandwidth. Steven and Rita emphasized the importance of recording lectures with their on-screen presence along with annotations on the slide, highlighting its potential to enhance student engagement, and facilitate comprehension of course concepts through observation of the instructor's thought process. Steven discussed:

> If you look at the online teaching, some of the lectures do not have people [instructor's presence]. It is [only] slides, which is not effective. Students quickly get bored. That is why in the classroom, people are more engaged [in classroom] than the online [recorded session], because they want to see people [instructor and peers]. In some of them [video recordings], [they] have a little talking head in lecture...that is not effective...I really want to create something similar to what you see in the classroom. You see the professor most of the time, not in a talking head style. But in the size big enough. And you see their expressions and you see their hand gestures. You will see their movements. And you see the slides. So that is why if you look at my lecture, you will see both, me, and my slides. (Steven, Interview 1)

Steven highlighted the importance of instructors' presence in the course and developed the videos that helped students notice instructor's facial gestures and hand movements. He mentioned that once he realized that the videos without instructors' presence would be ineffective, he watched a lot of instructional videos on YouTube and Massive Open Online Courses (MOOCs) to observe the ways in which instructors assure their presence in the videos. Steven explored ways to develop good instructional videos prior to COVID pandemic, when he offered online MOOCs through Udemy. He benefitted during COVID pandemic, because, when instructional medium switched to online and hybrid, he had already developed skills in developing videos, which he utilized during COVID for his regular face-to-face university-based course, offered in online and hybrid mode.

Henry and Rita discussed the importance of providing students with lecture notes in addition to slide-decks. Lecture notes are written description and elaboration of the key points presented in the slides. Henry shared his initial resistance with sharing lecture notes with slide decks because he previously believed that students learn better when they make notes by themselves, however, when designing online instruction during COVID, he added his notes to the slide deck so that students can refer to the notes when needed, without writing notes themselves. He shared that he pondered for years and continued to reflect if sharing lecture notes would help or hinder students' learning. Henry noted:

> [In the past], I resisted putting my lectures into PowerPoint. For 20 years, on purpose. Because I wanted people to write, and by putting them into this form that I use now, two things happen: One thing is that I make the notes available to the students, so they do not have to write. The second thing is that partly because of trying to be appealing to

> people who are watching on TV [screen] basically, I go through the material faster. (Henry, Interview 2)

Henry noted adjusting his materials during COVID based on his belief about what would help students in teaching such content. Rita, Henry, and Steven annotated their slides while presenting their content. Faculty members found that annotating the slides was useful because it allowed them to present information in small pieces and make connections between pieces of information, which they thought would help students in processing information by "connecting the dots." Steven discussed:

> I use Microsoft OneNote as my slide. I mean, not many people do that. It is the software to take notes. I put some of things in my notes, so I can write on it... And so, I have all kinds of half-baked slide, some of slides are just empty. And then when you teach you actually write on that, because I do think that many people spend so much time and to build to develop the beautiful slides, animation, all of these things. [But] I think the best way to animate is to write on it using your pen or using the whiteboard; that piece is the best animation, because whatever you write that is animated. (Steven, Interview 1)

Steven signaled that gradual appearance of ideas, and the annotations between the ideas, helped students learn about the concepts and their subcomponents. Rita used playful hand puppets and engaged illustrations as interactive tools to present key ideas; when she could not continue with hand-puppets, because of changes in instructional mediums during COVID, she stopped using the hand puppets and continued using Wacom to annotate her slides:

> It is very difficult to sit through a science lecture online. Hence, my TED Talks, with a lot of hand motions and soft puppets and moving about the room and like pulling students in the room to talk to them, was not always possible. So, two years ago or I

> guess in the spring of 2019 when we went online quickly, I had to adapt everything to an online version. That was hard. I use Wacom. So, I am able to write all over my slides and annotate everything. (Rita, Interview 1)

Rita and Steven both used the Wacom device to illustrate their ideas and write over slides, along with Microsoft OneNote.

Charlotte continued to use YouTube videos featuring visual advertisements as a pedagogical tool to present information to supplement her lectures, during COVID. She used videos to provide students with examples of the latest software in the information risk and management industry. As she explained:

> Especially in the technological era, you could go and find an interesting YouTube clip or even a corporate video. An example is, there is a company called Logic Tech. And Logic Tech makes compliance, governance, and risks type software. And they have got all these lovely little videos that give you a three-minute demo of what their software can do for you. And so instead of me just saying, oh, there are a lot of software out there and they have these types of features. It is like I put on this little clip, and they go, wow, which is so cool. (Charlotte, Interview 1)

The use of video clip advertisements helped Charlotte get the point across. When asked the reason behind using these video content, she pointed that students' attention span is around eight minutes, and therefore, if they have multiple ways to interact with the content, they might remain attentive to the lesson. She used various sources of information because she acknowledged "when there may be a better way of communicating that knowledge than what you have [otherwise], right? I am not the be-all and end-all of everything" (Charlotte, Interview 1).

Faculty members employed a range of instructional resources and tools to present content by combining lectures with digitally supported means of communication, such as videos, on-screen annotations, illustrations, and written notes during COVID. Faculty members highlighted the use of examples with concrete illustrations to facilitate students' understanding of concepts. Faculty believed that certain instructional strategies were better than lectures alone, based on their experience and trial and error; however, they did not investigate the efficacy of instructional studies through formal research studies support their claims.

Due to the COVID pandemic, instruction was delivered online (Spring 2021), hybrid (Fall 2021), and face-to-face (Spring 2022). Unexpected changes in instruction made some faculty (Martin, Ruth, Arjun, and Andriana) experiment with digital ways of presenting content, such as live video-conferencing and recorded lectures, for the first time. However, other faculty members (Henry, Charlotte, Steven, Ethan, Rita) had extensive experience of presenting content online, therefore, they used various digital tools that they had used in the past. Faculty who had prior experience of online teaching did not find the transition to online mode too labor-intensive. Prior to COVID pandemic, Charlotte and Ethan offered online courses for remote students via 2SU platform, Steven designed Massive Open Online Courses (MOOCs), Rita worked with instructional designers to design online course at her previous university, and Henry owned an open website where he featured his online modules (including videos with embedded quizzes) for the students to review basic concepts and experimented with multiple digital tools (such as Slack, Zoom, etc.) in his work with industry and research partners. This prior experience of teaching online and using digital tools helped faculty spearhead use the tools more comfortably than others. Despite the fact, faculty with relatively more technological experience were somewhat comfortable in adapting to hybrid and online instruction, the sudden shift to a new

instructional mode, combined with health concerns, unpredictable circumstances, and the need for quick adaptation, caused significant stress to all faculty members.

All faculty members, even those who had prior experience of teaching online, mentioned that teaching in the hybrid mode was a challenging endeavor. Henry described,

> The university did not do well from my point of view is audio for hybrid classes. So, I was assigned a really large room where there could be social distancing, where my hybrid classes were held. A lot of students came in. And the audio and the room were just terrible. It was very bad. The room mics were inadequate. (Henry, Interview 3)

The use of words such as "terrible" and "inadequate" revealed Henry's difficulties in presenting the content during COVID. Similarly, other faculty members used the words "horrible," "very difficult," "worst of both worlds [online and face-to-face]," "trickier," "hardest," and "challenging" to denote their experiences of presenting content in hybrid mode. They underscored the difficulty of managing online and face-to-face sessions and answering students' questions in two different modes simultaneously. Faculty highlighted the need for more resources and support from the university (such as laptops with improved mic and camera, acoustic lecture halls for recording videos, and additional Teaching Assistants) to facilitate with instruction in hybrid and online modes.

Faculty who taught when courses were fully online (Spring 2021) and in hybrid (Fall 2021) mode, retained their lecture videos on the blackboard so that the students could access. However, those faculty members who taught fully face-to-face (Spring 2022) did not report recording the videos and sharing it with the students. In such a case, when students felt unwell and could not join the in-person class, they either used previously recorded videos or asked students to seek their peers support in learning the content shared during the session.

*Guest Speaker Sessions***.**

Faculty members (Martin, Ruth, Ethan, and Arjun) invited guest speakers to their classes to share their experiences prior to COVID. Ruth, Ethan, and Arjun continued to call guest speakers during COVID via Zoom, however, Martin reconsidered the choice of inviting the guest speakers, citing the stress individuals would have to face because of living during the pandemic.

Guest speakers included professionals, community members, and community volunteers. Guest speakers discussed their ideas and experiences to supplement students learning. Faculty reasoned that guest speakers discussed "on-ground" realities with the students that supplemented the understandings that faculty brought to the course. Examples of guest speakers sessions included: peer faculty presenting their research proposals (Martin), community members and non-profit sector representatives sharing insights from community work (Martin, Ruth), the Institutional Review Board (IRB) staff explaining research protocols (Martin), library staff demonstrating how to search resources in the databases (Ruth), alumni to help students understand the job search process and job markets (Arjun), and Chief Medical Officers providing insights from their autopsy practices by giving examples from their day-to-day practice (Ethan).

To enrich the classroom with firsthand accounts and diverse viewpoints, Ruth, a public health professor, invited community members as guest speakers. Ruth prepared the community members to present the content online and made them comfortable in using digital environment so that they can discuss their ideas with the students. She said, "I try, when possible, to bring in people who themselves are diverse…I try to make it comfortable for the speaker." She added insights from student evaluation stating that, "a couple of the students said they really like the speakers". (Ruth, Interview 4). When asked what influenced your choice of bringing guest speakers in, she added,

> Well, I am a 70-year-old white lady basically. And I am teaching a diverse group of students. I can talk about trans-people, but I am not trans. I can talk about whatever it is, but I do not have that experience. I think it would be the height of white privilege for me to try to cover that without anybody talking to the students. I can talk to them about what it is like to be a 72-year-old woman with arthritis. (Ruth, Interview 1)

Ruth further discussed that students need to hear from the people in the community, because she could not speak for the experiences that she never had. She exemplified, "The group Mothers against Gun Violence, women who have lost teenagers to the gun violence, they would come and talk to the students about their loss, what they hope for the community, and what they are doing to try to make it better" (Ruth, Interview 1). The sharing of personal stories allowed students to connect with community members on a personal level, understand the cost of gun violence, and shed light on how they could join hands with community members to address these issues.

Arjun, a management instructor, invited alumni to speak to his class to demonstrate application of concepts taught in the classroom in their professional work:

> I typically have four to five guest speakers, my former students…[For example] I had somebody from Prudentia…A former student, [who] came and talked to the class and said this is how we use this information [taught in the course]. So, they get 3 or 4 opportunities to do [learn about] that. And those presentations are about 20-25 minutes. And so, my [former] students will either zoom in or they will actually come to campus to do these [guest speaker sessions]. (Arjun, Interview 3)

Arjun's used a deliberate strategy for leveraging existing relationships with former students to enhance current students' learning. By inviting his former students as guest speakers, Arjun went beyond the sharing of theoretical concepts and showcased the application of course learning in

solving real-life problems. In addition, the alumni sessions served as a pathway to enhance current students' connections with former students. Arjun noted that the alumni delightfully shared their contact information with his students. The students' direct access to experienced professionals empowered them to seek personalized career guidance and upskill themselves to identify and develop the competencies required in the current job market.

Ethan, a chemistry instructor, invited people from his field such as a Chief Medical Examiner, to demonstrate the practical application of course concepts in their line of work. He explained that these practitioners previously used to be adjunct faculty who taught this course on campus, however, due to the accreditation body's requirement, adjuncts were not allowed to teach a course. Therefore, he started teaching the course himself and continued to provide insights from the practice, by inviting these practitioners as guest speakers:

> Our Chief Medical Examiner, the guy who does the autopsies all day long comes over in the evening and teaches in the forensic pathology course, but the AAFS [accreditation body] wanted a tenured faculty member to be able to do that rather than adjuncts. And so that is sort of the reason that I also took over this course…[So, I] wrote down was availability of supplemental things to help get points across and make it interesting, like guest speakers, cases that help illustrate the point, graphics and other supplemental materials that can be used. (Ethan, Interview 1)

Ethan also discussed it was easier to invite the guest speakers because during the COVID pandemic the classes were online, and they could teach a class without commuting to the campus. He envisaged that in future he could invite guest speakers from distant places, through video conferencing.

Prior to COVID, Martin invited guest speakers from the University's Institutional Review Board, who outlined the key ethical considerations and regulatory frameworks governing research conduct. Subsequently, he invited experienced faculty members to present illustrative examples of their research proposals, demonstrating the practical application of ethical principles in their respective research areas. “So, in the past when I've had guest speakers just like from the department people that come in for an hour during this semester and they present their research, and the students interacted with them” (Martin, Interview 2). This exercise helped students understand how the National Science Foundation grant proposals were written. During COVID, he eliminated guest speaker sessions, especially because faculty and staff were overwhelmed due to online transition, catered to self- and family health issues, and juggled with multiple responsibilities (such as personal, child, and elderly care). Therefore, Martin excluded guest speakers’ sessions from the course without compromising the quality of instruction, thus addressing time limitations, workload constraints, and reducing the coordination efforts required:

> So, if I were to teach this again in person, I might do that [invite guest speakers] again, but probably not as much…I will [used to] have somebody come in from the IRB office…But she just sort of tells what IRB is and they know what IRB is. So, it actually was not very useful option. So, I cut that out too. (Martin, Interview 2)

Martin empathized with others and wanted to protect his time and energy, especially during COVID. He discussed that he would exclude guest speakers’ session because, “partly that was just less stress for people to do in the evening when they rather be home. And then I just thought [it reduced my burden of] coordinating with one more person. I do not think we missed it.” (Martin, Interview 2). By excluding guest speaker sessions, Martin prioritized self-care and valued their peers’ well-being.

Faculty (Martin, Ruth, Ethan, and Arjun) invited a variety of guest speakers such as alumni, peer faculty, community members, IRB professionals, and field experts to include varied perspectives, bridge theory and practice gap, develop networking, enrich class discussions, and diversify sources of information. In addition, faculty members acknowledged utilizing university-based resources such as IRB professionals, peer faculty members, and alumni. Faculty members found universities' external partnerships with community members and community organizations and networking with practitioners through professional organizations as useful resources. While before the COVID pandemic, the faculty made efforts to invite individual guest speakers on campus; however, during COVID, frequent use of online videoconferencing made some of them reflect that they could invite guest speakers through Zoom videoconferencing, which they saw a potential pedagogical option, going forward. Some faculty members also realized the possibility of guest speakers from distant geographical locations without spending additional funds for their travel.

Faculty also highlighted the challenges in inviting guest speakers. Martin discussed the challenge of coordinating with the speakers and planned to stop calling guest speakers. Ruth highlighted the need to arrange institutional compensation for external guest speakers and emphasized that in absence of institutional funding she paid the guest speakers by herself. Thus, to invite guest speakers to enrich and extend conversations beyond the classrooms and bring in diverse experiences and community voices, further institutional support such as institutional funding to pay speakers and support in coordination with guest speakers would be helpful.

*Field-based Experience***.**

Four faculty members (Martin, Ruth, Charlotte, and Andriana) reported using field-based experiences to engage students in understanding and addressing problems in the world. Note

Martin and Ruth were teaching in Spring 2021, where the instruction was online; Charlotte was teaching when the instruction was in hybrid mode, and Andriana was teaching when the students were back in face-to-face with face masks. Ruth, Charlotte, and Andriana continued the field-based projects, during COVID, where Ruth and Charlotte did the community-based research projects virtually, Andriana engaged students in field-based musical performance, with masks, and Martin replaced the field work with the guest speaker sessions during COVID.

Ruth noted that student engagement with community-based projects has contributed to improving public health in communities:

> I became interested in working in the community. I could work on smaller projects and did not need such a big funding base for it. I could bring students with me to the community. So that started me thinking about that. Then I got the Laurel [pseudonym] teaching innovation award. I decided to do more intensive work, which involved working with community members...I go to various community events and people know me and they may then say, “Ruth [pseudonym], we need your help at”, most recently, “legal services”, said, “Ruth, could you come and work with us?” I said, “okay but can my students [will also] come because I'm a teacher,” and they said, “yes.” (Ruth, Interview 3)

Ruth shared that earlier in her career, she had got huge external grants and travelled across the world to study and contribute to public health. However, now her age and health did not allow extensive travelling, therefore, she had focused on working with students in the communities in Syracuse using small scale funding, such as one from the Laurel [pseudonym] award. She clarified that these community projects helped her build students’ ability to provide community services, without securing huge external funding. Students in her classes continued

these projects within and beyond their academic courses. She narrated several examples of community projects where she worked with students to address community issues such as advocacy work for Common council to "pass a local ordinance, protecting children in rental property from lead poisoning," provision of health services for the uninsured, and safety net for people suffering from neighborhood trauma and gun violence (Ruth, Interview 1). Ruth continued to work on a community-based research project on lead poisoning with the students from her course and has sought input from legal services, written an IRB application, which was under review at the time of interview. She discussed, "My students and I, and two other faculty met on Zoom a couple of times. We developed what we were going to do. Legal Services asked us to do a research project with parents whose children have been lead-poisoned" (Ruth, Interview 3).

Ruth's engagement in similar community projects benefitted students as they "got to know the context," had hands-on experience on working with public health project, and made collaborative efforts to address community issues. She found that students' professional and career outcomes were positively impacted by community-based research projects. Ruth collaborated with her students and community members and "published 16 articles on using the Community Action Research and Education model, responding to community requests. And 76 students have been coauthors on those articles and 23 community members." (Ruth, Interview 1).

Ruth elaborated that community project work then evolved into community members teaching some sessions in the class and leading bus-tour activity. She explained that "I developed this method of bringing the students on a school bus...And the community members would lead the bus tour." She would share the city maps with the students she and her colleagues developed and let the community members talk to them about issues they had been facing. They would

“show the areas of particular disadvantage...where we've had the most gunshots and the most murders. This is where there is a food desert. This is where there's lead poisoning.” And we would go to a community center…”[Students] would get 10-minute presentations from six different groups in the community center” (Ruth, Interview 1). During COVID, when community visits were not possible, she replaced community visits and bus tour activities with the guest speaker sessions. She recalled, “Then the people I worked with in the community, I would bring them into the classes and help them teach the classes.” Examples are shared in guest speaker section. Ruth reflected while she needed to change the pedagogy from bus tours to guest speakers’ sessions, students still gained the opportunity to engage with the local community, listened to lived experiences of community members to understand what it meant to live in a particular neighborhood, learned from the community members, and collaboratively addressed the problems in the community.

Charlotte, an enterprise risk management professor, engaged students in interacting with and learning from local businesses in the town. Her field project was designed to prepare students to engage with local businesspeople in the community and examine the risks that businesses experienced. She encouraged students to apply the theoretical model of enterprise risk management to examine the risks involved in the businesses. Due to COVID pandemic, the professor guided students to reach out to the students to do an online field-project. In the process of interviews with the students, the local business owners got the opportunity to think about the risks that their businesses were facing and to figure out ways to address them:

> One of the things they had to do was a research project and they could pick any topic at all that they were interested in. But they had to use at least three of the chapters from the book like three different concepts from the book, they had to apply those in their

> analysis. [I was] blown away. We are talking about 18–19-year-old students, they were freshmen. They did unbelievable research interviews, sometimes archival, sometimes quasi experimental [studies]. (Charlotte, Interview 3)

Charlotte presented an example of a previous student's project in the enterprise risk management course that she was impressed with. The student researched advertising and marketing support for social events. She recalled the student's project, "she had noticed that the number of signs [sponsored banners] were decreasing. And so, what she was really interested in was, why was the advertising [support], marketing support, and the sponsor support decreasing [in social events]?" (Charlotte, Interview 3) By sharing an example of a student project, Charlotte exemplified how these projects helped students apply their inquiry skills and understand the content to understand problems in the context:

> In terms of the case analysis, there is one learning objective that has to do with being able to apply the tools and techniques in an experiential situation in some research field, they actually have to go out, ask the questions, get the data, interpret it, and present back a risk assessment, like what's going on in small business or the small organization. It [the organization] could be a not-for-profit, it could be a shoe store, it could be anything…[From engaging in these projects, students learn] basic vocabulary, process model tools and techniques, be able to analyze the cases. And that actually being able to apply it in experiential situation. (Charlotte, Interview 1)

Prior to the COVID pandemic, students conducted inquiry projects in the neighboring University communities, however, during the pandemic students used internet-based communication channels and their personal and professional networks to identify a business case from any part of the world. When the university instruction was offered in a hybrid mode; some students were

on campus, while others participated in instruction remotely. Some of these businesses were also not located in the university neighborhood, rather in geographically distant communities. Charlotte converted these on-site community projects to hybrid community projects, during the COVID pandemic, to minimize health-related risks. She described that her "students had a tough time this semester [finding an organization to be studied for a group project], out of six groups only one got confirmation from their organization [for group project]." She added that "they have been looking for since week five, this is week eight" (Charlotte, Interview 2). Charlotte's students faced multiple challenges in securing local businesses to agree to be part of the research, due to the pandemic and unpredictable economic situations. To overcome these challenges, Charlotte noted that some of her groups sent e-mails or commented on "the Facebook pages of these organizations and wondered why they don't hear back." She discussed with students the strategies to find a local business owner who is interested in participating in the research:

> You got to approach [organizations] personally. You need to show up at the door, introduce yourself, and explain why you are there. Or if you send an e-mail, forget Facebook or Instagram, forget any of that. Do not send them a tweet for heaven's sake. Okay. But if you do send an email, indicate it is because you would like to set a time to meet with them and talk about the project. Do not ask for approval in an email. They do not know you for that. (Charlotte, Interview 2)

Charlotte's facilitation helped students in securing the participants for their inquiry projects: "It took a couple of groups before they figured that out. But they all seem to have someone in the organization lined up now" (Charlotte, Interview 2). However, it was difficult for her students to secure the research site on time; therefore, she demonstrated flexibility in her class schedule and accommodated students by providing extra time and resources, where needed:

> But they are a little behind schedule, given that part two of the project was due last week. And part three is officially due this week. And so, we have been spending more time in class, I have been giving them an opportunity to talk to their teammates, to ask questions, and to give them some suggestions and whatnot. I have had some meetings with groups on Zoom outside of class time. And that also, I will not say it [project work] interferes, but it requires that flexibility to adapt within the classroom. (Charlotte, Interview 2)

For Charlotte, it was not the first time that she did the project in hybrid mode; however, she had facilitated these projects in online mode. Prior to COVID, Charlotte engaged students in a similar project when she taught a course virtually through 2U (a third party ed-technology partner). However, uncertain situations posed by COVID were also new for her and her students and led to various challenges for the students including access to the business site for the case study. Perhaps, it is because of her prior virtual teaching experience, that she was flexible in offering face-to-face field project experience in hybrid setting. As she explained:

> The history of the industry project goes back to other distance courses. Now, we at the school, we have been teaching distance for 20 years, probably more…Because of pandemic, geographically dispersed groups were working on a small business that is at one location when nobody else is in that location, [except one person]. But they might have a teammate who was in Korea or New Jersey, California. And a vast majority of them were in the local city and on campus. (Charlotte, Interview 2)

Charlotte valued the students' learning experience in field project so much that despite being in COVID pandemic and difficulty in finding the business site, she continued the field projects, and facilitated students to overcome the challenges by providing guidance and offering

accommodations such as flexibility in submission deadlines and using class time to discuss the challenges.

Martin described his field trips in the environmental justice course, a course that he taught in the previous semester, prior to COVID, where students were "out in the community—meeting with people and visiting places" (Martin, Interview 1). He shared the inspiration for designing field-based study comes from his early life experiences of facilitating elementary school camps, he narrated, "I would have a group of 20, 11- and 12-year-olds and I would take them hiking in the redwoods in California. And my job was to teach them about nature for the day, about forest ecology" (Martin, Interview 1). He shared that he also personally enjoyed going out in the field and working with communities, "Getting people outdoors, and so, I loved it. I mean to me that just rang all the bells" (Martin, Interview 1). The field visits he designed for his environmental justice course were a continuation of his passion for field and fieldwork. In his course, he supplemented field visits with weekly writing assignments on the concept under discussion:

> My idea was that I would do it as a series of field trips. So, we would be getting out into the community. So rather than learning about environmental justice in the classroom, we would spend a lot of time outdoors in the community meeting with people visiting places, doing that. (Martin, Interview 1)

Martin reflected on the challenges in organizing field trips during the pandemic, because of social-distancing requirements and multiple lockdowns. He did two field trips abiding by the social distancing protocols in the prior semester; however, he could not design a similar learning experience for his students to interact with the community in the current semester, because the university guided the instructors to move instruction online. He recalled, "we were able to get out on a bus and maintain social distance. It was crazy. I mean, it was just like the precautions

that we had to take, buses were not as available…we could not meet with people" (Martin, Interview 1). Therefore, he arranged video conferencing with people (including community members and environmental justice officers) through which students interacted with community members and local NGO representatives and learned from the primary informants. Martin emphasized that he could go to the field alone and video-record the experience of the field for his students substituting in-person fieldtrips; however, he valued students with first-hand sensory experiences:

> Environmental justice issues in this city [name redacted], oftentimes have to do with what places are more polluted and who lives in those polluted environments. You can look at pictures and I can show people, I could technically go to a place myself and show them a video of that. But they are not going to be able to actually get an adequate understanding of that place. That sort of sensory experience, the smell, right? Polluted places are often smelly places. So being able to see, that's what that smells or experience, what that smells like (Martin, Interview 1).

Martin added another dimension to field visit by discussing the value of sensory experiences while learning about the environment. When asked what he would do differently, he shared that he would engage students in doing field recordings during the visit and shared examples of what he would like them to do during their field visit: "some journaling or do some observations in a site or some kind of measurement. I mean, we could do water quality sampling. We could do, like walk a transect and find out how many vacant lots you see" (Martin, Interview 1). He added that these active exercises would engage students mentally and physically in crafting the meaning of their experience. He also cautioned the need to ensure students' safety during the field visits, because some of the areas were "not totally safe for [students]" due to existing

environmental injustice problems. Therefore, “you are not going to just turn lose a lot of kids that are not used to that neighborhood. You have to be a bit careful.” (Martin, Interview 1). Therefore, when planning field trips, faculty also considered the safety of both students and surrounding communities.

Faculty’s (Martin, Ruth, Charlotte, and Andriana) prior experience of working with communities and their passion for field work influenced their choice of field-visits as a pedagogy. Faculty underscored the value of first-hand and sensory experiences that students gained from visiting the sites themselves and interacting with people in the communities. They sought university-based funding to provide field-based experiences to the students. Health and safety implications were also considered while planning the field experience. During the pandemic, when it was not possible to conduct in-person visits, faculty demonstrated creativity, adaptability, and flexibility in designing alternative learning experiences that embraced community engagement principles. They designed virtual field experiences and guest speaker sessions and provided continued support to the students to enhance their engagement with communities.

*Experiments***.**

Faculty members (Steven, Ethan, and Rita) in science disciplines used experiments to bridge the gap between theory and practice. Steven taught during hybrid instructional phase, and Ethan and Rita taught during face-to-face with masking policies in place. Steven replaced in-person computer security labs with virtual labs, Ethan used the science labs that he created for students in College of Professional Studies (online) class, which encompasses use of home-based materials to conduct scientific experiments at home, and Rita envisaged inclusion of labs in the semester, post-COVID.

Ethan and Rita used lab-based experiments and emulation exercises to engage students. Ethan employed Process-Oriented-Guided-Inquiry-Labs (POGILs) cases in a forensic chemistry course whereby the lab experiments were presented as cases with guided questions to help structure students' inquiry process. During COVID, when conducting POGILS was no longer possible, because of restrictions imposed on face-to-face labs, Ethan used his prior lab manuals where individual labs encompassed detective stories. Each lab session's description contained a paragraph starting from a detective story to capture students' attention and make these labs more interesting. The students took up the role of detectives and tried to solve the case mystery:

> So, I took that lab and that information. All I did was I put a paragraph in the beginning. I have said detectives at a crime scene found an unknown white solid material. It is unknown. The mass spectrometer in the laboratory is broken and will not be up for two weeks. We have to figure out what this stuff is. And made it like a forensic question in a truly organic lab. And it turns out that the forensic students [and] non-science majors, largely really liked that class. And so, what they ended up doing was a fair amount of organic synthesis. So, they learned what organic synthesis was about. (Ethan, Interview 1)

Ethan reasoned that designing a lab session where students investigated the case as detectives and hiding the learning outcome resulted in increased interest in the case. He called this approach, "science by stealth," "Not on purpose, not something thought they would do. But if I had just given them that lab without that one paragraph on that, I am sure that they too would have hated," he reflected (Ethan, Interview 1). He further discussed that the teaching award financially supported him to engage one of his former students in writing these forensic science labs in a detective language. He discussed that he simultaneously taught an online version of the

same chemistry (forensic science) course in professional studies program, and used at-home lab experiments, where he replaced the chemicals with household ingredients, that students could find in their kitchen, and performed experiments following the guided scientific inquiry process. In Ethan's course, the labs followed a guided inquiry process and structure, where teaching assistants guided students through to conduct an experiment to test the pre-set hypothesis using the pre-determined procedure.

While Ethan emphasized the need to design structured lab experiments for students to learn how to follow a structure to obtain the results, Rita critiqued this approach. She felt that providing students with the set hypothesis and procedure to solve a scientific problem berefted them of wonder, mystery, and possibilities of failure. She narrated:

> One of my disappointments as an [undergraduate] science student, [was], a lot of times those [labs were] really clear, we call these labs as being canned. We would go through a series of steps and would not fail. And there is no mystery, there was no fun to that. Like you knew how the experiment had [a] pointed end and it was not really intellectually engaging. So, when I am working with my own students, I like it to be more open-ended. I am here, I really do like that. Like the student and I are exploring the concept [such] that there is room for failure because science is a self-correcting process. (Rita, interview 1)

Rita did not have labs attached to the course, but she planned to include home-based science lab sessions using household materials in future iteration of her course. Rita recalled her undergraduate experiences and suggested that labs must embrace open-endedness and flexibility; therefore, she plans to engage students in scientific experimentation with support and direction,

but without having definite answers. Un-canned labs emulated the conduct of real scientific experiments, and supported her proposition that science is a self-correcting process:

> What that means is, when you are [a] practicing scientist, when you are doing science, a lot of times your initial hypotheses will turn out to be wrong and you need to learn how to reformulate them. And you will see you have to learn from that failure. And that is self-correcting. Well, if we go this direction, it turns out that's not correct direction. We correct [ourselves], we go back and forth constantly making some steps forward but failing. If students do not learn that process, hands-on, they are going to fail [at] the graduate level or they are going to fail beyond the graduate level because they won't be prepared for that kind of struggle. Like what, how do you regroup? What do you do when your experiment does not work? How do you think about that process in a different way to get to the next level? (Rita, Interview 1)

Rita described the process of scientific inquiry and underscored the importance of designing un-canned lab experiences to emulate the process of scientific inquiry. She wanted students to participate in such experiences to develop virtues of patience, persistence, and resilience, when experiments did not achieve expected results. She critiqued the current undergraduate chemistry lab model, where students have one correct answer to acquire, and wanted undergraduate scientific education to be reflective of real science experiments, so that students' undergraduate experience serve as an anchor to graduate education. She cautioned that it is difficult for faculty members to design such courses, where students could fail. It is "scary for teachers today, frankly. If you think about a new faculty member coming into a tenure track position, the pressure is that you want students to really have a good experience, right?" She further added that many a times, departments require "good teaching evaluations" from the newer faculty and

therefore, it is difficult to design experience where "the student may fail." She pointed that students' failure in the courses, may result in poor teaching evaluations, thus affecting individual faculty's tenure and promotion processes. Rita further shared that she did not created these "un-canned" lab sessions in the current semester, because she was busy in restructuring the course for online and hybrid delivery. However, she would like to structure these labs for the upcoming semester, perhaps using home-based products so that students can engage in scientific inquiry, without necessarily needing a chemistry lab on-campus. She noted that there is no chemistry lab for bio-chemistry courses on-campus, and therefore using home-based materials for scientific inquiry would be feasible. She shared that during COVID she had to make a lot of changes in the instruction, which was overwhelming and therefore, she was in the process of developing home-based labs and would be using these home-based labs to complement in-person instruction post-COVID.

Steven, a cyber security instructor, explained how he designed and conducted labs in virtual environment, prior to and during COVID. He emulated well-known computer security problems through these labs and asked students to identify a problem in the given emulated scenarios and develop a solution for it in a virtual lab-environment. He described:

> So, this is a social network. Open Source one. So, I went into [go in] this software… [Let us pretend to be] victim Alice. Okay, we got lucky Alice…[Her profile says] "I am Alice. I love coding"… So okay, now, let us see, she is looking at the Sammy's [profile]. So, let us just [once Alice] go[es] to Sammy, take a look of Sammy's profile. And that's when she clicks on Sammy's profile, the attack will be launched. And so now you have seen this, but then you go back to your "Alice's" profile, and you will see, it is different now, it says "Sammy is my hero," instead of "I am Alice and I love

> coding.". So that is the attack...That actually was the original attack, we just simplified it, and actually made it in a different platform (Steven, Interview 1)

Steven noted that these labs were developed prior to COVID and were offered in the computer labs at the university. However, during the COVID pandemic, students used their personal computer machines to conduct these lab experiments. He explained that he used his teaching award to hire one of his past students to create emulation labs. With his former student, he has managed to design "a lot of these kinds of emulations in the lab." Steven further added why he wanted to design these labs, "My goal is to form [emulate] famous attacks…So [that] students can actually experience that... I can tell the story, but if students can participate in that, and just be part of the story, it will be more interesting" (Steven, Interview 1). Steven added that once students have experienced the cyber-attacks, he engaged them in thinking about creating strategies for defense. When asked how he came up with the idea of creating emulations, he recollected that during his university years, he was not trained in cyber security using emulation labs. Instead, most of his faculty used lectures and slides. However, he was inspired by one of his professors of networking who used emulations. He said, "The teacher, the professor, I took class from. One professor, he is very, very (creative). He designed this whole, his own lab in this network part" (Steven, Interview 1). While recollecting memories from his graduate studies, he added,

> And then when I become professor, I said, okay, if I can do this in cyber security, that would be great. And duplicate what that Professor did but in this field [of cyber security]. And then when I first taught and I looked at it, I could not find any useful hands-on activity. Because cyber security [was] relatively new to the [field]. And so, I could not find anything. So, I said, okay, I am just going to build some for my own use.

> And that is how I get started. And then gradually more people are using that. And then I developed more labs. And then now, we have more than 1000 Universities using that. (Steven, Interview 1)

Steven described his personal journey of developing emulations and accompanying instructional strategies for computer security labs, using funding from Laurel Award and National Science Foundation. He underscored the novelty of the labs, by highlighting that such labs were non-existent for teaching problem-solving in computer security. The funding has enabled him to train other faculty members in using computer security emulations through hands-on workshops on campus. Resultantly, he has created a virtual community of over 1000 professors who use emulation labs in teaching computer security across the United States.

Faculty (Ethan, Rita, and Steven) used varied types of experiments (hands-on vs virtual, and guided vs semi-guided). Faculty shared that these experiments helped students see the practical application of concepts. Ethan used POGIL cases written in detective language, where students followed the prescribed scientific process to find the solution; Rita proposed to use un-canned and semi-structured labs so that the students learn from their mistakes, without necessarily searching for "one correct answer;" and Steven designed and used emulated computer security problems in virtual labs so that students examine the security risks in the given scenarios at hand and subsequently search for practical solutions. Ethan, Steven, and Rita had prior experiences of teaching online and therefore they continued offering virtual experiments when they switched to online teaching during COVID.

Ethan reported that he learned about POGILS from a student who used to teach in high school and was inspired by forensic series, and therefore wrote the detective stories in opening paragraph of labs to infuse curiosity. Steven noted that he was inspired by one of his professors,

and Rita stumbled upon this idea of un-canned labs when she was herself a Teaching Assistant, because of her personal dissatisfaction of how undergraduate science labs are taught. Both Ethan and Steven used the Laurel funding and hired one of their graduate students to bring the idea to fruition (i.e., to co-develop lab experiments and environments). Rita's Laurel award was recent at the time of interview, and she shared that she would invest the budget on hiring a graduate student to co-create these home-based un-canned labs that she could teach in the next iteration of her biochemistry course. She was tenure-track professor at the time of interview, therefore, expressed her fears in designing "un-canned" labs, because students might not appreciate learning from "failing" and provide poor teaching evaluations, affecting faculty's promotions to become a tenured faculty. Thus, organizational resources, such as support from graduate students and funding for innovation projects, were necessary to design and implement experiments in various courses. Moreover, the need for administrators to provide safe spaces for faculty to experiment instructional strategies was also highlighted.

Exercises

Henry, Martin, Steven, and Ruth provided various in-class problem-solving exercises to engage students in examining and solving problems during class. In his policy analysis course, Henry used in-class problem-solving exercises which he called "temperature checks" and assessed students' understanding and skills learned from the class, formatively. Students directly uploaded in-class exercises and programming assignments to the Google Classroom platform to minimize the exchange of papers between students and faculty members during COVID. This was done to minimize the exchange of articles between individuals, potentially saving them from the risk of being exposed to COVID.

Martin used a writing and peer review exercise for his research methods course. During COVID, his exercises were conducted virtually on Zoom web-conferencing. Martin elucidated that each week he discussed a specific element of a research proposal. He engaged students in reading different sections of 30 research proposals during the semester. After reading through research proposals, students worked on that section for their research proposals, and in the next class, they used some of the class time to read each other's work and provided feedback:

> We start with a sort of introductory research statement and then we move. That is one week. And then the next week, we do research questions. And then we do the empirical background and then we do the theoretical background, and then we do the research design and methods section. So, timeline work plan but the research methods which is the bulk of that. And then they present those on the last week of the semester. (Martin, Interview 2)

Martin was the only faculty who conducted a writing and peer review exercise for his research course. Martin's workshopping strategy helped students craft the research proposal on the topic of their interest and receive ongoing peer- and instructor- feedback, thus, holding relevance to their graduate studies. Through this activity, students wrote and presented sections of their research proposals and received iterative and extensive feedback from both instructors and peers. Martin referred to this exercise as "workshopping the proposal." Weekly assignments helped students work on one section at a time, while receiving feedback and making weekly improvements in their drafts. They modified their drafts based on feedback before submitting their final research proposals.

Steven, a computer security instructor, underscored the importance of exposing students to the security problems that they would face when they are working in the computer security field.

He emphasized that the students need to fully examine the security issue and then use techniques to solve the issue. Previously, when he posed a question, only a few students would raise their hands, while others would not. This is because some were afraid of participating, while others were afraid of being laughed at by their peers for their mistakes. Therefore, he modified his strategy, presented the problem on the screen, and displayed a Google document where students could type their answers:

> Now in the classroom, which is what I am doing right now I am put a problem there, I am asking them to have to think about that. Give them real five minutes. And, I asked them to that one of technique I'm using right now is because in the past, when you ask them to think, some of them they are not thinking...How do you know they are doing things [thinking through the problems]?…I am using a Google document. So then when I asked question, I put out a Google Doc, I share with everybody. I said, start writing your answer on that. I want to see you type in live, you do not have a computer, use your smartphone, you can just type your answer, and usually it is not very long. (Steven, Interview 2).

Steven emphasized that he wanted students to keep their answers anonymous if they did not want to share their names. He added, "So now I can see actual answer. If I see the mistake. If I find a student go in the wrong track, I immediately correct them…[that] never happened in the past". He provided on-the-spot feedback to enhance student learning. Through this exercise, he provided students with opportunities to identify the problems, analyze the various parts of the problem, and then to find potential solutions. The discussion is further expanded in the student learning assessment section, where he emphasized how he tricked the problem in his exams to

examine whether students understood the nitty-gritty of the security problems. The exercises remained the same pre- and during COVID and were administered similarly.

Faculty designed these exercises for students so that they could get immediate feedback on their work and use it to improve their learning. Through Martin's peer review workshop in synchronous zoom sessions, and Steven's problem questions through Google Docs, instructors and peer feedback were provided to the students. However, Henry assessed and provided quick feedback on "temperature checks" on Google Classrooms and on programming assignments using Slack. Faculty used these exercises to inform the flow of their instruction and made modifications in the instructional plans when they found that students needed more assistance in understanding a particular concept.

Martin shared that he did this exercise in face-to-face classroom settings before COVID, and used Zoom—a video-conferencing software—to conduct this exercise, without any significant changes in the exercise. Martin compared facilitation of workshopping exercise conducted across two instructional mediums—face-to-face sessions pre-COVID vs Zoom-based sessions during COVID. He reminisced that the experience of workshopping online was equivalent to face-to-face experience:

> I would not say it is the same, it is similar, and I think it works well. The students are graduate students, and so they have an investment in the class that sometimes undergraduates do not have. So, they come to class, they have done the reading, they have done their writing, they have turned in their assignments, all those things, and they get along well, which is nice (Martin, Interview 2).

Martin explained that the students' characteristics (graduate versus undergraduate) determined how they participate in online classrooms. He shared that he did not have the challenges that

some of his colleagues who taught undergraduate courses had. He reasoned: (a) students in his class neither dominated nor refused to participate in the discussion, (b) he had built rapport with the students prior to the pandemic, and (c) students were disciplined to complete their readings and weekly tasks. He added, “Everybody participates, and some people participate more than others, but everybody participates, and nobody totally dominates. It actually makes my job really easy that way” (Martin, Interview 2). Martin’s experience of teaching online was pleasant, however, he still believed “face-to-face interaction is more valuable,” and if he were provided the opportunity to choose between online and face-to-face, he would return to face-to-face classroom. He found that the conversations mediated by Zoom were artificial because individuals’ postures and gestures were not fully visible. Gestures and postures served as cues to facilitate classroom discussions and helped him to decipher social cues to channelize discussions.

Henry and Steven recalled that they had previously conducted temperature checks, quick-write exercises with Multiple Choice Questions (MCQs) using paper and pencil, and quick responses on MCQs using hand gestures (e.g., raising a hand for agreement and lowering it for disagreement). However, when instruction moved online during COVID, Henry hunted for a tool to conduct these exercises online. Henry did not want to use Blackboard, because he did not find it user-friendly. Instead, he “spent a lot of time looking for what tools are out there.” He explained that he capitalized on his prior experience of teaching online and writing online modules (Henry, Interview 3). In contrast, Steven had an “aha moment” that Google Classroom can be an alternative: “I don't know, it just someday I just suddenly said okay! I mean Google Docs is there.” He then used Google Docs to conduct an MCQ-based exercise and gave prompt feedback. Recalling previous teaching experiences, he recollected, “Sometimes when you ask [a question]. They have four choices: A B C D…So, in the past, I would always add okay if your

answer is A, raise your hand, [now] B Raise your hand, C raise your hand." Further, he added, "That's what we typically do" (Steven, Interview 2). Thus, faculty's personal beliefs regarding the value of exercises and ongoing feedback, their preferences, trial and error with the software, available resources at the organization (such as Zoom, Slack, Google Classroom, Google Docs), and the COVID pandemic influenced the choices of exercises and the software they chose to conduct these exercises.

Faculty shared a variety of instructional strategies used to engage students in learning. Some of these activities included: the presentation of content using a variety of media and multiple instructional mediums (online, hybrid, and face-to-face), guest speaker sessions, field-based experience, experiments, and exercises. These activities engaged students in hands-on and minds-on activities and allowed them to receive feedback on their projects and assignments. The use of community-based and lab-based experiences helped the faculty make connections between theory and practice.

Faculty's personal factors (prior knowledge, beliefs, preferences, and insights), organizational factors (e.g., availability of Teaching Assistants, digital videoconferencing, office applications, learning management system, resources obtained through list servs), societal factors (news, updates in the field), and the COVID pandemic (leading to physical and mental stress) influenced faculty's instructional decisions. The next section elucidates faculty's justification for using various strategies simultaneously in their teaching.

Multiplicity in Instructional Strategies.

Faculty members used a combination of instructional strategies to engage students in the learning process. These strategies included discussions, exercises, facilitation, presenting real-

life examples, using a slide deck to guide the conversation, providing students with pre-work to guide students' learning, use of storytelling, and emulation exercises.

Faculty adapted instructional strategies in response to class size to maximize student engagement during COVID. Considering the sizable population of 200 undergraduates, Ethan opted for a conventional lecture approach and interactive large-group discussions to deliver core course materials. Conversely, Ethan's laboratory sessions leveraged smaller student groups of 20 students each, facilitated by Teaching Assistants, to encourage active participation and hands-on learning experiences. Ethan reported that his course incorporated a rich tapestry of instructional strategies to effectively engage students and promote a multifaceted learning experience:

> We talk about stuff and try to have a conversation as much as possible. I use videos, I use things called POGILs. We have laboratory settings. It is sort of a multi-prong, multi-sensory sort of approach...So, we try a lot of stuff. (Ethan, Interview 1)

Ethan noted the importance of using several methods as it kept students engaged and attentive while learning current information, which could be boring and challenging otherwise.

Charlotte described five reasons for using multiple instructional strategies. She believed in multiple pedagogies:

> I am a firm believer in multiple pedagogies, different techniques. There may be reading, there could be video lectures, there could be web links, there could be games, there could be in-class videos, small group exercises, large group exercises, discussions and sharing, triads, small group work, large group work, open discussions, and even some lectures. I try to keep the lectures a little tiny bit…But I really like a very mixed pedagogy. I try to avoid being a talking head. (Charlotte, Interview 1)

Charlotte explained that diversifying the sources of information engaged students in learning from their surroundings, “I think there are so many sources of knowledge or examples. And so especially in the technological era, you could go and find an interesting YouTube clip or even a corporate video...” (Charlotte, Interview 1). Third, she used multiple sources of information, “I think the other part too is acknowledging when there may be a better way of communicating that knowledge than what you have [otherwise], right? I am not the be-all and end-all of everything.” (Charlotte, Interview 1). Fourth, because she felt that, “It gets boring if you do not [use multiple sources of information]. It gets boring for me. If I start falling asleep, in my own class, it is definitely not a good situation.” (Charlotte, Interview 1). Fifth, she believed that today’s learners have shorter attention spans and a variety of instructional strategies keeps students engaged. She recalled a training experience from her corporate background, “One of the things she talked about was, most people have an attention span of about eight minutes. And once you go beyond that, they start to zone out” (Charlotte, Interview 1). After presenting her reasons for using multiple strategies, she emphasized her use of multiple strategies in her courses, by stating, “I don’t always stick to the eight minutes, but I’m always trying to think about how you break things up” (Charlotte, Interview 1).

Andriana advocated for the use of multiple strategies and reflected that due to COVID, certain instructional strategies were infeasible to maintain physical distancing to reduce the risk of spreading the virus. She focused more on the theoretical aspects of the music-making process and introduced various instructional strategies, such as pre-reading chapters and completing digitally supported exercises (such as Kahoot quizzes) to gauge students’ understanding of the assigned pre-reading. Prior to the COVID pandemic, this course focused primarily on participatory music making exercise, with some discussions on theoretical content. However, due

to the need to maintain physical distancing, she increased the emphasis on theoretical content. As noted by Andriana:

> Now we have a cap, we can only sing for 30 minutes. We cannot sing more than that, and we have to vacate the room. So, I usually retained the mini lecture part of my job, of my teaching. So maybe we will. Last week, we read a chapter of the book, and you know we just kind of like [learning about music], it did not even look like an ensemble. (Andriana, Interview 1)

Andriana discussed that typically ensemble would only include performance, therefore, the course did not feel like a "pure" ensemble but more of a blend of music ensemble and study about the culture in which the music was created. She presented a snapshot of how she interacted with the students, "So let's [discuss] some highlights of the reading [then] I would say, take out a little piece of paper, write down five things that you remember from your reading" (Andriana, Interview 1). She shared, "Some people read; some people didn't read." She then discussed the key points about the context in which Shenzin musical pieces was created (pseudonym used to protect participant's identity). After a discussion on the contextual details, Andriana presented a musical piece, she stated, "Let's listen to this example yeah that was an early example of Shenzin music…so we will do 25 minutes, 30 minutes of that" (Andriana, Interview 1). Subsequently, she ended the session by assessing students' knowledge of the musical piece and its context through "a quiz, usually it's Kahoot." (Andriana, Interview 1) Andriana's expressed that her course was "enriched" because of including exercises on understanding the context in which Shenzin music was created, in addition to focusing on the music composition. She primarily made this choice because of COVID pandemic, as she could not ask students to perform music for a longer period of time, to avoid the spread of the virus through aerosol particles.

In summary, all faculty used multiple approaches to engage students in the learning process through student interaction with the teacher (through conversation and discussions), content (through assigned readings, quizzes, activities, and collaborative projects such as music making), and with their peers (through peer discussion, group projects, etc.). Faculty engaged themselves and their students in the teaching and learning process and leveraged technology-supported instructional strategies (such as virtually presenting the content, lecture videos, responses to online activities on google doc, Slack messaging app to provide student with feedback, virtual emulations, virtual guest-speaker sessions, and virtual case investigations) to prevent the spread of COVID virus.

Personal factors such as faculty's prior training experiences, beliefs, preferences, and feelings influenced the choice of multiple strategies; for example, Charlotte recalled her experience from her corporate training background where she was told that adults' attention span is about eight minutes; therefore, she used multiple strategies in a session so that students' attention can be maintained throughout a session. Instructional and organizational factors such as class size and availability of support from teaching assistants also influenced the choices of instructional strategies. For example, Ethan primarily lectured in 200+ students classes, however, he was able to conduct interactive lab experiments and exercises with the help of Teaching Assistants. Moreover, faculty evaluated the feasibility of certain instructional strategies that they had used in the past, in the face of COVID pandemic, and selected those that were implementable. For example, Andriana increased her focus on the context in which music was created and added discussions, readings, and quizzes to engage students in learning about the context primarily because she could not engage students exclusively in music composition and practice, following Music Association guidelines to avoid the spread of COVID.

Student Learning Assessment

All faculty assessed student learning using multiple assessment strategies and provided feedback to the students. Three dimensions of assessment were discussed: types of assignments, multiplicity in assignments conducted during and at the end of the course, and partnership with students in designing student learning assessments.

Types of Assessments

Faculty discussed multiple assessments provided to the students. Examples included: group-based fieldwork in communities (Martin, Charlotte and Ruth), writing academic papers resulting from action research with community members (Ruth), concept mapping exercises to assess if students can connect different concepts and sub concepts (Rita and Martin), global strategy analysis of a business firm (Arjun), an op-ed article for a business magazine (Arjun), a personal history narrative (Ruth and Arjun), problem-solving exercises (Henry and Steven), content presentations (Ruth, Arjun), musical composition (Andriana), short quizzes (Andriana, Ethan, and Henry), and exams (Rita, Steven, and Ethan). Faculty used instructor-to-student and peer feedback provided through verbal facilitation and written notes on their assignments. The assessment types can be classified into two categories: (a) assignments without instructor support, and (b) assignments with continuous instructor support and facilitation.

Assessments without Instructor Support

The faculty designed assignments to assess students' competence using strategies such as quizzes with multiple-choice questions, concept maps, open-ended responses, and essay assignments. Support for such assignments was provided beforehand to students to ensure that they understood the concepts and could do the assignments on their own without support from the instructor. For example, Steven provided students with instructions in the classroom to solve

the problems in class, so that they were prepared to unpack the problem in the exam. Subsequently, in exams, he asked students to solve problems. Some of the problems mimicked the problems that students have solved in the class; others were modified to assess if the students could apply their learning to solve a "fresh" problem. Steven shared that when the problems were modified, students found it difficult to understand the nuances of the problem:

> I did talk about some of the labs, they're just doing what I put on slides, without going [using] through their brain. I have tried to force them to go through [use] their brain to think about this. So, in the exam, sometimes I trick the problem. When I trick this problem, they just fail. I mean, terribly. Yeah, so if I do not trick this, I mean something the few get it right, but if I trick it a little bit, then they just have no idea. So, if you understand [the problem], it does not matter how we trick the problem you should be able to learn [solve]. (Steven, Interview 2)

Steven explained by "trick[ing] the problem," he intended to "evaluate whether they fully understand [the problem]…without tricking, that is more of a repeating." He further reflected that he struggled to help students unpack the problem by understanding its key elements and solving it. He added, "So that is something I have been struggling [with]. I am sure most of professors are struggling with that. I mean you can spend a lot of time in the class and talk about the exercise, but then you will not have enough time to talk about the content, [it] is always [a struggle to] balance that" (Steven, Interview 2).

Assessments with continuous instructor support and facilitation

Assignments with continuous instructor support and facilitation mimicked faculty instructional methods and provided students with ongoing support as they completed their assignments. Faculty assessed students learning through field-based projects (Ruth and

Charlotte), lab-based and virtual experiments (Ethan and Steven), visual diagram (concept map or flow chart) (Martin and Rita), research proposals and papers (Martin and Ruth), programming exercises (Henry), and musical performance (Andriana). These strategies were used as instructional and assessment strategies and were discussed in the detailed in instructional strategies section. Faculty guided students through the process of doing an assignment by sharing content, facilitated them to find primary and secondary sources of information, and accommodated students by providing flexibility and class time to ask questions and resolve the issues that they faced in completing the assignments.

Henry assigned take-home problem sets to the students to improve their programming skills. He narrated, “we will have 39 assignments. 26 out of 36 are programming assignments to do in the course” (Henry, Interview 2). Ten assignments were about calculations and interpretations, “So that they're not just watching, they're actually doing things” (Henry, Interview 1). Henry provided ongoing support to students with the assignments. Prior to COVID, he used office hour sessions, in-person after class discussions, and Ask-Me-Anything Friday afternoon sessions to help students learn problem-solving. When these in-person sessions were not possible, he used a Slack channel, where students shared their questions regarding concepts taught, technology being used to solve problems, programming code, and sought feedback from the instructor on their initial program codes (Henry, Interview 1). Henry discussed the nature of student-student and student-instructor interactions on the Slack application:

> Over the course of the semester, there is about 4500 messages, which is about 330 messages a week…The messages include students asking mostly about the where to get the data from? How to analyze the data? What are the issues in the coding? There are few messages around the issues in installing the programming software at their machine

> and interpretation or correctness of results of calculation-based assignment. (Henry, Interview 2)

Henry explained this "on-the-ramp" support is provided because he "wants to win" and "win with all of them," implying that he wanted all the students to succeed by understanding the problems and learning how to solve them. He shared that if you were running a company and you had your employees, you would not test the employees; instead, you would help them, support them, and teach them so that they can reach optimal performance. Emulating an "on-the-job" environment, he offered constant guidance during programming assignments, to troubleshoot coding issues, so that students could focus on enhancing their problem-solving skills.

Martin used a similar approach to his research proposal assignment, where he engaged students in writing one element of the research proposal each week. These elements include research epistemology, problem statements, research aims, research methods, and ethical underpinnings. The students wrote and presented specific sections and were provided with iterative and extensive instructor and peer feedback. The students modified their drafts before the final submission of the research proposal. Martin called this strategy "workshopping the proposal." He narrated:

> And so, we met last night…we were doing the kind of empirical framework for their work. So, the historical, geographic background, study sites, that kind of stuff that we need to know for their research. And so, they workshop those, they had to have a draft and then workshop those with each other, get feedback [from peers and instructor]. We do a debrief. And that's kind of the way this part of the semester goes each week. (Martin, Interview 2)

Ongoing peer and instructor feedback on the elements of research proposal helped students develop and improve their proposals during the semester.

Assignments could be categorized into two types: (a) assignments completed by students in the absence of instructor support, and (b) assignments completed with constant instructor support and guidance. It was noted that students needed much more support in the assignments that depicted problems/projects that they would encounter in their careers such as community-based field work, music performance, experiments, authoring a research proposal or academic paper, and programming exercises. These assignments were dynamic because they could potentially assess knowledge, skills, and attitudes. However, assignments such as quizzes and essay assignments required less support and were limited to assessing knowledge.

Faculty's pre-set learning outcomes, approaches to learning, and beliefs regarding what type of evidence was required to assure students learning influenced the choice of their assignments. Steven believed that students should develop skills to solve unfamiliar questions related to the concept to ascertain that they have learned the concept. Therefore, he included "tricky" questions in the exams. Henry, amongst others, who provided ongoing and immediate feedback to students on the programming assignments, believed that students needed support to achieve the learning outcomes, and a one-shot exam at the end was not sufficient to develop the skills that they were teaching in their courses.

Faculty's beliefs and approaches to learning were reflected as they changed instructional mediums during the COVID pandemic. When COVID did not allow them to provide ongoing feedback to the students in a face-to-face setting, they "hunted" for the applications to provide support to the students. For examples, Henry replaced office-hour support with Slack application and Martin facilitated peer-workshopping of research proposal on Zoom.

Multiple Assessments – During and at the End of the Course.

All faculty reported using multiple assessments (quizzes, exams, written assignments, projects, and performances) during the course as well as at the end of the course. All faculty members explained that they structured the progression of the assignment with increasing difficulty levels targeted towards the instructional goals, so that students achieved their instructional goals as they completed the course assignments. All faculty provided multiple opportunities to students to show the evidence of their learning through multiple exams and quizzes, and small assignments progressing into projects and performances. Progressive assignments provided students with the opportunity to receive feedback from peers and faculty and improve their components or drafts iteratively before final submissions.

Charlotte's and Andriana's courses provide examples how multiple assignments were assembled in progressive fashion to help students do their assignments evidencing their learning overtime. Charlotte, in her enterprise risk management course, explained the process model of risk management and used quizzes to assess students' learning:

> Quite often I will run a pop quiz in week two or three or four, week six or something, where I will ask the first six questions or give me the six stages of the process model. I actually had one student who said, does it matter what order they're in? And I was like, yeah, it does...I do not care if you got them all up. [If] they are not in the right order. You do not get this. (Charlotte, Interview 1)

Quizzes helped her assess students' understanding of the theoretical concepts and provided her with an opportunity to provide feedback to consolidate students' understanding of the theoretical model before they went for field work. Charlotte designed a scaffolded assignment to ensure students could effectively apply the theoretical framework of enterprise risk management to real-

world scenarios. She presented a clear roadmap through comprehensive guidelines, followed by supporting students in identifying the practical steps of interview data collection, analysis, and synthesis. She provided feedback and support as students achieved various milestones of the field work. For example, she asked students to prepare an initial contract among team members and post it on the Blackboard, and when she found students drifted from their contracts, she would provide them feedback. She also prepared students for the field interviews by asking them to present the questions that they would use in the field interviews and provided feedback to augment their learning. Students worked in groups, identified the needs of local businesses, helped local business owners examine the risks associated with businesses, and collaboratively crafted a risk management plan with local business owners. She narrated, "Building upon theoretical understanding of the risk assessment process model, students use[d] actual tools and techniques associated with risk identification, risk measurement, [and] risk management in a variety of organizational and industry contexts" (Charlotte, Interview 1).

Fieldwork culminated in a final in-class presentation, fostering the application of theoretical models in the field, in alignment with course objectives. Charlotte shared, "They are live cases that students actually work on, and present back [to] each other...They have to learn the process model, learn the techniques." In their field-work projects, students "have to go out and ask questions, take that data, make sense of it, and share with us what they have learned about how real people manage risk" (Charlotte, Interview 1). Students chose a variety of business sites for their investigation, including "crime investigators, clean up organizations, water purification, eye specialists like laser eye surgery, lots of small restaurants, dog groomers, hair salons, you name it, wineries, and microbreweries." She emphasized, "There's something to be learned from all of them" (Charlotte, Interview 1).

Charlotte explained the concept of the fieldwork assignment came from her heart. “At heart, I am a researcher. I know some of my colleagues probably do not. I am not out there getting grant money. But I am a researcher [and] problem solver at heart,” she explained (Charlotte, Interview 1). She added that her experience of working in industry also informed her choice of fieldwork, “I also come from [industry]. So, I spent a lot of years having to solve problems. I was in the field, I was dealing with things and having to do my own investigation[s]…having to solve problems” (Charlotte, Interview 1). She further recalled that when she started teaching this course, she used a casebook, where “all these mega corporations, Chase Manhattan, the Unit corporation global oil and gas extraction company, and Microsoft” were discussed, however, she noted, “I think it's like 70-80% of our GDP comes from small enterprises less than 100 people.” She then emphasized that she valued the study of risk management in local businesses and therefore started authoring a casebook featuring these risk management in local businesses. She explained:

> That is really great that you’re studying Microsoft or Google or the JP Morgan Chase. But how does that help you understand how your local restaurant is staying in business or why it failed? How does that help you understand if you are in a not-for-profit, what you need to do, to be successful? How does it help you understand that Mom and Pop shop, where it is a husband and wife and they are getting older?…I am working on a book…for the undergrads, it will have enough vignettes to bring the material to life for them…I am planning to use vignettes that I build from some of the projects my students have done. (Charlotte, Interview 1).

Thus, scaffolded assignments that Charlotte administered with students and provided feedback became a source of information for her casebook. The casebook project reflected the importance

that Charlotte attached to examination of risks faced by small businesses operating locally in the communities.

Andriana added another dimension to the design of the scaffolded assignments. She used Kahoot quizzes for knowledge testing and peer-assessments to assess students' musical skills. She explained that she negotiated the assignment criteria with students to reflect the culture of making traditional music in the Shenzin (pseudonym) region. She exemplified that when she was teaching Western European music, she used a note scale to grade students' proficiency as they performed. However, when students performed Shenzin music, she negotiated the choice of song and used peer assessment, where students were asked to provide verbal feedback to peers, to assess the compositions of Shenzin music. Verbal negotiation of the choice of songs and quality of overall musical piece between students and faculty reflects the ethos of Shenzin music and culture. Andriana noted:

> The negotiation or student-centered [activities] are really based on critical pedagogy and culturally responsive teaching, and it is not related only to [this], because it is [it reflects] the type of music I teach. When I used to teach choir, I used the same kinds of things. For example, one of the things that we do in choir is we do a note check to see if students are singing in the right notes because now there is a right and wrong. It is written music, and you have to sing it. (Andriana, Interview 4)

Andriana anchored her design of final performance assignment to reflect music-making in traditional Shenzin cultures. Because her assignment design was also inspired by reading educational literature on critical pedagogy and culturally responsive strategy, she changed her assessment strategy. She reflected that she had previously decided the criteria and assessed the students based on her criteria. Later she realized, "I figured out there was a lot more powerful if I

gave every person in the choir a grading sheet or rubric, and they listened to the students, and they graded [their peers]" (Andriana, Interview 4). She emphasized that her practice of negotiating songs for final performance and self- and peer- assessments is also rooted in critical and student-centered pedagogy, where instructor is not the sole authority to decide the type and quality of the assessed product; instead, all members in a classroom community have equal weight in decision-making.

Faculty used a variety of assessment strategies, at various points in the course to gauge and develop students' understanding and skills and provide feedback to the students. None of the faculty members administered any assignments before implementation of instruction to diagnose students' existing levels of competence. Faculty noted that formative feedback and structured support helped students to improve their performance, over time. Faculty members shared that their readings in educational theory, personal values of inquiry, shared-decision-making value, industry experience, and career aspirations (such as writing a casebook) shaped their assignment design. In addition, faculty used small-scale and scaffolded assignments because these assignments allowed faculty to provide iterative feedback to enhance students' learning.

Faculty acknowledged the pedagogical value in designing scaffolded assignments but also highlighted that key challenges in designing these assignments including the extensive time and resources needed to design and grade these assignments. Charlotte mentioned, "As much as I enjoy reading the students' work, and this is on me, I still really hate grading" (Charlotte Interview 3).

Henry discussed that the university should not expect junior faculty to design multi-fold assignments and provide instantaneous feedback because it would consume their time, negatively affecting their research output and work-life balance. Henry shared that he could afford time and

energy because of his tenured status in the organization and lesser familial responsibilities, unlike junior faculty who need to meet tenure requirements, while often taking care of young kids. These reflections point to difficulties in providing immediate feedback and grading multi-fold assignments in the face of competing priorities that organizational promotion and tenure structures and family life could impose on individual faculty members.

Partnering with Students in Deciding Assessments.

Andriana, Arjun, Ruth, and Martin reported partnering with students in deciding types of assessments, however, the extent to which they engaged students in decision-making varied across courses. These faculty reported that partnership and negotiation with students around assessment choices was not particular to COVID, rather they considered it as a best practice and do so in every semester. Andriana chose the final performance songs based on students' input, participation, and feedback. She wanted students and herself to prepare a performance "that we [were] all proud of" (Andriana, interview 4). She explained that she organized a performance at community church as final assessment:

> So, this semester, [it is the] second week of classes. All the pieces were distributed. I asked feedback for them. I asked them to listen to a number of pieces and to figure out which ones they like best. So, we could perform, they [students] had a voice, an agency, a choice [to select the music piece that they are interested to play]. And you know they looked at what I proposed to them, and they said, this piece seems a little too hard…Could you find another piece? So, I went back to my drawing boards, and I looked for other pieces, and I found another piece that I thought was going to work for them. (Andriana, Interview 4)

Andriana decided on the song with the students' consensus and helped them prepare the song throughout the semesters. prior to COVID and during COVID. She provided students with the agency to choose the song, noted that the students were more likely to be interested in practicing the song, and envisaged that they would be successful in the final presentation. She added, "By the end of the course, by the time of the concert, they were better prepared, because they rehearsed a lot more" (Andriana, Interview 4). She discussed, "One of the biggest problems that I think about assessment in general in education is that we think one size fits all." She narrated another example from her course, where she provided students with a choice to show their learning: "I said you need to show me that you understand what Capoeira [Brazilian style of martial arts dance] is and students can then choose [what works for them]. There were parameters that you need to demonstrate that you understand the style." She further added an example from her previous semester, that one student chose to draft a poem for this assessment task, and shared, "What we are doing this semester is we have taken her poem and setting a music that goes with it" (Andriana, Interview 2).

In the earlier course offering, prior to COVID, Arjun administered a course-feedback form to receive students' suggestions regarding changes in instruction. The students requested the inclusion of op-ed articles as a potential choice that they could use to provide evidence for their learning. Subsequently, in this iteration of the course, Arjun included an op-ed article on "globalization—your personal view," as an assignment choice in the course, along with the two other assignment choices: narrative of your (and/or your family's) global journey; or global strategy assessment of an employer/firm (excluding Amazon, Boeing, and P&G) of interest to you. Arjun explained students could select one of the three options:

> So, they [students] can pick what is best for them. I am interested in history and genetics, but you may not be. Because I like something, I cannot make everyone do that, right? I think one-third of the classroom will choose one option, right? Some kids are not invested in [the strategy assessment]. So, for them they can do the op-ed. It is the simplest option. Some kids are like, I desperately wanted to work for Deloitte or some firm they pick. So, then they can look at Deloitte's globalization. So, when they go for the job interview, they know everything about that global strategy. That is sort of help [them] in the job market. So, each one can pick what interests them. (Arjun, Interview 2)

Arjun reflected the changes in the current offering of the course, during COVID, where students had a choice between three assessments. He shared that students made choices based on how they preferred to exhibit their learning about globalization. Ruth in her public health ethics course, allowed students to provide evidence of their learning, in a format that they preferred, especially when students could not complete the prescribed assessment task. She recalled an incident of allowing one student to alternate the prescribed assessment task with mutually agreed upon assessment task:

> There's another master's student in social work. And she took my reproductive health class, last semester. But she was due to give birth in the middle of the class, and after she attended the first few classes, she had to be, I think, on bed rest or something and she is older. And so, I was worried about her pregnancy. And I said this is not a good time for you to be writing a term paper. So why do not you do just make a PowerPoint presentation and tell me in each case what you went through during that [pregnancy] phase and what you would like somebody else to know. (Ruth, Interview 4)

Ruth recalled that even prior to COVID pandemic students' personal circumstances and showed flexibility by allowing the student to present their learning on a topic and format of their choice and convenience. The student selected to discuss her experiences of pregnancy and related them to public health ethics and presented a slide-deck, instead of writing a term paper. Ruth emphasized that she could change the assignment given the individual circumstances of the student. She stated, "When people are struggling, like that's five weeks of pregnancy, I believe I have the right to change the assignment. I can, and I do. But I try to make it something that the person can learn from" (Ruth, Interview 4). Ruth shared that she continued her practice of being considerate of the students' lives during COVID, and made adjustments in assignment deadlines and formats, upon students 'requests. Some faculty members (Andriana, Arjun, Ruth, and Martin) provided choices to the students regarding the assessments from the onset, others provided choices based on students' circumstances.

Henry, Rita, Ethan, and Steven's course assessments were regimented in the course syllabi and the choice was not given to students regarding assignment types pre- and during COVID semesters:

> The real assessment is usually going to be in the exam, in the quiz. Yeah, so that is why I do not ask a lot of questions in the lab, it is more about the experience. So, they learn the theory. Now they have to go through this [experience], and hopefully when they go through this, they can connect the theory with this. And then the quiz and exam are for evaluating whether they fully understand that or not. (Steven, Interview 2)

Steven anticipated that students would be able to make theory and practice connections because of learning experiences that they went through and the assignments they were expected to

complete. These choices were made by faculty themselves necessitating students to show evidence of learning.

Certain faculty members offered students the freedom to choose their assignment options, whereas others did not provide such flexibility. Those who allowed students to determine their assignment type were influenced by factors such as student feedback from previous courses, consideration of the course's collaborative nature (e.g., music-making activities), personal values to accommodate and be flexible, pedagogical value, and awareness of challenges related to student health.

Informal Support

Faculty (Henry, Ruth, Charlotte, Rita, Arjun, and Martin) discussed the ways in which they provided informal support to students beyond the in-class session timings. These faculty discussed that they have informal support for the students through office hours even pre-COVID, however, they switched the support to online modes to accommodate students during COVID.

Prior to COVID, Henry organized a Friday session called “Ask Me Anything” (AMA) sessions for students enrolled in his courses. AMA sessions had an informal structure students brought questions or problems related to the topic of their interest in economics. He described how AMA sessions were conducted:

> So, I sit in a room with a whiteboard, I just say, come and ask me anything…When people do not have a burning question, they want to ask, I say, look, we can play stump the chump. You guys can make up a problem and watch me do it… The reason [this] is valuable is you are going to see; [I] screw it up. I am going to make mistakes. [I tell them to] be careful when you write this down [in your notes] because I am going to probably say and do some[thing] that is wrong. But the valuable part is you will see me

> actually checking and figuring out when I did something wrong…People in my classes will come on Friday afternoons and sit in a room and do economics on whiteboards. Isn't that awesome? That is awesome. (Henry, Interview 1)

Henry deconstructed the problem and demonstrated to students how to solve the problems. In one conversation, he asked me if I have taught Math in the past and used examples from Math education to explain how important it is for students studying Math and Economics to observe how to deconstruct the problem, make a mistake, and learn from their mistakes: "The thing that's important about math [and economics] is detecting when you made a mistake. Real math [and economics] is not about flawlessly doing things right the first time, by divine intervention" (Henry, Interview 1). He emphasized that traditional classrooms might not provide the spaces for failure, however, it is necessary for students to learn how to solve unknown problems and learn from their mistakes. "When students watch you doing math in class, they would never see you make a mistake. When you have the example worked out in class or you are teaching something, you know the answer in advance," Henry added. He clarified why he did not embed these AMA sessions in regular classes, "I do not play stump the chump in my regular mainstream class. Because there is a risk that the problem will go way off the rails. Then you have a bunch of people who end up lost in floundering and confused." He emphasized he would not suggest newer faculty or Teaching Assistants to organize such sessions, because their reputation at the institution might be at stake when they appear "confused and lost" in solving problems. He added, "I can do this because I've been teaching for a long time" (Henry, Interview 1). The primary objective of these sessions was to complement the regular course, demonstrate the problem-decoding and problem-solving process, enhance understanding of the subject content, and strengthen the relationship with the instructor. He emphasized the importance of AMA

sessions; however, he also discussed that due to additional stress during COVID, he could not facilitate these sessions.

Henry could not offer in-person office hours and in-person AMA sessions during COVID, and therefore created a Slack channel for his policy analysis course. In the Slack channel, students asked questions from instructor and peers and sought feedback on their programing assignments. Henry stated that Slack channel worked for him because he would give very specific assignments with detailed instruction about how they should do their programming assignments. He emphasized, "Instead of saying, just please write a program that does the following thing, I would tell them in detail how they should write it and how they should name the variables and stuff like that." He designed the exercises strategically to reduce time spent in providing feedback and debugging students' code. He narrated:

> So that was on purpose, right?…I set it up specifically so that I can quickly give them feedback. And that worked very well until they got into the bigger questions like with their projects, like why, what do I do when the data has this funny characteristic? (Henry, Interview 2)

Henry stated that he designed assignments and hunted for a software that could help him provide coding related support and feedback to the students. This depicts his intentionality in designing informal student support system. Henry acknowledged setting up the system "specifically" to provide quick feedback, indicating a deliberate efforts to assist students. Employing consistent naming conventions for variables further aided him in quickly and efficiently identifying the bugs.

Rita, Ruth, Charlotte, Arjun, and Henry discussed that they encouraged students to engage in discussions during office hours prior to and during COVID, especially if they were struggling

with a particular concept taught in the course. Rita recalled a case of one of her past students who struggled with the course and came to office hours to get personalized support, “She was just drowning, and she managed to get the C. She came to my office hours...She worked really, really hard.” Rita added that in the advanced version of that course, offered next semester, “She got an A in the course, and I wrote letters for her to get into her internship program” (Rita, Interview 1). Similarly, Ruth discussed how she allowed students to reach out to her to seek help in writing papers, “They can show me their paper as many times as they want to, before the paper is posted. And I will help them do better.” She emphasized that students from other departments who joined her course would sometimes have no background in researching library sources and writing papers, therefore, she provided due support.

In addition to providing support in understanding the content, Charlotte and Arjun capitalized office-hour sessions to provide emotional support and helped them to transition to university life during COVID. Charlotte discussed, “I have never spent so much time in office hours. With my virtual Spring class, so much time and extra hours [were spent] with students in individual meetings, just listening to them, how upset they were, and how stressed they were” (Charlotte, Interview 1). Arjun emphasized that freshmen students joined university from high school, during COVID, and were rapidly put into online classes without understanding how to learn online and manage their studies. He narrated, “Time management is huge important skill thing that they lack…So, I can see that they are struggling because suddenly you have lot of reading and work…[and] there is no parental helicopter.” Arjun expressed his concern that many students were prioritizing involvement in on-campus activities over dedicated study time. He emphasized the need for targeted guidance for these students:

> [They would say] I will do this club and that club...you have to be with them and tell them that well you can do all those things, but it's better to study one hour before that class or to study before than to study 8 hours before the exam. (Arjun, Interview 2)

Thus, learning during COVID was especially challenging for first year students because they were adjusting to university life. As students were acclimatizing themselves to learn online, some of their faculty members were also learning how to teach online.

Two faculty members [names redacted to protect identity] also provided additional accommodation for the students under their dissertation supervision, such as allowing them to audit the master's course to enhance their research and programming skills. Of the two faculty members, one granted permission to his doctoral student from a different university to participate and audit his master's course. Since these courses were offered online because of COVID, student from another university could join virtually. He explained that this student was also taking the same course at her university, but her university's course did not cover some key ideas that he would cover in his class and highlighted that she could benefit from interaction with him and the peers. He stated, "She has to write a final proposal, so she'll get comments from the professor there and she'll get comments back from me on the same assignment." Another faculty member was supporting his doctoral student by allowing them to audit a master's course, where the student could learn specific skills needed for his research. Nonetheless, it was interesting that these two faculty members named COVID as an opportunity to engage their doctoral students in auditing their courses, thus helping them sharpen their specific skills.

Faculty found that out-of-class support (such as Slack messaging, auditing specific classes, and consultations with students during office hours) supplemented the in-class support and nurtured a one-to-one informal student-faculty relationship. While providing academic support

during office hours was in their duties, they went miles ahead to provide support for students to manage their personal and university lives. When asked if such support was unique to the COVID pandemic, they recalled examples from the past (non-COVID times) in which they had gone leaps and bounds to support their students, however, they stated that due to additional health related issues and financial and social stress, faculty made themselves more available to students and provided emotional support and flexibility during COVID.

Conclusion

The study discussed faculty's instructional decisions made and the factors that influenced these instructional decisions. These decisions included: course design, instructional goals, selection of concepts, instructional strategies, assessment strategies, and informal support provided to the students. Faculty retained their instructional goals despite of being in a public health crisis. The course design and selection of concepts of foundational and skill-based courses (such as chemistry and biochemistry) were influenced by personal, instructional, organizational, and societal factors, however, the COVID pandemic-related challenges and alternate instructional mediums did not influence these decisions. However, the course design and content selection in conceptual and society related courses (such as managing in a global setting, enterprise risk management for information professionals, and public health ethics) were influenced by the ongoing pandemic, and faculty reported included readings and discussions specific to the pandemic and related challenges. Andriana's music ensemble course was an exception, where she used dynamic approach to designing a skill-based course, and the discussion on COVID was not embedded in the content. Moreover, instructional strategies, assessment strategies, and informal support provided to the students were affected by all five factors, including: personal, instructional, organizational, societal, and COVID related factors.

Faculty described the course design process using various elements and discussed sequencing of these elements. Unanimously, they made decisions regarding the instructional goals; content of the course; ways in which the student interacted with the content, teachers, peers (instructional strategies); assignments; and informal support to students. Faculty's instructional decisions were influenced by personal factors (such as the approach to teaching and learning, values, education, and experience), instructional factors (such as effectiveness, student background, student participation, student feedback to instructors, student-teacher relationships, student attendance, and curriculum), organizational (resources available teaching awards and monetary allowance, peers, teaching assistants, faculty development activities, promotion, and reward structure), societal factors (society, job market, and culture and politics), and pandemic-related factors (health issues, economic crises, and challenges in adapting the instruction to health situations).

Chapter 5 presents a grounded theory model of instructional decision-making and influencing factors, discusses the findings considering other studies, presents the implications of these findings, and identifies recommendations for practice and future research.

Chapter Five

Discussion

Chapter 5 summarizes nine award-winning faculty members' instructional decisions and the factors that influenced their instructional decisions. The chapter presents a grounded theory model of instructional decisions generated by analyzing the faculty interviews and their respective course syllabi. The grounded theory model describes the faculty's instructional decisions as they designed and taught their courses along with the factors that influenced their decisions. The chapter discusses three insights that were generated from the study: (a) instructional decisions for designing a course involved an experimental, iterative, contextual, and political interplay of various personal and external factors; (b) the faculty's personal agency and characteristics influenced their decisions; and (c) adaptation of instructional decisions to instructional and societal circumstances is a complex process necessitating systemic organizational and instructional support. The chapter concludes with recommendations for university administration and faculty development, study limitations, and implications for future work.

Summary of Findings

The current study investigated two research questions: What instructional decisions did award-winning, higher-education faculty make during the COVID pandemic? What factors influenced the instructional decisions of higher-education faculty members? The study's findings indicate that the participating nine faculty made various choices, including course design, instructional goals, selection of topics, instructional strategies, and student learning assessments, in designing their courses. These choices were influenced by personal, instructional, organizational, societal, and pandemic-related factors.

Instructional Decisions

Instructional decisions were the choices made by faculty before, during, and after their respective course's implementation. Instructional choices are categorized by when they are made: pre-instruction decisions, during instruction decisions, and post-instructional decisions (Borko, & Shavelson, 1990; Gagne & Briggs, 1974). Borko and Shavelson (1990) and Gagne and Briggs (1974) identified that most instructional decisions are made before the delivery of instruction (pre-instructional decisions), modified during implementation, and reflected on after the implementation of instruction for the next iteration. In this study, all faculty who participated in the study made pre-instruction decisions to plan the instruction and reflected them in their respective syllabi. These decisions were adapted and modified during the implementation of instruction to accommodate personal, instructional, organizational, and COVID-related factors (in-the-moment instructional decisions).

All faculty members in this study reflected on the instruction's implementation and received student feedback to make choices for the next iteration of the course (post-instructional decisions). Two faculty members (Charlotte and Andriana) discussed the need to build transparency and involve students in making changes in the pre-instructional decisions described in the syllabi. Post-instructional decisions were not part of the study because the researcher followed the faculty members only for one semester, given the faculty's time constraints and the stressful situations they faced during COVID. The types of pre- and in-the-moment discussions faculty made included course design, instructional goals, selection of content, instructional strategies, student learning assessment, and informal support. A summary of instructional decisions is presented next.

Course Design

In the current study, all faculty members designed a 16-week course delivered through the university course management system. Seven faculty members designed their course from scratch and two faculty members redesigned most of their course. Faculty members had agency to re/design their courses, taught during the study period, because of their tenured status. Faculty course design processes coalesced into two approaches, linear and dynamic.

All faculty documented the pre-instruction choices in their respective course syllabi. Five faculty members (Martin, Henry, Ethan, Rita, and Steven) employed a linear design process and made minor changes to pre-instruction choices based on students' interactions with materials, student performance, and global events. In contrast, four faculty (Ruth, Charlotte, Arjun, and Andriana) employed an iterative and dynamic approach and made major modifications to pre-implementation choices during the course. Modifications in dynamic design process included addition of content (drawn from news and current events related to the COVID pandemic), change in instructional strategies (exploration and use of digital tools that meet students' needs considering the changing environment of pandemic), change in assignments to respond to students' needs (such as request for flexibility in assignment format and deadlines) during COVID.

Faculty's course design conceptualizations were different from each other, however, all faculty members deliberated on the learning outcomes, selection of concepts taught, instructional strategies, resources, and student learning assessment and provision of feedback (as advocated by instructional design models (Dick, 1996; Dick et al. 2005; Gerlach et al., 1980; and Tripp and Bichelmeyer, 1990). Notice that steps such as analysis of current learners' needs and entering behaviors were not discussed, however, the analysis of learners' needs and skills are advocated

as a primary step in the instructional design models (Dick, 1996; Dick et al. 2005; Gerlach et al., 1980; and Tripp and Bichelmeyer, 1990). Instead of analyzing their current students' needs, faculty relied primarily on their conception of what learners would need in future to function better in their careers and society. This is in alignment with the recommendations made by Kenny et. al. (2005), Rowland (1992) and Visscher-Voerman & Gustafson, 2004) suggesting that contextual constraints might or might not allow designers to follow the models step-by-step and in a comprehensive way, therefore, designers might skip or modify the stages, given the circumstances in the context. Stefaniak et. al. (2022) underscored that many of these prescriptive instructional design models describe how designers engage in meaning-making within a situated context; however, they do not highlight practical choices that designers make to coordinate contextual factors in the environment.

It was interesting to note that none of the participating faculty members referenced the prescriptive step-by-step process to design instruction, as proposed by some instructional design models such as Dick and Carey's model and Gerlach and Ely's model (Dick et. al., 2005; Gerlach et. al., 1980). Faculty pointed out that they were not trained in instructional design models. Instead, all faculty tried and tested various approaches to the course design process, continued what worked for them during the courses they had taught, and designed their courses accordingly using some of the similar elements advocated by the design models. Similar elements included setting objectives and outcomes, specification and organization of content, determination of instructional strategies along with the time and space, selection of resources, evaluation of performance, and analysis of students' feedback (Gerlach et. al, 1980). Faculty did not mention doing a comprehensive analysis of their learners' needs prior to or during COVID, rather they relied on what they knew students would need to work as a professional in their

respective disciplines. Faculty members who followed linear design made minor adjustments in the ongoing delivery of the course, however, those who used iterative process made major changes during the implementation of the course to adjust to the ongoing circumstances to accommodate the learners and contextual circumstances, such as including content related to the economic and health crises during pandemic.

All faculty who participated in this study primarily learned their respective course design processes through trial and error, and were not trained in prescriptive instructional design models, and therefore they were not using ID models. Different courses have different learning goals and were affected by the context in which they were taught; therefore, they were designed differently. All faculty made in-the-moment decisions and adapted to the instruction based on a rapidly changing instructional context during COVID and emerging circumstances such as student absenteeism, lack of student participation, and lack of resources. Faculty members' iterative approaches mirrored the essence of rapid design decision-making, such as the Tripp and Bichelmeyer's (1990) model of design, because they made varied changes in instruction during the implementation of instruction based on their observations in instructional, social, and societal contexts. A similar approach is advocated by Stefaniak, et al (2021) in her framework for instructional decision-making, where they underscore the important influence of external (instructional goals, contextual factors such as availability of resources, time, and human resources) and internal factors (such as approach to design and individual values) on instructional design. Their reasons behind the course design process reflected their prior knowledge, experience, beliefs, and values (narrative based reasoning), personal identity characteristics (identity-based reasoning), and their personal values (value-based reasoning). The faculty's personal experience of learning to design instruction through trial and error, content of

the courses, and the "messy" nature of design and implementation in real-life contexts resulted in the adaptation of the course design sequence. Based on their narrative based, identity-based, and value-based justifications, their approaches to course design decisions were identified "naturalistic approaches" rather than "normative approaches." This is because, normative approaches are typically justified using utility, value, benefit, and risk assessment (see Jonassen, 2012 and Kahneman & Klein, 2009 for detailed distinction between normative and naturalistic approaches to decision-making). Instead, faculty used their personal experiences and values to justify their instructional decisions.

It was a unique learning that, foundational and skills-based courses taught by Martin, Henry, Ethan, Rita, and Steven followed a linear design process, and made minor modifications. However, conceptual, and social science courses taught by Ruth, Charlotte, and Arjun followed a dynamic design process—and were more adaptive to ongoing circumstances in the environment; except in case of Andriana who taught a foundational and skill-based course while following an iterative design process. Andriana's music education course fell in the arts domain which provided her flexibility to use iterative design process, while building students' musical skills. Drawing upon bounded rationality model (Simon, 1972), a recent theoretical paper by Stefaniak et. al. (2022) advocates for making design decisions responding to the environmental factors (such as instructional resources, availability of time and resources). However, it is unknown if the dynamic approach to the design of a course is applicable for all content areas. The patterns noticed in course design processes (linear vs dynamic) of different faculty members teaching varied disciplinary content areas, raised a question for further research: How does the type of approach used for course design (linear vs dynamic) influence the content taught?

Instructional Goals

All faculty in this study designed their course goals to positively impact the students' professional and personal lives. Andriana, Arjun, Charlotte, Martin, Ethan, Henry, Steven, and Ruth designed their courses to empower students by equipping them with in-demand skills for their careers. In addition, faculty (Ruth, Martin, and Andriana) aimed at fostering a powerful sense of self and belonging in their communities. To achieve these instructional goals, all faculty decided on specific learning objectives that reflected selected content topics, instructional strategies, and assessments. For example, to improve students' understanding of the real-life applications of the content, faculty used case studies (Charlotte, Arjun, and Ruth), service-learning projects (Charlotte and Ruth), and guest lectures (Arjun and Steven). These instructional experiences are expected to foster holistic learning to prepare students for success in their personal and professional lives. The faculty's goals transcended the confines of the specific course they were teaching at the time of the interview, incorporating a broader vision of empowering students to improve their personal and professional choices. These two aspirations influenced faculty members' teaching across courses and helped them craft specific and course-tailored objectives that reflected these aspirations.

Changing circumstances during COVID did not influence the instructional goals of any courses taught by faculty members who participated in this study. Similar findings were noted by the Bartolic et al. (2021) where 83.3% of the instructors reported not changing their learning objectives for their courses (n=309) and shared that they were able to accomplish the broader objectives of the course. This study observed immediate effects of COVID in higher education at eight colleges and universities, across four different continents. Faculty deliberated that they did not change the goals to ensure that the purpose of the course is intact and other course elements (such as instructional strategies and assignments) are adjusted to ensure the achievement of the

instructional goals even during times of disruption (Bartolic et al., 2021). However, in other studies faculty have reported to update the program expectations along with testing and graduation requirements to adjust for the uncertainty in the environment (Delamarter & Ewart, 2020). For example, student-teachers in the program had to participate in an internship program where they design and deliver instruction and film their lessons, however, these requirements were removed for graduation because students could not arrange for internships, resulting in additional stress during an ongoing pandemic situation (Delamarter & Ewart, 2020). Faculty who took part in this dissertation study maintained their learning outcomes, similar to majority of faculty members who participated in Bartolic et al. (2021) study. Bartolic et al. (2021) reported that majority of faculty kept their learning goals intact to direct the course of activities and assessments during the course delivery. Different faculty members faced different circumstances and were able to hold on to or modify the course learning outcomes given their circumstances and individual priorities. Searching and using alternatives for achieving the learning outcomes, depict faculty's expertise in the content and pedagogy, however, in some practice based disciplines, for example, nursing and emergency medicine, learners might not attain the learning goals when not provided with practice with "real" patients.

Selection of Content

The faculty members' content selection and underlying reasonings presented in chapter 4 revealed that the content selection was a "political" process. Faculty's individual preferences, biases, predispositions, beliefs, values, and expertise influenced their selection of content topics and instructional materials (videos and readings) used in the courses. Examples included Martin and Andriana included diverse voices and perspectives in selecting instructional resources, Ethan and Arjun considered financial accessibility of instructional materials, and Ruth and Steven

demonstrated concerns for their students to have a comprehensive understanding of their discipline. However they were not satisfied with the available textbooks in the market, therefore authored textbooks and casebooks for their students.

Moreover, major agreements in the fields, accreditation requirements, and licensing requirements in foundational and skill-based courses also influenced faculty's content related choices. For example, Ethan's chemistry and Rita's biochemistry courses, were "traditional" sciences and there were major agreements in the disciplinary fields as to what topics needs to be included in these courses. These major agreements influenced Ethan's and Rita's content choices for their courses. Moreover, faculty teaching courses in current and emerging fields had greater autonomy in selecting course content. Examples include Steven's Computer Security course and Andriana's Shenzin Ensemble course. Rita, Martin, Henry, Steven, and Ethan, who taught the skill-based courses, shared that they front-loaded the content topics and made rare modifications to the topics and instructional materials during the course implementation. In contrast, Ruth, Charlotte, Andriana, and Arjun's courses were more conceptual and in newer fields of study, which allowed them to make modifications to accommodate students' interests and included global events. Changing circumstances during COVID did not inform selection of content topics and instructional materials (videos and readings) in courses that were designed using a linear approach and covered foundational and skill-based content. However, news pieces related to COVID pandemic (such as financial crises, health crises, and global impact of pandemic) were added to the courses that were designed using dynamic process and covered society related content. Galustyan et al. (2024) examined changes in the engineering curriculum during COVID pandemic and found that faculty examined the market needs during COVID. Faculty in their study reported updating engineering curriculum so that future engineers are prepared as they

work in the industries post-COVID. Cassum et al. (2024) and Rizvi et al (2022) conducted studies in nursing schools and identified that most faculty members preserved the content topics in their syllabi for the theoretical courses. However, some faculty members who taught clinical courses replaced the in-person clinical experience with adding theoretical components in courses, and others used e-simulations and other digital pedagogies to complete their topics. However, in all the studies cited above, the course design process of the faculty members were not reported. Therefore, this dissertation study adds an interesting dimension for researchers to explore the extent to which the course design process and content area influences the selection and modification of content, especially in emergency situations.

Instructional Strategies

Faculty's instructional strategies included the presentation of content in many ways (all faculty), guest lectures (Martin, Ruth, Ethan, and Arjun) featuring working professionals, alumni, and community members, field-based experience (Martin, Ruth, Charlotte, and Andriana), lab-based and virtual experiments (Ethan, Rita, and Steven), and exercises (Henry, Rita, Martin, Steven, and Ruth). Zoom video-conferencing software was used by all faculty members during online and hybrid sessions, however, in Spring 2022 semester faculty did not record their classes.

All faculty adapted their instructional strategies to achieve instructional goals and present in online, hybrid, and face-to-face instructional mediums, as per the university guidelines, in respective semesters. The COVID pandemic induced change in instructional mediums influenced faculty's instructional strategies. For example, faculty could no longer present content to the students in a face-to-face setting, therefore they had to feature the presentation online and engage students in online discussions regarding content. All of them who taught in online and hybrid

mediums reported using Zoom video-conferencing software to teach their classes synchronously. Like my study, other studies on instructional changes during COVID noted the rampant use of video conferencing software such as Zoom, MS Teams, and Google Classroom. Stecula and Wolniak (2022) surveyed students and found that there was a reduced the necessity to travel back and forth to school, improved the possibility to learn from students' home countries, saving time and financial resources, increasing convenience, limiting the spread of the COVID, and ease of access to materials. However, students reported lack of contact with teacher and colleagues, necessity to purchase additional materials (such as laptops, smartphone, headphones, microphones), low quality of e-materials, and reduced motivation to learn (Stecula, & Wolniak, 2022; Zhu et al., 2021) when taking courses through synchronous online platforms.

Faculty presented content with instructional video with instructor's presence, annotation of slides using Wacom and OneNote, and YouTube videos. To replace swhite/blackboards, faculty in my study annotated their One-note pages using Wacom software. Similarly, studies found that faculty annotated their presentation materials using PowerPoint or digital whiteboards to emulate face-to-face physical classrooms (e.g., Chan et al., 2020; Dietrich et al., 2020; Xiao et al., 2020). Increased use of interactive digital tools such as Nearpod, Padlet, online polling, and breakout room discussions was also reported (e.g., Ali et al., 2020; Gomez et al., 2020).

Four faculty members in this study reported using guest speaker session pre-COVID, and three individuals replaced in-person guest speaker sessions with virtual guest speaker sessions. Meanwhile, one faculty excluded guest speaker session considering health-related issues and work overload during COVID. Use of household materials to conduct chemistry experiments at home and remotely accessing university computer to engage in virtual labs experience for computer security classes were alternate ways to conduct lab experiments. Community visits

were replaced with online guest speaker sessions and virtual field-projects by two faculty members, and one faculty member continued with in-person field-visits with social distancing protocols. Similarly, other studies reported faculty changed their instructional strategies considering the increased risks of COVID spread and used online guest lectures, live skill demonstration sessions, video recordings of field trips, and conceptual application exercises in replacement of field-based experience (Chan et al., 2020; de Luca et al., 2021; Dietrich et al., 2020; Dodson & Blinn, 2021; Garcia-Alberti et al., 2021; Gomez et al., 2020; Xiao et al., 2020). Similarly, in two studies nursing faculty reported conducting virtual patient simulations to replace in-person patient simulations. However, some nursing faculty were not able to teach clinical and in-field-based components via virtual means, because of the nature of the content they taught; these faculty reported replacing the clinical experience with addition of theoretical content in the course (Rizvi, et. al., 2022; Cassum, et al., 2024). Some studies also reported faculty members taught field-based lessons using alternative settings such as public parks and replaced lab experiences with creating lab experiments using house-hold items (Dodson & Blinn, 2021; Gerhart et al., 2021; Palmer et al., 2021). Thus, faculty members across different universities modified their instructional strategies to continue instruction during COVID. While these changes were well-studied, it was not examined what informed these changes, other than changing circumstances due to COVID pandemic.

This study found that faculty's choices of instructional strategies were informed by their instructional principles, the content they taught, and personal and social factors such as students' interests, current events in society, students' questions, and stated interests. The selection of instructional strategies was guided by the faculty's beliefs regarding effective ways of teaching and learning. Faculty explained that learners learned best when they 1) observed experts as they

deconstructed problems (Henry and Steven), (2) made mistakes as they solved problems or performed experiments and modified their thinking as a result of their performance (Ruth, Henry, Steven, Arjun, Ethan, and Rita), (3) interacted with and were supported by faculty, guest speakers, and peers (all faculty), (4) made connections between their prior knowledge and newly learned knowledge (all faculty), (5) found the relevance of the learned concepts in their professional (Ethan, Rita, Arjun, Rita, Henry, Steven, and Ruth) and personal lives (Andriana, Ruth), (6) solved conceptual problems (Steven, Arjun, Henry, and Ruth), (7) used concept maps to explain their thinking (Martin and Rita), (8) wrote about their understanding/research related to instruction (Ruth and Andriana), (9) received specific and timely feedback on their learning by their peers and faculty (all faculty), (10) interacted with examples and active illustrations of the concept (Steven, Henry, and Rita), (11) interacted with the community (Andriana, Charlotte, Martin, and Ruth), and (12) participated in a community service and advocacy projects (Charlotte and Ruth). These principles were aligned with the learning principles discussed in the theoretical literature in Chapter 2 (Ambrose, 2010; Boettcher & Conrad, 2021; American Distance Education Consortium, 2021; Chickering & Gamson, 1987; Merrill, 2002; Smith & Ragan, 2004; Gagne & Briggs, 1974). However, faculty in my study ascribed to two principles that were not discussed widely in the literature and warrant additional investigation in a future study: learners learn by experiencing the phenomenon as they (a) interact with the community (Andriana, Charlotte, Martin, and Ruth), and (b) participate in community service and advocacy projects (Charlotte and Ruth). These two principles are not part of mainstream Instructional Design principles; however, community-based learning literature identifies these as key principles (Cooper, 2007; Mooney & Edwards, 2001). The faculty reported learning all these principles mostly by observing their own teachers, experimentation during instruction, and

reflecting on their instruction. Some faculty members also justified their instructional decisions through their prior readings in adult learning (Ruth and Andriana) and surveying different technological applications to make appropriate instructional choices (Henry, Andriana, and Steven).

Student Learning Assessment

All faculty members who participated in the study assessed student learning using multiple strategies. Three dimensions of student learning assessment were discussed: types of assignments, multiplicity of assignments conducted during and at the end of the course, and partnership with students in designing assignments.

Literature supports the use of formative and summative assignments to assess students' learning, where formative assignments provide students with the support and ongoing feedback needed to aid their learning. However, the purpose of summative examinations is to gauge if the students have learned the desired skills and knowledge to complete the course requirements (Black, 1993). In this study formative assignment corresponds to the assignments with instructor support, feedback, and facilitation, and summative exams correspond to the assignments without sufficient instructor support.

Faculty designed two types of student learning assessments: assessments without sufficient instructor support (all faculty), and assignments with continuous instructor support (Ruth, Charlotte, Martin, Rita, Henry, and Andriana). Examples of assignment without instructors' support included quizzes with multiple-choice questions, concept maps, open-ended responses, and essay assignments. All faculty provided support prior to administering the assessments to assess that students knew the concepts and could do the assessments on their own without ongoing support from the instructor. Moreover, six faculty members (Ruth, Charlotte, Martin,

Rita, Henry, and Andriana) also designed assignments with continuous instructor support, feedback, and facilitation, included field-based projects (Ruth, Andriana, and Charlotte), lab-based and virtual experiments (Ethan, Rita, and Steven), visual diagrams such as concept maps or flow charts (Martin and Rita), research proposals (Martin and Ruth), research papers (Martin and Ruth), programming exercises (Martin and Steven), and musical performance (Andriana). Faculty provided support in several ways, some examples included collaborating with community to organize field-based projects (Andriana and Ruth), developing worksheets for students to record field observations (Martin), providing continuous feedback on elements of research proposals (Martin), providing feedback on drafted interview questions (Charlotte), and correcting the students' program code (Henry). Studies conducted during COVID also reported the use of individual assignments, clinical simulations using virtual software, vodcasts, and virtual observations of students' performance such as conducting tele-health appointments (St-Onge, et al., 2022; Rizvi, et al., 2022; and Zagury-Orly & Dunning, 2021). However, these studies were primarily focused on assessments, and did not discuss instructional strategies in detail. In my dissertation study, it was interesting to notice that student learning assessments mimicked instructional strategies, implying that faculty supported students throughout the assessment by providing continuous support and feedback provided to the students. Faculty noted that they had provided support to students even prior to the pandemic to conduct field-based assignments, because they find such support is necessary to ensure the development of their skills as they completed assignments addressing professional and real-world problems.

All faculty who participated in the study reported use of multiple assessments (quizzes, exams, written assignments, projects, and performances), during and at the end of the course, and provided feedback to the students. They explained that they structured the assignment's

progression with increasing difficulty levels targeted towards the instructional goals, so that students achieved them as they completed the course assignments. They noted that formative feedback and structured support helped students to improve their performance over time. Two faculty members (Andriana and Ruth) discussed how their readings in educational theory, values of inquiry and shared decision making, industry experience, and career aspirations (such as writing a casebook) shaped their assessment design. Similarly other studies noted that faculty designed various assignments to assess students' knowledge, including take-home exams, open-book exams, and series of quizzes (St-Onge, et al., 2022; Rizvi, et al., 2022; and Zagury-Orly & Dunning, 2021). Rizvi et al. (2022) noted that they rewrote quiz questions so that students could not search the answers on Google. Resultantly, the revised quiz questions (such as scenario-based questions) were targeted to gauge students' higher order thinking. It was not clear from the study whether faculty provided students with the structured instructional support and practice to answer revised higher order questions, or students were alarmed by the change in the nature of questions.

Studies also surfaced faculty's concerns about students' cheating in their exams as they were not under strict vigilance. However, in this study, no such concerns were highlighted by the faculty (Reedy et al., 2021; St-Onge, Ouellet, Lakhal, Dubé, & Marceau, 2022). Instead, four faculty members (Andriana, Arjun, Ruth, and Martin) partnered with students in deciding on the types of assessments; however, the extent to which faculty engaged their students in decision-making varied across courses. Faculty who allowed students to determine their assignment type were influenced by factors such as student feedback from previous courses, content of the course (e.g., music-making activities), personal values to accommodate and be flexible, perceived effectiveness of shared decision-making, and awareness of challenges that students encountered

during the COVID pandemic. Student-instructor partnership in assessment design have been discussed in the recent literature. Curtis and Anderson's (2021) and Cook-Sather et al. (2023) advocates for increased learner participation in assessment related decisions and considers it as a way to bring equity at the center of assessment practices, where students and faculty make "more equal and efficient use" of perspectives to come to an equitable assessment design. Curtis and Anderson's (2021) paper is published in NILOA and presents a synthesis of studies reporting three-fold benefits of student-faculty partnerships in student learning assessment design: (a) improved engagement in learning process, (b) improved understanding of the learning process and a stronger sense of identity, and (c) students taking responsibility in the learning process.

Informal Support

Faculty (Henry, Ruth, Charlotte, Rita, Arjun, and Martin) discussed how they provided informal support to students beyond the in-class session timings. Some examples included one-to-one discussions with students during office hours (especially if students were struggling with a particular concept discussed the course or needed emotional support), providing additional resources on the blackboard to bolster students' prior knowledge, reaching out to students' academic advisors to explore ways to support the student, and the use of Slack space to guide students in their coursework. Moreover, two faculty members (names concealed to protect individual's identity) provided special accommodation to their doctoral students to audit their master's courses to advance their research and programming skills. Like the faculty in my study, other studies also present self-reported data of faculty members where they reported providing support to the students through extended virtual office hours and sharing personal contact information to connect with the students' outside of the designated class time. Some studies underscored that faculty reported using social media groups to contact with their students and

reported challenges with multiple communication channels, however, in my study, faculty primarily connected with the students using email and/or Zoom web-conferencing tool. Studies that reported faculty's use of alternate means of communication were conducted in Asian countries and the reasons for such connection included: improving students' sense of community using Whatsapp groups (Khan et. al., 2022; Rizvi, et. al., 2022); using WeChat and Whatsapp groups to communicate the information about the course (Xiao, et al, 2022; Rizvi, et al, 2022); and using Whatsapp and phone-calls to assess students' learning through viva exams (Rizvi, et al, 2022). Some studies also reported unavailability of stable internet connection and technological devices and use of alternate means of communication helped in reducing a significant barrier to instruction (Rizvi, et al, 2022; Cassum, et al, 2024). However, in this dissertation study, social media platforms were not used to support connection with students, perhaps because students did not face extensive resource constraints and could connect with the instructor through email, Slack, and Zoom meetings.

Factors Influencing Instructional Decisions

All the faculty members who participated in the study made various instructional choices. These instructional choices included overall course design, instructional goals, selection of content topics and instructional materials, instructional strategies, student learning assessment, and informal support. These choices were influenced by faculty's personal factors (values, content expertise, approach to teaching and learning, and autonomy stemming from their tenure status); instructional factors (such as wider agreements in the field about what to teach in particular courses, students' participation in instruction, faculty's reflection on instruction, student demographics, skills, and interests; content of the course; cost of instructional materials; and curriculum requirements by the department); organizational factors (including promotion

and reward structures, professional societies, senate approval, available resources, university-based and external funding acquired); societal events (including current events, issues facing neighboring communities, culture, and politics in nearby communities and more globally); and COVID pandemic-related factors (such as students' absenteeism, lack of preparedness, adjustment of instruction in response to COVID, faculty and students' stress and fatigue).

Personal Factors

Instructional factors, organizational and societal factors, and the COVID pandemic influenced faculty's decision-making. Personal factors included the faculty's prior knowledge, values, skills, school and industry experiences, and their approaches to teaching and learning. The faculty's instructional decisions were influenced by what they believed was important, what they knew worked in their contexts, and their existing skills in using technology and designing instruction. For example, faculty members developed assignments that engaged students in experiences that they considered relevant and useful for students: community-based projects (Ruth, Charlotte), problem sets (Steven, Henry), collaborative music-making exercise (Andriana), science labs with home-based materials (Ethan, Rita), quizzes (Arjun, Rita), and peer-review of research proposals (Martin). Moreover, when the COVID pandemic forced faculty members to change instructional mediums they looked for alternative ways to conduct similar assessments. For example, instead of in-person field projects, two faculty members (Ruth and Charlotte) asked students to conduct virtual field projects and provided flexibility and support to students by adjusting assignment deadlines and offering additional guidance to secure field-study participants.

Moreover, all faculty's prior knowledge of technological platforms and the pedagogical value that they associated with specific instructional strategies informed their instructional

decisions. Faculty with more expertise in using technological platforms and teaching virtually (Steven, Andriana, Henry, Rita, Charlotte, Ethan) mentioned ease in pivoting faster to the required instructional mediums, in comparison with others (Ruth, Arjun, and Martin). However, the effectiveness of their instruction was outside the current study's scope.

Borko and Shavelson (1990) also argued that faculty members' instructional decisions are influenced by their access to the information about learners, content, and context and their ability to process and make decisions considering these factors. Iglesias-Pradas, Hernández-García, Chaparro-Peláez, and Prieto (2021) and Donnelly, Miller, Krsmanovic, and Saitta (2022) found that faculty members' technological and pedagogical expertise helped them switch instructional mediums during COVID. Faculty reported adapting their instruction to ongoing circumstances. Iglesias-Pradas, et al. (2021) found that faculty's technological expertise and resulting rapid adaptation to online mediums impacted students' performance during COVID. Donnelly, et al. (2022) found that faculty made various adjustments and experimented with diverse ways of teaching online during the COVID pandemic, such as the creation and use of lightboards to record lectures for students. Faculty's comfort level with technological devices resulted in smooth online transition. In addition to the technological and pedagogical expertise, faculty's beliefs influenced their decision-making.

Hora (2014) examined the beliefs of 56 science and math faculty and found that two of their most common beliefs were: (a) students learned best through repeated practice (27 faculty members), and (b) students had different learning styles (20 faculty members). Hora (2014) found that faculty members' beliefs influenced their instructional strategies (e.g., using a variety of strategies in class, including lecturing, display of questions for debate and discussions, demonstrations, rhetorical questions, illustrations, clicker questions, small group work, case

studies), cognitive engagement strategies (memorization, connections to the world, problem-solving, developing innovative ideas, and integrating information), and instructional technology choices (chalkboard, demonstration, PowerPoint, and miscellaneous objects).

My study results support other studies' findings in concluding that faculty's prior knowledge, skills, school and industry experiences, and their approach to (or beliefs about) teaching and learning influenced their instructional choices. However, the current study explored an under-researched dimension (i.e., influences of faculty's values on content selection). Faculty's values, such as respect for diversity and inclusion, adaptability and flexibility, approachability, consideration for students' financial viability to purchase textbooks were all examples of faculty values as reflected in the selection of topics and instructional materials.

Instructional Factors

The second most common factor influencing faculty's instructional decisions were instructional factors. All faculty in my study explained that the instructional factors included faculty's reflection in/on the instructional situation and adaptations in instructional decisions to respond to changing university guidelines during COVID. When the university guidelines regarding face-to-face instruction changed, all faculty members used Zoom to teach their online classes in Spring 2021 and hybrid in Fall 2021. In Spring 2022, the university guidelines required faculty to teach face-to-face with masking requirements, three faculty (Ethan, Andriana and Rita) were interviewed that semester, and they reported retaining some of the online exercises and lecture recordings in their course management system from the previous course offerings.

All faculty members had used Zoom previously for meetings and online conferences, however, using it for instruction was a newer experience for several faculty members (Martin,

Henry, Ruth, and Andriana). In addition to using Zoom for online synchronous interaction with students, Andriana, Rita, Steven, and Henry tried and tested multiple software packages to facilitate student learning. Andriana used Kahoot for quizzes, Rita and Steven illustrated concepts using Wacom, and Henry first tried Zoom chat, but was not comfortable in staying online for the entire week, and therefore used Slack (a messaging application) for asynchronous student consultations. Students' readiness to use software played an integral role in their decision-making.

Student-related factors, for example students' background knowledge and skills, students' participation, students' feedback to instructors, and student-teacher-community relationships, also influenced faculty's instructional decisions. Arjun and Charlotte noticed that their students signed up for several co-curricular activities, societies, and clubs, as the university reconvened face-to-face instruction. The faculty noted that their overbearing involvement in activities resulted in their struggles to manage their studies and suspected that it was a natural response to compensate for the social isolation experienced during previous semesters impacted by COVID. Recognizing students' enthusiasm for renewed in-person interaction, the faculty provided guidance on balancing academic responsibilities with co-curricular activities in one-on-one consultations during office hours and to the whole class during lectures.

Sciutto (2021) analyzed student assessment data in a statistics course collected prior to and during COVID to determine the extent to which changes in instructional mediums influenced students' performance. He found that overall students' course performance remained equivalent across different modalities (face-to-face in fall 2019 and online in fall 2020); however, after controlling for course performance on the final exam, students performed significantly better on integrative writing assignments in online medium. Students in the online class used

asynchronous materials for content exploration and reported effective collaborations with peers in an online environment, from which the instructor realized two lessons for the next iteration of the course: (a) increasing asynchronous materials for content review and (b) using online medium to engage students in collaborative problem solving and writing assignments.

The current study's findings raise a question whether students' online collaboration observed by Sciutto was primarily driven by academic reasons or by a desire for social interaction due to pandemic restrictions. The current study's finding revealed that instructors noticed increased student engagement in cocurricular activities, potentially stemming from similar social needs arising from pandemic-related limitations. All faculty members considered instructional situations and student-related factors (students' background knowledge and skills, students' participation, students' feedback to instructors, and student-teacher-community relationships) while making their instructional decisions.

Andriana, Arjun, Ruth, and Martin reported partnering with students to make certain instructional decisions, thus honoring students' voice and choice in instruction. Andriana co-designed concert performances with her students' input in the selection of the songs that they wanted to perform at the concert, noting that students' voices and choices influenced the choice of content. Similarly, Arjun asked students feedback on the changes that they deem important through course-feedback form. Based on students' request, he included op-ed articles as an assignment option. Ruth and Martin adjusted assignment formats and deadlines based on students' needs and requests. However, Arjun did not adjust the assignment deadlines based on students' request, because he believed that students need to prepare in advance for the assignment submission. Thus, some faculty members partnered with students in making some instructional choices, and others relied on their experience and student performance to make

instructional decisions by themselves. Sciutto (2021) also highlighted that faculty make note of the student feedback and made changes in their courses, to reflect student feedback. However, like two faculty members in this study (Arjun and Rita), other studies argued that instructors used course feedback as a powerful stimulus to reflect on instructional practices and use their professional judgment to make instructional decisions that help students achieve instructional goals (Mandouit, 2018).

Organizational and Societal Factors

Instructional decisions were influenced by organizational and societal factors: resources supplied by the organization, current events in the society where the institution was situated, organizational promotion and reward structures, faculty's affiliation with professional societies, senate approval and accreditation, and proposed teaching innovation for the University's Laurel teaching awards. Charlotte, Arjun, and Ruth used case studies and examples developed from relevant current events such as risks faced by small businesses, global economic crises, and public health issues as retrieved from news, media, and listservs during COVID. Use of real-life events helped in making connections between the content faculty were teaching and the events happening in society.

Henry, Arjun and Andriana discussed how unavailability of instructional resources (such as access to mic, camera, teaching assistants, and musical instruments) made it difficult for them to provide a conducive learning experience. Arjun and Henry mentioned the need for more teaching assistants in teaching hybrid and online mediums. Andriana followed guidance from a national music association and reorganized a music-making exercise using home-based articles when musical instruments were unavailable because of the risk of COVID spread.

All faculty made several adjustments responding to organizational and social factors to reflect ongoing changes in society and accommodated students in online and hybrid modes, such as offering online office hours, video-recording lessons from home, using home-based musical instruments resulted in continued teaching and learning experience. Like my study, Ertmer, (2001), Hora & Anderson, (2012), and Hora (2012) discussed significance of available resources, such as teaching assistants, material resources, and monetary provision to plan and implement field visits. Elumalai, Sankar, Kalaichelvi, John, Menon, Algahtani, and Abumelha (2021) found a positive relationship between student-reported quality of learning and administrative support and resources provided to the instructors. Thus, faculty across multiple studies have reported that their choices reflected organizational and societal factors. As this proves, the provision of support and resources was crucial for continuing education, especially in demanding situations such as the COVID pandemic.

COVID Pandemic related Factors

The COVID pandemic influenced students and faculty, institutions, and society in general. In the current study, faculty members who participated reported that their instructional decisions were also affected by changes in instructional mediums and the health issues faced by the students and faculty. All faculty members discussed how the COVID pandemic resulted in heightened students' and faculty's stress levels, students' lack of preparedness in studies, and plummeting classroom attendance. Through careful observation of student performance and adherence to instructional guidelines, faculty tailored the learning experience to effectively respond to students needs and instructional goals. These adaptations included invitation to guest speakers to replace community visits; preparation of community members to present using online video conferencing tools (Charlotte and Ruth); active illustration of concepts using Wacom to

replace chalk boards (Steven and Rita); provision of immediate feedback on programming assignments using Slack to replace office hours sessions (Henry); support for students to conduct virtual field-based studies replacing in-person field-trips (Charlotte, Martin, and Ruth); use of break-out groups in virtual conferencing to replace in-class group work sessions (Martin), and development and use of additional online resources (Henry and Rita).

Heightened stress among students and faculty during the COVID pandemic has also been discussed in other studies (Bhowmik & Bhattacharya, 2021; Younis & Elbanna, 2023; Eika, 2021). Similar to my study, faculty members in other studies reported making rapid adaptations in their instruction, to respond to the circumstances stemming from the COVID pandemic. Faculty made "on-the-fly" adjustments to respond to COVID pandemic-imposed limitations to face-to-face instruction (Delamarter & Ewart, 2020; Hickling, Bhatti, Arena, Kite, Denny, Spencer, and Bowles, 2021). Delamarter & Ewart (2020) reported that teacher educators made several adjustments in their instruction during COVID: updating program expectations to reflect the uncertainty in the environment; increased communication between students, faculty, and field supervisors; and changes in assessment from typical classroom observations of student-teachers to synchronous classroom observations (Delamarter & Ewart, 2020).

Hickling, Bhatti, et al. (2021) examined adaptations made to instruction by 63 public health teaching academics from five universities in the United States, Australia, and Canada using a survey. They found that faculty made changes that mimicked the traditional lecture and tutorial format and delivered content synchronously through video-based meetings. Small group discussions were also conducted and found to be engaging students in participating in the conversation, more than that of traditional lectures and tutorials delivered through videoconferencing (Hickling, Bhatti, et al. 2021). Similar to the findings of my study, this study

found that, the COVID pandemic forced individuals to make changes in their instructional decisions, where some individuals made cursory changes by utilizing the most easily available digital tools in replacement of physical tools, and others took it as an opportunity to identify tools that would be more effective for their students. My study adds that more experience with technology and pedagogy allowed faculty to experiment with varied tools and chose the one that they considered optimal for students.

In the current study, all nine faculty members who participated were tenured, had at least 20 years of teaching experience, and were agile and flexible in trying and testing various instructional methods when the pandemic-related circumstances forced them to do so. Faculty (Steven, Andriana, Henry, Rita, Charlotte, Ethan) who had more digital literacy and were teaching technology-related courses, with small class sizes, were at an advantage, and experimented with technological tools more than others (Ruth, Arjun, and Martin). This finding challenges the conclusions from previous studies that faculty members' age and extensive experience in teaching restricted them from being agile and flexible in their teaching (Akcayir, Dundar, & Akcayir, 2016; Alhawsawi & Jawhar, 2021; Huang, Teo, & He, 2021). Instead, the current study found that in multiple instances, all faculty adjusted their instructional decisions to facilitate learning during the COVID pandemic and incorporated educational technology in aspiration to attain educational goals set for the students at the beginning of the course. Examples include allowing students to choose between attending classes synchronously or watching recorded videos (Charlotte), flexible assignment submission deadlines (Charlotte, Ruth, and Martin), and increasing students' cumulative course grades (Rita).

Faculty's extensive experience of teaching—where some had taught online too—established principles of teaching, approaches to teaching, and reflection on teaching (signaled

through their applications for teaching awards), and technological literacy enabled them to design instruction while responding to contextual variables. The next section presents a grounded theory model of instructional decision making.

Grounded Theory Model (GTM) of Instructional Decisions and Influencing Factors

The Grounded Theory Model is organized around a central circle divided into five sections, each representing a key instructional decision: instructional goals, topic and material selection, instructional strategies, informal support, and student learning assessments. A circular shape is used with pie-shaped instructional decisions. This is because faculty used various sequences to design the instruction and went back and forth between the instructional decisions to ensure that instructional goals are met.

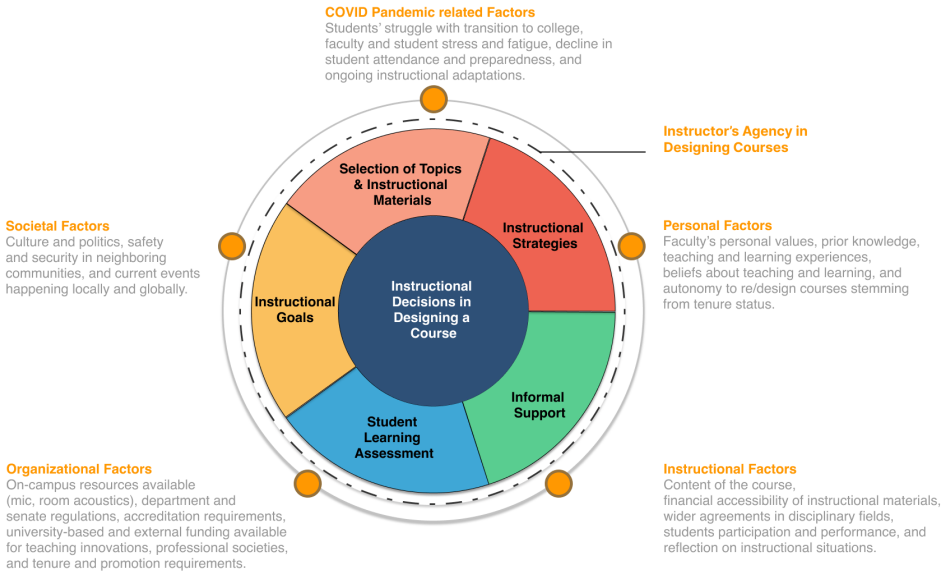
Interviews and syllabi were analyzed and coded into categories, emerging to bigger themes. The themes made the key concepts in the grounded theory model of instructional decisions. This grounded theory model identifies instructional decisions and explains the factors that influenced faculty's instructional decisions. The model used a circular shape to express the key instructional decisions made by all faculty members in varying sequential order. Sequencing of instructional decisions varied across faculty members, reflecting the varying disciplines and courses taught. The model used a circular shape to express the key instructional decisions made by all faculty members in varying sequential order. Sequencing of instructional decisions varied across faculty members, reflecting the varying thinking patterns, disciplines, and courses taught. Using a circular design, the model presents all elements without sequencing them, implying that an expert instructor decides the instructional goals and objectives and selects the decision-making sequence that they deem suitable for their design process. The faculty in my study did not follow a prescribed sequence when making these decisions; however, instructional goals guided all

course elements (selection of topics and instructional materials, instructional strategies, assessment of learning, and informal support provided to the students).

Surrounding this core circle is the dotted circle, emphasizing faculty's agency in steering the design of the course and managing the influence of several factors on these decisions. Faculty arbitrated certain factors through the design of instruction and orchestrated their instruction to accommodate other factors. Instead of using a fuller circle, a dotted line circle is used, to acknowledge that several factors could influence the design and implementation of instruction, beyond faculty's awareness or immediate control. Finally, a full outer circle with five dots represents the specific factors that influence instructional decisions. These include personal, instructional, organizational, societal, and pandemic-related factors.

Figure 12

Grounded Theory Model of Instructional Decisions and Influencing Factors



The three main arguments generated through this grounded theory model included instructional decisions for designing a course is an experimental, iterative, contextual, and political process; the faculty's personal agency and personal characteristics influenced their

decisions; and adaptation of instructional decisions to instructional and societal circumstances is a complex process necessitating systemic organizational and instructional support.

The Innermost Circle in GTM: Instructional Decisions in Designing a Course

Instructional decisions made by faculty in designing a course portrayed an experimental, iterative, contextual, and political process. In my study, all faculty members made several instructional decisions in re/designing instruction for a 16-week course delivered through university. None of them followed and/or referenced the prescriptive step-by-step process offered in models such as Dick and Carey's model and Gerlach and Ely's model (Dick et al., 2005; Gerlach et. al., 1980). However, faculty's instructional decisions followed the essence of Tripp & Bichelmeyer (1990) as they tried and tested what worked and made changes during implementation of instruction, based on their observations in context, primarily suggesting two things: (a) faculty learned course design process through trial and error, and were not trained in prescriptive instructional design models, and therefore they were not using the models, (b) instructional context was rapidly changing during COVID and factors such as student absenteeism, lack of student participation, and lack of resources demanded from faculty to make in-the-moment decisions and adaptations to the instruction. Faculty's personal experience of learning to design instruction through trial and error and "messy" nature of design process in real-life contexts resulted in adaptations of the sequence based on faculty's personal factors and varying contextual factors.

Design of instruction is summarized in syllabi. Syllabi are often viewed as a "contract" between faculty and students detailing the topics and assignments in the course. Traditionally, syllabi have been viewed as instructor-determined contracts because faculty make most instructional decisions, and students follow the course (Berschback, 2010; Dean & Fornaciari,

2013; Gentry, 2012; Parkes & Harris, 2002; Veliyath & Adams, 2005). Some of my study participants viewed syllabi as a contract between students and instructors, determined primarily by the instructor. However, some provided more choices to students to make changes during implementation of instruction. For example, three of nine faculty members (Ruth, Andriana, Martin) provided some choice to students in selection and/or contributed to the selection of content topics, instructional strategies, and assessments. However, the other six faculty (Henry, Steven, Ethan, Charlotte, Rita, and Arjun) provided small-scale, in-the-moment choices: such as allowing students asking questions regarding a topic of their interest; including an assignment based on students' suggestions in course feedback form; and engaging students in sourcing examples for class discussion. Moreover, their decision to allow students to collaborate in instructional decision-making was influenced by their agency in content selection (i.e., conceptual and social-science related courses allowed more autonomy to faculty in contrast to the foundational and skill-based courses), class sizes (small class sizes allowed more flexibility to include student voice), nature of the content taught (arts and social sciences allowed more flexibility than basic sciences), and belief in the usefulness of shared decision-making in students' progress. The aforementioned factors influenced faculty members' view of syllabi as a preliminary draft of guidelines versus a "rigid contract." Those who viewed syllabi as a preliminary draft of guidelines shared syllabi with the students to spark conversations and negotiations regarding learning goals, selection of content, instructional strategies, and assignments. Others presented syllabi as a relatively "rigid contract" for students.

I argue that the term "contract" for syllabi is misleading because instructional syllabi are not bound by law. The term is used as a metaphor to illustrate syllabi as a roadmap for study and examination requirements. Moreover, pre-decided course decision can be depicted in the syllabi,

and considering syllabi as a contract limits individual instructors from considering it as a living negotiation between faculty and students. Considering the syllabi as a "binding contract" and sharing it with students, leaves little space for faculty to accommodate the iterative nature of the instructional decisions responsive to the situational and student-related factors that implementation of the instruction in real life offers. In addition to accommodating students' interests, negotiated syllabi also present opportunities for instructors to reflect on ongoing changes in technology, pedagogy, content, discipline, society, and environmental circumstances, and to adapt the instruction to be responsive to the ongoing changes (Fernandez, Figares, & Cecil, 2022).

For teaching tomorrow's generation, after considering class sizes, content of the courses, function of courses, and department and accreditation guidelines, faculty can negotiate syllabi with students. They may engage students in collaboratively deciding on the features of the course, while selecting current and futuristic content, without dismissing the history and evolution of the content in the time when instruction is implemented. Implementation of this suggestion calls for additional effort and time from faculty because they would need to negotiate the instructional decisions with students and adjust during implementation. Kaplan and Renard (2015) and Tran (2011) suggest that negotiating syllabi development with students signifies enhancement in students' acceptance of syllabi, improvement in student motivation, and investment in the learning process. Examples include engaging students in search for content materials (such as readings, videos, etc.), which also helped diversify teachers' professional repertoire and reduced teachers' time and effort invested in searching for learning materials (Tran, 2011).

Shared decision-making in the syllabi design process demands a lot from the instructor and is dependent on the type of courses taught to ensure the quality and requirements of the course while accommodating students' interests and personal goals. It also engages students in assuming responsibility for the learning process and co-creating a learning environment. However, this experience may be differentiated with respect to student demographics, where some students may perceive syllabi design as a shared exercise and contribute to the design, while others may not share their thoughts and views, and resort to accepting the result of negotiations. In such a case, the exercise of syllabi development would still be instructor-led, and student representation in decision-making could be superficial (Tran, 2011). In addition, students may have varied ideas about the course, which may not align with the outcomes of the negotiation. Therefore, based on my study's findings and reading of literature, I suggest investigating ways to engage all students in establishing personal and collective goals, content, and strategies of instruction through constructive negotiation processes facilitated by faculty members.

The Dotted Circle in GTM: Faculty's Agency & Personal Characteristics

The faculty members were the key agent in making instructional decisions related to the overall design of the course, content selection, objectives, instructional strategy, organization of student groups for group work, allocated time and space to different activities, selection of resources, assessment of student performance, and use of student feedback to inform instructional implementation. Two faculty members (Ethan and Charlotte) discussed that their agency in designing their courses was because of their tenured status and extensive experience and expertise in the content. The roles of faculty and instructional designers are differentiated in the literature; faculty are content experts and instructional designers are design experts

(Abramenka-Lachheb & Ozogul, 2022; Halupa, 2019). All faculty in this current study relied heavily on their personal background, knowledge, skills, approaches to teaching and learning, and values while making instructional decisions. This implies that when the COVID pandemic forced universities to change instructional mediums, all faculty members who participated in this study mostly relied on their prior knowledge, experience, values, and perceived effectiveness of instructional choices. Except in the case of Ethan, who offered an online course with 2SU (a third-party application) where he was mandated to consult with instructional designers at the College of Professional Development through which the course was offered. The other eight faculty relied extensively on their personal knowledge and expertise to make instructional decisions and did not seek additional support.

All faculty members developed instructional goals based on what they believed is important for students to learn and effectively contribute to the discipline and society. Instructional goals and objectives for the course were shared with the students through course syllabi. Two-fold purposes were summarized from the discussion with faculty: the courses should (a) enhance students' disciplinary knowledge to help students understand the world better, and (b) help students advance their careers and create a positive impact on society. These goals guided faculty's decision-making regarding topic selection, instructional strategies, student learning assessments, and informal support. Since the study was conducted during the COVID pandemic, instructional mediums were primarily dictated by the public health emergency. Some faculty referred to the goals periodically in classroom to remind students of goals during the learning journey. Faculty members' selection of instructional goals was influenced by their approaches to teaching and their ideologies of what is essential for students, discipline, and society.

Faculty's instructional principles guided the selection of instructional and assignment strategies for their courses. Some of these strategies included the presentation of content through lectures supplemented by digital resources (slide decks, exercises, and notes), use of diagrams and illustrations, guest speaker sessions, community service projects, student-generated case studies through social investigation, draft-submission, and peer feedback on the write-up, field-based experiences, software emulations, process-oriented guided inquiry labs (POGILs), and un-canned and regimented lab experiments. Faculty's instructional strategies (for example Ruth's invitation to community members to speak to the class about the lead poisoning, gun violence, and neonatal deaths; Henry's provision of continuous feedback through Slack on students' programming assignments; and Andriana's participatory music making activity) were aligned with their learning principles, which were also discussed in the theoretical literature (such as learners learn by engaging in active problem-solving, working with the community, and receiving feedback from the instructors) (Ambrose, 2010; Boettcher & Conrad, 2021; American Distance Education Consortium, 2021; Chickering & Gamson, 1987; Merrill, 2002; Smith & Ragan, 2004; Gagne & Briggs, 1974).

Faculty's values also influenced their instructional decisions. These values included (a) reflection of diversity, equity, inclusion, and social justice in course instructional and materials; (b) faculty's visibility and presence in the course; (c) visual and financial accessibility of learning materials; (d) religious and cultural sensitivity of the instruction and materials; and (e) availability of the learning materials and flexibility to adapt instructional decisions to suit students' needs (such as changes in assignment type or submission day, and allowing excused absence to students to accommodate for health issues such as contracting COVID virus). Faculty also reported certain choices were influenced by their values. Examples include extending their

out-of-class support in terms of administering the Slack channel, inviting students to audit classes, extensive consulting, and counselling during office hours to help students process through the crisis's situations generated because of COVID pandemic.

Faculty's decisions were influenced by their mental models generated from past experiences and trial and error can serve as a foundation for making useful decisions (Klein, 2015; Dembo and Howard, 2007). However, Kahneman and colleagues argued that mental models and heuristics may lead to biased decision-making, which may or may not be informed by the evidence in the field and/or extracted from logical pros-and-cons analysis and cost-benefit analysis, instead relying on intuition and personal biases in decision-making. In other words, over-reliance on information gained through professional circles and one's individual beliefs, and not examining the pros, cons, and evidence, might also lead to biases in decision-making (Kahneman, 2011). However, biases generated through intuition, misinformation, and personal beliefs are unavoidable (Kahneman, 2011), and can be useful in making immediate decisions where time and other resources do not allow for extensive examination of what works in the context and for a particular audience. Encouraging faculty to engage in constant observation and reflection on their instructional decisions and resulting implication and examining the lessons from the science of learning could result in effective decision-making (Schoenfield, 2011; Dewey, 1933).

In my study, faculty members' personal heuristics, insights, and mental models included a mix of learning principles and myths but was a feasible method for them to make decisions. For example, learning styles theory was a myth and not based in empirical evidence (Kirschner, 2017). However, to be certain of what works in a context and for a certain group of learners, there is a need for faculty to continuously experiment with instructional decisions, reflect on

instructional situations, generate, and examine available evidence, recognize one's own biases in decision-making through continuous reflection processes, and engage in continuous improvement. The use of reflection in/on action and evidence-based decision-making is also helpful in making good instructional decisions in the instructional design and teacher education literature (Dewey, 1933; Jonassen, 2012).

Instructors' self-awareness about background, principles, and values and their influence on instructional decision-making could also contribute to improved transparency in instructional decisions with the students (Winkelmes et al., 2023). Maintaining transparency in instructional decisions, such as explaining to students why certain assignments are given and how they contribute to overall instructional goals, is suggested to be helpful for all students, including students from marginalized backgrounds (Winkelmes et al., 2023). This implies that instructional design models and theories can be supplemented with a discussion on how designers and implementers' personal theories influence their decisions, suggesting the need to examine and discuss the instructor's positioning and background related to content with students to improve transparency in instruction.

The Outermost Circle in GTM: Factors Influencing Instructional Decisions

Besides faculty's personal agency and characteristics, instructional, organizational, societal, and pandemic-related factors influenced faculty's decision-making. All the faculty participants steered the direction of instruction, by accommodating various factors, using varying strategies such as accommodating students for absences, changing the assignment type and deadline, and including current events and literature to reflect the ongoing changes in the disciplinary field and society. Moreover, faculty abided by the university guidelines regarding changing instructional mediums due to changing COVID situations. They also referred to using

trends in workforce development and disciplinary fields to design their courses so that students can contribute to the discipline and wider society, in the given time.

Adjusting the instruction while considering faculty's personal aspirations for students, disciplinary updates, availability of organizational resources, changes in the culture and politics in the society, and the environmental and health conditions during COVID was a complex endeavor. Faculty felt overwhelmed by the changes they had to make and expressed their concerns about their well-being, their students' well-being, and learning loss resulting from abrupt changes in instruction and other facets of human life.

Perhaps, support from the university's center of teaching and learning was not visible and well-trusted among the faculty members, which is why, none of them reported seeking out instructional support. Instead, the faculty relied on trusting their expertise and experience to make these adaptations. Similar findings were noted in other pre-COVID studies (Burki, 2020; Ramlo, 2021; Donnelly & Patrinos, 2021), where centers for teaching and learning and professional development units lamented the lack of faculty participation in faculty development workshops. However, during COVID, some centers for teaching and learning in other universities reported an immediate surge in the demand of teaching related professional development activities (O'Toole, O'Sullivan, O'Brien, & Costelloe, 2022; Stanton & Young, 2022). Nevertheless, like my findings, Sheffield, and Moore (2023) and Tomej, Liburd, Blichfeldt, and Hjalager (2022) also found that their faculty members made instructional decisions mostly independently and spontaneously, without receiving much support from each other, their departments, and the institution at large. Their confidence and self-reliance affected their choice of not seeking external support. However, the nature of the support provided and the

buy-in among faculty members is a different topic of study and needs to be examined in a different study.

The teaching during COVID was like "building the plane, while flying it" (Tomej et. al., 2022; Khamis, Naseem, Khamis, & Petrucka, 2021). Expertise and experience in teaching and using technology in teaching favored some participants, while those who were not experienced in teaching and technology were at a disadvantage. Effective online teaching requires careful planning and preparation. Therefore, there is a need for well-thought, well-trusted, proactive, and personalized faculty development mechanisms to prepare all faculty members to teach effectively (Tomej et al., 2022; Khamis, Naseem, Khamis, & Petrucka, 2021) through varied instructional mediums, in usual times and during emergencies. These findings suggest the need to examine professional development programs offered through teaching and learning centers, and find out if these programs help individual faculty members to improve instructional decision making at the institution.

The grounded theory model of instructional decisions and influencing factors represents award-winning faculty's instructional decisions as they designed a course during COVID, however, this should not be considered as the process model of instructional decisions because it does not have information regarding process of designing instruction. This is because step-by-step design models such as Dick and Carey's model and Gerlach and Ely's model (Dick et al., 2005; Gerlach et al., 1980) have the advantage of leading novices through a logical procedure for designing a course (Andrews and Goodson, 1980; Edmonds et. al., 1994). In conjunction with the existing models of instructional decision-making, this model adds an important dimension to instructional design literature by presenting how nine award-winning faculty members anchored to their personal experiences and beliefs and used their agency and agile, iterative, and

experimental thinking processes to make decisions while designing and teaching their courses. Thus, future research should compare how individuals trained in Instructional Design make instructional decisions during crises and examine the effectiveness of their instructional decisions.

Lessons Learned

This study, along with others conducted during the COVID pandemic, offer valuable insights for educators in the face of future disruptions caused by natural disasters or public health emergencies. Here are four key takeaways to consider:

Prior virtual teaching experience influence instructional decisions: Faculty with extended experience in virtual instruction reported that easier transition in adapting their instructional strategies and assessments strategies during COVID pandemic. For example, Steven used Wacom device to write his notes on One-Note pages, before pandemic, and continued to do so during pandemic. He also ran a MOOC where he had recorded professional instructional videos and therefore, found it easy to use Zoom and teach students via Zoom. Henry had an active website, where he uploaded instructional modules therefore, found it easier to teach online. Charlotte and Ethan both taught online courses through 2SU platform prior to pandemic, and therefore, adapted their instruction to the given online situations easily. However, faculty had no experience of teaching in hybrid and noted that it was difficult to teach in hybrid mode, where some students are online, and others are in face-to-face classroom. Investment in professional development to prepare faculty for both online instruction and emergency remote instruction can benefit educators in teaching online and quickly adapt their instruction to unforeseen circumstances.

Faculty's values to prioritize student support and well-being influence their decisions: The study highlights how faculty prioritized student well-being by adjusting instructional strategies, assignments, and grading practices, and provided extended support during office hours sessions. Faculty members attributed increased support and flexibility to their intrinsic values where they considered accessibility (visual and financial) in selecting the learning materials, religious and cultural sensitivity, flexibility to adapt instruction to students' needs (such as changes in assignment type or submission deadlines and allowing excused absence to students for accommodating their health issues such as contracting COVID or pregnancy complications), and providing students with emotional and academic support during office hours sessions and/or asynchronous messaging via Slack. Development of intrinsic values in preparing future faculty members may help them to prioritize student support and well-being.

Field Experiences for Instructional Design Students and Student-Teachers

Instructional design models provide students with the background knowledge in instructional design and explain the process of design decision-making. However, faculty in this study explained the experienced complexity of the instructional systems, whereby, they had to compete with multiple priorities and cater to multiple forces affecting the instructional system during COVID. Therefore, curriculum for student teachers and instructional designers must include field experiences where students design and develop instructional solutions for the real-life contexts. By experiencing instruction through such field-based projects, students would test their assumptions about the design process and develop skills to examine contextual variables and design context-relevant instructional solutions.

Resources and support by the university: Faculty appreciated the availability of Zoom and other software that the university offered to facilitate the transition to online and hybrid

teaching modes. However, inadequacies in infrastructure (echo-cancellation in classrooms, updated mics and speakers, updated computers, and Wacom supplements for slide annotations, etc.) were also highlighted. To prepare for future emergencies, it is recommended for university to devise an emergency protocol listing the essentials to conduct teaching online or in hybrid mode and invest in infrastructure slowly and gradually. Faculty in my study also did not seek support from other faculty members, teaching and learning center, and/or center for online instruction (except the ones who were teaching 2SU courses).

It has been well documented that higher education faculty make instructional decisions in silos. Multiple studies highlighted COVID's role in catalyzing professional learning communities where faculty discussed their instruction and learned from each other (Cramman, et al., 2021; Zeivots, et. al., 2022). However, participants in my study, solely relied on their prior experience, beliefs, values, and technical expertise to adapt to the different mediums of instruction. Further studies are required to examine why faculty in this university stayed in silos and did not seek support, even when faced with the challenges. Based on such studies, strategies for fostering a shared culture of continuous improvement within educational institutions (such as learning from prior research on teaching in emergencies or sharing of strategies that individual faculty or their teams found effective) can be implemented.

Limitations

The study has four main limitations: limited participation of a faculty member over only one semester, data overload, limited triangulation, and the descriptive nature of the study, which restricted the ability to develop a formal theory suggesting practical and actionable implications. Future research with extended faculty participation, focused data collection, and triangulation

methods could build on this study's findings to generate more actionable insights for faculty and institutions.

The faculty members who participated in the study consented to participate in the study for a single semester. Three faculty members participated in Spring 2021, three different faculty members participated in Fall 2021, and three different faculty members participated in Spring 2022. Comparisons have been made across nine faculty members in the findings chapter, however, it must be noted that all faculty were facing different challenges presented to them by the changes in the policies (such as change in instructional mediums, fluctuations in spread of COVID in the university and the county, and changing guidelines by Centre for Disease Control and the state across three semesters). Since the base-line situation of all nine faculty members were not similar, more studies are required to substantiate the claims that are made in this study. A longitudinal study would be preferred in such a situation where I would have followed the same instructors for multiple semesters, as pandemic-related regulations and conditions evolved and investigate the changes they made over time. However, after observing participants' fatigue and stress caused by the pandemic and instructional changes, I limited my request for participation to one semester. As a result, three distinct faculty members were interviewed each semester; however, it was impossible to identify the changes in the patterns of their decisions as situations evolved over three different semesters. Moreover, as faculty in this study highlighted that their tenured status, extensive teaching experience, and content expertise provided them the agency to lead the course and adjust it to the demands of the content, context, and learners. Ae longitudinal study could also be carried out to follow instructors' decisions and influencing factors in different stages of their careers.

The study relies only on faculty's self-reported data on instructional decisions and design as mirrored in their syllabi. This study does not triangulate their self-report decisions with classroom observations and student performance. This is because the study was conducted in uncertain settings where faculty were adapting their instruction, and more data collection for triangulation purposes would have resulted in increased load on the faculty participants in crisis situations. Moreover, it was my first full-scale independent qualitative study project with time and resource limitations, and for this reason, it was difficult to synthesize the data and develop a theory of instructional decisions.

This study is descriptive; therefore, it is difficult to suggest the implications of what faculty should and should not do. The grounded theory generated from this study is suggestive in nature, open to critique and further examination, and should not be considered as the sole framework for institutional decisions. Triangulated qualitative studies and experiments are required to examine effective instructional decisions and to generate evidence to guide future decision-making.

Implications for Future Work

The study involved nine higher-education faculty members who taught courses in various disciplines at an R-1 research university. Their participation was based on three criteria: (a) achievement of the Laurel award for excellence in teaching received in the past 12 years, (b) willingness to participate in the study, and (c) were teaching a course at the university at the time of the study. The criteria for faculty selection were unique, and data were collected from specific faculty members. The goal of the study was not to make generalizable claims to all faculty members who taught their courses during COVID. However, the insights gained through this study are informative because they revealed the instructional decisions of award-winning faculty members and examined the factors that influenced their decision-making during COVID

pandemic. Extending this study to other disciplines and R-1 universities can provide a broader view. Moreover, these faculty members had relatively more agency in designing the course given their tenured status in comparison to adjuncts; therefore, it is important to understand the faculty members who have less agency (such as part-time faculty, adjuncts, or new faculty members) in making major re/design decisions to fully understand the scope of instructional decisions by diverse faculty members and the conditions that influence their decisions.

Faculty members in this study mentioned that they were able to give more time to teaching and thinking about instructional decisions because of their current professional status (e.g., tenured, associate/full professor rank) in the study. One faculty member mentioned that it would be unfair for us to expect a similar kind of dedication and emphasis on teaching by a faculty member on the tenure track, because tenure decisions at the institution were heavily based on research and rarely considered the time and effort invested by faculty in their teaching. The findings of the study highlighted the need to examine how recognition and reward excellence in teaching at R-1 research universities influence faculty's teaching and students' learning.

Efforts have been made across universities to improve teaching quality (Neisler, 2022). In my study, faculty made and adapted instructional decisions while considering their personal, contextual, content-related, and learner-related factors. Therefore, there is a need to co-examine how faculty's personal factors influenced their instructional decisions and what role professional development plays (if any) to encourage faculty to learn about teaching and learning theories and investigate their teaching practice.

Faculty members who participated in my study pursued a teaching innovation project in their teaching and learning, for which they had won the award in the past ten years. Innovation and scholarly work on teaching and learning stemmed from the individual's willingness to take

risks, support, and professional development (Cropley, 2015; Alencar, Fleith, and Pereira, 2017). The faculty's motivation to pursue a teaching innovation project was driven by their willingness to invest in teaching, monetary support provided by the institution to pursue an innovation project, and extended experience in the field of teaching and learning. The faculty were intentional about improving teaching and learning and invested in experimentation and risk-taking when they were designing and implementing instructional projects, even before the pandemic, as noted from their awards. This raises questions if provision of the resources, incentives, and autonomy to experiment with pedagogies, improve the likelihood for faculty to invest their time and efforts in teaching.

Faculty training and development are usually focused on topics that include topics such as theories in instruction, course design, instructional strategies (problem-based learning, simulation, etc.), and assessment strategies (multiple-choice question writing, assignment development) (Philibert, Konopasek, & Riddle, 2019; Wheeler & Bach, 2021). My study suggests the need for a more holistic and comprehensive study of faculty training exploring if and how the programs allowed faculty to make connections between theory and practice and design their instruction by considering their personal approach to teaching and learning, expertise and experience, personal values, content to be taught, characteristics of learners, disciplinary ways of thinking, available learning resources, and available evidence of teaching and learning.

This study also highlights the importance of further understanding and developing faculty members' in-the-moment decision-making. Schoenfeld (2010, 2015) argued that in-the-moment decision-making is an interplay of faculty knowledge, resources, goals, beliefs, and orientations. Less attention is paid to in-the-moment instructional decisions in instructional design literature,

teacher training, and faculty development programs. While knowledge of instructional design models is important for the faculty, research should also be done to examine faculty's intuition, reasoning, reflection, adaptation, iterative improvement, and evidence-based instruction, because these skills may help faculty in adapting and improving instruction and student learning experience.

This research primarily focused on the faculty's narration of the decisions they made and their justifications for their decision-making. However, it is unknown how faculty members' decision making is carried out in the classroom and received by students. Schoenfeld argued,

> "What matters in teaching is not so much what people say but what they do. Thus, although professed beliefs are important, what is important from my perspective is the triangulation of claim about teachers' beliefs (whether their own professed beliefs or beliefs attributed to them by researchers) with teachers' actual classroom behavior" (Schoenfeld, 2011, p. 48).

I argue that both individuals and instructor thinking and action merit investigation, to develop a triangulated view of instructional decisions and influencing factors, it is necessary to extend the study to observe their decision-making in the classroom, as exhibited by faculty through their teaching behavior. Furthermore, the relationship between instructional decisions, teaching behaviors, and the effectiveness of instructional decisions also needs to be studied.

To advance this research on instructional decision-making and professional development, I propose following line of inquiry: (a) examine the relationship between instructional decisions and teaching behaviors, (b) determine the effectiveness of instructional decisions and teaching behaviors, (c) examine the role of reward and recognition in improving instructional quality, and (d) investigate the influence of professional development programming that encourages faculty

members to reflect on their own decisions on their instructional decisions and teaching behaviors.

Conclusion

Instruction is often a purposeful and systematically planned sequence of events intended to engage learners in achieving learning goals. However, in this study, faculty members reported planning the course prior to the semester, and made changes of different scope, as they taught their courses during the pandemic. The pre-instructional decisions and during-implementation decisions both were reflective of faculty members' personal expertise, beliefs, and values; instructional factors such as the content of the course, financial accessibility of instructional materials, wider agreements in the disciplinary field, students' participation and performance, and reflection on instructional situations; organizational factors including on-campus resources available, university-based and external funding for teaching innovation, guidance from professional societies, and tenure and promotion requirements; societal factors including culture and politics, safety and security in neighboring communities, and current events happening locally and globally; and the COVID pandemic related factors including students' struggle with transition to college, faculty and students' stress and fatigue, and decline in student attendance and performance. Thus, faculty's tenured status provided them with agency to design and implement the instruction, while navigating the factors listed above. However, some factors (such as change of instructional mediums and masking policies) were primarily dictated by the changes in the pandemic situation and were beyond individual faculty's scope of influence. Nevertheless, faculty ensured the continuity of instruction while keeping instructional goals as their guiding posts. The research underscores the importance of providing faculty with the instructional environment that is open to experimentation so that they can experiment with

various instructional approaches and examine and disseminate good instructional practices that worked in their contexts. Moreover, faculty must be supported with financial resources to undertake the teaching innovation projects, to improve their understanding of and willingness to make instructional innovations that result in improving their instructional practice. In case of large classes and changing instructional circumstances, support such as Teaching Assistants and instructional design support must be made available and visible. Furthermore, there is a need to examine how can faculty be supported to design a student-centered, evidence-based, and contextually relevant learning experiences.

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Appendices

Appendix I: 2020-2023 Nomination Evaluation Worksheet

Nominee:

_____

Nominating Letter:

Please evaluate the strength of the case made by the nominator.

1 (weak) 2 3 4 5 (strong)

Rationale and suggestions:

_____

_____

Addresses Award Goals:

1. Demonstrates excellence in teaching at all levels in a way that is seen as significant by faculty members, students, and the public at large.

1 (weak) 2 3 4 5 (strong)

Rationale and suggestions:

_____

_____

2. Ability to role model for faculty members the many dimensions of teaching as manifold opportunities for constant improvement, even for the best teachers.

1 (weak) 2 3 4 5 (strong)

Rationale and suggestions:

_____

_____

3. Invests in their teaching as seen, for example, in teaching initiatives or innovations or in techniques for assessing or evaluating student learning.

1 (weak) 2 3 4 5 (strong)

Rationale and suggestions:

_____

_____

4. Evidence of consideration of student diversity and strategies for inclusive pedagogy within the proposed project.

1 (weak) 2 3 4 5 (strong)

Rationale and suggestions:

_____

_____

5. 5. Ability to improve the teaching and learning environment on campus in ways that can be singled out and recognized as valuable.

1 (weak) 2 3 4 5 (strong)

Rationale and suggestions:

_____

_____

6. Based on the Project's brief description it has merit, is do-able within 3 years, and has potential for impact on teaching and learning on the Syracuse University academic community as a teaching award-winning professor.

1 (weak) 2 3 4 5 (strong)

Rationale and suggestions:

_____

_____

Appendix II: Recruitment Email (Online)

Dear Faculty Member (Name),

I hope that this email finds you in good health.

I am conducting a study with faculty who have been awarded for their teaching excellence. I found your name on the Meredith professors' list at Syracuse University's website indicating that within the last decade you have been awarded the prestigious Meredith Professorship for your teaching excellence. Congratulations!

As part of my doctoral Research Apprenticeship Practice, I, Zeenar Salim in the Instructional Design, Development and Evaluation program, am conducting a research study to investigate award-winning faculty's course re/design decision-making process and factors they believe influence their decision-making. The purpose of the research therefore is to explore and unpack the decision-making process of award-winning faculty as they design/redesign their courses amid the COVID pandemic.

Participation in the research study will involve interacting with the researcher through a total of 3.5 hours of online qualitative interviews spread over the semester. The first interview [1 ½ hrs.] will be near the beginning of the semester; the second interview [1 hr.] will be mid-semester; the third interview [1 hr.] will be near the end of the semester. I will also seek your help in retrieving documentary and artifact-based evidence (such as your course syllabi, learning materials, course shell/ files, etc.) that serves to demonstrate your decision-making processes and resulting actions.

I believe that you will be able to provide required information to help me further understand faculty, with excellence in teaching, course re/design decision-making processes. Please help me with this study by replying positively to this email indicating that you are willing to participate. I will share additional details about the study with you and a consent form to participate upon a favorable reply. I hope that you are indeed willing to support this research with your participation.

Respectfully,
Zeenar Salim, doctoral student [Student Researcher]
Doctoral Student - Instructional Design, Development and Evaluation
264 Huntington Hall | Syracuse, New York 13244
Telephone: 315.4509665 | Email: zsalim@syr.edu
SYRACUSE UNIVERSITY | SCHOOL OF EDUCATION

Appendix III: Consent for Participation in Interviews (For Faculty) [Online]

Protocol Title

Tenure Faculty's reflections on their Instructional Decisions while Re/Designing a Course

Student Researcher
Zeenar Salim, doctoral student
Instructional Design, Development & Evaluation
264 Huntington Hall
Syracuse, New York 13244
Telephone: 3154509665 | Email: zsalim@syr.edu
SYRACUSE UNIVERSITY
SCHOOL OF EDUCATION

Dear Faculty Member,

The purpose of this letter is to provide you with information about participation in a research study and offer you the opportunity to decide whether you wish to participate. You can take as much time as you wish to decide and ask any questions now, during, or after the research is complete. Your participation in this research is voluntary.

The **purpose of the research** is to explore and understand decision-making and factors that influence the decision-making process while the award-winning faculty design or redesign a course amid COVID pandemic. The faculty recruited for the study are 'recognized' for their teaching through the award of an institutional award in teaching excellence.

By consenting to be the participant of the study, you will be invited to participate in three activities:

Interviews: Faculty will be asked to participate in a series of three interviews.

The first interview will be 1.5 hours. It will be conducted near the beginning of the semester. Its purpose is to gather general information about the faculty member's insights into their course

design decision-making strategies and gather examples of design strategies proposed in their award-winning proposal.

The second and third interviews are one-hour each, conducted near the middle of the semester and at the end of course. The purpose of the second interview is to capture recent course decision-making activities and identify the factors that influenced the faculty's decisions during their teaching cycle. The third interview also focuses on recent course decisions however ends with a reflection of the processes and factors that have influenced the faculty members course design decision-making over time.

The courses discussed during the interviews may or may not be the course that the faculty member designed during your teaching excellence award process. There are between 10 and 15 questions in each interview. The interviews will be conducted via ZOOM at a time convenient for the participant. A request will be made to video record the interview. The faculty member may choose if they will allow the interview to be audio or video recorded. Transcripts will be generated from the interviews and used for data analysis.

The research participants have the right to skip or refuse to answer any questions that they do not want to answer, without sharing the reasons. The interviews recordings will be stored on the researchers' computer in password protected folders. The access to data is limited to the researchers in the study.

Document analysis: Faculty will be invited to share the grant proposals they wrote and submitted for the teaching award. This document will be analyzed in terms of design-decision-making evidence and actions toward fulfilling the teaching award proposal. The sharing of award-winning proposal is voluntary and at the discretion of the faculty.

Course material analysis: Faculty will be asked to share artifacts from their courses (syllabi, worksheet, rubric, etc.) or any other circumstance that have influenced their course design thinking and decision-making. Artifacts may include products/evidence of decision-making such as a written document on why the course was developed/redesigned, syllabi for the

original and redesigned course, learning material re/produced, course shell on learning management system, instructional videos, etc. These artifacts will be reviewed for evidence of design thinking, decision-making and actions. The sharing of artifacts is voluntary.

Voluntary participation in the study means that you consent to participate in the interviews. However, it would be up to you to share artifacts and/or documents to supplement the researchers' understanding of the research phenomenon (design decision-making). The researcher will use pseudonyms to protect the confidentiality of individuals participating in the study. The findings from the study will be disseminated to the academic audience through a published paper and/or professional presentation. The identity of the individual, program, institution will be protected.

There are no immediate benefits to the faculty who participate in the study, however, by talking with the researchers you may encounter moments of reflection and insight into your own teaching. Your insights may also contribute to the development of data-driven theoretical model that can be useful for you, other researchers, instructional designers, faculty members and the academic community at large. There is minimal risk associated with this study. The faculty member may feel uncomfortable answering some questions, however, has the right to refuse to answer without penalty.

The research study will be conducted online. We know that whenever one works with email or the internet, there is always the risk of compromising privacy, confidentiality and/or anonymity. Your confidentiality will be maintained to the degree permitted by the technology being used. It is important for you to understand that no guarantees can be made regarding the interception of data sent via internet by third parties.

Your privacy will be protected by using pseudonym in the data analysis, reports and writeups. Your name will remain confidential and will not be shared with the higher administration or academia in general. The researcher will make sure to store the data in password protected files. The insights developed from the data collected will be disseminated in

the form of publishable academic article, however, no names and personal identifiers will be used to protect individual's confidentiality.

Participation in the research study is voluntary, and you can withdraw anytime from the study at any point in time. You can contact the student researcher, doctoral student Zeenar Salim (zsalim@syr.edu), if you have any questions.

I am over 18 years old and a Syracuse faculty. I understand what my participation in this study involves. I have printed a copy of this form for my personal records.

Please add the check mark ☒ below to indicate if you agree to be:

Video and audio recorded ☐

Only audio recorded ☐

Not recorded ☐

By typing my name, email and today's date and submitting the form, I agree to participate in the research study.

Name: Click or tap here to enter text.

Email: Click or tap here to enter text.

Date: Click or tap here to enter text.

Printing the name indicates your knowledge of and consent to the terms outlined in the consent form. Once you have printed your name, please click submit. Zeenar will contact you to setup the first interview. Thank you!

Appendix IV: Research Tools

Interview Protocol on Course Design (First Interview- 1.5 hours)

Hello I am [name]. Thank you for agreeing to participate in this study! This interview is designed to give you an opportunity to share with me your thoughts on re/designing courses and to help me understand how/ when/ why you have made course decisions while re/designing your courses. I hope to video record this interview, please confirm that you grant me permission to video record and then we will get started. If you are not comfortable with the video recording, we can go ahead with audio recording or no recording. Please let me know what is appropriate for you. [Upon starting, introduce participants, re-state this should take about 1 ½ hours, review briefly context to study as defined in introductory email and consent letter, ask if there are any questions and encourage interviewee to share materials and resources to help showcase their re/design actions]

- What is your teaching philosophy; how does this influence your teaching (strategies, objectives, materials)?
- What attracted you to apply for a Meredith Professorship Award?
- How did completing the Meredith Professorship proposal influence your course/ design decisions?

  PROBE: Did your design ideas come from another of your courses?
  PROMPT for examples, rationale for importance, etc.

  PROBE: Did your design ideas come from a professional development session?
  PROMPT for examples, rationale for importance, etc.

  PROBE: Did preparing the proposal influence your design thinking or did you stick to your initial ideas?
  PROMPT for examples, rationale for importance, etc.

  PROBE: What other factors influenced your thinking?
  PROMPT for examples, like course feedback / evaluation? reading about new or different techniques? social media? colleagues, faculty meetings on curriculum? new school-/college-level decisions? etc.) **PROMPT** for examples, rationale for importance, etc.
- Please tell me about a specific course or section of a course that you modified:

  PROBE What brought that course/section to mind?

  PROBE for specific parts of the course/section that were modified and why (feedback, new strategy, etc.) and how does this align with your teaching philosophy?

  PROBE for how you went about making the modification (consulting help, reading, taken from other course, etc.) and how does this align with your teaching philosophy?

  PROBE If and how pandemic challenges affected the design of the course?

  PROBE for thoughts on why this was different, important… and how it affected other parts of the course.
  PROMPT How it modified their role as instructor or did it?
  PROMPT How students' activities, thinking, outcomes, productivity, were modified or not?
  PROMPT How did it influence students' learning? if it did?

  PROBE for did you (or would you) use this strategy/approach again – in another section of the course or another course? Why or why not …

PROBE How does this section of the course fit into the larger scope of the expected learning?

PROMPT How well did this section work?

PROBE Would you change anything you including in this section now? What and why?

- In summary… can you visually (e.g., analogy, diagram, step-by-step process, series of descriptive words) describe or show me the process and thinking you went through to design and prepare this course/section, in a way that might help other faculty think about effective design decision making?

Interview Protocol on Course Design (Second Interview – 1 hour)

Hello again, thank you for agreeing to participate in a second interview! The purpose of this interview is to continue our conversation and develop a further understanding of what decisions were made in the past few weeks, based on or different from the initial design plan that you created for your course. With your permission, this interview will be video recorded. Please let me know if you are okay with video recording. If you are not comfortable with the video recording, we can go ahead with audio recording or no recording. Please let me know what is appropriate for you. As a reminder, in our last meeting we talked about the process you went through as you were writing your proposal for the Meredith Professorship Award, and you walked me through an example of some design-decisions processes you made for this course you are teaching now. Some interesting strategies you described included… (summary of previous discussion). Is there anything you would like to add to my summary before we begin today? Let's begin with the interview and please feel free to share any course resources that may help me visualize your decisions or the products of your decisions.

- What were some key design decisions that you either tested as designed these past few weeks or modified during the past few weeks while teaching?
  - **PROBE:** for what was the design being implemented?
  - **PROBE:** what brought this example to mind – it worked well?
    - **PROMPT** for was it a success? What were the student reactions? your reactions?
    - **PROMPT** for specific examples of success and why they thought this
  - **PROMPT** for overall how well do you think the design worked, how did you know?
  - **PROBE:** decisions that were made to modify/change an activity, etc. during a course …
  - **PROBE:** what brought this example to mind – it failed?
    - **PROMPT** for specific examples of failure,
  - **PROMPT** for what did you do – let it run its course, make a change at that time?
  - **PROMPT** for rationale for making modifications; did a modification work?
- Given this experience do you think that your course design decision-making strategy is effective?
  - **PROBE:** why and what factors do you consider most important in making such decisions.
    - **PROMPT** why is your process effective (or not) … specific examples beyond the one discussed that suggest your process and factors work for you.
- On your course design decision-making process … are their others (colleagues, leaders in your field, etc. who influence your thinking?
  - **PROBE:** who and how?
    - **PROMPT** for specific examples of others' ideas as they relate to your own.
    - **PROMPT** for examples of where this faculty member has shared course design success and failures with other**s**; circumstances and rationale for sharing – what happened after?
- How likely is it that design decisions you make in this course will be used in your other courses?
  - **PROBE:** why and how?

PROMPT for specific examples.

- Would you modify the process of making course design decisions that you sketched/shared last week? Are there any factors or sub-processes that you would like to add or subtract from the diagram based on the given course design decision?

Interview Protocol on Course Design (Third Interview – 1 hour)

Hello! The purpose of this interview is to continue our conversation and develop a further understanding of what decisions were made throughout this entire course, based on or different from the initial plan that you had in the beginning of this semester. The interview will be video recorded, are you still okay with a recording? If you are not comfortable with the video recording, we can go ahead with audio recording or no recording. Please let me know what is appropriate for you. As a reminder, in our last meeting we talked about some specific modifications you made to your course and how these were working over the previous weeks. Here are a few things I summarized from the discussion … (summary of previous discussion). Is there anything you would like to add to my summary before we begin today? Let's begin with … and remember, it is very helpful is you share course resources that may help me visualize your decisions or the products of your decisions.

- What were some key design decisions that you made during the past few weeks while teaching?
  PROBE: decisions that were made to modify/change an activity, etc. during a course …
  PROBE: what brought this example to mind – its success? failure?
  PROMPT for specific examples
  PROMPT for what did you do – let it run its course, make recent changes at that time?
  PROMPT for rationale for making modifications?

- If you were given a chance to rethink some of your design decisions, how would you undertake these decisions differently … in terms of your thinking process, factors you take into account, etc.?

- Are there any course decisions/choices you used this semester that you are going to use going forward in this course or other courses?
  PROBE for specific examples and rationale.
  PROMPT explain under what circumstance you see these decisions/choices working in the future.
  PROMPT how do you see this affecting student learning, your teaching in different types of courses (e.g., science vs. humanities? Introductory vs complex content courses? etc.)

- What changes will you need to make? Why? How?
- If and how your course re/design decisions are influenced by the Meredith professorship award and the project undertaken during Meredith professorship.
- What is the evidence of (change in) instructional decision-making process as influenced by the undertaking of Meredith project?
- If and how have you reflected on your previous instructional decision making in your research work? Teaching and service?

- In what ways the project influenced the target audience (learners) and peripheral audience (department, institute, academia)?
- If and how have you applied the learning in different contexts, other than the one that was under the grant study? Would you modify the process of making course design decisions that you sketched/shared last week? Are there any factors or sub-processes that you would like to add or subtract from the diagram based on the given course design decision?

Appendix V: Example of Memos

Memo 1: Community Service and Diversity Equity and Inclusion

Ruth's approach to teaching is to "upset the power differential" by bringing community service to the forefront of teaching and engaging students in understanding the community needs and instilling the love for community service in them through engaging them in community service work.

Values – Diversity equity and inclusion are coded as a separate code, but I think they should be combined with the values section – because how can we separate it from the community?

While coding Ruth's interviews, I really wanted to create a separate code for research and community service. But for now, I have retained it, to continue coding with the same set of codes. These could be really separated if there are more faculty members using community-based approaches. I remember Charlotte also does.

Ruth particularly uses recruitment strategies to recruit students of different backgrounds. If others also use such strategy, it could be an instructional decision to discuss about. For now, I have added it as an individual code, however, later it can be merged with the community service.

Appendix VI: Coding Scheme

D/F	Name	Definition	Example Quotations
Decisions	Brief intro to the course	Name of the course Type of the course	E.g., Ethics in Health Science E.g., Meredith, online course, face to face course
	Design the course	Description of how the course elements (assessments, content, teaching strategies, students' needs, subject matter requirements, accreditation, and policies such as attendance, timings, etc.) have been organized	You, I used to teach a 400-level econ course and I had to require people to attend. And this is a university. They cause, you know, frankly an obscene amount of money to go to.
	Course design map	Map of how course elements connect with each other	First, I identify course goals, then assessment, then teaching exercises
	Goals of the class	Description of what is the outcome/aim/goals of the course? How will that be achieved?	Communication - if you can't talk about it, you're never going to be able to save a child's life.
	Assessment	Description of how the learners' understanding, or skills or attitudes are examined in class or at the end of the course?	One of them as I have lots of in-class exercises, which I collect and read immediately.
	Selection of teaching strategy or teaching strategy	Strategies of teaching students so that they would engage more in the class.	***Give more time explaining issues:*** So, I know that I'm going to get a really heterogeneous group of students. And I like, I don't throw a bunch of mouth up on the board and assume Loudens. Clear a lot of time explaining it so that my address the issue you're talking about.
	Update the readings (to include new knowledge)	Faculty makes changes in the content /course readings to reflect the recent update in the field of study or due to changes in the today's world.	Because when a book, especially in public health, when a book is published, it's already out of date, right? **So, the books that are published now probably don't have COVID in them.** Probably don't even have the other coronaviruses in them, right?
	Add the content	Faculty has modified some content or add some content because of other reasons.	various religious values and here's one that I came across. I mean, one of my colleagues is Sikh. So, I showed how the Sikh people, during COVID, we're feeding other people and Sedna, that's, isn't that amazing? We don't know enough about that. So, I try to like promote diversity, right?
	Add a student	Faculty has enrolled a student in the course who was not the part of the course	So, there was this guy who was some USR in this place where I got massages. His name's Tim anyway, said, do you want to go to school? He said yes. He was the only one who said yes. So, I brought him to school
	Used Zoom/ Tech tools	Use of some online tools (e.g., Slack, zoom, google classroom) for teaching.	I did this year because I had students in the course using Google Classroom, which let me do that.

	Revert to face to face	Faculty's preference to continue teaching online or move to face-to-face classes, after pandemic	Keep Slack, I just know because so many people sent me messages, for mostly people in the class that went well. So now I will like to keep that forever for this class. (PW, Pos. 131)
	Timings of the class	A decision of whether the faculty is changing the time or not due to some reasons.	I hope my classes all in the evening so that students who work full time can attend.
Factors	Subject matter	The subject that is being taught influence the decisions	***Disability is a huge issue in public health.*** *So, when teaching public health, one cannot miss discussion around disability*
	Pandemic	COVID related changes	Then **pandemic hit**. You, came to where it's the idea that you can use Google Classroom and that will be easy and now, you're enjoying it, and we want to retain it
	Student Characteristics	Students cultural/historical/ professional background, skills, current knowledge, needs, etc.	So, I know that I'm going to get a really **heterogeneous group of students.** And I like, I don't throw a bunch of mouth up on the board and assume Loudens. Clear a lot of time explaining it so that my address the issue you're talking about.
	Approach to teaching / Beliefs about teaching	Beliefs related to how teaching is done or can be done for achieving maximum value	I talk about historical trauma and epigenetics. And then I use the Irish **potato famine as an example**. And when I introduce social determinants of health and one of the early social determinants of health that people are affected by, now goes by the name ACE, Adverse Childhood Experiences
	Teaching experiences	Faculty's personal experience of teaching in previous semesters/ colleges and learning drawn from it	But in **my other classes**, I used Google Classroom extensively. So, because of this, this Fall, and then again in the Spring, I can just walk into class and say we're going to use these three or four online searches and you're going to need to sign up for an account
	Personal Background	Faculty's personal, cultural, historical, or any other identity characteristics	Yeah. But I try to make it something that that person can learn from. And **that's because I worked in OBGYN. I mean, I'm not as a clinician, but I ran a program to reduce infant mortality.**
	Research experience	Faculty's past or current research experiences	I worked in blindness in the beginning of my career in Egypt, I got my doctorate was on this disease that causes blindness in Egypt.
	Learning experience	Faculty's past or current experience of learning a subject in school or college or by self (through readings, watching videos) or at a workshop	I did a lot of readings about the newer types of teaching, right?
	Teaching Knowledge/ skills	Faculty's knowledge about how to teach students and skills of teaching in higher education	Yeah. So, I think **when he did the practice injection on me.** Now, remember, we wouldn't do that anymore because with HIV we now know that we shouldn't have it. But those, this was a long time ago in the seventies. And so, I just fill the syringe with normal saline - salt water sterile and had him inject me because he couldn't imagine how to put a needle into skin. Well, I said, do it here. Now, we wouldn't do that anymore. But there's other things you could do. Right.

	Faculty Ed-Tech literacy	Faculty's knowledge and skills of using online platforms for teaching.	I mean, it's okay that you asked me, but like I'm not typical in the sense that I run my own website to support my courses. And I've done that for 20 years. I use Blackboard a little, but basically, I have my own software. I put everything on the web already. I've written interactive online actually says so. So, like so I shouldn't speak for the rest of the university. I was, I basically felt very fortunate to have had all this background when suddenly everything had to go online because I already, I didn't use Google Classroom. I didn't use that really interactive stuff. But everything else was pretty a pre-set on
	Preferences	Key topics, techniques, tools or approaches that faculty prefers to use int their teaching.	I'm not sure if that's a perfectly normal I would want to teach in person
	Perceived value	Benefits that faculty or their students draw from the implementation of certain idea, teaching a content area, teaching strategy, assessment, etc.	But one of the things that happens when you feel **connected to the community** is you are **happier.**
	Affordances	Availability of human or material (books) or technological resources	I don't think it's teaching, it's my effort to lower my carbon footprint. I haven't even used any Xerox for about six or eight years. Do you think? I mean, again, some people need to give out handouts. But you could post them on Blackboard. Right? We have this system so why not utilize it.
	Perceived constraints	In availability of human or material or technological resources	But all the rooms, at least in the Maxwell lagers complex that are wired for basically that have cameras and audio. They have technology that might have been great 10 or 15 years ago. And then wireless mikes, you can walk around. There's a cordless wireless mike. **None of those things have anywhere near modern echo cancellation.**
	Circumstances	Conditions (contextual, cultural, current debates in the field, etc.) that influence faculty's decisions --- other than pandemic	And nobody in the administration at Syracuse University assumes, I believe they honestly assumed that all the students are celibate, nobody gives birth.
	Evidence of success/failure	What evidence faculty collects to determine if a resource/ strategy is useful or not	Students' results, students' feedback form, students verbal feedback (like /dislikes)
	Reflections	Thinking about one's own teaching and seeing what can be improved or retained in order to improve students learning	It (post survey) was very quantitative. Only Like art skills and they liked it. But there was nothing in the pre-test, post-test to guide me about what to do better the next time, it opens is I think a waste of an evaluation. Yeah.
	Updates in the field	Availability of new knowledge or advancements in concepts in the current era	Inclusion of: 1. New technological advancement in the course such as robotics 2. Updated content such as inclusion of updated

			statistics on COVID cases in the public health course.
	Diversity Equity and Inclusion Values	Changes made in teaching and learning to accommodate students from diverse backgrounds. Changes in teaching strategies or content to provide students with understanding of the subject from diverse author's or people's point of view.	I think because I try, when possible, to **bring in people who themselves are diverse**. And sometimes, but most of them are people I know quite well. And so, I might know something about their history. I might have asked them; would you mind talking about that? I also try to make it comfortable for the speaker. So, the students could ask the speaker a question and feel comfortable about it. I think it's good. I mean, these are 2 or 3 quarter hour classes. So, it does help to have different voices.
	Seeing teaching as advocacy for change	The faculty uses teaching as a medium to advocate for a social or political cause such as advocating for social justice or mental wellbeing	Children. To teach this group of refugee children, there's a group of about 10 refugee children who are from Iraq, Syria, Nepal, and other places. There's a lot of refugees, but this group was brought together because they are all in either the late stage of high school or early college and they want to go into health professions. So, doctors, nurses, physical therapists, you get the idea. So, my colleague at Upstate who works with refugees, asked if I would come in and help, teach these students how to do a focus group, right? Because we're going to have them do focus groups of other refugees, other people from their background about the mental health challenges that refugees, parents and children faced during COVID. So, we have lots of interest from faculty, we have somebody from the psych department.

Appendix VII: List of themes, categories, and codes

1. Instructional Decisions
    1.1. Nature of Instructional Decisions
        1.1.1. Course Design
        1.1.2. Instructional Goals
        1.1.3. Concepts Taught
        1.1.4. Instructional Strategies
            1.1.4.1. Types of Instructional Strategies
                1.1.4.1.1. Presentation of Content
                1.1.4.1.2. Guest Speaker Sessions
                1.1.4.1.3. Field-based Experience
                1.1.4.1.4. Experiments
                1.1.4.1.5. Writing and Peer Review Workshop
                1.1.4.1.6. Problem-solving Exercises
            1.1.4.2. Multiplicity of Instructional Strategies
        1.1.5. Assessment Strategies
            1.1.5.1. Multiple Assignments – During and at the End of the Course
            1.1.5.2. Partnering with Students in Deciding Assessments
2. Factors Influencing Instructional Decisions
    2.1. Personal Factors
        2.1.1. Faculty's Personal and Professional Attributes
        2.1.2. Approaches to Teaching and Learning
        2.1.3. Values
    2.2. Instructional Factors
        2.2.1. Response to Instructional Situations
        2.2.2. Student Related Factors
        2.2.3. Student Background
        2.2.4. Student Participation and Instructional Mediums
        2.2.5. Student Feedback to the Instructors
        2.2.6. Student Teacher and Community Relationship
        2.2.7. Curriculum and Consultation with Peer Faculty
    2.3. Organizational and Societal Factors
        2.3.1. Organizational Resources
        2.3.2. Current Events, Culture, and Politics in the Society
        2.3.3. Peers' Influence on Instructional Choices
        2.3.4. Learning from Peers
        2.3.5. Integrating Peers' Academic Contributions into Courses
        2.3.6. Peer Coaching
        2.3.7. Organizational Promotion and Reward Structure
        2.3.8. Professional Societies
        2.3.9. Senate Approval & Accreditation
    2.4. COVID Pandemic Related Factors
        2.4.1. Worried Students and Faculty Amidst Uncertain Times
        2.4.2. Student (Un)preparedness
        2.4.3. Student Attendance

2.4.4. Adaptations in Instruction
2.5. Laurel Teaching Award

Appendix VIII: Overview of the courses discussed in the study.

Aspects of the Courses	Martin	Ruth	Henry	Charlotte	Steven	Arjun	Ethan	Andriana	Rita
Courses under investigation	Research Design in Geography	Public Health Ethics	Data Analytics	Enterprise Risk Management for Information Professionals	Computer Security	Managing in a Global Setting	Chemistry (Forensics)	Shenzin [pseudonym] Music Ensemble	Nutritional Biochemistry
Created/ Redesigned	Redesigned	Created	Created	Created	Created	Created	Created	Created	Redesigned
Student level Undergraduate [UG] Graduate [G]	G	G	G	UG & G	UG & G	UG & G	UG & G	UG & G	UG & G
Semester	Spring 2021	Spring 2021	Spring 2021	Fall 2021	Fall 2021	Fall 2021	Spring 2022	Spring 2022	Spring 2022
Class Size (Number of Students)	6	50	50+	35	15	48	400+	6	19

Appendix X: List of Acronyms

Acronyms	Full form
AMA	Ask Me Anything
BA	Bachelor of Arts
CARE	Community Action Research and Education
CDC	Centers for Disease Control and Prevention
COVID	Corona virus disease
GTM	Grounded Theory Model
IRB	Institutional Review Board
ISACA	Information Systems Audit and Control Association
MA	Master of Arts
MBA	Master of Business Administration
PhD	Doctor of Philosophy
POGIL	Process Oriented Guided Inquiry Learning
TA	Teaching Assistant
TED Talks	Technology, Entertainment, and Design (TED) Talks
US	United States

Vita

Zeenar Salim

Education

Master of Philosophy (MPhil) in Education, 2016, Institute of Business Management, Pakistan

Master of Education (MEd) in Math Education, 2014, Aga Khan University, Pakistan

Bachelor of Education (Math and Science Education), 2012, University of Karachi, Pakistan

Bachelor of Commerce, 2010, University of Karachi, Pakistan

Awards and Honors

Fulbright Ph.D. Scholar, U.S. Department of State	2018-2023
Fellow, Advance Higher Education, United Kingdom	2017
President's Merit Scholarship, Institute of Business Management, Pakistan	2016
MPhil with High Honors, Institute of Business Management, Pakistan	2016
MEd with High Honors, The Aga Khan University, Pakistan	2014

Professional Experience

Graduate Teaching Assistant, School of Education, Syracuse University	2023-2024
Graduate Assistant, Institutional Effectiveness, Syracuse University	2021-2023
Internal Evaluator, QTL_net, Office of the Provost, The Aga Khan University	2019
Instructional Designer, QTL_net, Office of the Provost, The Aga Khan University	2021- 2022
Instructional Designer, Development Planning Unit, University College London	2020-2021
Instructional Designer, School of Information Studies, Syracuse University	2019
Faculty Developer, QTL_net, Office of the Provost, The Aga Khan University	2016-2018
Instructor of Record, Notre Dame Institute of Education	2013-2016
Secondary School Teacher, New Day Secondary School	2010-2011
Secondary School Teacher, Bright Scholar Academy	2008-2010