

Exploring the Implementation of Care in Teaching in a First-year Engineering Course

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ABSTRACT

Instructors in higher education are typically hired for teaching positions based on their research expertise in a particular area, understanding that subject matter expertise is necessary for teaching and instruction. What is sometimes overlooked and not given enough importance is that teaching is also a relational activity, and because of this, care can be considered to be a fundamental component of effective instruction. Research has shown that some faculty are hesitant in showing care to their students since this might suggest a lack of academic rigor and lessening expectations for students. It might also be that faculty view care as a concept that does not belong in higher education and is something that is more appropriate for younger children. Yet there is research in higher education which shows that implementing care to students motivates them to perform well in class, meet and exceed the goals set for them by the instructors, make constructive improvements and create overall ideal conditions for learning. Along with this, prior research on care in teaching has focused mostly on primary and secondary education levels, with far less attention given to care in teaching in higher education specifically, and little in the context of Engineering Education.

To advance our understanding of the potential value of care in teaching in higher education, this study presents an empirical case study of how care can be enacted in teaching in an Engineering Education classroom. The study draws on Tronto's political ethics of care framework, originally developed in the context of feminist theory and methodology, and operationalizes it in the teaching and learning setting by situating the context of the study in a first-year general engineering classroom in the department of Engineering Education at Virginia Tech. Since the purpose of the study is to understand what teaching behaviors can act as evidence of care, this context was selected as a likely scenario where these teaching approaches might be present. Virginia Tech is an R1 institution, the Department of Engineering Education values student-centered teaching, and the foundations of engineering course: ENGE 1216, is a project-based course where it may be more likely to see care being implemented in the teaching. Along with this, the three instructor participants that were chosen to bring light to this phenomenon have been recognized for their teaching expertise by being given teaching awards in the past, and also have experience in teaching this specific course, having taught it at least twice before.

This study used a case study approach and included two interviews with the instructor participants to understand their general beliefs about care as well as how they intended to implement care in relation to Tronto's ethic of care framework. It also included three observations of their classrooms, one for each phase of the semester, and looked at three years' worth of students' SPOT comments.

Tronto's framework includes four ethical elements: attentiveness, responsibility, competence, and responsiveness. Findings suggest that instructors' intentions with

implementing care, their enactment of care in the classroom, and students' perception of what instructor behaviors they found to be most valuable to their learning, all have strategies and approaches that relate to each of the four ethical elements. The responsibility element was seen to have the most approaches and strategies. Findings also showed that despite different instructor backgrounds, beliefs and personalities, each instructor had relatively similar approaches to implementing care in relation to each of the four ethical elements, with some unique features for each instructor. There also seems to exist, a reasonable degree of alignment between instructors' intention with implementing care, their enactment of the care in the classroom, and what students commented was helpful.

This study took a framework developed in accordance with another discipline and operationalized it in a teaching setting. It has shown what teacher behaviors can act as evidence of care in the context of Engineering Education. The study has also disaggregated common instructor actions that usually tend to be conflated, to more specific behaviors to understand the impact each behavior can have in relation to care. It has also grouped common approaches and strategies together that instructors use, to show how when this is combined, is also a way of implementing care. There are a list of specific teacher approaches and strategies that instructors should be using that can satisfy each element in the care framework and can thus implement care in the classroom.

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GENERAL AUDIENCE ABSTRACT

With the idea that subject matter expertise is required for teaching and training, instructors in higher education are frequently chosen for teaching roles based on their research competence in a particular field. Care can be regarded as a vital element of good instruction because teaching is also a relational activity, which is sometimes disregarded and not given enough priority. According to research, some professors are reluctant to show their students that they care because doing so would imply lowering standards for students. Another possibility is that faculty believe that the concept of care is inappropriate for higher education and is more suitable for young children. However, studies in higher education demonstrate that providing care to students inspires them to perform well in class, fulfil and exceed the objectives set for them by the instructors, offer helpful adjustments, and generally foster the best learning environments. Additionally, earlier studies on care in teaching have mostly concentrated on the primary and secondary education levels, paying little to no attention to care in teaching, specifically in higher education or in the context of Engineering Education.

To better understand the value that care in teaching in higher education can have, this study chose a context where care being shown in teaching would be likely to be seen. Since the purpose of the study is to understand what teaching behaviors can act as evidence of care, a first-year general engineering classroom in the department of Engineering Education at Virginia Tech was chosen. This is because Virginia Tech is an R1 institution, the Department of Engineering Education values student-centered teaching, and the foundations of engineering course: ENGE 1216, is a project-based course where it may be more likely to see care being implemented in the teaching. Along with this, the three instructor participants that were chosen to bring light to this phenomenon have been recognized for their teaching expertise by being given teaching awards in the past, and also have experience in teaching this specific course, having taught it at least twice before.

This study included two interviews with the instructor participants to understand their general beliefs about care as well as how they intended to implement care, or specifically in relation to Tronto's ethic of care framework which was the theory that guided this study. It also included three observations of their classrooms so it could be seen how care was enacted, and looked at three years' worth of students' SPOT comments to understand what students described the instructors doing, that was most helpful for their learning.

The theory used for this study had four main elements to it: attentiveness, responsibility, competence, and responsiveness. The findings suggest that instructors' intentions with implementing care, their enactment of care in the classroom, and students' perception of what instructor behaviors they found to be most valuable to their learning, all have strategies and approaches that relate to each of these four elements. The responsibility element was seen to have the most approaches and strategies. An example of a strategy to be attentive is

to be signal availability and emphasize proximity with the students, as well as checking in on them. Examples of approaches to satisfy these strategies would be to walk around the classroom as well as to ask students questions to see how they are doing. Findings also showed that despite different instructor backgrounds, beliefs and personalities, each instructor had relatively similar approaches to implementing care in relation to each of the four elements, with some unique features for each instructor.

This study took a theoretical framework that was used in another discipline and was able to use this and show how the four elements that made up this framework could look like in a teaching setting. It has shown what teacher behaviors can act as evidence of care in the context of Engineering Education. The study has also broken down some instructor actions that usually tend to be grouped together, to more specific behaviors to understand the impact each behavior can have in relation to care. It has also grouped common approaches and strategies together that instructors use, to show how when this is combined, is also a way of implementing care. There are a list of specific teacher approaches and strategies that instructors should be using that can satisfy each element in the care framework and can thus implement care in the classroom.

Dedication

*“Saraswati Namastubhyam Varade Kamarupini
Vidyarambham Karsihyami Siddhir Bhavathu Mey Sada”*

Salutation to you, Goddess Saraswati, grantor of blessings and embodiment of all wishes. I am getting inducted into studies, please grant me accomplishment in my academic work.

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Chapter 1: Introduction

1.1: Potential Impact of Care in First Year Engineering

Traditionally, faculty in higher education are often recruited into teaching roles based on their research expertise, recognizing that content knowledge in the discipline is important for teaching. There is also a growing recognition that while faculty do not typically get formally trained for their teaching role, this pedagogical skill still matters (Postareff, 2007). There is substantial literature on this topic and many universities now have units dedicated to improving the quality of teaching (Postareff, 2007). However, this emphasis on gaining competence and improving skill can sometimes obscure the fact that teaching is a relational activity and that, as a result, care might be considered an essential underlying element of effective instruction (Barrow, 2015; Meyers, 2009). Ultimately, the caring relationship between a student and a teacher is crucial in higher education (Barrow, 2015; Thayer-Bacon & Bacon, 1996), and is usually not given enough importance.

There are a few reasons why faculty in higher education sometimes think that care is perhaps not an appropriate framing for their teaching. Meyers (2009) found that some faculty members view care as a lack of academic rigor or lessened expectations for students, and as a result, they question if caring even belongs in a college-level course and instead think that caring is more appropriate for younger children. This same idea is echoed in a study conducted by Barrow (2015) who found that many postsecondary instructors believe that caring for their students will have no benefits for them in the future. Barrow (2015) also mentions how there is very little research that has been done specifically about care in higher education, and a quick search on Google Scholar for publications on caring and teaching produced a small list (approximately less than 10 articles), as opposed to the vast majority of articles that were returned for a comparable search at the primary and secondary education levels. Furthermore, the higher education articles that do address a caring pedagogy or an ethic of care, tend to be located in teacher education and teacher training programs (Barrow, 2015), without any mention of teachers implementing caring practices.

Since there is evidence that faculty in higher education are not presently aware of the positive impacts implementing care in teaching can have, as well as the fact that this field has barely been researched, the main question that arises then is whether care is even needed in teaching, and whether there are negative impacts when care is not implemented. A study that was conducted by Hong & Shull (2010), examined how professor attitudes affect undergraduate engineering students. When the students were asked as to what concerns and challenges they faced from the major, they brought up how they believed it was upsetting how the lecturers don't even care to find out which classes you are required to take (Hong & Shull, 2010). Furthermore, they believed that the professors never bothered to connect what was read from the textbook and apply it into real life in order for them to become effective engineers. The students in this study felt that the professors nor the program showed any interest in them (Hong & Shull, 2010), and that this lack of care negatively impact on students' perceptions of themselves (Hong & Shull, 2010).

Another general issue commonly found in first-year students, especially in engineering, is their sense of belongingness. In a study conducted by Pearson et al. (2018) that examined the impact of diversity of background on sentiments of belongingness for incoming engineering students, they discovered that the sense of belongingness is so low that it is relatively troublesome for some first-year engineering students. This study had also discovered that the engineering culture really has a temporal effect (lasting longer than two weeks) that helps to dispel the idea that a student even belongs in engineering. The results further went on to show that new students may not have a sense of belonging because Engineering Education may be cultivating an exclusive environment (Pearson et al., 2018). This transition is already tough since students are in a completely new environment, they must be a lot more independent, and this can be intimidating and overwhelming for many students. First-year university students must generally adapt to a number of adjustments in order to effectively transfer to this new way of life (Husted, 2017). On top of this, first-year engineering students are even seen to start their education believing they belong in their discipline and so Engineering Education must begin concentrating its efforts on sustaining or at least not undermining students' sense of belongingness to their discipline (Pearson et al., 2018). A crucial part of this would be to start to find out what care practices might be practical to implement in Engineering Education.

From the aforementioned two paragraphs, it can be clearly seen that sometimes there are general struggles that students face in the teaching and learning setting such as low self-esteem, self-evaluation, a low sense of belonging as well as low motivation. It was discussed that these negative impacts could be a result of a lack of care being shown to the students. What is important to discuss then is whether implementing care in teaching practices can help in solving some of these issues, and the different ways in which care can generally be beneficial to students in the classroom. Barrow (2015) mentions that a caring behavior from faculty members encourages students to perform well in class, exceed goals set by professors, make constructive improvements, and push the boundaries and limits established in the classroom. In the same Hong & Shull (2010) study that was mentioned previously, this time when the students were asked what they considered to have positively impacted their learning in their engineering course, they mentioned that they felt that when instructors engaged with students outside of class and genuinely cared about their achievement, it helped the students feel more connected to them. This connection created a positive impression of the professor, it had made them more approachable and easier to talk and connect with, which in turn positively impacted student learning. Furthermore, when asked to describe the behaviors of the professors that had significantly altered the lives of the students during their undergraduate engineering studies, out of the 16 different traits they had mentioned, “caring” was mentioned fourth behind “enthusiastic”, “engaging” and “helpful” (Hong & Shull, 2010), suggesting it is a trait that students really prioritize seeing from their instructor.

In summary, this relatively limited literature on the topic suggests that showing care can positively impact students’ attitudes towards a course, as a positive connection is created with the instructor which in turn makes the instructor more approachable and easier to connect with. This, however, also goes onto positively impact students’ learning. The study conducted by Hong & Shull (2010) found that most concerns and challenges the students faced in their engineering degree were usually as a result of a lack of care shown by the professors, and similarly, when professors had shown this care, it positively impacted student learning. This study had also gone on to find that cultivating and nurturing supportive faculty-student connections is one potential strategy for achieving long-term goals of STEM student retention (Hong & Shull, 2010).

1.2: Personal Motivation

As already noted, transitioning from high school to university is challenging and in a recent thesis that looked at how well-being and effectively adjusting to university life interrelate, it was noted that first-year university students experience a lot of change and must learn to adapt in order to successfully acclimate (Husted, 2017). This was no different for me as university in itself was very intimidating since it was a new environment and a much more hostile atmosphere than the high-school I was at for the previous five years. Along with this, we were immediately put into a lecture hall with 800 other students, trying to understand the meaning of free-body diagrams. Essentially, it was a very new and stressful environment for not just me, but also for my friends and many other students I had spoken to.

Within this first semester of the undergraduate degree, in order to highlight why I believe care is crucial in teaching, I will briefly share the contrasting experiences I had in two of my courses; Introduction to Computing Engineering and Mathematical Modelling 1. These two courses are essentially a coding and a math course. I had previous experience of coding as our high school had introduced it to us, and it was an area I really disliked. I could understand the logic of the problems, but I always had trouble converting that logic into the language that we were coding in. Due to these experiences, anytime there was anything to do with code, I had an automatic response of knowing that I just wouldn't be able to do it. Mathematics however was quite the opposite since my mother is a math teacher and so it had always come to me very easily and I was confident in my abilities with it. Naturally then, as I had approached these two courses, I went into the Computing course quite nervous and worried, and into the Math course quite confident. It was during these courses that I had first experienced and realized how much the teacher's ability to care mattered.

Both course instructors taught well, in my opinion: they covered the necessary content and explained difficult problems well, and made them easy to understand. The instructor in the Computing course, however, just seemed to care for the students a lot more than the instructor of the other course did. I understand that the phrase "seemed to care" is a little vague, however all I can do is explain how I felt. Office hours were a huge part during these courses and both of the instructors had fixed office hours, however, since some of us students also had to take electives, these office hours would clash with the timings of the

elective classes. When speaking with the Computing instructor about this issue, the instructor always seemed to provide a solution for us. Whether it be to come and meet them in their office at a different time, or it be to email them with the question and assuring us they would reply within 24 hours, they always seemed to show their students that one way or another, they will respond to our concerns. The instructor always made us students feel as though any of the students' concern was also their concern and they always took responsibility for it. This had made us feel like we were allowed to be vulnerable in a way and that there was no reason to be hesitant if we ever had a question or concern. This instructor did not simply just ask if we had any questions or concerns, but also made us comfortable in sharing these. The other instructor on the other hand wouldn't be flexible in taking out any extra time for the students. It was more so a policy of either you are able to attend the office hours, or your question may not be answered. The instructor would also take sometimes up to a week to answer emails regarding questions about assignments etc.

By the end of the semester, other students along with myself ended up doing fairly well in both courses, however, we knew plenty of students who were not so confident with math to begin with, and by the end of the course, this confidence had dropped even further. I personally had come out of the math course not liking the subject very much and actually had more negative associations towards mathematics concepts and the general idea of it. However, by the end of the computing course, I had really begun to enjoy coding and it had seemed like it was always an interesting problem to solve. Since the instructor was able to not only acknowledge our questions, vulnerability, and caring needs, but was also able to attend to them, we always had a sense of trust that any problem would be solved. Since the instructor was able to consider the uniqueness of each student's position and problem, and also responded and catered to each of these problems, they showed they really cared about their students. It is as a result of this instructor and the care that I believe they had implemented and shown during that course, that my overall confidence and outlook on coding and approaching it has changed today.

1.3: Research Questions

The purpose of this qualitative study is to better understand how instructors enact care in teaching in the classroom. To understand this, three instructors as participants for this study were chosen to see how they implement caring practices in a first-year general engineering program that they were teaching, at Virginia Tech. The study explores the different ways in which the participants intend to implement care in the classroom, it will observe how the participants enact care in the classroom, as well as understand what teacher behaviors students believed had helped most in their learning.

This dissertation will be guided by one main research question which aims at exploring how care can be enacted in teaching within the classroom. To tackle this main, overarching research question, the study was broken down into three sub-questions. The first of these questions aims at understanding the instructor's intentions with how they want to implement care in the classroom. The second sub-question is focused on what the instructors are actually enacting in the classroom with regards to care, and the third is centered around understanding what teacher actions students had described to be helpful for their learning.

RQ: How is care enacted in teaching in a first-year general engineering program at Virginia Tech?

RQ 1.1: What were the instructor's intentions with implementing care in the classroom?

RQ 1.2: How did the instructors end up enacting care in the classroom?

RQ 1.3: What do students describe to be helpful for their learning in what the instructors have enacted?

1.4: Summary

This chapter introduced how the topic of care hasn't been given a lot of importance or priority in higher education, or Engineering Education more specifically. It outlined some of the negative effects associated with a lack of care, as well as how implementing these caring behaviors can improve a student's well-being, motivation, and overall learning. The personal experiences of the researcher have also been included in this chapter to help in explaining the motivation behind choosing to carry out this specific study. The chapter then concluded by outlining the research questions that guided this study.

Chapter 2: Literature Review

2.1: Conceptual Background

The concept of the “ethics of care” first appeared in a highly cited paper by Joan C. Tronto in the 1980s, which had talked about how future feminist moral thinking must be broader and more theoretical, and despite the biological disparities between men and women, an ethic of compassion transcends these distinctions (Tronto, 1987). Since then, Tronto has gone on to talk about the need for care and robust care policies in institutions (Tronto, 2010), in a paper which examined how to determine whether institutions offer quality care, and the need for developing “care institutions”. Other researchers like Nel Noddings and Vivienne Bozalek have also significantly contributed to literature on care. Noddings, in one of her papers, talks about how teaching is very important in terms of personal relations, and then describes this relationship in terms of care ethics (Noddings, 2012). In this piece, Noddings also initiated a basic framework of what care looks like and attributed traits such as interacting, thinking critically, and responding reflectively in connection to care (Noddings, 2012). Tronto initiated the conversation about care and Noddings brought this conversation into the educational space more specifically and briefly defined what it may look like. From this, Vivienne Bozalek went ahead and used a political ethics of care as a normative framework in order to evaluate a model of teaching and learning in professional development. In this paper, she identified the five elements of care as being attentiveness, responsibility, competence, responsiveness and trust (Bozalek et al., 2014).

Care has been defined by Tronto (2010) as a species activity that entails everything we must do to preserve, continue, and fix our "world" so that we can live in it as best we can. We attempt to weave a complicated, life-sustaining web out of our bodies, ourselves, and our environment (Tronto, 2010). Given that it places a strong emphasis on self-care as well as the reality that care is a very broad, public, and political action that is essential to human existence, this is a novel, innovative, and comprehensive way for higher educators to think about care (Bozalek et al., 2014). There are many different ways to understand and perceive what care actually is, but at its foundation, care entails listening, discourse, critical thinking, reflective reaction, and establishing intentional connections across the disciplines and to life

itself in order to develop and maintain it (Noddings, 2012). The ethics of care first appeared in the 1980s predominantly on the experience of woman. Philosophy, psychology, education, political science, library science, business, nursing, religion, and bioethics are now additional fields in which the ethic of care is acknowledged. According to care ethics, relationship is both ontologically and morally fundamental, which means that every human being begins in relationship and that a human person develops as a result of relationships (Noddings, 2012).

When considering how care might apply to Engineering Education, there seems a natural link to the significant literature that has emerged on the need to develop empathetic engineers (Walther et al., 2018). Furthermore, along with empathy being identified as a key factor in engineers' overall career success (Hecker, 1997), it is also associated in discussions regarding students' ability to consider the perspectives of other stakeholders and incorporate these insights into the design and the decision-making process (Walther et al., 2018). In the context of engineering, empathy has been portrayed by scholars as being a fundamental element of ethical reasoning since students require this attribute in order for their designs to satisfy customers' needs (Hess & Fila, 2016). Much of the empathy literature is mentioned in accordance with ethics and it can be seen in a way that empathy and care are slightly interconnected in terms of it being a quality that humans need to possess in order for the betterment of some external party. This however is quite different from this study as much of the literature on empathy and ethics deals with student characteristics, mentioning how it is an important characteristic that students need to have when they eventually become a professional engineer. In this study, however, I want to look at how care is used and implemented in teaching specifically. As opposed to focusing on students exhibiting these characteristics, the emphasis is being placed on the teacher to understand how care can be enacted in teaching in the classroom.

2.2: Empirical review of studies of care in teaching in higher education

This section focuses on studies of what students believe care looks like in higher education. Earlier on, mention was made of the study conducted by Anderson et al. (2020), who examined students' ideas of effective learning and teaching, and while care was not the main

focus of the study, students consistently identified caring as a crucial indicator of good teaching. They identified effective instructors as those who are passionate about their subject, teaching, and students, and that this has a significant impact on how pupils connect with the material, are enthusiastic about learning, and have goals for the future (Anderson et al., 2020).

When asked about care and how teachers show it, the students described how teachers show it by being open, attentive, and aware of their students' lives and other commitments, responsive to their needs in terms of learning, and invested in their wellbeing and academic success (Anderson et al., 2020). This seemed to be essentially everything that the teacher did on top of just teaching the students, that they weren't necessarily obliged to do. In order to describe teachers' care towards the students, the students used words like 'nurture', 'investment' and 'love'. They portrayed effective instructors as individuals who care about their discipline and subject matter, and they both openly and figuratively referred to this concern as passion and enthusiasm (Anderson et al., 2020; Hooks, 1994). Contrary to what many educators are wary of when it comes to care, students did not appear to associate care with any type of lowered expectations or avoiding challenges, as they also mentioned that they actually put more effort into learning in those courses where they felt that the teachers cared about them (Anderson et al., 2020). This study had also found that as with other forms of care, students claimed that the professors' dedication to the students in terms of care was mirrored by the students' dedication to the teacher and the subject matter of their courses. Other students also spoke about their relationships with instructors when describing their experiences of care, suggesting that care is expressed both within and outside of the classroom (Anderson et al., 2020).

In another study conducted by Noddings (2012), she identified more general traits of what care might look like in higher education. They identified that the carer must firstly be attentive which shares parallels with the political ethic of care framework that was used in the study carried out by Bozalek et al. (2014). Along with being attentive, the primary goal is to comprehend what the cared-for is going through and to hear what is being stated when the caregiver's attention is open. (Noddings, 2012). It is emphasized in this study that from the perspective of care ethics, the teacher, as a caregiver, must be interested in the care recipient's expressed needs, not merely those that the school as an institution and the

curriculum as a set course of study assumes. This is important since there may be several care needs that are not identified by the department or the school which would never be met if the teacher does not specifically look out for the care needs of every student. Along with this, there may be times when, as caregivers, we are unable to meet the care recipient's indicated needs. This could be because of a lack of resources, and sometimes we disapprove of the need or how it has been expressed. In the latter case, it is especially important to find a mode of response that will keep the door of communication open. Instead of addressing the indicated need, the caregiver wants to keep the caring relationship going (Noddings, 2012). Even if we cannot satisfy the care needs of the students, we should always maintain a relationship which will allow them to feel comfortable expressing these needs whenever they need to.

Although care has been demonstrated to be a crucial component of what educators should incorporate into their instruction, the literature also includes reasons why care isn't utilized as frequently as it should be and some drawbacks to it. Tronto (2010) identifies two main concerns: paternalism and parochialism (Tronto, 2010). Paternalism is when caregivers believe they know what the patients need better than the patients themselves, whereas parochialism is when caregivers develop preferences for particular care receivers who are closest to them (Tronto, 2010). When faculty adopt care in their teaching, these are some factors that they need to be aware of. There are also further cautions related to caring. Firstly, some faculty do care, but they believe their students are unaware of or unappreciative of their efforts (Meyers, 2009). Faculty members may become less likely to use care in the future as a result of this. Additionally, some instructors claim that establishing caring relationships in large courses can be too challenging, and others worry that they will become too lenient if they get to know their students (Meyers, 2009). Some professors also think that showing compassion is just going above and beyond and not necessarily a part of their work. Additionally, there are viewpoints that expressions of concern transgress established boundaries between public and private life, as well as ideas and sentiments in higher education (Anderson et al., 2020).

In one study conducted by Walker & Gleaves (2016), they theorized what a caring teacher looks like in higher education and their study utilizes the viewpoints of the concerned teachers. Within this study, experts and specialists that were classified as Faculty Colleagues

and members of the University Promotions and Conferment Committee were contacted, and each member of the staff who rendered judgment was asked to name a caring faculty member and then to specify why they believed the academic to be caring. All members of the staff were familiar with the academics' work. According to the responses, these experts believed that their "caring" faculty members had the following characteristics: they actively promoted learning in class, actively listened to students, exhibited empathy, gave appropriate and motivating feedback and praise, had high expectations for students' work and behavior, and showed a keen interest in their personal lives (Walker & Gleaves, 2016). This is how care is enacted in teaching in higher education according to these experts.

Narinasamy & Logeswaran (2015) conducted a case study on one teacher who was known to show genuine interest in the students' welfare and had been teaching Moral Education for twenty years. From the observations and interviews conducted with this teacher, even though it was seen that the teacher had a relatively limited understanding of what constitutes care for students, this teacher thought that the caring approach was a slow process for changing kids' behavior and that it was essential for pupils to get care consistently. (Narinasamy & Logeswaran, 2015). Along with this, the teacher thought that caring was more action-based and that it involved making time for pupils who might need someone to talk to about their concerns and helping them solve them. From this study, there were six themes derived from how the teacher showed care to the students. These were accomplished through demonstrating compassion for students, validating and complimenting them, being patient, having empathy for students, treating them fairly, and paying attention to them (Narinasamy & Logeswaran, 2015).

From the studies that have been discussed above, it can be seen that students value instructors that show care in the classroom as they view the notion of care as being effective in their learning. This is because literature shows that when instructors care for their students and are passionate about the subject they are teaching, students' motivation to learn also increases which creates ideal learning conditions for students. These studies also showed that students did not associate care with lowered expectations or a lack of academic rigor, but rather instructor's going above and beyond what they are obliged to do; teach the students. It was also seen that sometimes care is not implemented as much as it could be due to paternalism and parochialism. Some instructors are also hesitant in showing care since they

fear that students will not appreciate the caring efforts they put forward, while some faculty don't believe it is their job to go above and beyond. Literature however does still offer many more positive benefits to implementing care in the classroom than drawbacks, and some examples of basic behaviors include actively listening to students, showing compassion and empathy, showing a keen interest on students' personal lives, validating them and paying attention to them.

2.3: Model of Care

From the literature discussed previously, it is clear that teachers implementing care leads to a better learning outcome for students. However, this relation between implementing care in teaching practices, and this eventually leading to ideal conditions for learning, is not a direct relation and there are many different factors that allow for the correlation to occur. Based on the readings, and the previous discussions from the literature, I have specifically come up with some factors, and have developed a model that I used to guide/inform this study, represented below in Figure 1.

Model of Care

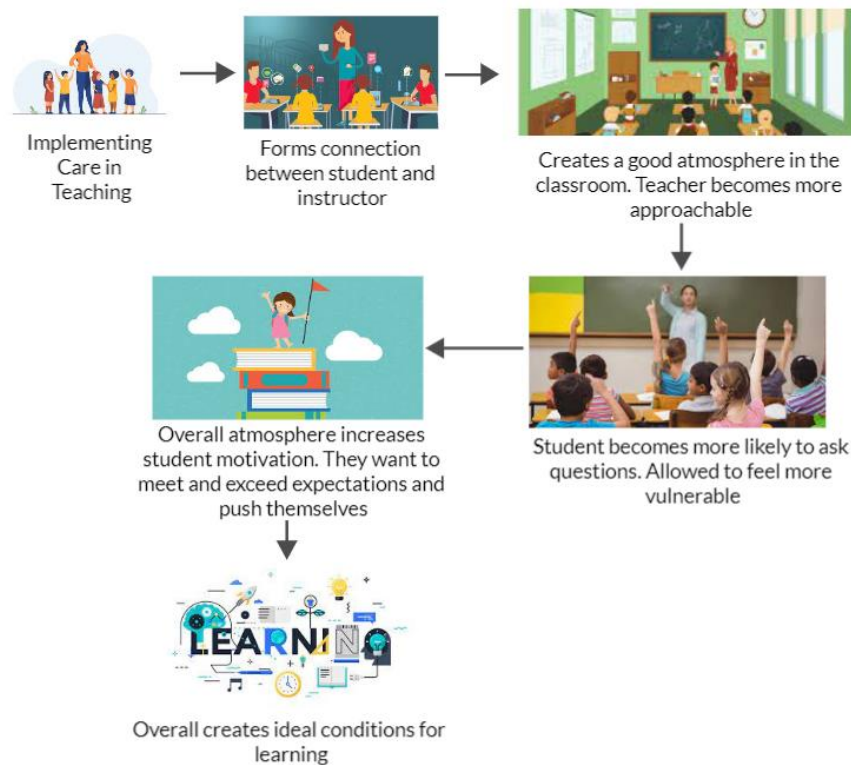


Figure 1 - Model of Care used for study.

2.4: Theoretical Framework: Tronto's Political Ethics of Care

2.4.1: Tronto's Definitions of Care

Tronto mentions how at the most general level, care denotes some form of engagement and that it carries other features with it. Firstly, care suggests that one would be extending themselves toward something or someone else. When care is addressed, it is typically neither self-referring nor self-absorbing, with the exception of self-care (Tronto, 1993). There is also a specific emphasis placed on action, in that care implies that it will inevitably result in some kind of action. Tronto gives the example of how if someone mentioned that they cared about world hunger, yet did nothing to end world hunger after that, then they didn't even understand what it meant when they said that they cared about this problem (Tronto, 1993). The same analogy can then be used with students and teachers, in that if a teacher mentioned that they cared about a student's well-being in their class, but then didn't carry out any form

of action to aid in the students' well-being, it can be argued that the teacher doesn't truly understand what it means to care. Finally, Tronto also mentions how care also derives from an association with the notion of burden (Tronto, 1993). By this, she means to say that when you say you care, it suggests more than just showing an interest in something or having a passing whim; rather, it implies taking on some sort of weight, or burden. In this context, we can also think of burden as being responsibility.

2.4.2: The Four Phases of Caring

Following from this general definition, Tronto identified four different phases of caring. These four phases of care are conceptually distinct but linked because care is a continuous process (Tronto, 1993).

2.4.2.1: Caring About

This phase involves the first acknowledgment of the need for care, which entails identifying a need and determining whether or not it has to be met. To successfully carry out this phase, it entails putting oneself in the shoes of another individual or group to understand the need (Tronto, 1993). A socio-political example of this phase could be what society's approach would be to homelessness. In this case, society has to assume the position of the homeless, and then noting what they would need.

2.4.2.2: Taking Care of

This phase is the next step in the caring process as it involves genuine ownership of the recognized need, followed by decision-making over how to address it. This phase does not just involve focusing on the needs of the other party, but rather, recognizing that action can be taken to meet these unmet needs. Tronto mentions how if one believes that a problem cannot actually be solved, then the necessary "taking care of" has not been done (Tronto, 1993). The example she uses is that we can care for children starving in the third world, but if we believe nothing can be done about, if for example any food being sent there might be stolen, then we have suggested that while we recognize there is a need that should be met, we cannot meet this need, and hence no "taking care of" can occur.

2.4.2.3: Care-giving

For care-giving to take place, it involves the immediate satisfaction of care needs. It usually demands physical labor, and almost always brings the caregivers into contact with the care recipients (Tronto, 1993). Volunteers directly showing up with the necessary meals for AIDS patients would be an example of care-giving.

2.4.2.4: Care-receiving

The final phase in the caring process is this element of care-receiving. This acknowledges that a person that needs care will end up responding to that care (Tronto, 1993). This phase is crucial as it provides the only way of knowing that caring needs have actually been met. An example of this would be if the children that were starving earlier, now seem healthier after being fed. It is vital this phase is included in the caring process since care-givers may perceive for the needs of the object being cared for, to be met in a certain way, however these perceptions can be incorrect. For example, despite the fact that it would take the volunteer much less time to feed a person with mobility issues, they could prefer to do so on their own (Tronto, 1993).

2.4.3: Tronto's Ethical elements of Care

As a result of these four phases of care that have just been discussed, Tronto then developed four ethical elements of care. These include Attentiveness, Responsibility, Competence, and Responsiveness, discussed more in detail below:

2.4.3.1: Attentiveness

Attentiveness indicates that we cannot possibly meet others' needs if we are not aware of these (Tronto, 1993). At its most basic level, caring entails recognizing a need and meeting that need, which is why the first moral need for caring is to simply pay attention. It should be mentioned here that philosopher Simone Weil believed that we should be focusing on attention development and that meaningful human contact requires the ability to pay attention (Tronto, 1993).

2.4.3.2: Responsibility

Tronto's discussion of responsibility as being the second dimension of care is interesting as she mentions how responsibility is central in an ethic of care, but it can also be problematic. While from an ethic of care perspective, responsibility relates to understanding and concentrating on what has been done or hasn't been done to contribute to a certain solution. This is quite different if it was to be seen from a political theory standpoint (Tronto, 1993). When looking at it from political theory, responsibilities are usually defined as the need to follow rules and regulations that are established by commitments we have made. I personally do resonate most with Tronto's suggestion of instead continuing to utilize obligation (rather than legal provisions) as the foundation for understanding what individuals should do for one another, we would be better off focusing on a more open-ended view of responsibility (Tronto, 1993).

2.4.3.3: Competence

This element of care concerns whether the need for the care was met or not. Essentially, when proper care isn't provided despite good intentions and even acceptance of responsibility, the need for the care is ultimately unmet. Competence is a crucial element to include as a moral dimension of care as a result of the lack of bad faith displayed by individuals who would "take care of" an issue without being willing to provide any type of care. Competence makes it possible to have the confidence that the care work is being done in a competent manner, which is necessary (Tronto, 1993).

2.4.3.4: Responsiveness

The last element from Tronto's ethic of care framework is responsiveness and this is to do with the receptivity of the recipient of care to the care being given (Tronto, 1993). This relates in a way to the competence element where even though someone's care needs are being attended to and the intention of the care being provided is good, it is not necessary that this care will be received well by the care-receiver. Since the care-receiver's needs are ultimately the highest priority, we must understand how they are responding to the care, and if it is not well received, then this approach needs to be altered.

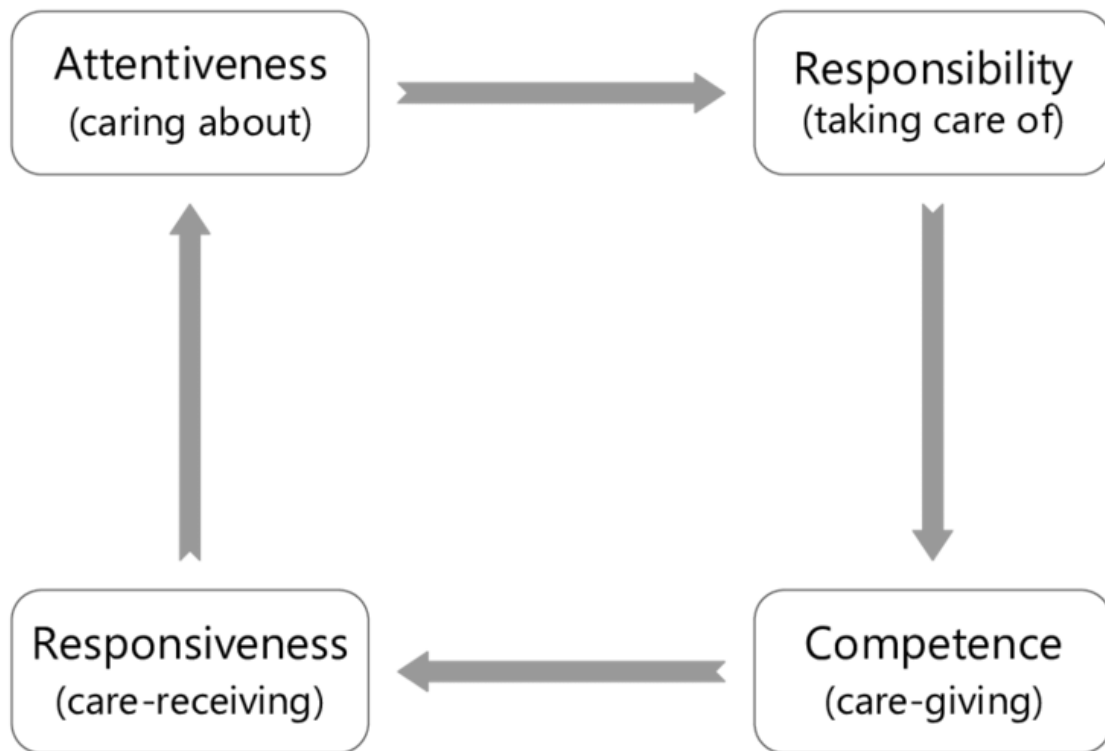


Figure 2 - Joan Tronto's ethic of care framework

2.5: Relating Tronto's framework to Teaching and Learning

There is currently not a lot of existing literature on how Tronto's ethics of care is related to teaching and learning and so from the discussion above as well as a few more points that Tronto mentions in "Moral Boundaries: A political argument for an ethic of care", a discussion of how this ethics of care framework could be applied in teaching and learning, is expanded on here.

Tronto focused the ethics of care on feminism and feminist discourse, but this does not mean that this is the only field that this framework can be related to. She mentions herself that the ethic of care is a practice and behavior rather than a collection of guidelines or guiding ideals. If this is then the case, then instead of being a set of precisely crafted moral rules that must be obeyed, care's moral traits will be more ambiguous (Tronto, 1993). It is because this framework is very general and applicable to different settings that Bozalek et al.

(2014), was able to use and apply this framework to the creation of professional development workshops, and this in higher education. Hence it can be argued that even though this ethic of care framework was developed focusing on feminist discourse, due to the generalness of the framework, if it can be applied to creating professional development workshops for teachers, then who is to say that it cannot be applied and used for classroom teaching and learning in Engineering Education?

For example, if we take the element of attentiveness as an example from the framework, Tronto describes this by mentioning how we have to be aware of other people's needs, as if we are not, then there is no way we can possibly meet those needs (Tronto, 1993). Included in this same description was philosopher Simon Weil's opinions on attentiveness who had mentioned that any true human interaction required the ability to pay attention. This means that attentiveness in this ethic of care framework, is not just related to feminist discourse, but as a matter of fact, any genuine human interaction. Simon Weil had mentioned that since it served as the foundation for genuine interpersonal relationships, the development of this attention should be required to be the focus of educational research. This shows that this particular element in the framework can be related to classroom teaching and learning, and that opens the possibility then for the other elements and the entire framework itself, to then also be related to classroom teaching and learning. The following section elaborates further on how this framework might be applicable to teaching and learning in higher education.

2.5.1: Attentiveness

As Tronto mentions, the first moral aspect of caring is attentiveness as it requires a recognition for a need and that this need has to be cared about and met. When we look at teaching and learning from a broad level, the initial need is that students want an education, and they want to learn. The fact that there are then teachers that are available to meet this need shows that the system has been attentive and has addressed the need for students wanting an education. When we look at teaching and learning more close-up, in a classroom

for example, attentiveness can be something as simple as a teacher walking around the classroom to be alert for any possible questions students may have.

2.5.2: Responsibility

With regards to this element in the teaching and learning environment, essentially the teachers will be taking responsibility of making sure the student's care needs are met. As students progress through the course, they will have certain needs that will have to be met. This could be in the form of understanding content knowledge, being provided with the best possible resources and environment for learning to take place, and anything else that can influence their learning and performance in the course. For this element of care to surface in the teaching and learning environment, the teacher will then not only have to recognize that these care needs have to be met, but they must realize that they should be accountable for helping students address and meet these needs. This is one way in which Responsibility can be related to the classroom setting.

2.5.3: Competence

When Tronto defined Competence, she emphasized the need for the care to actually be met. It was not enough to intend to provide good care and even accept responsibility for it, but rather, make sure that the caring need was met. In the teaching and learning space, one of the best ways to ensure students' needs are met is through any form of assessment. An example of a students' need could be to achieve the learning outcomes of the course, and to understand whether the instructor is helping students in meeting this need, it can be through any form of assessment. Ultimately, since the teaching and learning space deals with being able to try and meet all different types of student needs, the only way to understand whether these needs are being met is by assessing them. This could also include forms of informal assessment such as simply asking students whether they understood the material that was taught in the lesson or asking them specific questions about anything related to a need that had to be met.

2.5.4: Responsiveness

As responsiveness has everything to do with understanding how the care-receiver is responding to the care being provided, in the teaching and learning setting, it is the teachers that will have to be aware of the students' responses to the care they are providing them. In this setting, it is the teacher that is the care giver, and the student is the care-receiver. To understand then how students are responding to the care, the teachers have to find a way of asking students how their performance as an instructor is. An example of this would be obtaining students' feedback in any form. Teachers can use any form of feedback such as end of semester evaluations or even simply asking students informally in class, in order to better understand how they are viewing the care that is being provided to them. This is how Responsiveness can look in teaching and learning.

2.6: Teacher Behaviors in relation to Theoretical Framework

2.6.1: Attentiveness

An important part of this study will be to understand what particular teacher behaviors would act as evidence for each of the four different elements in the ethic of care framework. In Chapter 3 of this dissertation, an Observational Framework is written up and this contains examples of specific actions that will be looked out for from the teachers, that could act as evidence of the four ethical elements. The details provided in this section have informed the formation of that Observational Framework. As mentioned previously, attentiveness is the first moral aspect of care, and it simply requires the recognition for a need to be met, and hence when the classroom observations are being carried out, instances where this sense of recognition is observed from the teacher, will be paid close attention to. Previous literature has shown that this can involve the teacher carrying out simple behaviors such as listening, hearing, noticing, working with and attending to students (Russ, 2018). Along with some of these behaviors, it is also important to look at how available the teacher will be making themselves during the class session. This may look something like the teacher constantly walking around the room while the students are working so as to make sure they recognize

when a student needs them, as opposed to just standing in front of the class or doing work on their laptop. Maintaining attention ultimately comes down to a sense of alertness (Posner & Boies, 1971), and all of the traits that had been mentioned earlier in this paragraph, will be achieved if the teacher is consistently alert throughout the entire class period.

2.6.2: Responsibility

This is the second element in the caring process and so it must go beyond just noticing that a student's care requirements need to be met. For this element, actions where the teachers are holding themselves accountable and understanding that it is their duty to make sure the students' care needs are met, will be looked out for. If a similar analogy was used for this element, as was used in the previous element where the teacher is walking around the room in order to recognize instances where care needs are to be met, and how that satisfies the element of being attentive, then, the teacher going and addressing these concerns would be the behavior which satisfies this second element. Not only has the teacher recognized that there is a problem, but they have now gone ahead and taken the responsibility to address the problem. Another instance of this element could be when a student asks the teacher a question, and the teacher responds by telling the student they will find out more about their question and get back to them later. This again is an example of the teacher taking it upon themselves to make sure the students' needs are met. These are just a few examples of teacher behaviors that could act as evidence in achieving this element.

2.6.3: Competence

This particular element of care specifically emphasizes the importance of making sure that the care need is met. As Tronto mentions, intending to provide care and even accepting responsibility for it, but then failing to provide this good care, means that in the end, the care needs were not met (Tronto, 1993). Continuing with the same analogy then, once the teacher is finished with assisting the student, according to this framework, the student must believe that their care needs have been met. This could be through the teacher either successfully

answering their question, the student being satisfied that the teacher will get back to the student, or even if the teacher hasn't directly answered the student's question, they have guided the student enough for the student to no longer require the teacher's help, meaning their care needs would have been met. While these are some examples of what competency could look like, unlike the first two elements where it is easier to tell whether the teacher has recognized the student, and then proceeded to help them out, it would be harder to visually observe whether the teacher has been 'competent' in satisfying the students' caring needs. The best judge in determining whether the need for the care has been met or not, would be that of the care-receiver, which in this case is the students. Hence, the teacher satisfying this element or not would perhaps be something that can be better judged when the focus groups with the students are conducted.

In saying that however, there is previous literature that does indicate a few behaviors of what a competent teacher may do or look like. As a result, the following behaviors could be of importance to look out for to judge for the teacher's competency. One of the teacher behaviors that can be visually seen in the classroom and could be evidence of competence would be if the teacher is able to communicate with a range of diverse learners (Hollins, 1993). The first-year engineering program at Virginia Tech admits a huge diversity of students, and a lot of them are international students. For some of these students, perhaps their main care requirement is successful communication; to be understood and to understand what the teacher is saying. Hence, if the teacher is able to satisfy this care requirement, they can be seen as being competent. Another teacher behavior which can be seen in the classroom and that could serve towards the teacher's competence could be to provide a supportive and inclusive class environment (Hollins, 1993). Since there is a diverse range of students that are admitted into the first-year cohort, some of them may feel a little out of place or feel like they don't belong. The teacher should then be able to create a social context within the classroom that is comfortable and supportive for every child regardless of their background experiences (Hollins, 1993). It could be the case that for a lot of these students, their most basic care need would be to feel included, and if the teacher is able to successfully create this inclusive and supportive environment in the classroom, then we can say that the teacher would meet these care needs and would be competent.

2.6.4: Responsiveness

In the teaching and learning setting in the classroom, with regards to responsiveness, the teacher must be aware of how the students are responding to the care that is being given. While their intention for providing the care may be good, and they may even feel like they are providing good care and feeling confident, it ultimately depends on how the students respond to receiving this care. If the care that is being given to the students is not well-received and it is clear they are not responding to it well, then the teachers would need to alter their approach. As a result of this, one of the main behaviors the teacher could show in order to satisfy this element of care, would be to allow students to freely express what they believe is working well and what needs improving on. This could be through implementing some sort of constant feedback system from the students. If teachers allow students to give them feedback on what the students are learning well, what they are not learning well, what the teacher is doing well and what can be improved on etc., it allows a way for teachers to understand how students are responding to what the teacher is doing. When the teacher allows students to give them feedback, they are providing an opportunity for students to respond to the care that is being given to them. Through the act of teaching, the teacher is already providing a sense of care to the students by helping them meet their caring needs (to obtain an education), and so in order to understand whether this teaching practice is effective or not, feedback from the students would be helpful. Any sort of feedback which allows students to express their voice would be effective and an example of this could be through minute papers (Kumar et al., 2021), where students simply take a minute to list down everything they do and don't understand, as well as state what is and isn't working well for them.

2.7: Summary

Chapter 2 reviewed the literature on care, starting with a discussion on when this notion of 'care' was introduced into the literature, and who were the authors that were researching this topic. Along with this, some basic definitions of care were provided, along with a brief discussion of the difference between care and empathy. This felt necessary to do since it was

common to see a lot of articles targeting empathy, when care was specifically used as the search term. An empirical review of studies of what care generally looks like was provided, as well as a discussion of some of the benefits of showing care. From this, some of the caveats of care were also described, and why care may not be a necessary tool in education.

In Section 2.3, what a model of care could look like was outlined, and Sections 2.4, 2.5 and 2.6 introduced the Theoretical Framework guiding this study and how that could be related to the teaching and learning setting. A detailed discussion as to how the framework was developed, how the elements in the framework relate to teaching and learning, and then what observations from the instructor could act as evidence of the different elements in the theoretical framework, have been provided.

Chapter 3: Methodology

This chapter outlines the methods that have been used in this study. The main purpose of this study was to better understand how care can be implemented in a first-year general engineering classroom. The overarching research question that guided this study is:

RQ: How is care enacted in teaching in a first-year general engineering program at Virginia Tech?

To further operationalize the research design, three separate research sub-questions were created:

RQ 1.1: What were the instructor's intentions with implementing care in the classroom?

RQ 1.2: How did the instructors end up enacting care in the classroom?

RQ 1.3: What do students describe to be helpful for their learning in what the instructors have enacted?

A positionality statement is offered below to obtain a better understanding of the researcher carrying out this study, and then a rationale for using the case study as the main strategy of inquiry for the research design is provided. The setting and the context of the study will then be outlined, before discussing the data collection and data analysis procedures. Lastly, the different steps that will need to be taken in order to ensure there is validity and quality in this research study will be described and then a brief summary of the overall chapter.

3.1: Positionality

The term 'positionality' describes the researcher's worldviews as well as the stance they take regarding a research project's social and political environment (Darwin Holmes, 2020). The individual's worldview concerns ontological assumptions (opinions of a person regarding the nature of social reality and the extent of knowledge about the world), epistemological assumptions (a person's opinion regarding the nature of knowledge) and beliefs regarding

agency and human nature (assumptions made by individuals regarding how we relate to and interact with our environment) (Darwin Holmes, 2020). A researcher's background can influence the way in which they carry out their research, interpret results and ultimately all these factors affect the final outcome of the research, and hence, positionality requires acknowledging and allowing for the location of the perspectives, values, and beliefs of the researchers regarding the research design, conduct, and results (Darwin Holmes, 2020). This will help explain the influences of my interpretations of my research design, and this will help strengthen the quality of this research study.

Since this study includes researching the different ways in which faculty members show care in their teaching in the first-year engineering program at a U.S. R1 university, it is important that I briefly explain my background. I was born in India but have lived predominantly in New Zealand and have done my schooling in New Zealand. In Chapter 1, my personal experiences are discussed explaining how in my first-year engineering program, there were two courses that I had taken where one course had a caring instructor and the other didn't. As a result, I had felt a lot more confident in the course with the caring instructor even though I was initially not confident in my abilities with that course. This had interested me and had motivated me to better understand whether there is a correlation between caring instructors and student learning, motivation and well-being. It is this personal experience that has bought me to graduate school in the U.S. and has motivated me to conduct this research study.

My current view of the world is that the idea of there being an ultimate truth may exist, but since our knowledge could just be a subjective interpretation of our own experiences, we may never truly come to know it. I believe that every individual constructs knowledge in their own different way, and this knowledge is constructed when subjective interpretations result in new knowledge, and this new knowledge is deemed as being helpful to the individual. As individuals, the outside world and other people do play a role in help us make a meaning of things, and ultimately, while it is up to us as individuals to perceive what this meaning is, the outside world does influence our construction of knowledge. I identify myself as a constructivist as I am more interested in understanding the way by which people, including participants and researchers, interpret their experiences (Jawitz & Case, 2009). The term 'constructivism' relates to the notion that each learner creates meaning on their own,

as well as in social contexts, when they acquire new knowledge (Hein, 1991). Due to the fact that I adopt a more constructivist approach, I wanted to carry out a study where I was able to understand the different ways individuals make meaning out of and approach the same situation. In the case of my study, the individuals are the instructor participants, and the situation is the teaching of the first-year engineering course.

3.2: Research Design – Case Study

For this research study, a qualitative study was carried out, and there are different strategies of inquiry that could be used to conduct a qualitative study. These include Phenomenology, Grounded Theory, Ethnography, Narrative Analysis, case study etc. (Creswell et al., 2007). This study selected a few participants and needed to formulate a research design aiming to gain a better understanding of how care is enacted in a first-year engineering course. To arrive at the most appropriate strategy of inquiry, these five methodological approaches across each of the different characteristics of research design, were compared. This comparison is shown below in Table 1 below which has been adopted from the book “Qualitative Inquiry and research design: Choosing among five approaches” by Creswell (2016).

<i>Characteristics</i>	<i>Narrative Research</i>	<i>Phenomenology</i>	<i>Grounded Theory</i>	<i>Ethnography</i>	<i>Case Study</i>
Focus	Exploring the life of an individual	Understanding the essence of the experience	Developing a theory grounded in data from the field	Describing and interpreting a culture-sharing group	Developing an in-depth description and analysis of a case or multiple cases
Type of Problem Best Suited for Design	Needing to tell stories of individual experiences	Needing to describe the essence of a lived phenomenon	Grounding a theory in the views of participants	Describing and interpreting the shared patterns of culture of a group	Providing an in-depth understanding of a case or cases
Discipline Background	Drawing from the humanities including anthropology, literature, history, psychology, and sociology	Drawing from philosophy, psychology, and education	Drawing from sociology	Drawing from anthropology and sociology	Drawing from psychology, law, political science, medicine
Unit of Analysis	Studying one or more individuals	Studying several individuals that have shared the experience	Studying a process, action, or interaction involving many individuals	Studying a group that shares the same culture	Studying an event, a program, an activity, more than one individual

<i>Characteristics</i>	<i>Narrative Research</i>	<i>Phenomenology</i>	<i>Grounded Theory</i>	<i>Ethnography</i>	<i>Case Study</i>
Data Collection Forms	Using primarily interviews and documents	Using primarily interviews with individuals, although documents, observations, and art may also be considered	Using primarily interviews with 20–60 individuals	Using primarily observations and interviews, but perhaps collecting other sources during extended time in field	Using multiple sources, such as interviews, observations, documents, artifacts
Data Analysis Strategies	Analyzing data for stories, “restorying” stories, developing themes, often using a chronology	Analyzing data for significant statements, meaning units, textural and structural description, description of the “essence”	Analyzing data through open coding, axial coding, selective coding	Analyzing data through description of the culture-sharing group; themes about the group	Analyzing data through description of the case and themes of the case as well as cross-case themes
Written Report	Developing a narrative about the stories of an individual’s life	Describing the “essence” of the experience	Generating a theory illustrated in a figure	Describing how a culture-sharing group works	Developing a detailed analysis of one or more cases

Figure 3 - Contrasting characteristics of the five different qualitative approaches (Creswell, 2016)

In order to justify choosing to conduct a case study, key characteristics from the table above are chosen, and these will be related to some of the different strategies of inquiry mentioned, in order to show why I ended up choosing to use a case study.

3.2.1: Focus

In order to gain a better understanding of the selected issue, the study chose to work with a small group of participants. From the table above, it can be seen that Phenomenology and Grounded Theory would not be appropriate for this study since the purpose was not to develop a theory or understanding the essence of an experience. With regards to ethnography, the participants chosen did not necessarily share the same culture. While they are all teachers, the focus of the study was not exclusively to understand their values or beliefs that shaped the way they implement care in their teaching. It was more so what they do, and how they do it, as opposed to why they may do so. While the goal was to gain an in-depth understanding of the selected participants, the purpose was not to focus on their life in general, and so that is why a narrative research design did not suit this study either. In-depth descriptions of these participants were however a priority for this study, and in doing so, a

better understanding of the selected issue was gained. Hence, the case study was most appropriate for this study.

3.2.2: Type of Problem best suited

In looking through the descriptions of the different strategies of inquiry, there were once again similarities of this study with narrative research, ethnography, and case studies. While in-depth analyses of the participants were carried out, the purpose was not for the participants to tell and share their stories. Similarly, while the participants were all teachers and belong to a similar 'group' in that sense, they don't necessarily all share the same patterns and so again, since the aim was to provide an in-depth understanding of these different participants, the case study was what was best aligned.

3.2.3: Unit of Analysis

With regards to the unit of analysis, the narrative research and the case study related best to this study. One or more individuals were being studied, which is the similarity in both of these inquiries. The difference however lies in the focus of this study and that is not of the individual, but rather, it is the selected issue, and the participants are just being used to help in gaining a better insight into this issue. As a result, the case study suited this study better than the narrative approach for this characteristic.

3.2.4: Data collection forms

Most of the different inquiries relate to the way in which the data for this study was collected. In the first phase of the study, interviews were conducted with selected teacher participants. The second phase included in-class observations with each of these instructors while the last phase of the study dealt with collecting students' SPOT comments. Table 1 shows since the

case study emphasizes using multiple different sources such as interviews, observations, and documents, this is the inquiry which best suited this study.

3.2.5: Data analysis strategies

After interviewing the different participants, taking field notes by observing their class and looking through students' SPOT (students' perception of teaching) comments of the instructors, data were coded in order to try and find themes of strategies and approaches that were used by the participants to implement care. The themes developed were a result of the description of the participants. The themes were not developed for an entire group, nor were they developed to try and retell a story of an individual. As a result, the case study again had the greatest alignment with this study in regard to analyzing data.

3.2.6: Choosing to carry out Case Study

From the discussion above, it can be clearly seen that almost all of the characteristics in the research design process, related to a case study. Hence, the strategy of inquiry that was most appropriate for the study is the case study. It is mentioned at a later stage in this chapter that this study selected three participants. On the basis of this, the study being carried out is a singular case study (Creswell et al., 2007). Using Creswell et al. (2007), even though multiple different participants are being included in the study (3 faculty members), the context of the study revolves around first-year engineering instructors at one institution and in one particular course, and so that is classified as being a single case. Since these participants were recruited to help gather more insight into the problem (understand how care is enacted in teaching), the form of case study is known as a singular, instrumental (cases identified to help illuminate a problem) case study. The specific case being used in this study include three instructors teaching a first-year general engineering course offered in the department of Engineering Education at Virginia Tech (an R1 institution). This is a project-based course that is the second iteration of two courses offered in the first-year general engineering program.

3.3: Context of Study and Participants

3.3.1: Setting

This study was conducted at Virginia Tech at its Blacksburg campus, in Southwest Virginia and focused specifically on Foundations of Engineering II (ENGE 1216) which is the second course in a two-course sequence of the first-year general engineering program. This course introduces students to the profession through focusing on topics such as data gathering and analysis, engineering problem-solving, mathematical modelling, design, modern software tools, professional norms and expectations (such as communication, teamwork, and ethics) (Virginia Tech, 2023). This course is split into three phases during the semester. Phase 1 occurs between Weeks 1-5 of the semester, and in this phase, students are introduced to the course and are introduced to basic CAD skills and concepts. In the second phase of the course, Week 6-10, the students are put into their teams and start doing more teamwork-related assignments. In the final phase of the course which is the last 4-5 weeks of the semester, students are mainly wrapping up their final individual and team assignments.

This course was chosen for the study because the purpose is to see how care is being implemented in the teaching process, and since this is a first-year course, the students are mostly coming in from high school into an environment where they do not necessarily feel too comfortable; an environment in which literature has shown that the effects of care can be highly impactful. The context of this study specifically focused on the second course in the sequence, and one of the reasons for that is that it was assumed that students' ability to give detailed feedback in the SPOT evaluations would be better developed after two semesters in the program.

3.3.2: Participants

To obtain the participants for this study, faculty members that were teaching the ENGE1216 course in the Spring 2023 semester were chosen. In Virginia Tech, there are many different sections of ENGE1216 meaning that there were many different faculty members that had been scheduled to teach this course. In order to choose the participants that would be the

most appropriate for the study, it was decided to look at how many of these instructors had taught this same course at least twice in the past. Instructors that have taught this course at least twice in the past have more experience in the course compared to an instructor teaching it for the first time and would likely better understand the dynamics of the course compared to a new instructor, meaning that they already have strategies that they have developed and tested, and they are likely settled in these. Along with this, instructors that have Virginia Tech teaching-related awards were also chosen as this meant that it was more likely that these instructors could show care. It should be mentioned here that it is not the case that instructors who don't have awards are not good teachers or are not capable of showing good care. For this study however, a best-case scenario was trying to be established in terms of being able to see how care is implemented in the classroom and so including participants that have these teaching awards made it more likely that witnessing these acts of care can be achieved. Along with this, it was important that the participants chosen were reasonably diverse in terms of their roles, years of experience, and even their personal background as this would help in making an effective comparison between them. As a result of applying these factors, three participants were chosen, and with the number of data collection activities that were carried out, as listed in the following section, this number of participants was enough in allowing me to gather enough data in order to fully answer the research questions guiding this study.

Chapter 4 of this dissertation is called "Teacher Portraits", and this chapter introduces the readers to each of the participants and helps them understand the participants' backgrounds. The structure of the different sections in this chapter help in comparing and contrasting each participants' background and how they came into teaching and first-year engineering teaching more specifically, their beliefs about what is important in teaching, as well as their perceptions of care and how they may intend to implement this in the classroom. Each of the participants' names has been anonymized, and it was decided to assign pseudonyms as this may make the results easier to relate to and understand, compared to stating "Participant 1".

3.4: Data Collection

It was mentioned at the start of this chapter that the overall purpose of this study is to better understand how care is enacted in teaching in a first-year engineering course. In order to understand this, there were also three sub-research questions that had been posed. The data collection strategies that are described in this section all directly relate to the three individual sub-research questions that were mentioned at the start of this chapter.

3.4.1: Phase 1 - Interviewing Participants

The first sub-research question dealt with understanding the instructors' intentions with implementing care in the classroom. To carry this out, it was important to get a better understanding of the instructor participants themselves in terms of what their background was, and what their general definitions and ideas of teaching and care are, along with how the participants approach the implementation of care, in relation to Tronto's ethics of care framework. Ultimately, since this is the theory that guided the study, it was important to gather data from the participants that was also more aligned with the theoretical framework guiding the study. The data for this research question as a result took the form of two semi-structured interviews. The first interview with each of the participants took place at the end of the Fall 2022 semester. The interviews generally took approximately an hour to complete. These in-depth interviews were conducted to better understand the participants' backgrounds and general views and perceptions in relation to care and the implementation of care in the 1216 course. In this stage of the data collection process, the overall aim was to be able to generally understand the faculty's views on care, their definitions of it, what they generally perceive of it and why they believe it might be important.

The second round of interviews occurred during the middle of the Spring 2023 semester. The purpose of this interview was to understand how the participants think and implement care more specifically in relation to Tronto's ethics of care framework. Hence, the four phases of caring that Tronto's framework is made up of, provided the key constructs in structuring these interview questions. It was recommended by Castillo-Montoya (2016) that

in order to develop and refine interview questions, four phases are followed: interview questions are aligned with research questions and the theoretical framework, an enquiry-based conversation is constructed, feedback is received from interview questions and these questions were piloted. Both rounds of interviews were recorded on Zoom so that transcripts were produced and recorded, and along with this, personal notes from the interview were also made.

In Table 2, I present the interview protocol for the first interview that was carried out with the instructors at the end of the Fall 2022 semester. These interview questions are aligned with trying to understand the instructor's perceptions about care and how they think they can implement it in the classroom, and hence, these interview questions are related to the first research sub-question and satisfy what is recommended by Castillo-Montoya (2016). No questions in this interview were specifically related to Tronto's ethics of care framework since adding questions that have anything related to the four ethical elements of care, could have perhaps prompted the participants into thinking about care in a certain way, which would affect the results of the study. Rather, more general questions were asked, and these were related to what the different important aspects of teaching to them were, and then focused on more specific questions about what they felt about care in the classroom and how they may go about implementing it. Before conducting this interview, a pilot run with another instructor was carried out to ensure that appropriate feedback from the interview questions could be obtained. The pilot run went well as a good amount of data was able to be collected from the responses to the questions. The initial questions however were quite general and so more of the data that was collected focused on the instructor's backgrounds. While this was important, I also did want to obtain some data in relation to instructors' general views and beliefs on care. Hence, as a result of the pilot, I developed two questions that were more focused on care.

Table 1 – First Interview Questions to Participants

Theme of Question	Interview Question
Opening Questions	<ol style="list-style-type: none"> 1. How did you get into teaching? What were some of the reasons behind choosing this career path? 2. How did you come to be teaching first year engineering at VT? What were your reasons?
General questions on teaching	<ol style="list-style-type: none"> 1. What are some aspects of teaching that are important to you? 2. In teaching, what are some things you believe you do well? 3. Now what are some aspects of teaching you think that you could improve on? 4. What do you think are some of the things you do while teaching, that may make you appear as being a caring instructor?
Focused questions on care	<ol style="list-style-type: none"> 1. To what extent do you believe care is an important part of teaching? Care can be however you choose to define it. 2. What are then some of the ways in which you believe you implement this in the classroom?
Question yielding more data	<ol style="list-style-type: none"> 1. If someone had mentioned to you that “it is not the job of the instructor to care for their students”, what would your reply be to that? If you agree or don’t agree, why or why not?

While Interview 1 was helpful in understanding how participants generally viewed care, ultimately it was important to understand how they thought they implement care in relation to Tronto’s framework. As a result, a second interview was formed. The questions asked in this interview were more aligned with Tronto’s ethic of care framework, meaning more specific data in relation to the participants’ views on care could be gathered. Table 3 below shows the different elements in Tronto’s ethics of care framework, the definitions of each of the elements, and the questions that were asked to the participants in relation to each of the elements.

Table 2 – Second interview questions more directed at Tronto's framework of care.

Ethical Element	Definition	Question to Participant
Attentiveness	<p>If we are not attentive to the needs of others, then we cannot possibly address those needs.</p> <p>At its simplest level, care requires the recognition of a need and that need has to be cared about, and that is why the first moral element of care is to just be attentive.</p>	<ol style="list-style-type: none"> 1. How do you take student needs into account, as you plan a class or activity? 2. What are some of the different strategies you use in order to ensure that you are able to make yourself available to any of the students' needs?
Responsibility	<p>Responsibility relates to understanding and focusing on what has and hasn't been done in order to contribute towards a particular solution, and then taking ownership of positively influencing that solution.</p>	<ol style="list-style-type: none"> 1. To what degree do you feel like it is the instructor's responsibility to ensure students are learning? 2. What are the different ways in which you plan to take ownership of the students' needs in a class?
Competence	<p>It is not enough to just intend to provide good care, and even accept responsibility for it. At the end of it, what is most important is whether the need for the care was met or not.</p>	<ol style="list-style-type: none"> 1. To what degree do you believe it is important to make sure a students' needs are met? 2. What are some of your strategies to ensure whatever needs that students have, are met?
Responsiveness	<p>Responsiveness has everything to do with understanding how the care receiver is responding to the care being provided</p>	<ol style="list-style-type: none"> 1. Is allowing student feedback of your performance as an instructor, something that is important to you? Why or why not? 2. If yes, how do you go about ensuring they can give you feedback? If you haven't implemented it before, how would you go about it if you could?

3.4.2: Phase 2 - In-class observations

In relation to case studies, for this specific study, Creswell et al. (2007) recommend that the teacher-student interaction is observed, which is why the second stage of data collection involved classroom observations. This was in relation to the second research question which looked at how instructors are implementing care in their classroom. As a result of this, a total of three separate classroom observations for each instructor were carried out, and these observations were spaced over the course of the semester. It can be assumed that these instructors are able to enact care in any classroom as they would every day; however, if only one observation was carried out, there may be a chance that the instructor did not demonstrate any care on that particular day, perhaps just because of the nature of what was happening in the classroom on that day.

Spacing these observations out was justified since the class is loosely structured in three separate sections across the semester. As mentioned in the description of the 1216 course in the context of the study section, the three sections of the course start with the first few weeks of the semester in the 1216 course, which are mainly introductions and introducing students to basic CAD skills, followed by placing students in their teams to start working together on assignments, before finally seeing the students wrap up their final individual assignments as well as the group project. As a result of this, the in-class observations were carried out once between Weeks 1-5, another during Weeks 6-10 and the last observation in the last 5 weeks of the semester. As each of these three phases involved the students doing different types of activities, it was useful to observe the student-instructor interactions across all these different phases so that an understanding of how the instructor enacted care in the classroom, is as accurate as possible. With regards to recruiting the instructor participants, the instructors were notified that this is a data collection aspect of the research study and were reached out via email. The email template is found in Appendix A. Prior to interviewing the participants and carrying out any data collection activity with them, the official "Information Sheet for Participation in a Research Study", was sent to them, and this contained all the information regarding what they needed to know, what they can expect and also contained sections of confidentiality and who they can talk to regarding questions. This

information sheet is included in Appendix B. This phase of data collection had obtained IRB approval (reference number IRB # 22-1037).

While sitting in on the in-class observations, the main question that arose was to decide what to look for. There is currently very little to no literature which describes what actions and observations to look out for when observing instructors specifically implementing care in the classroom in relation to Tronto's ethics of care framework. As a result, an observation protocol was formulated, based on the four different ethical elements from Tronto's ethics of care framework. In order to come up with these possible observations, similar to Table 3, Tronto's ethical elements were first outlined, followed by their definitions and then what actions could perhaps be seen as a result of these definitions. It should be emphasized that this observational protocol was not a checklist, but rather simply a guide to help in observing and understanding what to look out for. It should also be emphasized that since each instructor was observed three times, at the end of every instructor's first observation, the observational framework was modified based on what was found. Minor modifications were added each time an observation was conducted as it was expected that this observational framework would become more accurate with each observation.

While sitting in the actual classroom and collecting this observed data, the observations themselves were conducted using the Teaching Dimensions Observation Protocol (TDOP) (Hora et al., 2013). This protocol was specifically developed in order to perform classroom observations, and this also helped in taking notes of the instructor's actions. The protocol itself focuses on six categories of practice: instructional technologies, pedagogical techniques, cognitive demand, student-teacher interactions, student involvement, and teaching strategies. The advantage with using this protocol is that each of these categories were broken down into more specific codes representing actual instructional behaviors. For example, under the pedagogical strategy category is a code called "MOV". This stands for "Moves into audience", which is when the instructor is walking up the aisles or enters the student seating area of classroom (Hora et al., 2013). There are several of these codes for each category, and each corresponds to an action that you are likely to see in the classroom. Using these codes was beneficial while observing the classroom, along with taking notes on the laptop of all important observations being made.

To code using the TDOP protocol, four main sections were initially kept in mind: Observation characteristics, Classroom characteristics, 2-minute interval coding, and 2-minute interval note-taking. It was initially necessary to note characteristics of an observation which included the observer's name, instructor name, course, department name, and date, in order to keep track of unique observations. It was then suggested to record certain characteristics of the classroom such as class size, layout of the classroom, and take notes about any interesting features of the classroom. For this study, all these factors were the same since all the instructor participants were teaching the same course, with the same number of students in two different classrooms which had similar a similar layout and seating capacity. All these notes were made before the first observation took place. The 2-minute interval coding began as soon as the classroom started, and this involved marking a particular code when it was observed. A rule of thumb was that the action/behavior needed to occur for approximately 5 seconds in order for it to be coded. If this behavior lasted past the conclusion of this one interval, then it was coded twice. What was equally important to remember was to carry out notetaking as during the coding process, there were aspects of the class that were of interest but could not be captured in detail by the TDOP codes. An example of this was when instructors would have specific conversations with the students, either about whether they are understanding the material, or to ask them how they find the classroom so far. The specificity of these conversations could mean coding that observation under a different element, and so detailed notes of these instances were taken so that it could be identified at a later stage as to which TDOP codes were most closely related to the notes (Hora et al., 2013).

The TDOP protocol was used for the first in-class observation to get a general overview of the different dimensions. In the second in-class observation for each instructor, they were enacting similar actions, meaning the TDOP codes were quite similar to the previous observation. There were however minor, yet important differences in some actions instructors were carrying out, which could only be described through taking notes. Hence, the TDOP was used in the first in-class observation to obtain a rough understanding of each instructor's general strategies with implementing care, and then in-detailed field notes were used for the following two observations. Table 4 shows examples of initial observations that could have been looked out for in relation to each element.

Table 3 - Observational Framework

Ethical Element	Definition	Examples of Observations
Attentiveness	If we are not attentive to the needs of others, then we cannot possibly address those needs. At its simplest level, care requires the recognition of a need and that need has to be cared about, and that is why the first moral element of care is to just be attentive.	<ul style="list-style-type: none"> • Teacher portraying a common sense of alertness (Posner & Boies, 1971). • Teacher walking around the classroom, seeing what students are doing. • Teacher generally just listening, hearing, noticing, working with, and attending to students (Russ, 2018).
Responsibility	Responsibility relates to understanding and focusing on what has and hasn't been done in order to contribute towards a particular solution, and then taking ownership of positively influencing that solution.	<ul style="list-style-type: none"> • Teacher providing a supportive and inclusive environment. • Teachers making students do more of the work. • Teacher providing well-planned and organized lessons
Competence	It is not enough to just intend to provide good care, and even accept responsibility for it. At the end of it, what is most important is whether the need for the care was met or not.	<ul style="list-style-type: none"> • Teacher using any form of assessment.
Responsiveness	Responsiveness has everything to do with understanding how the care receiver is responding to the care being provided.	<ul style="list-style-type: none"> • Teachers implementing different forms of feedback mechanisms.

3.4.3: Phase 3 – Students’ Perceptions of Teaching (SPOT) comments

The final research sub-question that guided this study was to understand what students believed the instructors did that was helpful to their learning. To understand this, the study used the Students’ Perceptions Of Teaching (SPOT) responses of each instructor for the Spring 2023 semester, as well as previous iterations of the course that each of the instructors had taught. The SPOT questionnaire used at Virginia Tech is a form of students’ evaluations of teaching (SET), and SETs are frequently used in higher education to evaluate the performance of the instructors (Brown, 2008).

Since SPOT comments were made available from multiple different iterations of the course that the instructors had taught, validity between the similarity in student comments in different years could be checked, and overall, there was sufficient data to obtain a full picture of what students generally believed each instructor did that most helped their learning.

The SPOT survey consists of a series of questions that are asked on scale where students answer between the ranges of “Strongly agree” to “Strongly disagree”. These survey questions are then followed by more open-ended questions which have a paragraph available for students to write however much they want to. One of these questions is “*What did the instructor do that most helped your learning?*” Upon analyzing the entire SPOT survey and all the questions available, it was determined that the data that was coming out of this specific question aligned well with understanding what students believed the instructors did, specifically with regards to how they implemented care in relation to Tronto’s ethic of care framework, that most helped their learning in the classroom. All the three instructors were asked for their consent to provide their SPOT evaluations for use in this study. All the instructors agreed to sharing their SPOT comments for the Spring 2023 semester, as well as for whatever SPOT comments they had available for the previous iterations that they had taught. These comments were provided a few weeks after the end of the Spring 2023 semester. This phase of data collection required separate IRB approval (IRB# 22-1012).

3.5: Data Analysis

3.5.1: Interviews with Instructor participants

Both rounds of the interviews with the participants were recorded with their permission. These interviews were conducted through zoom, and this had allowed for transcripts to be recorded. By the end of the interview, the transcripts of what the interviewer along with what the participant had mentioned, were obtained, along with the time stamps of this. Along with the recordings of these interviews, notes of the participants' responses were also made for both rounds of interviews.

The data that came from the zoom transcripts and from the personal notes made from the first interview were analyzed to gain a better understanding of specifically what the participants' backgrounds were in terms of how they got into teaching as well as how they came to teach first-year engineering specifically. Along with this, this interview was also carried out to better understand the instructors' beliefs about care, their perceptions of it, and how they go about planning to implement it in the classroom. There were no specific categories or themes that were initially being looked out for from the start, but after analyzing all of the participants' first interview, a commonality in the strategies and approaches of what the participants spoke about, as well as what were some of the unique aspects that each of the individual participants had mentioned, were determined.

After the transcripts had been generated and the notes were formed, a table summarizing all of the information regarding what each instructor had mentioned in relation to each other for each of the questions from Interview 1, was formed. According to Miles et al. (1994), this summarized table is known as a write-up. Miles et al. (1994) suggest that the next step after a write-up is to create a contact summary form. This is a form which explains very briefly, in a few sentences, the main concepts, themes, and issues that came out of the write-up. In this study, the questions that were asked from interview 1 were placed as the questions guiding the contact summary form, and for each question, a very brief summary of what was said by the instructors were provided. These brief responses helped in starting to visually see some common themes and strategies that instructors were mentioning, as well as some unique approaches.

After the completion of the contact summary form, the next step that was carried out was first-cycle coding, specifically descriptive coding. Descriptive coding involves giving codes to smaller units of data in the form of sentences or statements (Saldana, 2014). From the contact summary form, every segment of data that seemed important or interesting was given a descriptive code based on what the segment was about.

Interview 1 was carried out and analyzed in order to obtain a better understanding behind some of the reasons and motivations behind why the participants intended to implement care in a specific way, which is the first sub-research question guiding this study. Since the purpose of this first interview was to get to know the participants a little more generally, the data analysis process was concluded after all of the descriptive codes were generated, since the data that were obtained out of this was sufficient to understand participants' motivations behind intending to implement care in the classroom in a certain way. The codebook from the first interview is listed below.

Table 4 - Codebook for Instructor Interview 1

Question 1 - Reasons behind getting into teaching	Codes	Henry	Jacob	Melissa
	Parental Influence		✓	
	Enjoys university setting		✓	
	Convenience/Availability			✓
	Past teaching/course design experience	✓	✓	✓
	Industry to academia transition	✓		✓
	Unplanned	✓	✓	✓
Question 2 - Reasons behind teaching 1st year engineering at VT				
	Wanted change from previous job	✓		
	Convenience/Availability		✓	✓
Question 3 - Important aspects of teaching				
	Good teaching pedagogy	✓		
	Organized/clear expectations	✓		
	Facilitators, not teachers		✓	
	Help students develop understanding/applying information		✓	
	Engaging students		✓	
	Improvisation		✓	
	Empathy			✓
	Caring and Helpful			✓
	Lifelong learning			✓
	Good subject knowledge	✓	✓	
	Students are priority	✓		✓
Question 4 - What do you do well in teaching?				
	Professional, but relaxed environment	✓		
	Clear and flexible policies	✓		
	Students are whole individuals	✓		
	Inclusive	✓		
	Performing and improvising		✓	

	Engaging		✓	
	Enthusiastic/Energetic		✓	
	Creativity and Imagination		✓	
	Secure and Confident		✓	
	Responsive/Timely feedback			✓
	Regularity of class rhythm			✓
	Flexible and accessible			✓
	Organized	✓		✓
Question 5 - What to improve on in teaching?				
	Differentiating student success, and grades	✓		
	Have students learned?	✓		
	Inclusive of all students (e.g., autism/on spectrum)	✓		
	Aligning assignment with ILOs		✓	
	Patience (could be same as one below)		✓	
	Internal emotional response		✓	
	Be more engaging			✓
	Right balance between lecture/demo/hands-on			✓
Question 6 - What makes you appear as a caring instructor?				
	Patience with questions	✓		
	Flexibility	✓		
	Student engagement		✓	
	Secure and Honest		✓	
	Creative		✓	
	Job excitement		✓	
	Giving students a positive outlook			✓
	Smiling face			✓
	Emphasizing availability			✓
	Explains why course occurs a certain way	✓	✓	
Question 7 - To what extent is care an important part of teaching?				

	Important, less with learning	✓		
	More rewarding and effective	✓		
	Student identity	✓		
	Students will learn and apply this care	✓		
	Student Motivation	✓		✓
	Student well-being	✓		✓
Question 8 - How do you implement care in the classroom?				
	Student interaction at personal level	✓		
	Reducing power dynamic	✓		
	Consciously secure	✓		
	Weekly check-ins	✓		
	Engaging		✓	
	Interactive performer		✓	
Question 9 - Responding to 'it isn't the instructor's job to care'?				
	Development of bad student habits and behaviors		✓	
	Technically not necessary	✓	✓	✓
	Ineffective learning experience	✓	✓	✓
	No point if you don't care	✓	✓	✓
	Higher student motivation associated with personal connection	✓	✓	✓

Interview 2 was also analyzed in a similar way. After the transcripts were generated and the notes were complete, similar to the first interview, a write-up summarizing all of the information the participants provided in relation to each question, was formed. From this, a contact summary form was created which had helped in allowing me to see some of the similar approaches and strategies the instructors were mentioning. Descriptive coding was then carried out where a short descriptor code was given to the different segments of information that were seen in the contact summary form. This had created a list of first-cycle codes. Since the purpose of interview 2 was to understand the participants' intentions in implementing care, specifically in relation to Tronto's ethic of care framework, it was necessary to find common themes between the descriptive codes, so that these themes could be related to the different ethical elements in the theoretical framework. In order to do this, second-cycle coding, specifically pattern coding was carried out where common themes and patterns were looked out for from the current first-cycle codes, and these emerging codes were matched against Tronto's ethic of care framework (Miles et al., 1994). After completing the pattern coding process, the existing number of descriptive codes were split into 11 different second-cycle codes. Each second-cycle code had a number of descriptive codes that were related to it. The second-cycle codes were termed as being strategies instructors used to implement care in the classroom, and the specific descriptive, first-cycle codes that came under each strategy are termed as being the different approaches instructors use, in order to satisfy each strategy. As a result of the definition of the different ethical elements in Tronto's care framework, from the 11 strategies that were formed, there were 2 strategies that matched with the attentiveness element, 7 were matched with the responsibility element, and 1 each were matched with the competence and responsiveness elements. The codebook from the second interview is included below.

Table 5 - Codebook for Instructor Interview 2

Theoretical Element	Second-Cycle Codes	First-Cycle Codes	Henry	Jacob	Melissa
Attentiveness					
	Availability/Proximity				
		Walking around classroom	✓	✓	✓
		Close proximity to students	✓		
		Emphasizing availability		✓	✓
	Student Check-ins				
		Question slide	✓		
		Starts each lesson - "how's things going"	✓	✓	
		Monitors team dynamics through CATME			✓
		Team Check-ins	✓	✓	✓
		Check-in Questions	✓		
		Student interaction outside class	✓		
Responsibility					
	Student Relevance				
		Culturally/technologically relevant courses		✓	
		Putting oneself in students' perspective		✓	
		Building on prior knowledge	✓		
		Prior Struggle Focus	✓		
		Using inclusive examples	✓		
		Suiting all learning styles			✓
	Make students do the work				
		Active Learning	✓	✓	✓
		Facilitation		✓	
		Allowing students to take control of their own learning	✓		
		Freedom to explore		✓	
		Guide students, not handhold		✓	

		Students do the work and learn from mistakes	✓	✓	
		Imparting lifelong student learning	✓	✓	✓
		Coach students in finding resources	✓		
		Help students understand their mistakes	✓	✓	
		Open-ended prompts		✓	
		Passive instruction before classroom			✓
		Reflection after classroom			✓
	Promoting Verbal Interactions				
		Activities incorporating student engagement	✓	✓	✓
		Early engagement culture	✓		
	Flexibility				
		General Flexibility	✓	✓	✓
		Be positive and adjustable	✓		
		Give break to students	✓		
		Adjusting assignment dates	✓		
		Instructor flexibility with office hours etc.			✓
		Flexible Policies	✓		
	Clear Communication				
		Explaining relation and alignment of everything to ILOs	✓	✓	
		Clear and concise rubrics and instructions	✓		
		Explains why feedback was/wasn't implemented	✓	✓	
		To give better instructions for assignments generally			✓
		Instructor sending regular announcements and updates			✓
	Implementing Student Feedback				
		Common themes slide	✓		
		Doesn't simply listen to students		✓	
		Responding generally, not specifically	✓	✓	
		Useful vs. non-useful	✓		✓

		Speed of implementation		✓	✓
	Providing well-organized and planned system of learning				
		Aligning activities/assessments with ILOs	✓		✓
		Sufficient and timely feedback			✓
		Organized activities to demonstrate material	✓	✓	✓
		Considering assignment clashes with other courses	✓	✓	
Competence					
	Assessing students				
		Assessment of learning outcomes	✓		✓
		Talking to students in and out of class	✓	✓	
		Talking to other faculty members		✓	✓
Responsiveness					
	Actively Soliciting Student Feedback				
		CATME - comments about instructor	✓		
		General class reflections	✓		
		Exit surveys		✓	
		Mid-term evaluations			✓
		Ask/converse with students generally	✓	✓	✓
		SPOTs	✓	✓	✓

3.5.2: In-class Observations

It was mentioned in section 3.4.2 that TDOP would be used as a way to help code the actions of the instructors that were being observed in the classroom. In this particular phase of data collection, it was the action that the instructors were enacting in the classroom, that was of highest priority. Whether they attend to a certain student or were seen to be generally alert in the classroom, or even whether they tell the class to give feedback on the lesson, it was the action they were portraying that was important. As a result, the TDOP was followed in the first lesson of each instructor in order to get an understanding of what were generally some of the common actions and behaviors each of the instructors did. The output of the TDOP protocol provided codes of the different actions the instructors took during the lesson, along with any specific notes that were mentioned in association with that action. In this way, the TDOP protocol was useful.

It was found that in observation 2 of each instructor that the TDOP protocol was not necessary anymore since similar codes to the first observation were consistently being entered recorded, the only difference being the specific notes that accompanied each coded action. Hence, as mentioned in Section 3.4.2, data gathered from observations 2 and 3 were through the form of taking detailed field notes. This was important since along with the instructor's behaviors and actions, what they were saying to each student was also important to note down since this could determine whether or not the particular action could belong to one ethical element, or another. For example, instructors asking students whether they understand the material is an example of competence, whereas asking students for feedback or asking them how the course is going, is an example of responsiveness. In this scenario, the action of just talking to students is not enough which is all the TDOP protocol was able to capture, and hence in-detailed notes were taken.

During each class observation session, the initial observational framework provided for each instructor (Table 4) was available to just keep a reminder of what actions to possibly look out for. While interview 2 was already finished by the time the in-class observations were carried out, since these interviews had not been analyzed yet at the time, what exact observations could satisfy each of the elements were unknown at the time, and hence most of the possible behaviors that are mentioned in this initial observational framework, come

straight of what has been mentioned theoretically. Before the actual observations were carried out for this study, a test run of this process was conducted by carrying it out on another instructor's class (not one of my participants) and testing it out in that environment. It was during this pilot run that I had realized that typing out all of the observations that were seen in the classroom, were difficult. I needed to find another, more simple and efficient way of being able to record these observations. It is as a result of this pilot that I decided to go ahead and implement the TDOP protocol as a method of recording the observations.

After going through all of the collected data which includes the TDOP codes and the notes made from the first in-class observation, each of these actions were compared to what is in Table 4, which is the initial observational framework for each instructor. Whatever actions and behaviors were not currently in the initial observational framework, were added to the corresponding ethical element. After all these behaviors and actions were added into the initial observational framework, this was then updated to be called Observational Framework 1, which was unique to each instructor and was formed by the end of the analysis of the first in-class observation. The same process was carried out at the end of the second and third in-class observations until each instructor eventually ended up with a final observational framework, which was a summary of all of the actions seen in the different ethical elements, across the three in-class observations. Henry, Jacob and Melissa's final observational frameworks are Tables C1, C2, and C3 respectfully, listed in Appendix C.

3.5.3: Students' SPOT Comments

In relation to analyzing the students' SPOT comments, one of the questions that is posed to students in the SPOT survey is *"What did the instructor do that most helped your learning?"*. It was decided to use the open-ended responses that students provided to this specific question since this question is what most aligned with my final research sub-question. The approach to qualitative analysis that was used involved thematic coding using the themes that had emerged from the analyses of the prior research questions. The analysis focused on frequency of comments coded against particular themes, but also involved identifying especially detailed comments that might help elaborate the findings.

As mentioned in the Data Analysis section, the instructors had provided their SPOT comments for this course for the previous three years, and all of these comments were used in the analysis. For each approach and strategy instructors mentioned in their interviews, I had taken all of the students' comments and had placed them with the approach that the students' comment was most aligned with. For example, in the example I had just provided, I placed students' comments about Melissa regularly checking in on the teams under the "Team Check-ins" approach which came under the "Student Check-ins" strategy. Similar to this, many students also commented on how they liked the fact that Henry would regularly walk around the classroom meaning he was always available if students had questions, and students described how this had most helped their learning. I had taken these comments and grouped them under the "Walking around the classroom" approach which came under the "Availability/Proximity" strategy. There were specific approaches that were frequently mentioned by the students for each instructor, and these approaches were taken note of, and described in the Findings section.

With consideration to the frequency of mentions, the analysis showed certain approaches that were regularly mentioned by the students. For example, in Melissa's SPOT comments, many students had mentioned that the one thing she had done that had most helped their learning was how she regularly would come around to each of the individual teams and check-in on them by asking them questions to see if they are okay. This was stated by many different students in each of the three years.

Along with this, since this section of the SPOT comments is open-ended, students can comment however much or little they want. From all of the SPOT comments I analyzed for all three instructors, the majority of students described what they found most helpful for their learning in a few words or in a sentence. There were a few students however that wrote 3-4 sentences, going into a lot of detail in describing what they found helpful for their learning. An example of this was one of Henry's students who had gone into detail highlighting how appreciative they were of the fact that Henry was flexible in adjusting assignment dates throughout the semester. The student had explained how there were multiple instances during the semester where they ran into unexpected circumstances and described how Henry's willingness to be flexible had helped this student's learning since they did not have to worry about something that was not in their control. While being flexible was one strategy

that was not mentioned as frequently as some of the other approaches and strategies in Henry's SPOT comments, this particular comment was made note of and was used as an exemplar quote in the Findings chapter. Hence, along with the frequency of certain approaches and strategies that were mentioned in students' SPOT comments, comments that were also potentially illuminating were also further analyzed and discussed in the Findings section.

This analysis found nearly all student comments in this section of the SPOT to be codable according to the themes. The few comments that were not considered, were comments which had nothing to do with the question being posed. By the end of the analysis of the SPOT comments, students' comments that either repeatedly showed up, or were more unique in nature, were useful in understanding the specific instructor behaviors that were enacted that was helpful in the students' learning, and all these comments were considered and are discussed in more detail in the Findings section of this dissertation.

3.6: Research Quality

This section addresses the research quality that was ensured throughout the duration of the research study. Regarding qualitative research, while reliability demonstrates that the researcher's methodology is consistent across multiple researchers and projects, validity happens when the researcher verifies the accuracy of findings by using specific processes (Gibbs, 2007). One aspect of the research quality that was important in this study, was to ensure there is alignment between the goals of the study, theoretical framework, the research question and methods. Figure 1 below proposed by Maxwell (2008), is being referred to in order to ensure of this alignment. This figure is an interactive research design model. In this model, instead of being connected in a linear or cyclic order, the various components of a design work together to generate an integrated and interacting whole (Maxwell, 2008).

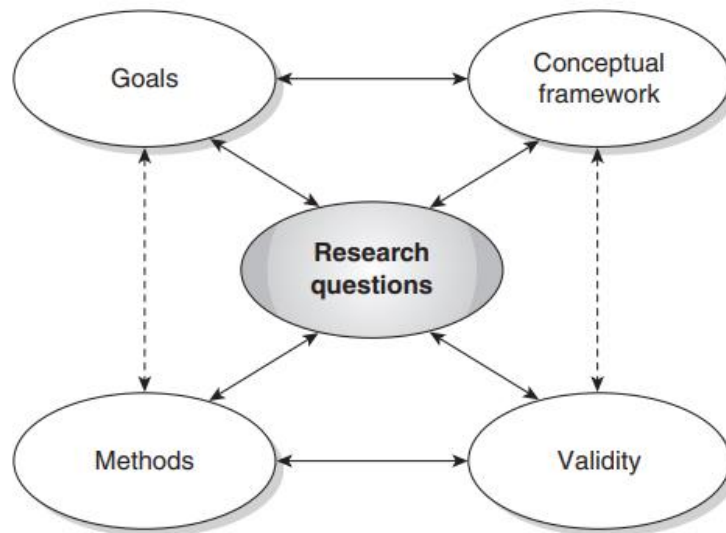


Figure 4 - Interactive Model of Research Design (Maxwell, 2008)

In this study, the focus was that care is an important part of teaching, and how I believed some teachers just cared for their students more than others did. Hence, the goal of the study was to better understand whether there are certain actions that ‘good’ teachers do, which show that they care for their students more than another teacher might be able to. This goal however was quite vague since it wasn’t clear what these actions were or looked like. To ‘care’ for someone is very vague and this is where the theoretical ethic of care framework helped in shaping this study regarding what showing ‘care’ could look like. This theory came about because of the goal of the study, and it further helped in the construction of the research questions. While this framework is related to all the research sub-questions in the study, research question 1(b) specifically is related to understanding how teachers enacted care in their teaching in the classroom. The framework was used directly as a guide for this sub-question to help better understand the different aspects of care that should be looked for while observing the faculty members. The goal of this study eventually helped in finding a suitable theoretical framework, and this framework helped to inform more about this topic of interest, that had initiated specific research questions to be framed. As a result, the upper triangle of this model is all interconnected and Maxwell (2008) recommends that this upper triangle should be a closely integrated unit.

The best way to understand this issue in more detail was to see how certain faculty members implement care in their teaching practices. The methods section, specifically the data collection strategy, directly aligns with the research questions. Three data collection

stages have been described earlier and each of these stages involved collecting data from multiple sources: namely from interviews, observations, and students' SPOT comments. This corresponded to carrying out a case study which was justified earlier on in this document. The first stage of data collection involves interviews with faculty and that is to answer the first research sub-question of understanding instructors' intentions in implementing care. The same strategy is also used for the second and third stage of the data collection protocol. Ultimately, since the data collection and analysis strategies were consistently discussed with the committee, plausible validity threats were dealt with, and as a result of that, the bottom triangle of the model is also closely integrated. Overall, the method section clearly aligns with the research questions as the methods will enable answering these questions, and that carrying out a case study will be the best way to do so while still achieving alignment across the theory, research questions and research design.

Another aspect of research quality to ensure was trustworthiness, and to ensure this, it was briefly mentioned in the previous paragraph that the entire research team in this study was involved and updated in every stage of the data analysis procedure. This was to ensure the results had gone through a form of respondent validation as described by Maxwell (2008). Respondent validation helps in avoiding the possibility of misinterpreting the instructor's interviews, the in-class observations as well as the students' SPOT comments, while also highlighting any possible researcher bias. If researcher bias was detected, Tracy (2010) suggests that in order to try and mitigate this, any personal reflections, general perceptions arising within the research process, as well as all research decisions, should be entered into a journal to keep a track of. Keeping a record of this is suggested to highlight instances of where researcher bias or positionality could affect the results of the study, and this was carried out within the duration of this study.

3.7: Summary

Chapter 3 discussed the methodological approach being used to carry out this research study. The chapter started with the positionality statement as being the main researcher in this study. Reasons for why the case study was chosen and being used for the study were then

outlined, before describing the context of the study. The three different data collection strategies were then described in detail before coming to the different strategies that were used to analyze this data. Ensuring that research quality was being addressed at every step of the study is important, and so this was also addressed.

Chapter 4: Teacher Portraits

Before progressing to the Findings of the study, this chapter goes into detail describing the three instructor participants that were chosen for the study. Included below are details of how they got into teaching and teaching first-year engineering at Virginia Tech specifically. The descriptions also include what are the different aspects of teaching that are important to them, what their beliefs about care are, and how they think they show care in their classroom. All of the information presented in this chapter helps to better understand how each of the instructors' backgrounds influenced their beliefs about care, and how they are motivated to implement care in the classroom in specific ways. This chapter is written up based on the information that came out of the first interview conducted on each of the participants in December 2022. In this interview, it was seen that participants chose which details of their life history they would share in response to the interview questions, and the analytical decision was made to only use this information rather than doing further follow-ups which might be perceived as intrusive.

4.1: Teaching as a profession and teaching first-year engineering.

4.1.1: Henry

Henry had completed his undergraduate degree in Civil Engineering and upon graduation, he had applied to do a master's in civil engineering and was accepted into graduate school. During his time in graduate school, he got experience being a Graduate Teaching Assistant (GTA) and reported that he really enjoy this experience. However, this did not change his plan to go to industry after graduate school. He found a position as a consultant and during this period of time, he mentioned that the advisor he had for his masters program was running a project-centered course where students would work together in teams on semester-long projects, working with industry partners. Henry got the opportunity to be an industry mentor for these teams. The class involved three different companies, and each company had the chance to teach one third of the class, and Henry led on this. This course was offered every other year and Henry got the opportunity to design and teach this course a total of three

times and he said that he really enjoyed this experience, his first exposure to teaching and designing courses.

As the years went on, Henry described how he realized that being a professional civil engineer for the rest of his career was not something that he wanted to do, and so he would keep an eye out for job postings and opportunities, especially those at Virginia Tech. There were a couple of Professor of Practice positions that had piqued his interest, and he had considered applying to a civil engineering position, however, the timing was not right, and he was also not sure about taking on a job which felt very similar to his present industry role. He mentioned that if he was going to apply to a new job, he would like it to be different enough so that it would seem like a change from what he was doing before, but similar enough to the extent where he didn't need to learn too many different new skills but could apply what he did from his previous job to his new job. When the Engineering Education Professor of Practice position came up which targeted teaching first-year engineering students, he mentioned he didn't know too much about this department, but stated that this position seemed interesting since it was a bit different and also more general, which would be a break from what he was doing for the past many years, but was still a field where he would be able to apply his expertise. He applied for and got the job and has been enjoying teaching in this space ever since.

4.1.2: Jacob

Jacob felt he had stumbled into teaching, but also mentioned that it was a profession in which he had always been potentially interested. After his bachelors studies he entered graduate school, and during this time, obtained an assistantship in one of the semesters for the interdisciplinary graduate education programs, and part of this responsibility required him to put together some of the seminar courses. This particular course was taught every other year, and the first time Jacob was involved in this course was also the first ever iteration of the course. From this, Jacob described how he had his own ideas with how he believed he could make changes to the course and make it better. Upon speaking to the people in charge of running the course, Jacob reported how he was allowed to redesign the course and was given

permission to facilitate and teach the course under the supervision of his seniors. During this semester, he had experience in completely re-designing the course, adding more in-class activities and discussions amongst students, and he described really enjoying this process. It was after this experience that he mentioned he started to initially think about teaching as a career. Along with enjoying the experience from redesigning and facilitating this interdisciplinary course, Jacob's father was also a tenure-track professor and Jacob reported that some of the conversations he had with his father had also encouraged him to consider teaching as an eventual profession. In the last year of his dissertation, Jacob ended up getting an instructor job with the Department of Engineering Education. The department was doing an emergency hire for instructors to teach in the first-year engineering space which he applied to and was successful in obtaining. This was initially just a one-year appointment, but he obtained more permanent roles and has stayed with the department since then. He also reported that he liked being in the university setting which was another reason why after graduate school he chose not to look for a job in industry, and rather stay in academia.

4.1.3: Melissa

Similar to the other two instructors, Melissa had also attended graduate school and reported to have experienced being a GTA during this time. Unlike Henry and Jacob however, she did not feel that this really gave her teaching experience. Her GTA job responsibilities involved grading, having review sessions and holding office hours. Upon graduation, Melissa obtained an industry position, but for personal reasons, she wanted to come back to Blacksburg and find any job that was available. Through certain contacts, she found that there was an adjunct position available with the Division of Engineering Fundamentals, which later became the Department of Engineering Education. She interviewed for this position and was successful in obtaining it and started a long career teaching first-year engineering courses, moving eventually into a more regular position. Melissa reported to somewhat accidentally stumble upon teaching as a profession and in first-year engineering specifically, and this was more so due to personal reasons. She has however, reported to enjoy this profession ever since.

4.2: Aspects of teaching that are important.

4.2.1: Henry

One of the aspects of teaching Henry mentioned that was important to him was to make sure that the teacher is on the students' side and wants the students to learn. He explained how he feels that the teacher just needs to have good enough content knowledge so that they can answer any related questions, but there is no need to be an expert. It is fine if the instructor even learns with the students. In saying this though, he does emphasize the importance of having some content knowledge since he believes you can have all of the best teaching pedagogy in the world, but if you cannot answer technical questions, then you are not very useful. Generally, he believes that as long as the teacher is on the students' side, they have good enough subject knowledge, good teaching pedagogy and are well organized, everything else will fall into place.

4.2.2: Jacob

One of the important aspects of teaching for Jacob was for the instructor to understand that in the classroom, they are merely just facilitators. He emphasized that the conveyance of knowledge these days is not too important since this information can be obtained online too. The challenge rather is the understanding process, and that is what the purpose of the teacher is; to facilitate and help students develop processing skills, and find, understand and apply the information that they have. The purpose of teachers, as he mentions, is not to stand at the front and deliver information, but rather to help students figure out how to learn better, how to engage with knowledge and develop necessary skills. Another important aspect of teaching for Jacob was his view that instructors are essentially performers. Audience engagement is their job and is necessary since you need to obtain students' attention in order to guide them through the learning process. In doing all of this, he talked about the importance of having a good plan in order to help students through this learning process, but it is equally important to have the skill to be able to improvise on the spot.

4.2.3: Melissa

Similar to Henry, Melissa mentioned that one important aspect of teaching was to understand that it is about the students, and the priority should be going to them and to their learning. What was unique to see with Melissa is how she prioritizes more of the emotional side of being an instructor. She mentioned that being empathetic with students and showing that you care about them, and their welfare is also important for their learning. She also believes that teacher traits such as being very funny, or being very attentive and being a dynamic speaker, are less important compared to being a helpful and caring person. She goes on to state how it is these qualities of being helpful, empathetic and caring which allows instructors to go out of their way to make students feel welcome and included which is what ultimately makes a big impact on students' learning. Similar to Jacob, Melissa stated how the conveyance of knowledge is not the priority, but rather helping students understand how to learn, and teaching them to be lifelong learners.

4.3: Importance of care in teaching, and what makes you appear as a caring teacher

4.3.1: Henry

Henry believes that care in teaching is very important, but it is slightly less important with learning. This is because you can still technically learn things even in a bad environment, and while this is not ideal, it can still be done. When it comes to teaching however, he believes that it makes sense to teach from a care perspective since this seems like it will be a lot more helpful in helping students achieve their learning outcomes. It is especially important in fundamental classes when instructors are also helping students in forming their identities, and showing care to students in the classroom means that they will learn these and go and show this care to their colleagues when they are in the workforce. Some ways in which Henry believes he can appear as a caring instructor is firstly by his patience. If the same question is repeatedly asked in different classes, he believes it is important to have patience, and understand it is the students' first time asking the question. Along with this, he believes he comes across as being caring by making it clear to the students that he understands that

everyone has a life outside of class, and sometimes that gets in the way. He also likes to be flexible in these scenarios. Henry also emphasized the importance of being really clear in explaining why the class has certain policies, and the fact that he takes his time to communicate all of this, makes him appear to be caring.

4.3.2: Jacob

Jacob also explained how he thinks that care is an important part of the teaching process. The reason for this is because showing care while teaching is just something that should be your job. He describes how the only way you can be an effective teacher is by showing you care, and if you do not care, then you cannot be effective at teaching. In doing so, there is no point in teaching since you will be wasting your time and the students' time. He had also explained that some students can have tendencies to develop bad habits, and the instructor needs to care enough about this to deal with this before it progresses to something more serious. It is because of instances like these that Jacob believes you need to care about the students, capture their attention and guide them through the learning process. In a slight contrast to Henry, Jacob believes he comes across as a caring instructor since he regularly comes to class enthusiastic, is always energized and consistently maintains engagement with the students. He mentioned that he also likes to emotionally connect with his students, and similar to Henry, Jacob also depicted the importance of explaining why the course is in a certain way. He believes that he comes across as a caring instructor since he explains why certain activities in the course are carried out, why some assessments exist, and this is good to explain to the students since they then understand your thought process while you were putting everything together.

4.3.3: Melissa

Regarding the importance of care in teaching, Melissa explained the importance of it from a motivation standpoint. She talked about how showing care is very important to students since this is what feeds into their motivation. They automatically want to do better and want to

learn. She stated how if students are seeing and believing that teachers care about them, then it goes a long way to making them also want to learn and do better. She mentioned how it is also just a part of being human. She talked about how teaching is such a relational activity and because of that, caring must just automatically come from the teacher. She depicted how it is necessary to even just care for the well-being of students in general as this will help students feel like the teacher is on their side. Melissa described that one of the ways in which she believes she comes across as a caring instructor is by the fact that she likes to give students a positive outlook on life. She likes to be optimistic with them, and even just do little things like giving them a smile. She mentioned that she believes that when she smiles, it gives students a positive presence in the classroom, and this makes them believe that she cares for them. Another way she believes she is seen as being caring is by emphasizing her availability to the students. She stated that she always likes to let the students know that they can have access to her whenever they may need it, and that she is always willing to help.

Chapter 5: Findings

This chapter will answer the three sub-research questions that are guiding this study:

RQ 1.1: What were the instructor's intentions with implementing care in the classroom?

RQ 1.2: How did the instructors end up enacting care in the classroom?

RQ 1.3: What do students describe to be helpful for their learning in what the instructors have enacted?

The chapter answers each sub-research question in the order in which they appear. The different approaches and categories that are either mentioned, seen, or described as being helpful in each research question, are grouped into their respective ethical elements, and presented in this chapter.

RQ 1.1: What were the instructor's intentions with regards to implementing care in the classroom?

1: Attentiveness

With regard to Attentiveness, the two main strategies that were identified in the analysis of instructor interviews were (a) emphasizing their Availability and Proximity with the students, and (b) carrying out Student Check-ins.

1.1 : Signaling Availability and building Proximity

Instructors had mentioned in their interviews that they prioritize **walking around the classroom** to pay attention to students' needs. Henry had mentioned that regarding being attentive to students, the most important thing to do was to "get out from behind the podium and to go and check on each team in every class period for a couple of minutes at least." This idea of constantly moving around the room is also seen from Jacob's comments as he states how he likes to "go around and talk to everyone, and generally just float around the classroom in case a student asks a question." While Melissa had also mentioned how she likes to be attentive by walking around the classroom, she also went on to talk about how she felt she

was available when just sitting at the front of the classroom. Here she mentioned that *“I will tell students when they go into work time that if they have any questions, they can raise their hand and I’ll attend to them, or they can come up to the front of the class to ask me questions.”*

Within the Availability and Proximity category, only Henry had stressed the importance of **being in close proximity** to the students, which could involve lingering around or sitting next to them. He mentions that he believes that *“you need to be close enough to the students in order for them to discuss their questions/concerns.”* From this, Henry could be implying that it may be the case that a student may not feel confident or may feel shy in asking a question to the instructor who is quite far away from them, compared to them being right beside their desk. Neither Jacob nor Melissa touched on the importance of being in close proximity with the students, but both of them however did place an emphasis on making sure they emphasize their availability to students; something Henry did not touch on. Jacob mentioned how *“I like to make it evident to students that I am available before, and after class, and also like to emphasize to the students that I am always available through office hours and by email.”* Melissa also goes on to talk about the importance of emphasizing availability when she mentioned that *“I like to be as accessible as possible and like to let the students know that I am available anytime they may need me.”*

1.2 : Carrying out Check-ins

Regarding student check-ins, the instructors had mentioned how they prioritized checking in with each student team and carrying out **team check-ins** to pay attention to student needs. Henry mentions that *“I like to go around and proactively ask students and teams questions, especially to teams who may not look like they are on track or are lost.”* Here it is seen that the check-in is an intentional proactive move by the instructor, and that they are specifically choosing which teams to approach. Jacob reiterates the importance of check-ins and mentions that he in fact likes to *“check in with each team once a week, just to ask how things are generally.”* Since the student teams are working together in their semester long projects, Jacob emphasizes the importance of regularly keeping in touch with each team since every team is on a different track, and so each of their needs will also look very different. The necessity of these check-ins is further reinforced by Melissa’s comments when she mentioned that *“I like to walk around the classroom a couple of times in the lesson just to check up on*

each team to see if they have any specific questions.” It should be noted here that this is slightly different to what Henry mentioned as he emphasized that he likes to proactively ask student teams questions, whereas Melissa more so asks the teams if they have any questions. Similar to Henry however, Melissa also mentions the importance of sometimes targeting specific groups to check in on. Henry stated how he likes to go up to teams who may seem lost or not on track, whereas Melissa mentions that she is keeping a general sense of which teams have ongoing problems. This can be seen when she states how *“sometimes certain teams may have team dynamic issues, and so I like to go up and talk to them, but otherwise, I will generally just ask the teams about how they are doing.”* A similar strategy related to this which only Melissa had said that she likes to use, is to monitor team dynamics through CATME (Comprehensive Assessment of Team Member Effectiveness) which helps in informing her sense of which teams need extra attention.

Another strategy that only Henry and Jacob had mentioned that they liked to use in order to check in on students was to start each lesson by generally asking the class **“how are things going?”**. Jacob mentions that *“in every class, I like to start by asking how everyone is doing, and how are things generally going?”*. He mentions in this quote that this is an effective way of gauging the students’ needs. This is especially helpful since the students taking this course have several other courses too, and sometimes they may be under a lot of stress from their other courses. By starting class in an informal manner, and by asking how everyone is doing allows students to have an opportunity to talk to the instructors to explain to them what their needs might be. Henry voices a similar strategy when he mentions *“I like to ask the students generally to tell me how things are going.”* Henry goes on to mention that this is crucial to being attentive since a lot of the time the instructors do not know what is going on in students’ lives outside of the class that they are teaching. He states that *“I care and sometimes we just don’t know, and so it is always good to ask.”*

Within this strategy of check-ins, Henry was the only instructor to mention that he also finds it effective to add in **check-in questions** as well as a **question slide** which is a slide which students can access in order to put in their own questions and concerns. He explained: *“I like to add check-in questions every 2-3 weeks to make sure they are doing okay outside of class. This helps me plan out whether I should or shouldn’t push them.”* Along with demonstrating that he is considerate, this phrase shows how Henry plans which questions he

can ask the students to better understand the needs that they may have, and to also be able to cater to them. Furthermore, Henry also realizes that there are students who may not feel comfortable and can be hesitant in asking questions and speaking in front of the entire class. As a result, he states how *“I like to add space in my slides for questions, in case the class may have any.”* The final check-in strategy that again only Henry mentions is to purposefully interact with students outside of the class setting. He states that *“even if it is outside the classroom setting, I like to try and ask how things are going.”* He also emphasizes that he likes to do this and tells his GTAs to do the same since this may allow students to feel more comfortable in being able to tell them their needs. He mentions that *“Students should feel like they have a connection with at least someone from the teaching team, even if it is the GTA.”*

2: Responsibility

The greatest number of strategies that all the instructors had mentioned in relation to how they wanted to implement care in the classroom, fell under the Responsibility element of Tronto’s ethic of care framework. This element relates to the instructors understanding and focusing on what has or has not been done in order to contribute towards a particular solution, and then taking ownership of positively influencing that solution. The mentioned strategies by the instructors involved: student relevance, making students do the work, student engagement, flexibility, clear communication, implementing student feedback, and providing a planned and well-organized system of learning.

2.1: Student Relevance

There were a number of different approaches the instructors mentioned they liked to do in order to design a course and provide a learning experience that is relevant to the students. What was interesting to see however was that all these approaches were unique to each instructor. Melissa states that the best way she likes to make sure her class is relevant to the students, is by **aiming to meet the needs of all learning styles**. She states that *“A lot of people like to learn in many different ways and so I try to make that type of learning available to them.”* It is seen that she believes that certain methods may suit different students better in the classroom, and so she tries to make sure that all of her students can get the most out of the lesson by making that type of learning method available to them. She mentions *“I like to*

keep varying and switching up the lessons in this way.” She goes on to explain how “*switching up*” the different learning style approaches could be helpful so that all the different types of students are catered to, and how this can also make the lesson a little more interesting since there is a variety of different ways that the material is being presented.

Regarding student relevance, Jacob had emphasized the importance of making sure that instructors were providing **culturally/technologically relevant courses**. He mentions that “*as instructors, we need to meet the students where they are, and design courses such that we take into consideration how their brains work these days.*” Similar to Melissa, Jacob references the importance of considering students’ cognitive needs, but instead of learning styles, he is attracted to the idea that their generation has grown up in a different world, which must be taken account of. He goes on to state that something important to keep in mind is to “*take their culture, how technology has impacted them, and how they interact with the world into account.*” As the world progresses, technology and culture also develops and changes, and Jacob emphasizes how these changes impact students and the way in which they interact with the world. Jacob also depicts how “*you have to make sure you keep changing your slides and material with time. You can’t use the same slides for like 10 years because times change and so must you.*” He clearly stresses the importance of making sure that your slides and methods of presenting material are consistently up to date so that it can help the students with their learning since they will be able to relate to something more in-tune with the world they grew up in. Regarding student relevance, Jacob had gone on to reiterate the importance of “**putting oneself in the students’ perspective.**” He mentions how putting yourself in their perspective can be effective since you can then imagine whether you would be engaged or not in an activity you are about to plan, and you can adjust these activities accordingly. This is seen when he states, “*whenever there is an assignment or an activity that I assign to them, I like to put myself in their shoes so I can make sure they are engaged and participating.*”

To satisfy this strategy of student relevance, Henry mentioned that he likes to **build on prior knowledge, focus on prior struggles, and uses inclusive examples**. He states in his interview that “*I like to try and use examples that cater to different types of students, without trying to disadvantage other students.*” He depicts the importance of this since these classrooms are made up of approximately 72 students who come from all over the country

and the world, and so they would all have vastly different backgrounds and upbringings. The importance of inclusivity in his classrooms is further seen when mentions *“I like to create a welcoming environment for a broad and diverse range of students.”* Along with being inclusive, another way Henry mentions that he tries to cater to student relevance is by focusing on their prior struggles. He states that *“I like to see what students have struggled with in the past, and I like to focus on those things.”* He iterates not only the importance of *“focusing on”* prior struggles since this is necessary to cover before more advanced content in the course is being taught, but also how necessary it is to understand what *“students have struggled with”*. Varying degrees of background information can also mean that there are varying degrees of prior struggles, and Henry explains how paying attention to this is important if we want to make our courses relevant to the students. Along with focusing on prior struggle, Henry also talks about value in building on prior knowledge. He states in the interview that *“I like to take the students’ prior knowledge and build on that with new things, and I try to bring in things that are familiar to students.”* This quote builds on what Henry had previously mentioned about using inclusive examples, where he likes to *“bring in things that are familiar to students”* and uses this strategy to further their learning by taking what the students already know and are comfortable with and building on that with new information.

2.2: Make students “do the work”

This strategy of making students do the work saw the greatest number of approaches being mentioned by the instructors. A total of 12 different approaches were mentioned between the three instructors about how they try to make sure it is the students that are doing the work in the classroom. One of the common approaches which all the instructors had mentioned in regard to this strategy falls under the concept of **active learning**. For example, Melissa mentions how *“students usually learn well through active learning, and so I try and make sure that I am providing that opportunity in my classes.”* Regarding Henry and Jacob, they have also both emphasized strategies that link to the idea of active learning, however they did not use the word *“active learning”*. The other approach which all of the instructors had mentioned in relation to this strategy is related to **lifelong learning, and all three of them used this term explicitly**. Regarding lifelong learning, instructors had mentioned that one reason that they wanted to make students do the work was so that they learn which are the ways in which they best learn, and in understanding how to learn, they can slowly achieve

lifelong learning. Henry stated that *“I want to teach students lifelong learning. As a result, any self-directed and skill development assignments are pushed off all onto the students mainly.”* It is clear from this quote that he prioritizes the idea of students eventually being able to learn things on their own without the need for somebody else to teach them. This is reiterated through Melissa when she commented how *“I want to help students learn how to learn. Lifelong learning is an important skill, and this is something important to teach them.”* All of the students are ultimately going to be on their own one day, and to allow them the autonomy to be able to practice learning things on their own, is an important skill as Melissa says. Jacob also goes on to mention how *“we should impart enough knowledge in the students to the point where they can kind of just be able to do their own thing.”* He also directly mentions how *“I like to really try and make the students lifelong learners.”*

Along with the two approaches that have already been mentioned, Jacob and Henry had both mentioned two more approaches they both use to make students do the work. The first was to emphasize the value of **learning from their mistakes**. Henry had talked about how he believes that learning is more effective for students when they go through a process of trial and error, as opposed to directly being told exactly what to do. This can be seen when he mentioned *“we need to allow students to actually do things and allow them to try and make mistakes and then learn from these mistakes.”* This is reiterated by Jacob when he also states that *“I like to allow students to do the work, make mistakes, and I believe that this is exactly how they learn.”* While this is almost exactly what Henry had also mentioned, Jacob goes on to state how *“students should make mistakes, figure out what they did wrong, and then do it again. You don’t learn much by doing things right, so I like to allow students to make mistakes.”* In this quote, Jacob clearly emphasizes how learning does not typically happen when things are going right, but rather, it occurs when a mistake is made and then figuring out why that was a mistake, and then how to rectify it. Along with talking about the importance of allowing students to make mistakes, Jacob and Henry also state the importance of **helping students understand their mistakes**. Henry goes on to talk about how *“it is the instructors that are responsible for helping students identify which things are actually errors, knowing when you are mistakes, and reinforcing the good stuff and not the bad stuff.”* It is important to note that earlier Henry mentioned how he prioritizes that students should be the ones *“doing the work”, “making mistakes”* and then *“learning from their mistakes”*.

However, he takes this a step further and talks about how the instructors are also responsible for helping students with this process of learning from their mistakes. When a student makes a mistake for the first time, it is not necessary that they will be able to understand that what they are doing is a mistake and that they should not continue doing it or be able to identify how to progress from these mistakes and avoid them in the future. They may need someone to initially guide them through this process after making a mistake, and Henry clearly explains how this would be the instructor's responsibility. Jacob reinforces this idea when he mentioned how *"you need to give them enough room to make mistakes, but also design the experience in such a way where they understand they made a mistake or be able to learn from this at least."* Similar to Henry, he talks about the importance of not just allowing students to make mistakes, but also providing an environment where they are able to understand their mistake and learn from it. All of this is the instructor's responsibility.

The rest of the approaches mentioned by the instructors were all unique to each of them. Henry mentioned how he likes to **allow students to take control of their own learning** and likes to **coach students in finding resources**. Allowing students to take control of their own learning is similar to the active learning approach he had mentioned earlier, and coaching students in finding resources is a part of helping students in understanding their mistakes which was also mentioned earlier. He states how *"I like to give the students as much autonomy and agency as possible so that they can take more control of their own learning."* This quote very much goes in tandem with active learning generally, as he states how he really wants to make students be as involved in the learning process as possible. He does however also emphasize the importance of the instructor's responsibility in giving the students some structure in relation to this. He mentions that *"I like to tell them to take some ownership in figuring out how they are going to achieve the goal, but also like to recommend a general process that they could start off with."* Along with this, Henry also depicts how *"my responsibility ends with coaching students on how to find resources, as well as identify how best they can learn."* It can be seen that Henry focuses on guiding students to find answers rather than giving them direct instruction as he emphasizes the importance of only coaching the students in being able to find resources, and not actually provide them with resources. This ties back to the idea of imparting lifelong learning onto the students as one of the goals of the course is to make students better lifelong learners. This will be difficult to achieve if the

instructors just tell students what to do, or provide them with all the resources they need, and will be more effective if the instructors are more so facilitators and guide them in finding the correct resources on their own.

This theme of **facilitation** and **guiding students, not handholding** are the approaches that only Jacob had mentioned in his interview. He repeatedly states how *“I am not a teacher, but more so a facilitator.”* He stresses the importance of this concept and mentions that *“we are here to facilitate the students to develop processing skills, and to help them engage with the material. It should not be the case that we are just standing up and constantly lecturing.”* It can be clearly seen here that Jacob prioritizes making sure students are being as engaged with the material and the learning experience as possible. He goes on to state that *“it shouldn’t be the case that teachers just stand up there and talk for hours because students will zone out.”* This same theme is seen when he mentions *“the instructor’s responsibility is more so to help and guide the students, not really tell them what to do, and not to handhold them.”* One of the approaches Jacob mentions he uses so that students can do the work, is by giving them the **freedom to explore**. He states that *“I like to allow students to explore on their own by giving them open-ended prompts.”* Open-ended prompts are something he suggests are a great way to allow students to be as creative as possible. In saying this however, he also talks about how *“you need to find the right balance of giving instructions and giving them the freedom to explore.”* This goes in tandem with what Henry had described earlier on when he talks about how giving students the autonomy and agency to do their own thing is effective; however, it is still the instructor’s responsibility to provide some guidance, and this is what Jacob depicts when he states how *“you need to find the right balance of giving instructions.”*

With regards to making students do the work, Melissa did provide some different insights into what Jacob and Henry had already mentioned, more so in relation to what she likes to make the students do before and after the classroom. She did mention that she likes to get students to *“do some group work and work together during the class”*; however, the unique approaches that she had specifically mentioned in her interview was to give a form of **passive instruction and assignments before the classroom**, and a **reflection after the classroom**. She states that *“I like to mix up the passive and active parts. So, an example is giving students readings or videos they have to watch beforehand which is the passive part.”* Similar to Jacob and Henry, Melissa is making sure she is providing enough instructions to get

her students to do some work, but the difference here is that she terms this a passive form of learning since she is making the students do this before her class starts. She goes on to say that *“I will then have students discuss some of their takeaways from these readings and videos in their teams, which is the active part.”* Along with making students do work before the class and during the class, Melissa emphasizes how she also likes to *“make the students write out a reflection about the work they discussed as an assignment after class, so that they are always thinking about it.”* She generally likes to make the students do some work before the classroom through readings or videos, some active learning during the classroom through group work and class discussions, and reflection assignments after the classroom as a way of making sure the students are reflecting on what they have learnt. The uniqueness in her approaches came from her emphasizing how she makes sure her students do work outside of the classroom as well.

2.3: Promoting Verbal Interactions

This strategy only yielded two approaches that were mentioned between the three instructors, one of which was mentioned by all of them, and one which was only mentioned by Henry. All the instructors talked about how they like to prioritize general **activities incorporating student engagement**. Henry also emphasized the importance of forming an **early engagement culture** in the classroom.

With regards to an activity that Henry mentioned that he likes to use to make sure students are engaged in his classroom, is he likes to ask them to tell him something he doesn't know. He states in his interview how *“I like to start each class by saying, tell me something I don't know. This helps in forming a rapport with the students and also helps the quieter students feel like they can be involved in class.”* The importance of thinking about what activities to include in the class to engage students effectively is also depicted by Melissa when she mentions how *“I really like to think about activities that need to be organized beforehand that can help with students engaging in the material.”* She stresses how it is not enough to just plan for what material to be taught, but it is important to also organize the type of activities to include in the classroom, so that students can engage with the material in the most effective way. The idea of planning activities is reiterated by Jacob too, when he states, *“I like to plan assignments to make sure students are engaged as possible in those activities.”* Henry takes this idea further by not only talking about the specific activity he likes

to use for engaging the students, but also emphasizes how this especially needs to be done earlier on in the semester. He explains how *“I like to do this question and engagement culture from the very start of the semester itself. I may not get as much engagement if I tried this later on in the semester.”* The key idea Henry brings up here is the importance of setting the tone from very early on.

What was interesting to see from the instructor’s interview responses was that Jacob mentioned engagement and the importance of it the most; however, between the three instructors, it was only Henry that had provided an example of what activity he likes to use to engage students in his classes. Neither Jacob nor Melissa provided examples of these activities in their interview responses, but rather only generally mentioned that they like to use activities. Jacob clearly emphasizes the importance of engagement when he mentions that *“you have to realize that you are a performer. Audience engagement is your job. You need to first get the students’ attention, and then guide them through the learning process.”* Neither Melissa nor Henry placed this heavy of an emphasis on engagement. The two of them talk about how student engagement is good to have in the classroom, whereas Jacob depicts how this is in fact necessary. He explains how getting the students’ attention is the first step before anything else, and it is only after you get their attention by engaging them that you can start the learning process and guide them through it. The importance of this is repeatedly highlighted in his interview responses through phrases such as *“I am very engaging, enthusiastic and energetic”, “I am an interactive performer”* and *“I like to maintain engagement of the students and show them that I care about them, and the class more generally.”* Jacob goes on to state that being engaging is not only necessary, but your students should also understand that the classroom environment for the whole semester is such, where engagement is required. He mentions how *“I want to make it evident that I am designing a class that is helpful to them, and that it will engage them.”*

2.4: Flexibility

There were a number of different approaches that were mentioned by the instructors regarding how they go about being flexible in the classroom. While all the instructors emphasized the importance of being generally flexible in the classroom, Henry went into more detail regarding this as to what he likes to specifically do in order to be flexible in the classroom. The approaches that were mentioned between the three instructors were to firstly

be generally flexible, be positive and adjustable, give breaks to students every now and then, adjust assignment dates, if necessary, be flexible with office hours, and have flexible policies.

Melissa emphasized **general flexibility** as well as specifically being **flexible with office hours**. She states how *“I am open to having meetings outside of office hours, even if the times don’t work for the students.”* She clearly explains here that she is happy to go out of her way to meet with students at any point of time. She had in fact mentioned in her interview that *“I am sometimes a little too flexible as I sometimes agree to meet on weekends, and sometimes send out too many reminders etc.”* Along with office hours, she gave an example of how generally being flexible with students is important for their learning. She mentions that it is important to *“help them in finding alternative processes.”* The specific example she mentioned had to do with students missing Frith Lab training. The Frith Lab is an area where students are able to use manual tools, cutters, and 3-D printers to design anything they wish to. They typically need to get formally trained for this, and in relation to this, Melissa mentions how *“with the Frith Lab, if they haven’t done their training, then I will typically tell the students to go and speak to those lab assistants and see what can be done, as opposed to not providing them with any alternatives.”* She explained in this quote how providing an alternative can be useful since this way, students will be able to take part in the planned class activities and this can be more beneficial for them.

Jacob had also stressed the importance of being flexible generally, and also emphasized how he is especially **flexible when it comes to assignments**. He states how *“if there is an issue with assignments, I can adjust it, allow students to resubmit, or adjust the way in which it is graded.”* He goes on to explain how *“I will always make sure I plan things out, but you also need to plan for when things go wrong, and when they do, be flexible with it and improvise.”* Similar to Melissa, Jacob explains how if something doesn’t go according to plan, the most sensible thing to do for the benefit of both the students and the instructor, is to just be flexible. Jacob also talks about how it is important to suggest alternatives when things don’t go according to plan. He states how *“when something doesn’t go right, I’ll ask the class why it didn’t work, and then I’ll proceed to suggest an alternative.”* Another important theme of getting feedback from the students is also seen from this quote. Jacob mentions *“I’ll ask the class why it didn’t work”* so that next time he is aware of this, and the same class activity or assignment isn’t repeated. He also goes on to depict how he can act

quickly regarding his flexibility. He states, *“I can drop things immediately, take the feedback from students, and then rework it for the next class section.”* He explains here how he believes that if a class activity hasn’t worked out in the way in which he expected, and if something similar has been planned for the next session, it then makes sense to then drop this activity and rework it for the next session. Generally, however, when asked how he would respond when things don’t go your way, the key things Jacob stresses are *“You need to be flexible. Change it and improvise around with it.”*

Henry had also emphasized the importance of being generally flexible, however, he did also state some important things he likes to remember in this regard. The first of which was to be **positive and adjustable**. He mentions how *“when things don’t go right, I try my best to keep a positive attitude about it, and then just try to adjust as much as I can.”* The key words he stresses in this quote are *“positive”* and *“adjust”* since he recognizes that things may not always go according to plan, but when they don’t, it is necessary to not dwell about that fact that it didn’t work out, and instead try to move on. Similar to Jacob and Melissa, he also gives examples of assignments. He states that *“if assignments are not up to scratch, I like to allow students with perhaps another week to try and work on it again and produce a better deliverable.”* It should be noted here that when Henry mentions if the *“assignment is not up to scratch”*, he means to say that the assignment that the student submitted is not to the standard that he expected. Even in this scenario, he believes that there may have been an issue with communication from the instructor’s end, and all of the fault cannot be put on the student, which is why he gives this one-week grace period. The theme of **suggesting alternatives** was mentioned by both Jacob and Melissa and was also echoed in Henry’s interview when he mentioned *“I’ll like to try and look at the bigger picture and see if there is another way to get there, even if it means changing things or getting rid of things.”* It can be clearly seen here that Henry prioritizes getting to the end goal as opposed to the way in which you get there. He explains through this quote how you should be doing everything in your power, even if it means to *“change things or get rid of things”*, to get to your end goal.

One other important theme that only Henry had mentioned was to also **give a break** to the students. He mentioned how *“sometimes, if need be, I like to just cancel class and let them take a break. They still need to do work, but it will be outside of class.”* Generally, however, Henry states that the biggest reason instructors have to be flexible is because

students also have a life outside of the classroom. He states that *“we need to recognize that there are other things going on apart from class, and sometimes life can just happen. We need to be flexible in these scenarios.”* He explains here that often times instructors can get too caught up in treating the students in a way as if their course is the only course they are taking. Henry emphasizes that it is important to understand that this is not the case, and to be adjustable accordingly. He states that ultimately it comes down to having **flexible policies**. He explains how *“I have organized, clear and comfortable policies. I am also okay with being flexible on these policies for certain student situations.”* He emphasizes how introducing these policies from the start will make students feel comfortable with the course, knowing that if there are situations that come up which aren't in their control, then they can comfortably talk to the instructor about this.

2.5: Clear Communication

The different approaches that were mentioned between the three instructors that related to communicating clearly were **explaining the alignment of everything to the intended learning outcomes (ILOs), clear and concise rubric instructions, explaining why feedback was/wasn't implemented, giving better instructions for assignments generally, and sending out regular announcements and updates**. From these approaches, the only similarity in the responses was between Jacob and Henry who both mentioned that they liked to explain why they did, or did not, implement students' feedback, as well as explain the alignment of everything to the ILOs. Aside from this, everything else each of the instructors mentioned was unique.

The one approach Henry had stressed the importance of was to have **clear and concise instructions**. He explains how *“I like to not burden students with too many dates, and so I like to make sure I have very clear instructions, but not too many either.”* He explains how in a course where there are many major group assignments, miscellaneous assignments as well as individual assignments, it can be confusing for students if you were to give due dates for all of these assignments right at the start. Along with the dates of the assignments, Henry also emphasizes the importance of having clear instructions about the assignments themselves. He mentions how *“I like to have very clear rubrics and clear policies.”* He depicts from this quote that having unclear or vague rubric instructions and policies could cause a lot of students to ask questions about a specific assignment. The better approach in relation to this, as Henry describes, is to have detailed and clear rubric instructions so that there are as

minimal questions about these assignments as possible, and students can be productive and get on with their work. Another important theme Henry talked about in his interview was how he likes to **explain how everything relates to the ILOs**. He states that *“Along with having clear rubrics, I like to explain how everything is important and is related to the learning outcomes of the course.”* Henry explains how it is necessary to explain how each assignment and assessment is related to the learning outcomes of the course so that students are able to make connections to the learning outcomes as they are going through that activity. Henry explains how this is necessary and mentions *“You need to be really clear on why we are doing what we are doing. You have to explain why you do certain policies, why they are structured like this, and not to treat students like robots.”* Furthermore, he states *“not to treat students like robots.”* From this he implies that many instructors may just plan certain activities and assignments which may serve no purpose to the students achieving the learning outcomes of the course.

This theme of explaining to the students why things are a certain way, was also touched on by Jacob. He talks about how *“I do like to explain why the course is a certain way, why certain activities are done, and explain to the students every decision that is made. It is good to explain to them what you were thinking about when you were pulling everything together.”* Similar to Henry, it is clear from this quote that Jacob also prioritizes making sure students understand why you are doing everything in a certain way. The way he mentions how *“it is good to explain what you were thinking about when pulling everything”* shows he values the idea of making sure the students are on the same page as the instructor. The other approach which both Henry and Jacob had mentioned was **explaining why certain student feedback was or wasn't implemented**. In relation to this, Henry states that *“I will always say why I am doing what I am doing, and I understand that I can't please everyone all the time.”* He implies from this that since there are approximately 72 students in the class, and after reading through all of their feedback, it is possible that there are a lot of contrasting opinions with what the students want. He explains then how in these scenarios it can be difficult that the instructor can cater to what everyone wants and must decide what they believe is best for the class, implement this, and then explain why this was implemented. This same theme is highlighted when Jacob explains that *“I will always respond to everything. I will mention why I either agree or don't agree with students' feedback, and so I will respond to everyone,*

but will only implement what I think is a good idea.” He describes here that one of the main reasons behind obtaining students’ feedback is to firstly improve the way the class is being run, but to also make them feel like their voice is being heard. Due to this, it is important to respond to everyone as Henry and Jacob mention, however, ultimately the instructor will have the best idea regarding which feedback to implement and let be, and it is their responsibility to go ahead with this and explain why they are doing so.

The two approaches that Melissa had talked about in her interview which related to clear communication, were **sending out regular announcements and updates**, and **giving better instructions for assignments generally**. Melissa mentioned that she prioritizes *“constantly reminding students to hand in their assignments on the days leading up to the deadline, along with on the day it is due. I like to keep sending out these reminders to the students.”* From this quote, Melissa depicts how students do have very busy lives and have multiple other courses that they are also busy with, and so to make sure they are up to date with the assignments due in this class, she states how she would prefer to constantly send them these reminders, as opposed to relying on students to remember. What is interesting from this comment is that Melissa went onto mention that *“I do feel though that sometimes I might be doing a little more than I need to or should be doing.”* She also talks about how clear communication is something that she likes to try and improve on. She describes how *“with student feedback, I try to look out for and see how I can give better instructions for assignments or even the kind of assignments I give.”* This is interesting to see and may suggest that in the past, she perhaps has not given instructions for assignments to the best of her ability. It is already seen that Melissa prioritizes reminders and updates regarding assignments, but she now also wants to get better at actually giving instructions about assignments too.

2.6: Implementing Student Feedback

In relation to implementing students’ feedback in the classroom, what was interesting to see from the instructor’s interview responses, was that it was not the question of whether they do implement the received feedback or not, but rather how do they go about implementing their feedback, and what they do with it. The different themes that were mentioned in relation to this strategy were providing a **“common themes slide”**, **not just listening to**

students, responding generally and not specifically, filtering useful vs non-useful feedback, and how quickly feedback can be implemented.

One of the things that both Henry and Jacob mentioned that they usually did with student feedback was to **respond to it generally, and not specifically**. Henry states that *“I don’t usually respond directly to the students, unless there is something very specific or concerning for a certain student.”* From this, he explains how in a classroom of 72 students, it is common to see many students providing similar feedback, and so it is more effective to respond generally to a wider student audience with similar concerns, than to have to individually respond to each student. As Henry mentions however, there could be scenarios where certain students have a specific issue or concern, and so in these situations, it is necessary to individually cater to these students. Jacob reiterates this idea of responding generally when he talks about how *“I try to respond generally whenever there is good reason to respond. Only if there is something specific that needs to be changed, will I respond specifically to that request, if it makes sense to.”* The only difference between Jacob and Henry’s comments is that Jacob does also emphasize the idea of making sure he will only implement feedback which he thinks is necessary and will be beneficial for the class. Like Henry, in this comment, Jacob also talks about how it is more effective to respond generally, unless specific scenarios arise. However, it can be seen through phrases such as *“whenever there is good reason to respond”* and *“if it makes sense to”* that Jacob also believes that with implementing student feedback, you **cannot just listen to the students**. He states that *“I will actively read through all of the feedback but will only implement feedback which I think is important and will do it in a way in which I think will work.”* It is clearly seen that Jacob does believe that student feedback is important since he does *“actively read through all of the feedback”*, but this is more so to just get a general idea of what he could do going forward. Jacob implies from this statement that he had taught this same course multiple times and so he will have a better idea of what will and won’t work regarding student success in the course.

As mentioned in the previous paragraph, both Jacob and Henry mentioned the importance of responding generally and not specifically to student feedback. What was interesting to hear from Henry’s interview was that he went on to describe how he likes to implement this feedback. He mentioned that he uses a **“common themes slide”** to respond

generally to the students. He explains that *“I will usually come up with a summary of the common themes I have seen from the feedback, put it in a slide, and then talk about it in class with the students.”* He reiterates that to put it in a class slide means that the students can visually see what they and their peers have suggested, and to talk about this can be effective as it may help them understand as to why or why not their feedback is being implemented. With regards to feedback, similar to what Jacob had mentioned, the instructor needs to decide which feedback they believe is important to act on, and what isn't. Both Henry and Melissa explicitly talk about **filtering useful versus non-useful feedback** from the students. Melissa states that *“while I do value feedback a lot and like to look over everything, I do also try to filter feedback in terms of what is useful, since some feedback is just not useful.”* Similar to Jacob, Melissa depicts how she values feedback and likes to look over everything, but also recognizes that not all feedback is useful. Hery also talks about this idea of filtering useful feedback when he explains how *“you also need to identify what feedback is constructive, versus what is just complaining.”*

Another important aspect with regard to implementing student feedback is how **quickly the feedback is implemented**. The instructor participants teach multiple sections of the same course, meaning that they will be teaching the same lesson multiple times a day to different sections of students. As a result, Melissa and Jacob both emphasized the importance of implementing the feedback as quickly as possible so that it can be applied in time for the next section. Melissa states that *“I like to ask students how things are going in the class because I can then immediately implement these for the next class section.”* She talks about how she goes around and actively asks students what things are working well and what aren't, and she explains how this is an effective way of understanding what can be changed in time for the next class section. In this way, she explains how she can keep improving the class as each section passes. Instead of asking students to give her feedback which she would receive by the end of the day, and then only be able to implement the following day, she prioritizes going and directly finding out from the students what she can change, and then implementing this in the next class. Jacob also highlights the importance of quickly implementing feedback. He explains that *“it depends on the clarity of the feedback regarding what is not working well. If it is not very clear, then I can have it changed by the end of the lesson. If it is clearer, I can change it immediately.”* It is clearly seen that Jacob prioritizes immediately

implementing student feedback as he depicts how if he understands the point of concern, and if this can readily be changed, then he can do so immediately. Otherwise, from his response, he mentions how the latest he will implement the feedback is by the following lesson.

2.7: Providing a well-organized and planned system of learning

There were a number of different approaches the instructors mentioned they like to do in order to implement care in the classroom. All of these approaches however, did not relate to the previous six strategies that were discussed, and so these approaches were grouped together under this strategy. The mentioned approaches involve **having an organized system of learning and providing activities, considering assignment clashes with other courses, providing sufficient and timely feedback, and aligning activities and assessments with ILOs.**

Of these approaches, the one approach which all three instructors had spoken about in their interview, was the importance of **having an organized system of learning**. Henry mentions that *“it is crucial that the instructor is well organized and has clear expectations.”* It was stated earlier in this chapter that Henry prioritizes students to do the work, however he also mentions that *“instructors need to help students with planning their learning and making sure they don’t go down the wrong track.”* He nicely explains how while it is important that students are the ones doing the work so that they get the most out of the learning experience, it is still the responsibility of the instructor to make sure that they provide an organized learning experience for the students. He goes on to explain that *“along with providing an organized system to do this learning, we also need to design things that will work for most students and help them to try and interweave everything together.”* Henry also depicts how while students are made to do the work and the instructors merely provide the most ideal conditions for learning to occur, it is also important to help students make the connections required for learning to occur. This is what he means from the phrase, *“interweave everything together”*.

This theme of planning is reiterated by Jacob as he talks about how *“you need to structure and plan each class session properly.”* He goes on to mention that *“you need to be specific about planning lessons, and realizing as to how students are going to be engaging in each of these lessons.”* While Henry spoke about the importance of general planning, Jacob

takes this further and emphasizes the necessity of having a goal in mind while planning each lesson. He depicts the importance of having “*specific*” goals in each lesson, and also talks about how every lesson plan needs to consider students’ engagement. Melissa also stresses the necessity of planning and being organized. She explains that “*I try to be as organized as possible.*” What was interesting to see from her response was what she considers to be a well-planned and organized lesson. She states that “*I try to make sure the class has an expected rhythm in terms of what time they start and the activities that are done in the classroom.*” She goes on to mention how “*this is so that nothing is confusing for the students.*” Melissa cleverly depicts the importance of having some sort of constant structure to each class session since students will know what to expect, and when this organized structure is in place, it will help with their learning gains. This is reiterated by her phrase “*this regularity is important and can help students.*” In this way, it is interesting to see what each of the instructors prioritize when it comes to providing a well-organized and planned system of learning. Henry emphasized planning activities and helping students interweave everything together, Jacob prioritized planning for student engagement, while Melissa stressed the importance of having a general class rhythm. While all of these different approaches are important to student learning, it is nevertheless interesting to gain an insight as to what the participants of this study prioritize.

One other approach that was mentioned by Jacob and Henry was **considering assignment clashes with other courses**. Jacob states in his interview that “*I like to be aware of students’ competing needs with other courses, such as clashes of tests and assignments. I like to make sure this courses’ assignments don’t clash with these other course assignments.*” There is a sense of considerateness that is seen here as Jacob recognizes that in order for his students to get the most out of his course, he knows he needs to make sure that he doesn’t make his assignments due at the same time as other courses’ assignments, otherwise students may not be able to solely focus on completing the deliverable for this course. As a result, to avoid this from happening, Jacob cleverly makes sure there are no clashes regarding assignments. The same idea is reiterated by Henry when he mentions how “*when I’m planning the entire course, I like to coordinate with the other classes to make sure no major tests and assignments clash together.*” Similar to Jacob, it can be seen from this quote that Henry also understands the importance of just seeing the students as humans, and not burdening them with a barrage of assignments, but rather spreading these out. While Melissa didn’t mention

anything about this in her interview, she was the only instructor to talk about the importance of **sufficient and timely feedback**. She directly states that *“students need to get feedback in a timely manner.”* She goes on to explain that *“in my experience, if the feedback is not timely, the students can feel frustrated since they don’t know where they are standing in the class, and they also cannot improve on future assignments.”* The last point that Melissa mentions is vital. She explains how giving feedback itself is not enough if students don’t get it in a timely enough manner such that they can improve on future assignments.

One of the most important approaches that only Henry and Melissa had mentioned that they liked to do to implement care in the classroom was to make sure all the **activities and assessments were aligned with the learning outcomes of the course**. Henry explains how there is not a lot of purpose in having assignments that are meaningless and not helpful to the students in achieving the learning outcomes and mentions how *“I always try to map out how each assignment is aligned with the learning outcomes of the course.”* Melissa supports this by stating that *“it is the instructor’s responsibility to come up with activities and a curriculum to help support the development of the intended student learning outcomes.”* She goes a step further than Henry’s quote and mentions how it is also the activities and the general curriculum that need to be aligned with the ILOs of the course. Everything that is included in the course such as the activities and assessments of the course, need to have a purpose to it, and they can only have purpose if they are directly aligned with the ILOs of the course as both Henry and Melissa touch up on in their statements.

3: Competence

As described in Chapter 2 with regards to this element in Tronto’s ethics of care framework, it is not enough for an instructor to identify a caring need that has to be met, or even accept responsibility for it. Ultimately, what is most important is that the students’ caring needs are in fact being met. Hence, in the context of this study, a competent instructor is classified as one who carries out the necessary actions to understand whether the students’ needs are being met or not. As a result, only one strategy came out of the instructor’s interview responses in relation to this element, and that was **assessing students**.

3.1: Assessing students

In assessing students, there were three strategies that were mentioned between the instructors: the general **assessment of learning outcomes, talking to students in and out of class, and talking to other faculty members.**

Both Henry and Jacob had emphasized the importance of **talking to students in and out of the classroom** as a way of informally assessing them and getting a better understanding of whether they are meeting the students' needs in achieving the learning outcomes or not. Henry mentions that *"just talking to students in class to understand what they are confused by, and if things are going well generally, can be very helpful."* What is important to note here is the phrase *"understand what they are confused by"* as this explains how the instructors are going around the classroom specifically to make sure students' needs are being met. A specific need they may have, is to gain better clarity about something they are confused by, and as Henry mentions, for the instructor to go up to the students, talk to them and help them clarify these doubts, makes them a competent instructor. The same idea is portrayed by Jacob when he explains that *"it is useful to just go up to the students to ask them how they are and what issues they may be having."*

Along with talking to students in and out of the class, another strategy to gain a better understanding as to how students are doing, which Jacob and Melissa had talked about, was to also **talk to other faculty members.** Jacob explains how *"asking colleagues who are teaching other sections of the same course is also super useful."* The advantage of this course is that many different instructors teach different sections too. As a result, it can be useful to understand how students are doing in other courses to get a better idea of which material they may be struggling with, or what seems to be coming easy to a majority of them. Melissa also highlights the importance of this idea when she talks about how *"talking to other faculty members as to how things are going in their classes and seeing if their students are kind of on the same track, can be helpful to compare against my students."* She depicts how it can be helpful to ask other instructors this question to understand how other students are doing in other classrooms, and this can give instructors a better insight as to what they could be doing differently. Melissa goes on to talk about how in relation to talking to other people, *"talking to the undergraduate curriculum committee is also helpful since everyone is getting together to collaboratively make sure all their students are fine."* She implies here that in the same way

that talking to other teachers is a good way of obtaining an informal assessment of the students, this can extend to members of faculty that are responsible for the course in other ways, such as the curriculum committee.

Ultimately, regarding assessment, the main strategy used to assess students is to **assess their learning outcomes**. Melissa explains how *“we are responsible for collecting students’ work to see where they are at. Assessment is a big part of this, not so much for the grades, but to see to what extent the students are meeting the learning outcomes of the course.”* She importantly talks about how the learning outcomes of the course is ultimately what is most important to achieve, and the instructors need to regularly make sure that they understand whether students are on track to achieving this. Melissa states how the main way of doing this is by *“collecting students’ work”*, and the importance of understanding whether they are on track to meeting the learning outcomes, as opposed to the grades. In response to asking these instructors what the best way of making sure students’ needs are being met is, and that learning is happening, Henry also mentions *“it is all about assessment and how you can assess their learning.”* He explains from this quote that ultimately in order to understand whether students are able to do what we had intended for them to learn, instructors need to find a way of assessing this.

4: Responsiveness

This element in Tronto’s ethic of care framework revolves around the responsiveness of the care-receiver to the care being provided. In this context, it is to understand how the students are responding to the care being provided by the instructors. As a result of this, similar to the Competence element, the instructors had only mentioned one strategy related to this element and that was to **actively solicit student feedback**.

4.1: Actively soliciting student feedback

The different approaches that were mentioned between the three instructors to obtain feedback from students was to use **CATME, general class reflections, exit surveys, mid-term evaluations, conversing with the students generally**, and the **SPOT surveys**. The question asked in the interview revolved around asking the instructors the way in which they go about

understanding how the students are responding to their teaching generally, and what their most effective strategies were, to obtain feedback.

All the instructors had mentioned that they liked to **converse with students generally** and that they like to use the **SPOT surveys** as a way of obtaining feedback from students. Melissa had mentioned in response to the question that *“SPOT evaluations, specifically the free-response answers are really helpful.”* The free-response space is where students can write anything they want to about the class and the instructor generally, and since this response is not guided by a specific question, it is helpful to see what the students’ overall opinions were of the class and the instructor. Jacob also talked about the usefulness of the SPOT surveys as he explains that *“I like to review my SPOTs at the end of every semester and then see what changes I can make and implement in the new semester.”* Henry had also mentioned that *“SPOTs”* is a useful survey that can help you implement changes in the following semester. The instructors go on to explain however that what could be more useful is to obtain feedback that can be more immediately implemented so that the students in the current semester can benefit from these changes. One way the instructors state that they like to do this is by asking students questions in class. Melissa talks about how *“I also like to ask students questions in the class. I like to ask how things are going before or after the class, and just going up to them to ask if the pace of the class is fine.”* Jacob speaks about this same strategy and states that *“asking students generally how class is going, asking them even outside the class and conversing with them can be helpful.”* Jacob brings up an important point in this quote when he depicts that he will even ask students *“outside of class”* if he sees them. Henry also similarly points out that just *“asking student questions in class and general check-ins about how the course is going is useful.”*

This idea of obtaining student feedback within the course of the semester so that changes can be implemented more immediately and hence they can obtain a better learning experience, is reiterated by Henry when he mentions how he likes to also use **CATME** and **general class reflections** as a way of obtaining student feedback. Henry explains how *“CATME surveys, but specifically the box where they can fill out comments about the instructor is helpful to understand how we are doing.”* Henry cleverly talks about how even though CATME is a tool used to monitor team dynamics in the classroom, there is a box where students can give comments about the instructor and the class. This quote shows how Henry finds it

important to consider every opportunity and instance where students could be giving feedback to the instructors. Along with this, Henry also speaks about the importance of general class reflections. He depicts that *“the general class reflections are a mixture of specific things they are doing in class, but also general reflections. This can help me understand how much students are understanding stuff, but also generally about the class too.”* From this quote, we can see that Henry uses general class reflections to also satisfy the competence element. He uses these reflections as a more informal way of assessing their learning as he includes some questions about *“specific things in the class”* to *“understand how much students are understanding stuff.”* What is important to consider with regards to this element is that Henry is also using these reflections to ask students general questions so that he understands how students are viewing the class. Regarding the responsiveness element, it is important to ensure that instructors are doing what they can to understand how students are finding the class and the instructor, and the general questions that Henry asks in his class reflections does just that.

Similar to Henry’s general class reflections, Jacob mentioned that he likes to use **exit surveys** in the classroom to obtain more general feedback from the students about how he is doing as an instructor and how they are finding the class. In his response he not only mentions that he likes to use *“exit surveys”* but also goes on to explain the kind of questions he asks to solicit student feedback. He states *“I like to ask them how is the teaching team doing? What issues do you have with the class? What do you like so far? What are we not accomplishing in class, and what do you wish for more of?”* These questions are seen to cover themes of generally asking the students how they find the class, what the teaching team can do better, and what they should continue doing. Jacob explains that this exit survey is *“a short survey that is sent out at the end of class and the students will typically have about 2 days to fill it out on their own.”* This means that students can firstly be inclined to fill it out since it is not a long survey, and they can be honest since it is anonymous. This seems to be a variation of Henry’s general class reflections, and Melissa uses the same idea when she mentions that she likes to use the *“mid-term evaluations”* to understand how the students are finding her classroom and her teaching. Overall, all the instructors did mention the importance of using both formal feedback systems such as the SPOT surveys, as well as more informal approaches to obtaining feedback such as asking students questions in class and giving them reflections

and surveys, so that they can more immediately understand what can be changed in the classroom.

RQ 1.2: How did the instructors end up enacting care in the classroom?

1: Attentiveness

It was mentioned from the interviews that the two main strategies that the instructors believed they used in order to make themselves attentive to students' needs, were to generally emphasize their availability and proximity to the students, as well as carrying out student check-ins.

1.1 : Signaling availability and building proximity

The only commonality that all three instructors had said they did in the interviews, in order to satisfy this category, was to walk around the classroom, and this was seen by all of them in their in-class observations too. There were certain periods within the classroom where both Jacob and Melissa were seen walking around the classroom to more so actually check up on the students and see what they were up to, while Henry was seen being a little more passive in this way and was just generally floating around the classroom in case a student needed help. Both Melissa and Jacob would actively go and ask the students questions, while Henry preferred to unobtrusively, slowly walk around the classroom. All three instructors did however walk around. The one approach to being attentive however, that only Henry had mentioned in his interviews, was to be in close proximity to the students. This was also clearly observed in his observations as while he was walking around the classroom, even though he was less intrusive, he was constantly in close proximity to the students, and would physically make himself closer to the desks in which the students were sat, while he was walking around. As a result, it was observed that the students felt more comfortable in asking him questions, since he was right next to them, and they didn't have to try to call him for help.

The final approach used in this category was to emphasize availability. It was only Melissa and Jacob that had mentioned this in their interviews, and this was also seen in their observations. Jacob was observed telling the students that they could ask him or the TA's whatever questions they have at any point in time, and he regularly mentioned this in

different class sessions. It was perhaps as a result of this, that it was consistently observed that students were regularly asking both the instructors and the TA's questions. This comfortable atmosphere could be seen in the classroom since a majority of the students did not seem to hesitate or be nervous in asking the instructing team any questions. In Melissa's classes, she would typically take the first 20-25 minutes of class to go over a series of announcements and updates as to what assignments are coming up for the students, and where in the semester they are. Along with this, she would introduce the new content that is going to be covered in class for the day, before allowing students to eventually work in their own groups for the rest of the class period on whatever assignment deliverable was going to be due next. It was seen that when the students would go into this work time, she would clearly tell the students to just put their hand up if they had a question and she could attend to them as a result, or alternatively, the students can feel free to come up to her. In doing so, it was observed that many students felt comfortable leaving their desks to go up to the front of the classroom if that is where Melissa was sat, in order to ask her questions. She was also seen to constantly scan the classroom to make sure if a student's hand was up, that she could go and attend to them. Regarding emphasizing availability, what is interesting to note was that even though Henry had no mention of this in his interview, in observing him, it was clearly seen that he too emphasized his availability to the students. Similar to Jacob, he was seen telling the students in every class session observed, that they can put their hand up and ask questions to him or anyone in the instructing team at any point. Whether it was telling the students that they can put their hand up to ask questions so that they could be attended to, or that they could come up to the instructor at any point if they had any queries or concerns, all three instructors had consistently clearly emphasized their availability to the students.

1.2 : Student Check-ins

In relation to the student check-ins, the one approach that all the three instructors had mentioned in their interviews that they like to use, was to conduct team check-ins. This was only seen in the observations of Henry and Melissa's classes however. Melissa was seen in all three class observations to go around to each team of students and ask them if they are okay, briefly check in on their progress and to see if they need help with anything. Henry was observed doing the same thing, but in one class session, had gone beyond just this. In this class session, Henry took a notebook and pen and sat down with each student group for

approximately 5 minutes to see how they are doing. During this part of the semester, the teams were working on a specific deliverable and so Henry sat down with each team to check-in on their progress and make sure they were all on track. It is assumed that he used the notebook and pen to make a note of the progress each team was on, what they were struggling with so that he could understand how best to help each of the teams. It is important to note as mentioned earlier that while Jacob did mention in his interviews that he likes to carry out team check-ins at least once a week, this was not observed in either of the three in-class observations. He was more so just seen walking around the classroom and making himself generally available.

Both Jacob and Henry had mentioned that another approach they use to satisfy this strategy is to start each lesson by asking the class as to “how are things going.” They had mentioned in their interviews that this is because life does exist outside of the class that they are teaching, and the only way they will be able to understand what the students are going through is to ask them. It was seen in all of their observations that both Henry and Jacob started off all of their classes by asking the entire class “*so how is everyone doing?*” and “*is everyone doing okay?*”. On certain days, these questions will yield more responses from students compared to other days, but overall, it was observed that the students would feel comfortable to open up about how their other classes are going in their degree, and when their other tests and assignments are. Another interesting insight from the interviews carried out is that Melissa mentioned that she liked to monitor team dynamics by using CATME. She mentioned that this would allow her to see which teams perhaps seem a little problematic, and how she may be able to help the team dynamics with certain teams. She also mentioned that she liked to do this near the start of the semester. Since monitoring team dynamics through CATME is something the instructor does in private on their computer, this was not visually observed. Melissa going up to specific teams to make sure their team dynamics were okay was also not something that was seen, although this was also because the first observation was only carried out on Week 5 of the semester.

Along with the strategies mentioned already, Henry had also mentioned in his interview that he likes to include a “*question slide*” in his power point, and this was observed in all of his classes. He would essentially just put up an empty slide for any questions and would share and make this slideshow available to his class before the class would start. All of

slides that Henry used in the semester were Google slides and he would allow students full editing access to these. As a result of this, the empty slide would be a chance for students to ask him any questions they may have either about the class material, or about anything in general. This was seen to be effective as students who were perhaps more hesitant in asking questions to the entire class could do so in a more private way. This slide was always full of both general questions, and questions specific to course content. Henry had also stated how he likes to satisfy this student check-in strategy by talking to the students outside of class (i.e., before the class would start or after the end of class). He was observed doing this again in all his class sessions by just making general conversations with students who would arrive early. He would essentially do the *“how’s things going”* approach, but this time, with a smaller group of students or even just one or two students. What was interesting to see regarding this approach is that even though it was only Henry that had mentioned this in his interview, Jacob was also seen to regularly employ this same strategy and the students in his classroom were in fact even more engaged in this activity compared to Henry’s classes. In Henry’s class, conversing with the students was observed, and he would usually have to initiate the conversation. In Jacob’s class however, it was seen that the students would readily start talking and making conversations with him without the need for him to even initiate the conversation in the first place. It should also be stated that Henry did mention in his interview that he likes to add a slide which had check-in questions specifically, and this was not observed in any of the observations. However, the purpose of this check-in slide was fulfilled by him asking students questions in smaller groups before class would start, ask how everyone is going to the entire classroom, as well as by adding a question slide which every student had access to.

2: Responsibility

As mentioned in research question (a), it was the responsibility element which had the greatest number of strategies in terms of how the instructors intended to implement care in the classroom. These strategies involved: student relevance, making students do the work, student engagement, flexibility, clear communication, implementing student feedback, and just providing a well-organized and planned system of learning.

2.1: Student Relevance

The first strategy mentioned by the instructors in relation to the responsibility element was student relevance. The interesting aspect about this particular strategy is that there were a number of different things the instructors had mentioned that they liked to do in order to satisfy this strategy; however, there were no commonalities between the instructors. All three instructors had mentioned their own unique ways of ensuring that their classrooms remain student relevant. It should also be noted that during the interviews, while the instructors talked about the different things they like to do to make their classes relevant to the students, a lot of these were not in fact observed in the classroom. This could be attributed to the fact that only 3 observations per instructor were carried out in a semester in which each instructor teaches approximately 30-32 classes.

In his interview, Henry talked about how he likes to **build on prior knowledge**, place an emphasis on **students' prior struggles** as well as use **inclusive examples** to make his classroom and the content he is presenting to the students, relevant to them. From these three approaches, it was only him using inclusive examples that was observed during the class observations. When explaining any new concept in the class, or when Henry was explaining anything generally, he would consistently use examples, and these examples seemed to always be related to something the students would know and understand. One such example he used was when he introduced the concept of stakeholders to the class. Henry cleverly talked about the app TikTok and had asked if everyone had heard of it or was using it to which all the students replied that they did. He then went on to explain the different stakeholders TikTok may have, and why they can be considered their stakeholders. This is currently a very popular app amongst students and kids generally in this age, and so this was a clever example to use as many students were able to relate to this. Generally, also, whenever Henry is able to use more informal examples, then he would ensure he does so by using examples that are more in-tune with the students' generation. He had provided a supportive environment as a result since all his examples were inclusive and did not seem to disadvantage any type of student. This was continuously seen, and because of it, the students not only appeared to be engaged, but also seemed to understand everything that was being explained. Henry building on students' prior knowledge or focusing on their prior struggles was not seen in any of the classroom observations. One reason this could be the case however is because the first in-

class observation was only carried out in Week 5 of the semester, and typically it could be assumed that the instructor is more likely to focus on students' prior struggles and start to build on their previous knowledge earlier on in the semester.

With regards to student relevance, Melissa had mentioned that the only approach she uses is to make sure she is catering to all of the students' **different learning styles**. This was clearly seen in all of her in-class observations as she would keep varying each classroom session by doing a combination of playing videos, assigning readings, carrying out basic lectures, and making students do group work. The students seemed to be engaged in the classroom in this way since there was not an abundance of just one format. Since there was a combination of a little bit of lecturing, some time spent watching videos, and then some time to also just do their own reading as well as work together in their teams, students were observed appearing to be involved for at least most of the class session without getting distracted or losing focus. Something interesting that was observed was that like Henry, Melissa was also seen using many inclusive examples in her classroom. The examples she would use were always student-relevant and were such that it catered to the large diversity of students in her class. In one of the class sessions, a group of students had raised a general concern about not being confident about choosing the exact discipline they want to do in the following semester. Melissa was observed to repeat this question to the rest of the class and ask the whole class who else had similar concerns, to which most students were seen to put their hands up and agree. As a result, she had given her personal example of how she was also not totally confident in what her career would look like and had explained that to an extent that was okay. By using a personal example, many of the students seemed to be able to relate to Melissa and by the end of the explanation, seemed content that as long as they a general idea of what they wanted to do and had some flexibility, they were in a good spot heading to the second year of their degree. It seemed as though all the students that had this concern were satisfied with the response. The interesting aspect of this observation was that this was something Melissa was clearly seen to do, but she had not mentioned this at all in her interview. With regards to Jacob, he had mentioned how he likes to make sure his classes are **technologically and culturally relevant** to the students, and he also likes to **put himself in the students' perspective**. Neither of these two approaches were clearly observed in the classroom however. In saying this, both of these approaches are quite abstract, and compared

to seeing someone using inclusive examples or observe someone walking around the classroom, they are difficult to visually observe. With regards to the instructor putting himself in the students' perspective, in a way this was observed through the activities that Jacob got the students to do. It was evident that he did think through the activities such that the students would enjoy them as well as get something out of them. This was more so seen however through the students generally being engaged, and so it is difficult to say if this can be something that is directly attributed through the instructor putting himself in the students' perspective. Again, this would be something that would be seen more clearly in the students' SPOT comments in research question (c).

2.2: Make students "do the work"

Similar to the student relevance strategy, all three instructors had talked about many different approaches they like to use in the classroom to make sure it is students that are doing the work; however, many of these approaches were not visually observed in the classroom. In saying this however, many of the approaches the instructors had mentioned are built on one another. For example, Henry had mentioned that he likes to make students do the work and learn from their mistakes, allowing them to take control of their own learning, active learning, and imparting lifelong student learning. It can be argued that making students do the work and learn from their mistakes is a form of allowing them to take control of their own learning. This by definition is also active learning since students are highly engaged and involved in the learning process. This can also then have positive impacts in helping them achieve lifelong learning. In the classroom however, one can only observe the most basic observations, which in this case, is seeing that students are doing the work, and whether there is some platform where they can also learn from their mistakes. Similar observations were made with Jacob and Melissa, and so it should be noted that as opposed to comparing the number of approaches they said in the interview versus the number of approaches that were seen in the classroom, it is more important to discuss whether the basic approaches such as allowing students to do work on their own, and guiding them if they need help, was seen or not.

As mentioned in research question (a), the different approaches Henry had mentioned that he likes to use in order to make students do the work was to allow them to take control of their own learning, make them do the work and learn from their mistakes, help them

understand their mistakes, coach them in finding resources, provide an active learning environment, and as a result of all of this, be able to impart lifelong learning onto them. From these approaches, what was clearly observed in the classroom was Henry making students actively do work and make them take control of their own learning. Typically, in many classes, when an instructor begins to start to talk about a new topic, they will perhaps do most of the talking and would occasionally ask the students if things make sense or not. In Henry's classroom, he always begins by asking the students what they think something means. When he was explaining what a stakeholder is for example, he didn't start by saying what the answer is, but instead asked "*so who can tell me what a stakeholder is?*". From this, one or two students will put up their hands and he will point out what was correct and what was lacking from their answers. He does this exercise for about 5 minutes and tries to get a majority of the students involved in this discussion. What happens by the end of this discussion is that instead of him telling the students directly what a stakeholder is, he has arrived at this answer by carrying out a whole class discussion. Essentially, the class as a whole have constructed the answer to "*what is a stakeholder?*". In this way, he allows the students to be the ones 'doing the work' and provides them with little pointers to help clarify any misconceptions they may be having.

What was also clearly seen in his classroom was allowing the students to take control of their own learning. In every class period, Henry would allocate at least 30 minutes for students to do work in their groups. Within this period, the students are working on their semester-long project, and they are allowed to think as creatively as possible. During this period, Henry also walked around the classroom and while he checks up on every group, he mostly allows them to do their own work and does not intrude or provide too much of his own opinions in the students' projects. It is clear that he prioritizes self-directed learning. In this way, since his classroom involves a lot of problem solving and group discussions, active learning is observed in the classroom. In relation to helping students understand their mistakes, one of the instances in which this was seen in the classroom was when Henry had put up a slide giving students feedback on one of the assignments that they had submitted. What was interesting about this observation was that giving feedback to the students was not mentioned anywhere in the interview and was seen on this occasion. It also seemed to be something that was very helpful to the students as this feedback enabled them to understand

their shortcomings and make these changes before the next deliverable. In saying this, however, this was only seen once during the three observations, and it only seemed to be for one of the bigger deliverables that the students had turned in. Helping students understand their mistakes was not something that was seen consistently, and on a smaller scale basis. During the MATLAB phase of the semester, there were a few instances where students had queries about certain questions and Henry would more often than not, help them find resources that would help them in solving those problems. He was observed to never fully explain to the students how to exactly get to the answer since he wanted the students to figure it out on their own, but in doing this, there may have been some students who were still unsure of how to rectify their mistakes. Overall, Henry did try to find the right balance in guiding the students enough to make them understand their mistakes on their own without directly providing them with the answer, and on more occasions than not, this did work effectively. However, it did appear to be the case that in some instances, the students did still seem a little bit lost and confused, meaning that they didn't get a chance to fully understand where they went wrong.

Similar to Henry, Jacob had also mentioned many different approaches by which he likes to make students do the work. He specifically emphasized his role as being more of a facilitator as opposed to a teacher, where he explained that his job was to more so guide students through the learning experience, and not so much tell them what to do. Like Henry's class, Jacob's class is mostly occupied with students doing a mixture of teamwork and small-group discussions, as well as whole-class and larger group discussions. When Jacob starts to talk about a new idea or theme to cover in class, instead of lecturing the students about it, he will first get the students to do a think-pair-share and discuss it in smaller groups. This is an interesting observation as 'think-pair-shares' was not something he had mentioned in his interview. After this, he then gets the students to report out to the larger class where they have a whole-class discussion about the topic. Jacob typically gives the students between 3-5 minutes to discuss the topic amongst themselves, before calling everybody back to have a whole-class discussion that lasts about 10 minutes. He would go through about 2 to 3 iterations of this in the classroom, before giving the last 25-30 minutes of the class to allow students to do work in their teams. Similar to Henry in this way, Jacob makes the whole class arrive at the answer to any of his questions together, and he makes the students be as

involved as possible in this construction of knowledge. In this way, he really is more so a facilitator since he provides simple instructions and prompts to allow the students to do more of the work. He mentioned in his interview that he likes to provide open-ended prompts, and this was clearly seen in his observations as well as he had provided very open-ended, and almost vague prompts. An example of this is when he asked the students *“What makes good communication?”* and had left it at that. To this, some students asked, *“is that all?”* to which he had nodded. He did not specify what type of communication, who the communication is between, the context of the situation or anything. This meant that there were no fixed boundaries as to how the students could think about the activity, and they were free to be as creative and imaginative as possible. In doing so, they were also encouraged to make mistakes as they went through a process of trial and error. As a result of this, they were given a lot of freedom to explore, and overall, active learning was seen to take place in the classroom.

Along with this, all these approaches involving the guiding of students, making them do the work and letting them be in control would likely have a positive impact on their lifelong learning. Again though, similar to Henry, with regards to helping students understand their mistakes, there was one instance where Jacob had put up a slide of feedback he wanted to give the students in relation to one of the assignments they submitted. This was again, very interesting to see since it was not mentioned anywhere in his interview and seemed to be very helpful to the students. However, helping students on a smaller-scale basis by just going around and answering simple questions around the classroom was not clearly seen. In saying this, there were not many instances from the observations where the students had a lot of questions to ask. It should be noted here that when students did have questions, it was also a mixture of the whole instructing team which includes Jacob and the two TA’s that would go around to answer questions. This is effective since it meant that at times were many students had questions at one time, they could all be catered to. Overall, however, it was difficult to understand whether Jacob had helped the students in understanding their mistakes, and this may be something that is easier to see in the students’ SPOT comments.

In Melissa’s case, regarding this strategy of making students do the work, in her interview, she had only mentioned three approaches that she likes to use: active learning, passive instruction before the classroom, and reflection after the classroom. In her three observations, no instances were seen where students were given some form of passive

instruction in the form of readings or videos that they had to complete before class. This was the same for reflections after the classroom. As mentioned at the start of this strategy however, these approaches may well have been carried out in other class sessions, and this may just not have been seen in these three observed class sessions. What was interesting to see in Melissa's observations is that she mentioned that she likes to use active learning, which is similar to Jacob and Henry, but unlike them, she did not detail other approaches she likes to use in order to satisfy active learning in her classroom. Melissa also posed questions instead of lecturing to the students and made them do mostly group work for most of the class sessions too. She was also seen being more of a facilitator as she simply guided students in their own construction of knowledge. There were not a lot of instances where Melissa helped in making the students understand their mistakes or coached them in finding their own resources, but as mentioned before, this may be something that happened in other class sessions and may be something that can be more clearly seen from the students' SPOT comments. Overall, however, there was not a lot Melissa had mentioned about making students do the work in her interview, and two out of three of these mentioned approaches were not seen. However, there were many other approaches which Jacob and Henry had mentioned that Melissa did end up using and this is always interesting to observe since it is something the instructor is doing, even though they had no mention of it.

2.3: Promoting Verbal Interactions

It was mentioned under research question (a) that the approaches the instructors had mentioned to satisfy this strategy were general activities incorporating student engagement and establishing an early engagement culture. Henry was the only instructor to mention both of these strategies, whereas Jacob and Melissa had only mentioned how they like to use engaging activities in the classroom. What was further interesting to see from the interviews was how Henry explained the specific activity he likes to use to help engage his students, whereas Jacob and Melissa had only mentioned they liked to use activities generally.

Henry had mentioned in his interview that the activity he likes to use to incorporate student engagement in the classroom, is to start by asking everyone *"tell me something I don't know."* This was clearly seen in all three of his observations, and it seemed to be very effective. It was evident that many of the students were waiting for this part of the class since as soon as he would put the slide up which asked this question, there would be multiple

students who would put their hand up, all eagerly waiting to tell their facts. These facts sparked general conversation amongst the wider class and set an engaging tone for the rest of the class period. Another interesting observation which maintained student engagement in the classroom was the number of questions Henry would ask. There were very few instances in his classroom where he would just tell the students what the matter of fact is. He would always ask questions such as *“so what does everyone think this means?”* and *“that is partially correct but can anyone else tell me what they think that does”*. He would make sure that he never directly tells students the answer to anything, but rather, they develop the answer together as a whole class. The only way he was able to do this was by asking constant questions. In doing so, the students were always engaged in the class since they were the ones who, together, had to arrive at the correct answer. This method of consistently asking questions was very effective in maintaining student engagement and was interesting to observe since it was not mentioned anywhere in Henry’s interview.

Another interesting point of observation was how Henry would intentionally get the students to go into smaller group discussions, followed by whole-class discussions. During the phase where Henry would keep asking the students questions, there were periods where sometimes students just did not know the answer, and in those periods, he would tell the students to discuss it in their teams and then report back to the whole class. These smaller group discussions would take approximately 2 minutes before Henry would call everyone back and have a whole-class discussion. This constant format of varying small group discussions and whole-class discussions was very effective for student engagement as they had the opportunity to discuss their thoughts in smaller groups, gather their ideas, and then report it out to the larger class. There was something about this variation of class size discussion that maintained the students’ attention and interest as to what was happening in the class. This was interesting to mention again since Henry had no mention of this in his interview. On top of this, Henry would sometimes break up the teams even smaller and get the students to do *“think-pair-shares”* which means they partner up with just one other person to discuss their opinions and ideas. This was also not mentioned in his interview, and this consistent variation of students discussing their thoughts in pairs, in their teams of six, and then with the whole class, made for a very successful and engaging class period. Henry had emphasized in his interview that he likes to carry out this engagement culture very early

on in the semester so that it continues for the whole semester. Since the first observation was only carried out in Week 5, this early engagement culture was not able to be seen, but by observing the way in which students were readily engaging with each other, with the instructor and asking and answering questions, it was clear that this engagement culture was established early in the semester.

What was interesting to see from Jacob's interview was that he repeatedly emphasized the importance of engagement and being an engaging teacher. He had in fact mentioned it the most out of the three instructors; however, in the interviews there was no mention of what he specifically does to engage the students. What was interesting to see in one of the class periods was that he started the lesson by banging two wooden sticks together. The class was noisy before the start of the class, and this was the way he got their attention. The class, to no surprise, was immediately engaged by this and this had set the tone for the rest of the class period. During that same class period, while he was having a general whole-class discussion, one of the students had jokingly said something hurtful to which Jacob pretended that his heart broke, clenched his chest and fell down to the ground and laid there. Again, this had definitely gotten the students' attention. The reason that all of the observations were important was because Jacob had mentioned in his interview that he is an interactive performer, and it is his job to make sure he obtains the students' attention. He hadn't mentioned exactly how he is a performer, or likes to get students' attention, but some of these observations clearly explained how he does so.

In all three of Jacob's observations, he started of the class by also asking the students *"tell me something I don't know?"*. Similar to what was seen in Henry's classes, it could be clearly seen that students had come prepared for this question and had readily engaged with Jacob and the rest of the class in sharing their facts. This again, had successfully established an engaging tone for the rest of the class period. Something that was seen differently in Jacob's classes was that he would ask more questions to the whole class for the purpose of general conversation. He would readily ask the whole class informal questions and would properly converse with them for a good couple of minutes. This was seen to a certain extent in Henry and Melissa's classes; however, not to the extent that it was seen in Jacob's class. He wanted to really just talk to the students like they are normal people, and wanted to have conversations with them that were outside of the class material. This had definitely helped

the students engage with him in the classroom more since it created a level of comfort for them to feel involved and included in class activities. Similar to Henry, Jacob had also consistently carried out a mixture of think-pair-shares, team discussion, and larger class discussions when talking about classroom content. The difference between him and Henry in this was that Henry would always ask questions to the entire classroom before going into smaller group discussions. Jacob however, preferred to introduce a topic, go into smaller group discussions straight away, and would then get the students to share their opinions with the larger classroom. Regarding student engagement, both methods were observed to be successful. Overall, it was interesting to see some of the specific things Jacob did like banging sticks together, falling to the ground, and making genuine conversations with the students, in order to be engaging. Since his interview had only yielded general responses about how he likes to be engaging, an interactive performer, and get the students' attention, these observations were helpful in understanding exactly how he satisfies these approaches.

Regarding student engagement, Melissa had mentioned that she likes to plan for which activities she can use in the classroom so that students can be engaged in the material. In the classroom however, compared to Jacob and Henry, Melissa was not seen to carry out as many activities that incorporate student engagement. Unlike Jacob and Henry, she did not start the class with *"tell me something I don't know?"* but would rather get straight into what they will be covering in class that day. What was seen however was Melissa giving students the opportunity to not only allow them to have discussions in their teams, but to also mix teams so that students could talk to other group members. Typically, in Jacob and Henry's classes, when students would get into think-pair-shares, or have team discussions, the students are only getting to talk to their team members, and this sometimes made it hard for them to get the chance to engage with other students in the class. In Melissa's classes however, she organized activities in a way where if students were supposed to give each other feedback, she would mix the teams of students together so that they get the chance to talk to someone new in the class. This seemed to help in relation to the engagement culture in her class. In saying this, there did seem to be more student-to-student and student-to-teacher interaction in both Jacob and Henry's class. This is because whenever new material was introduced in the class, Jacob and Henry would almost solely make the students come up with answers to the questions being posed about the content. Melissa would do this to an extent,

but she would also occasionally offer her own explanations of the new concepts to a greater extent than Jacob and Henry. Overall, Jacob and Henry did give more opportunities for students to interact not only with each other, but also with them as the instructor, compared to Melissa and this is why verbal interactions were seen to be higher in their classes, compared to in Melissa's classes.

2.4: Flexibility

The main approaches that were mentioned by the instructors in their interviews to satisfy this strategy were **to be generally flexible, be positive and adjustable, give breaks to students, adjust assignment dates, flexibility with office hours, and general flexible policies**. It should be mentioned that during the in-class observations, observing instructors being flexible was quite difficult due to the general nature of the flexibility. Instructors in most instances are only required to be flexible if a student asks for an extension, or if they are introducing an assignment for the very first time. Since only three observations for each of the instructors had been carried out, it happened to be the case that they were never observed introducing a new deliverable for the first time. Along with this, there were also limited instances where they needed to be flexible toward student needs too.

One instance where flexibility was seen was in Henry's class. One of the students had gone up to Henry to ask for an extension with their assignment to which Henry readily allowed them this extra time. Henry had also cancelled one of the class sessions to allow time for students to work in their teams on their final deliverable. This resonates with what he mentioned in his interview about **giving breaks to students**. Henry had mentioned that all the students had to do during this class session was to work together on their group project, and it was not necessary that the instructor needed to be present in the classroom during this time. As a result, he cancelled the class session, and allowed students to do work on their own accord, outside of class. While there were no specific instances where this flexibility was seen in Jacob and Melissa's classrooms, it should be mentioned that when they were talking about students needing to complete an existing deliverable, they did emphasize that the assignment dates were flexible. Both these instructors did briefly inform the class that if any student needed an extension of any sort, that they should feel free to come and discuss this with the instructor. This is similar to the **emphasizing availability** approach in the attentiveness element. In this case, these instructors did emphasize that there is definitely the possibility of

an extension if the student were to discuss their reasonings with the instructor. Unfortunately, there were no other observations that were seen regarding instructor flexibility, and to gain further insight into this, reviewing the students' SPOT comments in research question (c), may be more helpful.

2.5: Clear Communication

From the interviews with the instructors, in relation to clear communication, Henry had mentioned that he likes to provide clear and concise rubric instructions. Both Henry and Jacob talked about how they prioritize explaining the relation and alignment of everything they are doing in the course, to the intended learning outcomes (ILOs) of the course, as well as explaining why student feedback was, or was not implemented. Melissa on the other hand, stressed the importance of sending out regular announcements and updates as well as being better at giving instructions for assignments generally.

What was interesting to see in the in-class observations was that all three instructors were very good at providing basic announcements, as well as a brief outline of the class session, at the start of the class. This was somewhat seen from Melissa's interview where she outlined that she likes to send regular announcements and updates, but this was also more so in the context for assignments specifically as opposed to how the nature of the class is going to run for the day. Interestingly, this was not seen anywhere in Jacob nor Henry's interview responses. Melissa was seen to do this straight away after getting the class's attention, but in Jacob and Henry's case, straight after they would finish asking the class how everything is going as well as having general conversations with the students, all three instructors were seen to take approximately 5-10 minutes to explain firstly where in the course the class is, where they are heading towards, what assignments and deadlines are coming up soon, as well as what they are going to be doing in the class for that period. This was the exact format that all three instructors followed without fail in each of the observed lessons. In relation to clear communication, this was very effective as it kept on providing the students with information about where in the course they are, as well as reminding them what they should be working on, and when they should be submitting their work by. It was more interesting to see how none of this was explained in detail in either of the three instructor's interviews.

Melissa had specified in her interview that she wanted to get better at giving instructions for assignments, as well as even the types of assignments she comes up with. In one of her observations, it was clearly seen that she went into a lot of detail with regards to giving instructions for one of the assignments. In this particular class session, she was seen to take about 10-15 minutes to go through all of the assignments that were coming up in the next 4 weeks and when these assignments were due. On top of this however, she also opened the document for the assignment that was due next and went into detail as to what exactly she expects from the students and how she wants them to approach the assignment. This is exactly what she had mentioned that she wanted to get better at in her interview, and this was clearly seen in the classroom. On top of this, as she was going through the assignment document, her written rubric instructions were also very clear and concise, along with her verbal explanations of it. The students did not have many major questions regarding the assignment, and very few students went up to ask questions regarding the assignment for the remainder of that class period. What is interesting about this observation is that having clear and concise rubric instructions was something that was mentioned by Henry, and not Melissa, yet it was clearly observed only in her classroom.

With regards to Henry, he had mentioned in his interview how he prioritizes explaining everything he does in relation to the ILOs, having clear and concise rubrics and instructions, as well as explaining why he did or didn't implement certain student feedback. During the three observed class sessions however, only in one instance was he seen to explain why he did a particular activity to a certain extent. In one of the class sessions, Henry had talked to the students about how he likes to have four Comprehensive assessments of team member effectiveness (CATME) during the semester and why this has been effective for him in the past. In CATME, students are essentially supposed to rate and comment on each of their group members' performance in their teams, and this is readily available to the instructor. Students also have the opportunity to say anything they want to the instructor, directly to them as well. Typically, an instructor will make the class do two of these CATME surveys in during the semester, once during the middle of the semester, and once a few weeks out before the end. Henry however makes his students do four of these surveys which is out of the norm, and so he effectively explained to the students, the benefits he has seen with regards to this in the past, and why he is choosing to carry out this same procedure. This was

clearly something he had mentioned in his interview that *“we shouldn’t treat students like robots”* and how everything that is being done in the class should be explained to them, and this was definitely seen in this case. What was unfortunately not seen in the classroom was an explanation behind any of the assignments. In each of the observations that were made, students were already working on certain assignments, and these had already been introduced to them. In no observation was a new deliverable introduced to them, and so there was no opportunity of observing Henry explain how the assignment relates or aligns to the ILOs of the course. Due to the same reason, Henry having clear and concise rubric instructions was again not observed, since this is something that would have been covered when the assignment was initially introduced to the students, and as mentioned previously, this was not observed in any of the three class sessions. What was also not observed was Henry explaining why he did or didn’t implement certain student feedback. During the observed three class sessions, Henry was only seen to respond to student’ concerns with certain material about the course, not regarding any feedback to the course, or to Henry specifically where he may get contrasting feedback and would be required to explain why he is choosing to implement one and not the other. With regards to whether Henry did explain everything in relation to ILOs, provided clear and concise rubric instructions, and explained his implementation of student feedback, this may be found in the students’ SPOT comments, addresses in research question (c).

Similar to Henry, Jacob had also spoken about the importance of explaining everything in relation to the ILOs of the course, as well as explaining why certain student feedback was or wasn’t implemented. However, similar to Henry, in none of the three observations was it seen that Jacob was introducing an assignment for the first time. In the observed class sessions, the students were working on deliverables that had already been introduced to them, and so in this regard, Jacob was not seen explaining how a certain assignment related to the learning outcomes of the course. Along with this, since the first observation occurred in Week 5 of the semester, certain class activities such as think-pair-shares, or discussion in student teams followed by whole-class discussions, were always just seen to happen. It is possible that Jacob would have explained why he carries out these activities at the very start of the semester. Similar to Henry though, this is something that may just be better seen through the students’ SPOT comments. What was seen from Jacob’s observations however,

was him explaining why certain student feedback was and wasn't implemented. Jacob took exit surveys at the end of every class session which was essentially him asking students what they understood from the class session, what worked well and what could be changed or done better. From these exit surveys, near the start of every class session, Jacob would put up all of the student's comments from the exit survey and was seen to explain what changes he would make and why he made them. What was also interesting to note from this was that at the end of his explanation, students were never seen to have an issue with the specific changes he did or did not implement as a result of their feedback. They seemed reasonably content that he did explain and clearly communicate everything to them.

2.6: Implementing Student Feedback

In relation to the implementation of student feedback, the main themes the instructors had mentioned in their interviews were to **respond generally and not specifically, to have a "common themes slide", to not just listen to the students, filtering useful vs non-useful feedback**, and the **how quickly the feedback can be implemented**. It should be mentioned at the start that the one approach that could not be observed was seeing whether the instructors filtered the feedback. It is assumed that this would have been the case, since we can assume that not all of the feedback the instructors obtained would have been constructive, yet the feedback that was implemented and explained by the instructors, were all useful. It is just generally not possible to be able to observe the instructors going through this process, and this is something that may also not be seen from the students' SPOT comments, as this is also something that they don't necessarily observe.

Both Jacob and Henry were clearly seen to respond to the feedback that they received generally and not specifically. Henry had mentioned in his interview that he likes to summarize all of his feedback and have it in a 'common themes' slide, which he talks to his students about, and this is exactly what was observed in one of his observations. Henry would have asked students in the previous class session as to whether they had any questions, concerns or comments about the course generally as well as about specific deliverables, since near the start of this particular class session, the first thing he did after his usual ice breaker with the students, was put up a slide which had summarized all of the students' concerns. In this slide, he had first put up a question which most students would have asked, and then addressed this concern by putting the solution on the slideshow, as well as having a

conversation about this with the class. The questions the students had were a mixture of specific questions about the course material, as well as general concerns and points of feedback they had for Henry and the course. Henry was seen to address all of these issues generally with the students, and there did not appear to be any specific concerns that certain students had. What was also interesting to see was that as Henry was explaining which specific feedback he was and wasn't implementing, the students seemed to be content with his decisions as when he repeatedly asked if anyone had any questions or concerns from this, nobody was observed to put their hand up, or even later go up to him to talk about potential concerns. Similar to this, at the end of every class Jacob would give out exit surveys to the students. At the start of the class after his ice breakers, Jacob was also seen to go through all the feedback he chose and did not chose to implement. Unlike Henry, Jacob did not have a "common themes slide" which summarized all of the students' concerns, but rather he had just briefly put up what he is and isn't changing, and generally had a conversation with the students about this. Similar to Henry however, during this process, the students again did not seem to have any issues with Jacob's decisions. They seemed to just be content that the instructor had at least taken their feedback into consideration and had actively thought about and decided what and what not to implement.

Another interesting observation was that from this process where Jacob and Henry were explaining to the students what they did and did not implement as a result of their feedback, it was obvious to see that both these instructors had very clearly not just listened to everything the students had wanted. They had clearly gone through almost all of the students' feedback but had only implemented what they thought was best for the students and for the course and had explained this to the students in the classroom. This was exactly what Jacob had said he does in his interview; not just simply listening to the students. However, this was not mentioned anywhere in Henry's interview, but was clearly observed in his class session. It may have been the case that he just assumed that it is common sense to not plainly do everything the students are saying, and that the teacher does also need to have some control in making decisions regarding this, that he chose to not mention this in his interview. Another interesting point of observation was regarding the speed of the implementation of the feedback. In every class session, Jacob was seen to hand out an exit survey at the end of the class, and he would carry out this same procedure of responding to

what the students had to say in the very next class session. He had mentioned in his interview that if he can, he likes to try and implement the changes immediately in the same class session, but if he can't, he will definitely have it implemented, or talk about why he didn't implement it within the next class session. This is exactly what was observed in his classroom, and this is perhaps why the students appeared to seem very content with his decisions regarding implementation of their feedback.

Similar to this, Henry was also seen to be responsive in relation to the implementation of his feedback. In the class session which he had put up the "common themes slide" he had mentioned that *"this is what I have come up with from the questions and feedback you all gave me in the last class."* This meant that Henry too had gone about implementing the feedback in the very next class session. What is interesting about this observation is that again, nowhere in Henry's interview did he mention anything about implementing the feedback quickly. This may have just been another pedagogical strategy that he believes all instructors should be doing, and so he perhaps didn't think it warranted an explanation or mention in his interview. It should be mentioned however, that Henry was only seen to do this in one of the observed class sessions whereas Jacob was seen to conclude every class session with an exit survey, and then respond to those questions in the next class session. In none of Melissa's class sessions was she observed implementing student feedback. She mentioned in her interview that she does like to go briefly around the classroom to generally ask students if everything is going okay, and then on the basis of this, she implements their feedback. She was observed doing this where she actively went around the classroom to ask students how they are doing, however in none of the class sessions was she actually visually seen to implement student feedback in any way. In saying this however, Henry was also seen to do this in just one of the observed sessions, and so it may have been the case that it was just unlucky that none of the three observed sessions of Melissa had included her doing this, and that she may have actually implemented student feedback in another classroom. In saying this however, the two aspects of implementing student feedback that Melissa had talked about were filtering useful vs non-useful feedback, where it was already mentioned that it would be difficult to see, and the speed of the implementation. Specifically, she explained how she likes to ask students questions, and then implement these changes in the next classroom. Unlike Jacob and Henry, Melissa had never mentioned that she responds

generally and has a conversation with her class about the implementation of her feedback. Her approach seemed to be more subtle where she would just make changes wherever she would see fit. Hence, if this is the case, observing Melissa implementing students' feedback would be quite difficult. This again may be something that can be more clearly understood by seeing the students' SPOT comments.

2.7: Providing a well-organized and planned system of learning

As it was mentioned in the previous chapter, there were some approaches the instructors had talked about with regard to how they want to implement care in the classroom, which did not directly relate to any of the six previously discussed strategies. As a result, this strategy was formed on its own. The mentioned approaches that are a part of this strategy include **aligning activities and assessments with the ILOs, sufficient and timely feedback, having an organized system of learning and providing planned activities, and considering assignment clashes with other courses**. It should be mentioned from the start that regarding the final approach with considering clashes with other courses, this is typically carried out at the start of the semester and is also not something the instructor actively does in the classroom. Due to this reason, and the fact that the first observation for each instructor was only carried out in Week 5 of the semester, this approach was not seen in the classroom; however, in saying this, just like with every other observation that was not seen but mentioned in the interview, does not mean to say that the instructor did not actually carry out the approach. Again, more clarity could be obtained regarding this approach in the students' SPOT comments.

The one approach that was observed in all of the instructor's classes and in all of their observations, was that they all had an organized system of learning and provided planned activities in their classrooms. While all the instructors had talked about being well-organized and prioritized planning, it was Melissa specifically that had touched on the importance of having a sense of rhythm in the class. While she was the only instructor that had mentioned this in her interview, this sense of rhythm and constant structure in the class was what was exactly seen in every single instructor's classes. With Henry's class sessions that were observed, he would always start the class informally by asking the students how they are doing and then asking them to tell him something he may not know. This goes on for about 5-10 minutes before he lets the students know where they are in the semester, where they are going, what is coming up and then the general plan for the class session. After he goes

through all of the assignments and updates, he will bring up whatever content he wants to talk about and will keep asking the students questions as to what they think about it. As mentioned in the “make students do the work” section, the way Henry teaches the material in his class is by having class discussions and getting students to come up with the answers on their own. He simply just guides and facilitates this process and would provide them with little pointers here and there if they are getting stuck. He will typically carry out this whole-class discussion for approximately 15 minutes, and then will get the students to have smaller group discussions in their teams for about 5 minutes, before reconvening again as a bigger class. He will sometimes do between 1-2 sessions of these whole-class and smaller group discussions each, before he lets the students be for the last 20-30 minutes of the class, to just work in their teams on any deliverable that may be coming up. This class structure was exactly followed in all three of his observations.

Jacob had also followed a very similar class structure to this, where he carries out whole-class discussions and then smaller group discussion for most of the class before allowing students to just do work for the remainder of the class period. The only difference is that Jacob would get through a lot more of these whole-class and smaller group sessions, since he would typically allocate about 5-7 minutes for each. There was a lot more frequency of switching between these smaller and larger group discussions that was observed in his classes, and this had made the students constantly engaged. Melissa followed a slightly different structure where she would typically like to offer her own explanations of the discussed topic at the start by having one long whole-class discussion, before allowing the rest of the time for students to do work. Except for one class session, where the purpose was for students to obtain feedback from different team members, Melissa was not seen to typically do smaller group discussions and so there was no going back and forth between whole-class and smaller group discussions. The one difference between all the instructors as a result, was the frequency of having smaller to bigger group discussions before giving the rest of the class period for work time. Jacob was seen to do this back-and-forth class discussions the most, while Melissa did the least. The one commonality however between all of them was that there was always a constant rhythm and organized structure in each of their class sessions.

It was mentioned in section 2.5 that in none of the observations for any of the instructors, were they seen to be introducing a new assignment for the first time. When an instructor is explaining an assignment for the first time, along with explaining what they expect from the students, they typically also explain how it relates to the learning outcomes of the course. Since this was not observed, it was also not observed whether the instructors ended up aligning these deliverables with the ILOs of the course. Similarly, as mentioned in the previous paragraphs, each instructor had a set structure as to how they liked to plan the activities they do in the class. The reason behind this and how they help the students in achieving the ILOs of the course may have also been clearly explained, however, since the first observation was only carried out in Week 5 of the semester, this was also not seen. Whether this general curriculum alignment existed or not will probably be better understood from the students' SPOT comments.

One thing however that was interesting to note, which Melissa had mentioned in her interview, was to provide sufficient and timely feedback. What was interesting about this was that while Melissa had mentioned the importance of providing her own feedback in relation to the deliverables turned in by the students, this was not seen in any of her class sessions, but was seen in both Henry and Jacob's sessions, even though there was no mention of this in their interviews. In one of the class sessions, both Jacob and Henry had included a slide where they had just given feedback to the students. It should be noted that this feedback is different to what was discussed in Section 2.6 which spoke about implementing student feedback. This feedback that Henry and Jacob had given was their own feedback that they wanted to give the students in relation to one of the assignments that they had just turned in. It was interesting to see that their style of giving feedback was similar to how they addressed implementing student feedback too. Both instructors had given feedback very generally. They had both generally explained what students had done well, what misconceptions students had, as well as what students were missing from the assignment which was expected by the instructors. Following this slide was a discussion with the students whether they understood everything that was explained, and whether there were any questions following it. This would have been very helpful to the students as it was evident that this feedback was timely enough such that the students could implement it for the related assignment going forward. It was interesting to note how Melissa prioritized giving

timely feedback and also just generally being responsive, even though this was not seen in her class observations. Again, it should be mentioned that in all of her observed classes, the students were in the middle of an assignment. It was not the case where students had just completed an assignment such that Melissa could be observed in giving them feedback. Whether she did give this feedback and whether it was timely will be seen in the students' SPOT comments.

3: Competence

It was mentioned in the findings for research question (a) that the main way in which instructors made sure that the students' needs were in fact being met, was through **assessment**. In order to satisfy this strategy, the instructors spoke about the importance of **generally assessing student learning outcomes, speaking to students in and out of the class,** as well as **speaking to other faculty members**. Ultimately, the main aim of the course is for students to meet the intended learning outcomes of the course, and this is what their general needs revolve around. In order to ensure that they are on track to doing this, the instructors importantly speak about the necessity to find a way of understanding their progress and the way they are tracking generally.

3.1: Assessment

The only strategy mentioned regarding competence was assessment. There were very limited instances regarding assessment that was observed in the classroom however. This is because out of the three mentioned approaches, instructors speaking to other faculty members cannot be physically observed in the classroom, and there were no instances where a formal assessment was being carried out. It was seen in all of the observations for all three instructors that the students were always working on some form of assignment or deliverable, which is a form of assessment, but nothing else regarding the assessment of learning outcomes was observed. In relation to the instructors talking to students in and out of class, again, all three instructors were seen to constantly ask students questions about whether the material made sense, and this is a form of assessment as they are testing out the students' understanding as a way of ensuring whether they are on track or not. Aside from this, all three instructors were seen to go around talking to groups of students individually and in groups,

however, it could not be determined whether these conversations were specifically about course content and the teachers clarifying students' doubts, or whether it was the instructors generally asking the students about their well-being, and how they are finding the course and the instructor. Since the individual conversations were not heard, this could not be determined. It should be mentioned again however that the competence element has to do with whether the students' needs were met or not. Assessment is a good way of understanding this, however, since this element revolves around whether the students' needs were met, it is ultimately their opinion which matters the most to truly understand whether the instructors were actually competent or not. Due to this, the students' SPOT comments in part (c) will help in determining whether the instructors were successful in meeting the students' care needs and can be classified as being competent.

4: Responsiveness

The main strategy the instructor's had mentioned they use in relation to the responsiveness element is the **actively solicit student feedback**. The most effective approaches the instructors had spoken about as to how they go about obtaining student feedback includes **CATME, general class reflections, exit surveys, mid-term evaluations, conversing with students generally, and SPOT surveys**. Similar to the Competence element, many of these approaches the instructors had mentioned were of the nature where it was difficult to see in the classroom. Approaches such as CATME, mid-term evaluations and SPOT surveys are typically not what is seen to occur in the classroom, but rather, students are sent these and are required to do them outside of the classroom. Due to this, many of the approaches the instructors had mentioned in their interviews were not clearly seen from the in-class observations. Once again, more clarity on this can be achieved by looking at the students' SPOT comments.

4.1: Actively soliciting student feedback

Out of the mentioned approaches, the one approach that was observed in all three of the instructor's observations and in all three of their observations, was the instructors **asking students questions in class and generally conversing with them**. The instructors were seen to regularly go around the classroom and would typically ask students if everyone is doing

okay. It was mentioned in the Competence element however, that these conversations were purely observed, and not heard. As a result of this, it is unclear as to whether these conversations with the students revolved around the instructors asking and answering students' specific questions about the course material, which would satisfy the Competence element, or whether they were talking about how the course is going, and the students were giving their feedback on the class and the instructor, which would satisfy the Responsiveness element. This is again something that can be clarified in looking at the student' SPOT comments as to whether many of these in-class conversations included the ability for them to give feedback to the instructors.

An interesting observation in Melissa's class was that she was seen to use an exit survey in one of her classes. She had formed a few questions asking students about how they found the activity they did in class, what things they were struggling with, and what they wanted to see more of going forward in the class and had presented this as a miscellaneous assignment at the end of class for her students to complete and answer before the next class session. What was interesting about this is that Melissa had only mentioned that she likes to generally converse with students, use SPOTs and mid-term evaluations as a way of obtaining feedback from students. There was no mention of exit surveys at all, and this is what was seen in her classroom. It was only Jacob that had mentioned that he likes to use exit surveys to obtain feedback, along with conversing with students and using SPOTs. This is exactly what was seen in his observations too, as Jacob ended up using exit surveys in every class period. It was apparent that this was the case for the whole semester as in the observations, he did not even have to tell the students to fill in the exit survey, and instead, he would just have it up on the slide at the end of class, and the students were aware that they had to complete it before the start of the next class. Similar to Melissa, his questions again revolved around what the students liked, and did not like about the lesson, and what they wanted to see more of in the classroom and from the instructing team. Henry had mentioned that he likes to use CATME, general class reflections, talking to students in class and SPOTs as a way of obtaining feedback in his classroom. What was interesting to see is that while CATME is typically something that is not seen in the classroom, Henry was seen to clearly explain and talk about CATME in one of his classes. This was mentioned in the "Clear Communications" strategy under the Responsibility element. What was not seen however was general class reflections.

Henry had mentioned that he likes to use this strategy, in a similar way to how Melissa and Jacob mentioned and were seen to use exit surveys, however, there were no general class reflections that were catered to obtaining any sort of student feedback about the class or instructor, that were seen in any of the three observations. This may be seen in the students' SPOT comments.

RQ 1.3: What did students describe to be helpful for their learning in what the instructors had enacted?

In this study, the SPOT surveys for Jacob and Henry were looked at for the Spring semesters of 2022, 2021 and 2020. For Melissa, the SPOT surveys were looked at for the Spring semesters of 2023, 2022 and 2021. This is because this is all that was made available to me.

1: Attentiveness

The two main approaches instructors mentioned they used to satisfy the attentiveness strategy were to emphasize their availability and proximity to the students and carry out check-ins with the students.

1.1: Signaling availability and building proximity

One approach the instructors had mentioned in their interviews in order to emphasize their availability and proximity with the students, was that they liked to walk around the classroom, and they were all also observed to do this in the classroom. Regarding the students' SPOT comments however, only Henry and Melissa's students had reported this as being something they believed was helpful for their learning. Melissa's students had reported her as being "*very attentive and helpful*" and went on to describe how "*she walked around during the class and so it was easy to ask questions.*" This comment depicts how Melissa's act of walking around the classroom helped her in being more attentive in order to notice when a student had a question. Henry mentioned in his interview that he likes to unobtrusively walk around the classroom, and this was seen in his observation too. It was interesting then to see how

the students had commented on this exact trait and depicted how they had appreciated this nature about him since they believe it showed how Henry instilled a sense of trust in the students. One student mentioned how *"I appreciated that when you walked around, you simply watched as we worked instead of trying to micromanage. It showed that you trusted us to do a good job."* Henry had also mentioned and was observed to be in close proximity to the students. Regarding this, students had generally mentioned that *"he was always very accessible and close by if we needed anything."*

Even though it was only Melissa and Jacob that had talked about how they like to emphasize their availability in the classroom, all three instructors were observed doing this in the classroom. The students were also seen to talk about this availability with regards to all of the instructors. With Jacob, students emphasized his approachable nature and described how it was very easy to go up and ask him anything. An example of this is when they mentioned that *"he was so approachable all the time since he always told us to come up if we had questions"*. Another student reiterated this by saying *"he felt very human and approachable."* This idea of approachability was seen in Henry's SPOT comments too. The students described how *"he made himself very approachable to be able to ask questions about anything."* It was seen from the student's comments that Henry would go beyond emphasizing his own availability and emphasize the availability of the entire teaching team. One student foreshadows this by explaining *"either he or the GTA was always available to answer questions"*. Along with this, Henry was seen to extend this availability to outside the classroom as well as described by one of the student's comments regarding how *"he always gave us the option to go to his office hours."* The idea of having not just the instructor, but the entire teaching team available to answer students' questions is highlighted in Melissa's SPOT comments too. One student talked about how *"she had always offered help as much as she possibly could and had made her help and the help of her teaching team very accessible."* From Melissa's SPOT comments, students expressed how her consistent availability for them made them feel cared for and valued. This is seen through their comments of *"she always makes herself available to us which shows how much she cares for us and our success in the course."* and *"she would always be there for us which made me at least feel very comfortable."*

1.2: Check-ins

The main approaches instructors mentioned to make sure they carry out regular check-ins with the students was to have a question slide for students, start each lesson with “how are things going?”, monitoring team dynamics through CATME, carrying out team check-ins, having check-in questions and interacting with students outside of class. From these, the one approach that was seen in all the instructors’ SPOT comments was how they carried out team check-ins. Henry’s students had emphasized how regularly he would prioritize checking in with their teams as seen through one of the students’ SPOT comments about how *“he always set up times to meet with us as a team and make sure we were on track.”* Along with holding these team meetings, the students also spoke about how Henry would allow them to ask him questions during these meetings too. The students explain how *“he took the time to check in on each group and always allowed us to ask questions.”* From Melissa’s SPOT comments, it was seen that she, like Henry, would also regularly check in on each of the student groups. However, the one additional thing they mentioned in these comments was how because of these check-ins, they felt more comfortable to ask her questions which they probably wouldn’t have asked if these check-ins were not carried out. This is portrayed by one of the students’ comments where they mention how *“she always made sure to check in with each team to see if we had any questions which was extremely helpful especially if we didn’t want to ask questions in front of the entire class”*. This idea of students feeling more comfortable to ask questions as a result of the check-ins that she carried out was also highlighted in another students’ comment where they explain that *“she went around the classroom during every period and asked our team questions on a personal basis. I feel that we would not have asked some of the questions if we had to direct them towards the whole class, rather than her personally.”* The students also explained how Melissa was good at making sure every team was on track through these check-ins as seen by one student’s comment of *“she would regularly go out of her way to communicate with each group to make sure everything was going well.”* Jacob’s students had explained how he too was good at these check-ins by mentioning *“he would always connect with us throughout the entire semester.”* Along with this, it was interesting to note how the only other student comment in relation to this check-in strategy was with Jacob’s students talking about how *“he would always have space for Q&As integrated into his presentations”*. This was interesting to see since it was Henry that

had mentioned and was observed to have a question slide in his lectures, yet regarding students' SPOT comments, this was only seen in Jacob's classroom.

2. Responsibility

The main approaches instructors mentioned they had used to satisfy the responsibility strategy were to focus on presenting material that is student relevant, make students do the work, incorporate student engagement, be flexible, communicate clearly, implement student feedback, and provide a well-planned and organized system of learning.

2.1: Student Relevance

The different approaches the instructors mentioned to make sure their classes were student-relevant, were to make the course culturally/technologically relevant, to put themselves in the students' perspective, to build on prior knowledge, focus on prior struggles, use inclusive examples and to suit the different student learning styles. One of the only approaches seen from the students' SPOT comments was how the instructors were very inclusive in the classroom and always used inclusive examples to explain material. Henry's students had highlighted this idea of using inclusive examples by mentioning *"He had always used examples we could easily relate to, and presented the assignments and lessons in a way that all students could understand."* From this quote, the phrases *"could relate to"* and *"all students could understand"* specifically helped in depicting the inclusive nature Henry provided in his classrooms. His ability to be inclusive and make sure *"all students"* are catered to and understanding the content is again seen in another students' quote who mentions that *"he always made sure that all of us students would understand the content."* Similar to Henry, Melissa's SPOT comments also highlighted her inclusive nature in the classroom, but these comments went into more detail regarding how exactly she was inclusive. One student mentioned *"I like how she used real-world examples that we could understand and relate to before giving us tasks."* The similarity that is seen here with Henry's comments is how the examples used could be easily understood and *"relatable"* to the students. Another student mentioned that *"she used clear and real-world examples which I was surprisingly able to relate to"*. The students use of *"surprisingly"* suggests that they were perhaps not expecting to be presented with examples that they could relate to.

With Jacob's SPOT comments, along with real-world examples, students described how his use of examples from his own personal experiences was helpful in helping them relate to the material being presented. One student describes how *"he helped me learn by explaining each process in depth and giving examples about his own personal experiences. I think all of us students felt included and could relate as a result."* Including personal examples is something unique seen in Jacob's SPOT comments compared to the other instructors. Similar to Henry and Melissa however, this helped students with regards to relatability. The strategy of using real-world examples is seen in Jacob's comments too as one student talks about how *"he had given real-world examples and scenarios in all classroom instructions which made it easy for all of us students to understand. He was able to use examples which would connect with us."* The only other approach that was mentioned by the students' SPOT comments to satisfy the student relevance strategy was putting oneself in the students' perspective, and this was seen in Jacob's SPOT comments. The way this was described by one student was that Jacob would continuously always try and relate to the students. The student mentioned *"he was always very friendly and attempted to relate to his students. It seemed like he put effort and purpose behind every activity."* This is interesting to see since Jacob had mentioned in his interview that he likes to make sure he puts himself in students' shoes and approaches the formation of assignments and class activities in this way, and this is exactly what was mentioned by this student through their phrase of *"seemed like he put effort and purpose behind every activity."*

2.2: Make students "do the work"

This strategy had the greatest number of mentioned approaches in the instructor's interviews, and most of the students SPOT comments were also related to the different approaches used to satisfy this strategy. The approaches that were mentioned in the instructors' interviews used in order to make students "do the work" included active learning, facilitation, allowing students to take control of their own learning, giving students the freedom to explore, guiding students and not handholding, making students work and learn from their mistakes, imparting lifelong student learning, coaching students in finding resources, helping students understand their mistakes, giving open-ended prompts, having passive instructions before the classroom, and reflections after the classroom.

The one approach students had talked a lot about in their SPOT comments which was the case for all three instructors was how the instructors allowed students to take control of their own learning. Henry's students described how *"he allowed plenty of in-class time to work both by ourselves and with our teams."* Along with this, students also explained how Henry would mostly allow them to be responsible for their own learning. One student talked about this when they mentioned *"he didn't really try to tell us what to do or how to do it, and offered help only if we asked for it, but generally let us figure it out on our own, which I greatly appreciated."* The phrases *"didn't tell us what to do"* and *"let us figure it out on our own"* emphasize how even though the students had not directly mentioned it, Henry more so facilitates their learning process as opposed to influencing the way in which they learn. The idea of allocating time in class for students to do work together in their teams is reiterated in Melissa's SPOT comments when one student talked about how *"she gave us lots of time inside class to work on projects and get ourselves situated for all the assignments that would come up."* On top of this, one student also goes on to explain specifically why this in-class time to do work together was useful. They stated that *"by giving us time to work in class, she made sure our group worked together and this fostered an environment of respect and hard work within our group, which had overall helped us."* Jacob's students had also talked about how they liked the fact that he allowed them to take control of their learning, however it was interesting to see how the benefits of having this control over their learning, were different to the ones that were discussed by Henry and Melissa's students. Jacob's students explained that having this autonomy meant that they did not have any fixed boundaries with how they had to think and as a result, they were allowed to think as freely and creatively as possible. They explain this when they mentioned *"he would still allow me to use creative expression and solve problems on my own."* Along with this, even though it was implied through students' comments that Henry and Melissa acted as facilitators, this was only directly seen in Jacob's SPOT comments. The student described how while there was not much lecturing in the class, this had meant that there was extra time for students to work with their teams in the class. This is seen through the quote *"the class had little to no teaching, but the instructor facilitated me and my group's growth, and encouraged us with our projects."* The word *"facilitated"* in the phrase *"facilitated me and my group's growth"* is intentionally used by the student and shows how Jacob provided the perfect balance of giving them enough guidance to help them

grow, but not interfere too much to the point where they feel like they don't get to figure things out on their own.

Similar to students being able to take control of their own learning, the students' SPOT comments showed that the three instructors had given students a lot of freedom over the course of the semester. One of Melissa's students explained how *"she allowed us a lot of freedom and choice in our learning"* and *"she allowed freedom in the coursework so that students could learn in different ways."* The phrase *"learn in different ways"* describes how the students appreciated that as a result of them being given freedom, they were not bound to learn in one particular way, but rather whichever way was most helpful to them. One advantage of this was highlighted in a students' quote when they mentioned *"she also allows us to have creative freedom in the class."* Another student had explained how since the freedom they were given allowed them to approach learning in whichever way was most suited to them, this ended up increasing their motivation in the classroom and they had wanted to generally do a good job in the project. This is seen through *"the freedom we got in our projects made it more personalized which helped in me wanting to do it and put in more effort."* This idea of freedom was also seen in Jacob's student comments. The aspect of the freedom which they seemed to appreciate the most was how non-intrusive Jacob was. One student reported to appreciate this freedom that was given through their comment of *"in the group projects, he allowed for freedom of student ideas but letting us do our own things, and only giving suggestions or feedback when we asked or during a showcase."* While Henry's SPOT comments also had comments using the word *"freedom"* this was not gone through in detail, as can be seen from one student's quote: *"he gave us a lot of freedom in our project."*

One aspect of making students "do the work" that was emphasized by Henry and Jacob in their interviews, was for them to make mistakes so that they could then learn from these mistakes. As a result, this was seen in both of their SPOT comments. What was interesting to see from Henry's SPOT comments is that one of his students had directly quoted something Henry had mentioned in the class. In the class, Henry emphasized the importance of making mistakes as this was a better way to learn compared to making very few mistakes and not getting much out of the class. The student stated that *"I loved the way he explained his general agenda with us doing projects: 'I would rather it not work, and you learn something, compared to you doing something easy and it going perfectly and not learning"*

anything’.” It is interesting to see how students appreciate going through a learning process where they are expected to make mistakes, fix them, make more mistakes, and repeat this cycle. This is seen through Jacob’s SPOT comments too where one student explained how *“I liked how he allowed us to gain experience working on difficult problems in teams, knowing we will go through multiple iterations of it and making decisions as a result.”* In relation to making students “do the work” and make mistakes, Jacob emphasized the importance of the instructor’s responsibility in guiding students through this process, and not handholding them. This was highlighted in one of this comments when a student had mentioned *“what was helpful was that he only guided us through the problem-solving process in order for us to evaluate different courses of action to construct our instrument.”* What was interesting to see regarding this idea of guiding students, was that even though it was only mentioned by Jacob in his interview as something he likes to do, this was also seen in Henry’s SPOT comments. Students in his class commented as to how *“he was great about helping guide us in the right direction.*

One approach the three instructors mentioned in relation to making students do the work was lifelong learning. With regards to this approach, instructors explained in their interviews how students achieving lifelong learning was something they hoped for as a result of making students “do the work”. Students mentioning lifelong learning was something seen in all three instructors’ SPOT comments. One of Jacob’s students talked about how they believed class was more than just the content they learned in the class, but extended to also thinking about the type of engineers they want to be and how they can be the best version of themselves. This is highlighted in the quote *“everyday we learned so much more than just the engineering process of design and looked more into creating good characters as a person because engineers will be the future of tomorrow and this class allowed us to figure out what kind of engineers we want to be.”* Phrases such as *“engineers will be the future of tomorrow”* and *“figure out what kind of engineers we want to be”* show how this class has given students the ability to not worry about what they need to do in order to get a good grade in this class but think about what they are learning more deeply and how this may be useful in the future. This idea of consistently willing to learn and developing yourself is reiterated through another student who commented *“we were allowed to build skills on our own since we were able to work by ourselves and in our groups and from this, I got a better idea of the best ways that I*

can learn.” This theme of developing the ability to understand how to learn is also seen from Melissa’s student who mentioned *“she provided the necessary tools for us to get better at learning and to develop a problem-solving mentality that is essential for all engineering students.”* This is similarly also seen from Henry’s SPOT comments where a student explained how *“every task we did helped us learn how to think and learn, and work more like real engineers.”*

One approach mentioned in the instructor’s interviews was coaching students in finding resources. In Henry and Melissa’s SPOT comments however, they were more so seen to provide students with the resources. One of Henry’s students explained how they understood the main purpose of this class was to be learning on your own, making mistakes and then learning from these mistakes. They also explain how instructors would provide students with the necessary resources they would need. This is depicted from the quote *“Since in this class you should really be learning from your own mistakes, the main thing the professor contributed to my learning was providing the resources necessary to complete projects.”* This theme of providing resources for students was also seen in Melissa’s SPOT comments where her students mentioned how she *“continually provided us with a plethora of resources to guide us along the way.”* This was interesting to see in the case of Melissa, as coaching or providing students with resources was not even something she had mentioned in her interview. Along with this, another approach that was seen in Melissa’s SPOT comments was how she helped students understand their mistakes and learn from this. In their comments, students talked about how giving them detailed feedback paired with the quickness of this had helped students in understanding their mistakes. This is highlighted in the comment *“I feel like the feedback is what made helped us learn from our mistakes, and this made going about things easier and learning from them.”* This is again interesting to see since helping students in understanding their mistakes was also not stated anywhere in Melissa’s interview.

2.3: Promoting Verbal Interactions

The two approaches mentioned from the instructor’s interviews in order to promote verbal interactions in the classroom with, and between the students were to carry out general activities that incorporate verbal interactions and to carry out this interaction culture early on in the semester. What was seen in all of the instructors’ SPOT comments was how they

would carry out different activities in the classroom that would initiate verbal interactions with the instructors, as well as between the students. In Melissa's SPOT comments, one student describes how Melissa was able to successfully ensure interactions are occurring between students and how this ended up making the general atmosphere of the class positive, and students felt encourage to come to class as a result. One student mentioned that *"she did a good job in creating a welcoming environment, allowing for student interactions and bonds to develop."* Along with this, one student expressed their initial worry of not being able to engage in class, but then explain how this changed. This is seen from their quote *"there wasn't too much lecturing in the course and so I thought we wouldn't get to do a whole lot of talking with the instructor. She still did a good job in making this class as engaging as possible though."*

Similar to Melissa, Henry's students had also reported how he fostered in-class interactions, and this was regularly seen in the classroom. What was interesting to see in Henry's comments compared to Melissa, was that the students went into detail describing the specific activities Henry did in the classroom to promote this ongoing verbal interaction. One student described how *"at the start of every class the professor would always do a 'tell me something I don't know' slide which engaged the class. This gave us an opportunity to share something with him."* This student goes on to explain how this was something that they did not get a chance to do in other classes, and as a result *"he stood out amongst the rest of my professors."* Another student described Henry's ability to make everyone in the class interact as *"he would keep classes entertaining by doing the 'tell me something I don't know' and also having conversations with us, beneficial information, and group work."* The *"conversations"* Henry would have with the entire class, and the *"group work"* he would make the students do would add to the verbal interactions occurring in the classroom, and as another student explained, *"there would always be lots of class participation"* as a result of all of this.

The idea of having conversations in class was seen by Jacob's students too, and they described how this had made class a lot more fun and enjoyable since students felt like they could also participate in the class. One student described this when they mentioned how *"the professor was super engaging and always treated the class as a conversation rather than a lecture, making it a much more enjoyable experience."* Something interesting to see from the

students' SPOT comments in relation to Jacob was how they felt that he promoted verbal interactions in the classroom as a result of his positive and energetic attitude. Students had reported that *"he was always actually interested and energetic in every class, there was never a day of bad vibes, and this enthusiasm made him extremely easy to talk to, made him friendly and encouraged us to interact with him and others."* Another student had gone on to express something similar. They described how the energy Jacob would have would automatically be transferred to the classroom and to the students, and how even the shy students felt comfortable to participate. The student had explained how *"he made sure to keep the class engaging and was enthusiastic which was kind of infectious. I remember I was initially a little hesitant to participate in the conversations, but he made it easy to do so."* Another advantage from this that the student had mentioned, which is not related to verbal interactions, was how *"this is also made it easier to pay attention and stay focused in class."*

2.4: Flexibility

The approaches instructors mentioned in their interviews to make sure their classrooms are flexible for students, was to generally be flexible, be positive and adjustable, give breaks to students when needed, adjust assignment dates, be flexible with office hours and have flexible policies. The one approach that was mentioned by the three instructors in their interviews and seen in their SPOT comments was how they were all generally flexible. The students said that it was nice to have an instructor who understands that sometimes life gets in the way, things can go unexpected, and having an instructor who understands this and can accommodate accordingly is very helpful. Melissa's student described this when they stated that *"she was very flexible and understanding of delays or personal life that could affect grades/due dates which I appreciate."* Another student backed this up when they mentioned *"she was flexible to making changes to account for unexpected circumstances."* Ultimately, something that was mentioned by the students which they appreciated the most about Melissa was that to be flexible and willing to adjust, you have to generally be an understanding person. This is highlighted in multiple students' quotes when they depicted how *"she was very kind, lenient, and understanding."*

This idea of understanding that students can face unexpected circumstances, and instructors must be flexible as a result, is also showcased in Henry's SPOT comments. Students described how Henry was *"incredibly flexible and accommodating throughout the semester,*

which was very helpful when my team encountered unexpected challenges with our semester-long project.” What is useful to note from this comment is how the student describes that Henry maintained this level of flexibility for the duration of the entire semester which is what was helpful when a semester-long project was going on. Henry’s SPOT comments also had students explain how Henry was not just flexible and allowed students to turn in assignments at a time of their convenience but recognized that this could be a phase where students may also be feeling stressed or anxious. As a result, he was reported to also stay calm, and motivate and encourage the students during these periods. One student explained that *“after he allowed us to take the time to make adjustments to our assignments, he remained calm and encouraging to ensure that we were able to do our best on the assignment.”* This quote explains how Henry still prioritizes the quality of the deliverable that is turned in, as opposed to just the completion of it. Another student expressed something similar when they mentioned how *“overall, he was willing to shift things around to best fit our situation but made us believe we were still capable of finishing it.”* The phrase *“made us believe we were capable”* depicts how Henry would go beyond giving students the extra time to complete a project and would also motivate them to do so. Similar to Melissa and Henry, Jacob’s students also talked about how they found it helpful that Jacob had an understanding that students had a life outside of the class. They expressed this through *“his understanding of that everybody has a lot going on in their life was helpful.”*

While the comments seen by the students regarding the general flexibility approach implied that the three instructors were adjusting assignment dates, this was specifically only seen in Jacob and Melissa’s SPOT comments. One of Jacob’s students mentioned that *“by adjusting the due dates of assignments, we were able to make sure that we completed our assignments on time in addition to other subjects work.”* Another student raised an interesting point regarding this and explained how Jacob wouldn’t accede to every student request made and would not leniently give extensions for all assignments, but only the ones he really believed needed an extension. This is seen through their comment of *“while every assignment was not moved, the ones that needed to be moved were.”* Melissa’s students had also described her as being willing to adjust assignment dates when need be. One student explained how *“she was really nice about pushing the assignment deadline out further which was helpful since I got sick multiple times this semester and had to miss class.”* A sense of

gratefulness can be seen from this student as she goes on to explain how Melissa *“was very clear about the new deadlines if we needed extensions and it made making up this missed work effective, and I felt as though I didn’t miss anything in class.”* It was interesting to see these comments about Jacob and Melissa since it was only Henry that had mentioned the approach of adjusting assignment dates in his interview, and this was not seen in either Jacob or Melissa’s interviews.

From the student comments that have already been mentioned in relation to flexibility, all three instructors had flexible policies in their classroom. It was however only in Henry’s SPOT comments that having actual policies to support flexibility was specifically mentioned by the students. One student described how Henry had generally introduced flexible policies in his class at the start of the semester. The student talked about how *“he made it clear at the start of the class that he knows we have other subjects and classes, and that sometimes life can just happen, and so he introduced policies in relation to these situations.”* Another student went into detail explaining how they felt more comfortable after the first class since Henry detailed the flexible policies he uses in his classes. The student depicted how *“I was honestly kind of relieved because I was initially thinking like what if I get sick or something comes about, but after he explained the policies in his class and the extensions he can give, I felt better.”* It was only Henry that had mentioned having flexible policies in his interview, and this was also only seen in his SPOT comments. On top of this however, it was also only Henry that had mentioned in his interview how he likes to occasionally give the students a break from classes, but this was only seen in Jacob’s SPOT comments. One student had highlighted that every now and then, Jacob liked to give students a break from class and have them work on something else. The student talked about how *“he would occasionally give us days off the go to the Frith Lab which was nice since it reduced our workload outside of the class since it was for our projects, but it was also nice to get out of the classroom.”*

2.5: Clear Communication

The approaches the instructors mentioned in their interviews to make sure there is clear communication in the classroom included explaining the relation and alignment of everything to the ILOs of the course, having clear and concise rubric instructions, explaining why

feedback was or was not implemented, to give good instructions for assignments, and to send regular announcements and updates.

One approach that was seen in all the instructors' SPOT comments was how they explained the relation and alignment of everything in the class to the intended learning outcomes (ILOs) of the course. Jacob's students described him clearly explaining the purpose behind every task and activity that was done in the classroom and mentioned how this was helpful since it made them understand that everything happening in the class had value to it. This is seen from their comment of *"he explained both the practical applications and educational reasoning behind every activity and assignment. Everything we did felt like it had a purpose and was valuable."* Another student goes on to describe something similar and adds how Jacob was very transparent in everything he did, as seen from the comment, *"he was always very honest and direct about what we were learning and why we are doing it. This was useful to help me understand what is related to what."* This idea of explaining why certain assignments and forms of assessment were chosen and how they can help in making students achieve the learning outcomes of the course, is also seen in Melissa's SPOT comments where multiple students described how *"she would always explain the assignments and their purpose really well."* This was also shadowed in Henry's SPOT comments. Along with helping students in making these connections to the ILOs of the course, Henry was described by his students to also communicate his own expectations he had of the students, in each of the assignments. One student depicted that *"he would clearly explain what his expectations were for our project and what he wanted us to accomplish."*

It was seen from all the instructors' comments that along with explaining the relation between the assignments and the ILOs of the course, they also had clear and concise rubrics and instructions, and gave effective instructions for assignments generally. While these were two separate approaches that were described by the instructors in their interviews, the student comments seen in both of these approaches were very similar. One of Henry's students talked about how his explanation of assignments was very helpful. The student stated that *"The way he structures assignments is super helpful to me. There is always a template and rubric to help you understand what you are looking for."* Another student went on to state how the explanation and resources provided were always sufficient as can be seen from their quote of *"the detailed rubrics that the professor provided were pretty self-*

explanatory.” Something else that was helpful that Henry was seen to do as described by the students, was to actively go through each of the steps of the assignment in detail so that students would have an overview of what to do. One student explained this when they mentioned that *“he went through each assignment before we had to do it which allowed us to ask questions and it gave us an overview of what we had to do.”*

Jacob’s students had similarly described him as being clear in his assignment instructions. One student specifically talked about how they found Jacob’s clarity in his expectations behind the assignment to be useful. They wrote about how they *“liked how he was blunt and concise about assignments, due dates, and requirements. These made it easier when submitting assignments to know what needed to be included and what was unnecessary.”* Multiple students had also gone on to depict how Jacob had *“done a really effective job at explaining projects.”*, but along with this, there were also student comments that had emphasized how the way in which Jacob went about explaining the assignments, meant that there was no room for confusion because of the clarity of his explanations. One student detailed this in mentioning *“he would explain one part of the assignment and then another part. He would always break it down and ask us if we had any questions. This was very efficient and meant there was no room for confusion.”*

From the SPOT comments, Melissa was also seen to be a very clear communicator in explaining her assignments. Many students stated that she *“was very instructive on assignments and had explained the projects with detailed information.”* One specific aspect of Melissa that was brought up by the students regarding her explanation of assignments was how she would always have room for questions. Students had regularly mentioned that she was very open to queries or concerns students would have. One student depicted that *“she was always open when we were confused, and she would give plenty of opportunities to clarify points of concern which made us feel comfortable.”* On top of this, while Melissa was explaining assignments, students had mentioned that she would explain which material that was learnt in the class would relate to and help them with the assignments. One student explained how *“she explained the projects with detailed information, and she would even point out which class slides we learnt would help in the assignments.”*

The last approach that was seen from the students’ comments to satisfy the clear communication strategy was the instructors sending out regular announcements and

updates, and this was seen in Jacob and Melissa's SPOT comments. Jacob's students had described him as always keeping them generally up to date with what is going on in class. Students depicted how he would *"always attempt to communicate any upcoming class events and assignments well."* Melissa's students had also talked about how she is good at sending out updates, and one student in particular expressed how *"reminders of due dates were consistent. My other class has a daily quiz and sometimes they don't remind us about them, and I miss it."* Along with updating students about assignments that are coming up, Melissa's students had also talked about how she goes to the extent to check which students have not submitted their assignments yet, and then goes ahead and emails these specific students to remind them to do so. The student depicted how *"there are constant updates even if an assignment wasn't submitted, to remind us to submit."* This is something that was unique specifically for Melissa.

2.6: Implementing Student Feedback

The main approaches the instructors mentioned in their interviews in relation to the implementation of student feedback included, to have a "common themes slide", to not simply just listen to students, to respond generally and not specifically, filtering useful and non-useful feedback, as well as the speed of implementation of the feedback. It should be noted that most of the comments about feedback that the students mentioned in the SPOT comments were related to instructors either giving their own feedback or the instructors asking students to give them feedback. There was very little the students talked about in relation to instructors specifically implementing the feedback that was given to them. There was only one comment that was seen in both Henry and Melissa's SPOT comments, and this involved students mentioning how the instructors had *"made sure to get our feedback, listen to it and take it into account."* One of the approaches that this slightly relates to is Jacob's approach where he mentioned how he does not just simply listen to the students. The fact that the students explained how their feedback was only *"taken into account"* indicates that the instructors had not necessarily adopted everything that was suggested by the students. While only Jacob mentioned this in his interview, this comment was only seen in Henry and Melissa's SPOTs.

2.7: Providing a well-organized and planned system of learning

The different approaches mentioned by the instructors that satisfied this category were to align the class activities and assessments with the ILOs of the course, to provide sufficient and timely feedback, to provide a planned and structured learning experience, and to consider assignment clashes with other courses.

The one approach that was clearly seen in all the instructor's spot comments was how they provided clear, well-planned, organized and structured class lessons. From Melissa's SPOT comments, one student described how they appreciated that every class had a similar pattern and structure to it. The student explained that *"the structure of each class period was the same throughout the entire semester. This made it easy to lock in and focus in the class because I knew what to expect."* The students described how this organization had helped students have clarity over what they needed to do and by when they needed to finish certain deliverables by, and how this helped them in their learning. An example of this is seen in the quote *"I think the part that helped me learn the most was how organized the classes were and we always had no issue trying to figure out what we had to complete during the week."* Similar to this, students had also described how the structure of the classes were such that they felt like they had a good amount of time to work in their teams, and as a result, were able to turn in a high-quality deliverable. One student explained this when they mentioned *"it was clear she had a plan for each class, and the class was structured to help our project teams perform to the best of our ability."* The idea that every class has a similar pattern was also seen in Henry's SPOT comments. Multiple students had talked about how Henry was very clear with the syllabus and that throughout the course of the semester, things had not really gone astray from the syllabus. They spoke about how *"everything is always laid out very clearly and very rarely are dates changed from the syllabus. He was always very organized and ready for class."* Jacob's students had also mentioned that *"he provided a great structured learning experience."*

One of the things that was seen in the students' SPOT comments was how all the instructors had always given them feedback after each of their assignments, and how this was helpful for them in their learning. This was interesting to see since this was not an approach that was mentioned by any of the three instructors. Many of Jacob's students described how *"he had provided useful feedback after each project or presentation."* Some of them went on

to also explain how this feedback that was provided was useful. One student depicted *“he gave us all feedback after our first projects to allow us to improve for our second project.”* This theme of offering feedback after an initial project so that students can take this feedback to improve for latter parts of the project, was also seen in Melissa’s SPOT comments. Multiple students had explained that *“she gave tons of feedback on every assignment to make sure we could improve and learn from our mistakes.”* The phrase *“tons of feedback”* is interesting to note since more than one student had described how Melissa did not just give general feedback, but all the feedback she gave was almost always very detailed. Another student emphasized how *“I remember one time we got literal paragraphs of feedback.”* Providing feedback after each assignment was seen in Henry’s comments too as students mentioned how *“he always provided insightful feedback after each assignment.”*

Along with providing feedback, it was seen in Henry and Melissa’s SPOT comments that they had also provided timely feedback, and in general, were very responsive. One of Henry’s students detailed his timely feedback in mentioning how *“he was very helpful in providing timely and thorough feedback, both on assignments and for general questions.”* Along with this, students talked about how Henry was very responsive too. On top of providing quick feedback on assignments, Henry was seen to also make sure that if he needed to follow up on certain student questions, that this would be in a timely manner too. One student talked about this when they stated that *“he was very responsive to our questions as well as ones where he said he needed to get back to us on, so if any questions came up, he was able to answer them quickly and in detail.”* The trait of being responsive and quick to answer students’ questions was also seen in Melissa’s SPOT comments. Students explained how along with being responsive to their questions, she was quick to answer and respond to their emails too. One student mentioned that *“she responded to my emails very quickly and always provided thoughtful feedback.”* The idea of being available to answer questions quickly through being in person and also over email was highlighted by another student when they stated how *“she also answers questions in person and through emails well and is quick to respond.”* One additional thing that should be noted and was interesting to see was that it was only seen in Melissa’s SPOT comments that she considered assignment clashes with other courses. One of the students explained that *“I really appreciated her understanding of other courses and accommodating her students in relation to assignments in other courses.”* This

was interesting since Jacob and Henry had mentioned this approach of considering assignment clashes in other courses in their interview, whereas this was only seen in Melissa's SPOT comments.

3: Competence

The only approach that was mentioned by the instructors to satisfy the Competence element was to assess the students. In order to assess students, the instructors had mentioned three approaches between them which included the general assessment activities of student learning outcomes, talking to students in and out of class, and looking through their SPOT comments.

3.1: Assessing students

From these three approaches, the only approach mentioned by the students, that was also seen in the three instructors' SPOT comments, was talking to students in and out of class. In Henry's SPOT comments, students described how *"he looked out for the wellbeing of the students and checked if we understood the material or not."* Another student talks about how along with talking to the students and making sure they understand the content of what was being taught, if Henry believed students were confused or were not on the right track, he was always willing to explain the material again to ensure students understand everything. The student depicted how *"he kept asking us questions to ensure we understood the content, and if we didn't know, he would go over it again so we could do well and succeed in the class."* A sense of patience in talking to the students and making sure they understand everything before proceeding is what is seen from Henry's SPOT comments, and this is also seen in Melissa's SPOT comments. Her students described how she would always go around the classroom, talk to the students and make sure they know what is going on. They mentioned how *"she was always coming around to ask us if we had any help, any questions and whether we understood what was going on."* On top of this, Melissa was seen to do this with individual students and with student groups as well. One student explained that *"she worked with each group and ensured that the material was understood before submission."* This idea of informally assessing the students by asking them questions in relation to whether things are

making sense, is seen from Jacob's SPOT comments too, when one student described that he *"often asks us if there were any problems or questions along the way."*

4: Responsiveness

The one strategy that was mentioned by the instructors in order to satisfy the Responsiveness element was to actively solicit student feedback. The different approaches that were mentioned in order to obtain student feedback included looking at the instructor comments specifically in CATME, through general class reflections, exit surveys, mid-term evaluations, conversing generally with the students specifically about how they are doing as an instructor or how the class is going generally, as well as the SPOT comments.

4.1 : Actively soliciting student feedback

The two approaches seen in the students' comments included conversing generally with students in class, and general class reflections. Henry's students depicted how *"during class, he would come to us and ask us to give him feedback about the class."* Along with this, students had also mentioned that Henry was genuinely interested in listening to their feedback. They explained how *"he is also very open to feedback as he likes to hear from us, which I liked a lot since it makes us all more engaged."* The phrase *"makes us more engaged"* describes how students appreciate being given the opportunity to talk through what their opinions are of the course and how they think the instructor could improve it. This idea of feeling like your opinion was valued was seen in Melissa's comments too. Students described that *"she would ask us how the class was going and wanted our feedback on it and would take our ideas into account."* It was seen in Henry's SPOTs that he would also give out general class reflections which would be questions asking students to reflect on what they liked about the class, didn't like, what could be changed or improved upon, as well as what they wanted the same or more of with the class and from the instructor. Students interestingly described that while they found this process annoying, they valued it since it allowed their voice to be heard. They expressed how *"the reflections, while annoying, were helpful to help him understand how class could be better."*

Chapter 6: Discussion

The purpose of this study was to better understand how care can be enacted in the classroom. To this end, the study focused on a first-year general engineering program being taught at Virginia Tech (Foundations of Engineering – ENGE 1216) and selected three instructors whose teaching expertise was reflected through having obtained teaching awards, as well as having experience teaching this course (taught it at least twice before). To better understand how these three instructors implemented care in their classroom, the following overarching research question was formulated:

RQ: “How is care enacted in teaching in a first-year general engineering program at Virginia Tech?”

To further operationalize the research design, three separate research sub-questions were created:

RQ 1.1: “What were the instructor’s intentions with implementing care in the classroom?”

RQ 1.2: “How did the instructors end up enacting care in the classroom?”

RQ 1.3: “What do students describe to be helpful for their learning in what the instructors have enacted?”

6.1: Strategies for implementing care

This section will present the main strategies that came out of the instructor's interviews in relation to how they intended to implement care in the classroom. These strategies will be discussed in relation to the current relevant literature on that topic.

6.1.1: Attentiveness

The instructors mentioned two main strategies they use to satisfy the attentiveness element: availability and proximity, and student check-ins. As can be seen from Tables F1, F2, and F3 in Appendix F, the instructors mentioned between them three approaches to be available and emphasize their proximity, and six different approaches as to how they carry out student check-ins. To generally be available and emphasize instructor availability to the students, instructors mentioned they liked to walk around the classroom and also be in close proximity to the students. Being in close proximity to the students was mentioned as being useful since students were more inclined to ask questions as a result, and they also felt less hesitant to reach out to the instructor. What is interesting to see is that Dyer et al., (2018) also describes the benefits of close instructor proximity to the students but states a different reason as to why this is beneficial. They talk about how students are more likely to be off task and pay less attention if a teacher is further away, and that the inverse also holds true where students are less likely to be off task the closer the teacher is to the student (Dyer et al., 2018). In this sense, the findings of this study did not directly connect with what literature currently says on proximity since the instructors that mentioned and were seen to do this but were doing so for the express purpose of allowing students not to feel hesitant in asking questions.

The instructors also talked about how they believe emphasizing their availability and walking around the classroom is effective in making sure they are in a position to be aware and recognize if students have questions or certain needs. The importance of walking around the classroom and emphasizing your availability was also seen in a study done by Cole (1999). She described how going around the classroom to check up on students or teams of students for roughly half a minute can be useful to better understand whether students may have

questions and are on task or not. She emphasizes that the main purpose of walking around the classroom is to get an immediate assessment of the students' work by talking to them (Cole, 1999). This is interesting to note since this article combines together the act of walking around the classroom and talking to students as a way of informally assessing the students. In my study however, the instructors mentioned how the benefit of walking around the classroom specifically satisfies the attentiveness element, while talking to students to ask them if everything is making sense, satisfies the competence element, and the two approaches can be viewed separately. This disaggregation is as a result of my use of Tronto's framework and the definitions of each element.

The effectiveness of student check-ins in order to be aware of the different student needs was another strategy instructors mentioned that satisfies the attentiveness element. In order to carry out student check-ins, some approaches instructors mentioned involved carrying out actual team check-ins as well as putting up slides of prompts to encourage students to ask any questions they may have. The benefit of carrying out team check-ins as opposed to only walking around the classroom was further emphasized by Cole (1999) as she discussed how sitting down with a group for a longer period of time and interacting with them and watching them work is a lot more beneficial to understand what issues students may be having, and what they may be needing out of you. An approach one of the instructors mentioned was to carry out check-in questions with students for the purpose of understanding how they are doing in the semester and to also better understand their needs. The usefulness of asking students questions is also portrayed by Saphier et al. (1997) who, while talking about the importance of asking students questions, does so by describing the benefit of it being to check for their understanding. The instructors in my study again separate the type of questions you can ask students and describe how the nature of the questions can be such that you are simply checking in on them to see how they are doing, while Saphier et al. (1997) goes into more detail explaining how this nature of asking questions periodically is an effective way to check for student understanding. The value of the check-ins that Saphier et al. (1997) talk about in their study is also not specifically for the context of teamwork in class sessions, and so in this way, the findings of my study did have more to add than what literature currently mentions.

6.1.2: Responsibility

As mentioned previously, the responsibility element saw the greatest number of approaches being mentioned by the instructors, and these approaches were divided into seven main strategies. The first strategy was about making the material being taught in the classroom relevant to students. Instructors spoke about the importance of making sure all the material being presented in class was relevant to students and that more inclusive examples and learning styles were to be used. The significance of this is also represented in literature about culturally relevant teaching, indicating how making sure courses are culturally and technologically relevant to students will help embed students' background and culture into the course curriculum, and will hence help negate any of the adverse effects of the more dominant culture (Leonard & Guha, 2002). The instructors in my study also spoke about approaches involving suiting what some of them termed different students' learning styles and to generally put yourself in the students' perspective, and (Leonard & Guha, 2002) describe similar points when explaining how a part of conducting student-relevant teaching is to ensure instructors remain aware and are catering to students' unique ways of knowing, behaving and communicating.

There were also many approaches the instructors mentioned that centered around this idea that it is students that should be made to "do the work". This includes approaches such as making them take control of their own learning, making them "do the work" and learning from their mistakes, and generally imparting lifelong learning. Previous literature also aligns with the instructors' thinking as it has been seen that independent learning have been beneficial for students as this is seen to increase their general motivation and confidence, improves their academic performance as well as allows them to better be aware of what their own limitations are, and understand how to better manage this (Meyer et al., 2008). In saying this however, all the instructors in my study did prioritize giving students a lot of control of their learning, and they like to give students' opinions and considerations priority. Literature does also mention however that despite the benefits of allowing students to take control of their own learning to a certain extent, what learners prefer may not necessarily always be what is best for them (Kirschner, 2013). This was a slight difference between the finding of my study and literature since this point was not clearly emphasized by

the instructors at any point. Instructors mentioned their priority of making students manage their own learning process and this is a form of self-directed learning, a process by which learners are in control and manage their learning process, which is been seen to positively correlate with lifelong learning (Boyer et al., 2014).

Some other strategies instructors mentioned in relation to the Responsibility element included promoting verbal interactions between students and engaging them, to be flexible, as well as to communicate clearly. Promoting verbal interactions between students and allowing them to form these peer relationships has been seen to engage learners (Leach & Zepke, 2011). Research has also gone on to show that allowing students to have these verbal interactions that lead to their engagement in a range of different educational activities, ends up providing them with a higher quality of learning (Coates, 2005). What is not emphasized so much in literature is not just the interactions between students and the instructors, but also promoting these interactions between students and their peers which was made explicit in the findings within this study. The instructors in the study also spoke about the importance of being flexible in your teaching practices and having flexible policies for students. There is some research that talks about flexible teaching, and this has been linked with a term known as open learning. Open learning, similar to what instructors in my study have mentioned, refers to having flexible policies in the classroom as well as through online measures, and having these mean that students are able to have an increase in access and choice in their learning (Lundin, 1999). These flexible policies for university students specifically, have been researched to mimic the work patterns and professional needs of adult learners (Lundin, 1999). Clear communication was another strategy instructors talked about in relation to the Responsibility element. They specifically explained the importance of communicating assignments, announcements, and updates as well as the relation of all the in-class activities to the learning outcomes of the course with the students. Communicating expectations clearly was something the instructors had mentioned, and this is seen to help students since having clear communication and expectations with things like assignments help students be able to manage the time they spend on important educational tasks (Hunt, 2003). In fact, the necessity of communication is also shown in previous literature as the absence of clearly communicating your expectations to students is seen to be a factor to decrease their motivation to do well (Hunt, 2003). Along with communicating expectations, to clearly

communicate and explain how the class activities are related to the learning outcomes of the course, was also stressed by the instructors. Currently, literature supports the idea of not only having well-defined goals and learning outcomes, but also making sure these are clearly expressed to the students. Redelius et al. (2015) explains how when the learning outcomes of the course are both well-defined and expressed to the students, the clarity of this practice motivates students to talk about what they are learning and make better sense of it.

Implementing student feedback along with providing a well-planned and organized system of learning were the final two strategies instructors mentioned in relation to the Responsibility element. With regards to student feedback, they spoke specifically about the implementation of this feedback; not just simply taking their feedback or giving their own feedback. In relation to implementing student feedback, it can be seen from Table 6 that instructors mentioned they liked to address this via a “common themes slide”, they like to respond generally, and they also like to make sure the implemented feedback is done so in a timely manner. What was interesting to see is that Leckey & Neill, (2001) indicate that there are a lot of instructors that do not view student feedback as being very valuable, and are skeptical with the process. One of the reasons for this is how students are firstly not assessors and in spite of the fact that the lecturer has much more experience than them, if the students’ opinion goes against the lecturer, their responses can usually be not be challenged (Leckey & Neill, 2001). Literature has shown this to be troublesome since there are many benefits of implementing student feedback that include increased student self-esteem, motivation and personal satisfaction (Clynes & Raftery, 2008). On top of that, multiple studies show that students for the most part are willing to and appreciate the opportunity to participate in a process of course revision and evaluation (Brew, 2008; Carless & Boud, 2018). Literature also mentions many different approaches to implementing student feedback, however this depends on the nature and level of the class. Instructors providing a well-planned and organized system of learning was the final strategy mentioned in relation to the Responsibility element. One of the approaches they mentioned they employed to do this was to align the in-class activities with the course learning outcomes. There is a lot of literature that talks about the importance of instructors providing well-organized and planned systems of learning in their classrooms since this establishes an effective learning environment and also prevents most conduct problems (Brophy, 1983). Along with this, the importance of making sure the

learning activities and assessments that are being carried out in the classroom are aligned with the intended learning outcomes of the course, has been talked a lot by Biggs (2001). Biggs (2001) explains this idea of constructive alignment and refers to it as being able to set up a learning environment which can support the learning activities that are appropriate in helping achieve the intended learning outcomes of a course.

6.1.3: Competence and Responsiveness

As seen from Table E1 in Appendix E, there was only one strategy used to satisfy each of the Competence and Responsiveness elements. In relation to the competence element, the one strategy mentioned to satisfy this element was to assess the students, and this was through approaches involving assessing the learning outcomes, talking to students generally, as well as seeing if anything stands out in their SPOT comments. As mentioned in Chapter 2, the Competence element from Tronto's framework refers to how instructors need to have made sure that students' needs were met, and one of these needs is the achievement of the learning outcomes of the course. In order to understand whether students are achieving these learning outcomes, general assessment is a vital tool (Suskie, 2008). As literature shows, general assessment is an effective tool, however the instructors along with the literature have mentioned how one approach to assess the students is by just talking to them. It was mentioned earlier in this chapter that Saphier et al. (1997) explained how a good way of assessing students is by walking to the students, talking to them and asking them some general checking questions. As they talk to students in and out of class, instructors get the chance to ask them any relevant questions about the course which is a good way to assess and check for their understanding (Saphier et al., 1997). What is slightly differently spoken about in literature when it comes to competence generally, are different strategies in order to be a competent instructor. Literature has provided many different recommendations with what an instructor can do in order to be labelled as a competent instructor. This involves actions like ensuring instructors can communicate with a diverse range of learners, and are able to involve and include as much of the class as possible (Hollins, 1993). Where this differs from the findings in my study lies under the definition of Tronto's element of competence. The general definition of a 'competent' teacher does not necessarily fall under the actions

required to satisfy the competence element in Tronto's framework. This is because the competence element highlights the importance of understanding whether the need for the care was met or not. Most of the actions that literature recommends instructors can do to be generally 'competent', end up by definition, falling under the responsibility element in the framework guiding my study. This is because these are the specific actions that we can take in order to positively influence a situation (in the context of study, this is to effectively implement care in the classroom).

Chapter 2 also explains the Responsiveness element and how this centers around the idea that instructors need to find a way to understand how students are responding to the care being provided to them, and the main strategy mentioned here was by obtaining student feedback about the instructor and the course experience. Some approaches mentioned that could help obtain this feedback were through tools such as CATME, SPOT surveys as well as mid-term evaluations. Other methods such as giving general class reflections, exit surveys as well as just talking to students were also discussed. When comparing these approaches to the literature on obtaining student feedback, Richardson (2005) explains how surveys that use formal instruments are typically quite effective. This is because these instruments can document student experiences in a systematic manner, and these instruments are able to gather information from the entire student population. Along with this however, Richardson (2005) also mentions that feedback can be obtained through casual comments in the classroom with the students, and meeting groups of students. This reflects the approach where instructors mentioned how they like to generally talk to students in and out of class.

6.2: Answering RQ 1 - Instructor's intentions with implementing care in the classroom.

It was seen in the attentiveness element that nine different approaches in total were mentioned by the instructors regarding how they intended to be attentive to their students, and these approaches were split across two main strategies. In the Availability and Proximity strategy, all instructors mentioned how they intended to walk around the classroom. It was only Henry who mentioned being in close proximity to his students while Jacob and Melissa spoke about the importance of emphasizing their availabilities to their students. In the

Student check-ins strategy, it can be seen from Table E1 that Henry mentioned almost all the different approaches and ways to check in on students, except through the use of monitoring of team dynamics through CATME. This, along with conducting general team check-ins were the only two approaches Melissa mentioned under this strategy, while Jacob mentioned team check-ins along with how he likes to start each lesson by asking students “how’s things going?” Both Henry and Jacob mentioned they like to start class this way in order to check in on students, while all instructors had emphasized the importance of team check-ins.

With the student relevance strategy under the Responsibility element, there were no similarities between any of the approaches the three instructors had intended to do in the classroom. Jacob had spoken about how he intends to have culturally and technologically relevant courses and likes to put himself in the students’ perspective. Henry mentioned the importance of building on prior knowledge, focusing on students’ prior struggles as well as using inclusive examples, while Melissa had only mentioned how she intends to make sure to suit all the different student learning styles. There were more similarities between the instructors’ mentioned approaches to make students do the work, with the three of them explaining how they intend to make sure active learning is occurring in the classroom environment and how they want to impart lifelong learning in the students. Out of the twelve mentioned approaches for this strategy, Jacob mentioned a total of eight, Henry mentioned six, while Melissa spoke about four. Jacob and Henry also had similarities in both intending to make sure students are doing the work and then learning from these mistakes, as well as helping students understand their mistakes. Melissa had mentioned providing some passive instruction before the classroom and doing reflections after the classroom and these were unique to her.

The main approach mentioned to satisfy the promoting verbal engagement strategy was to carry out activities that incorporate student engagement, and this was mentioned by all the instructors. Henry went on to also say how he intends to carry out this culture from an early point in the semester. Henry was generally seen to mention a lot more approaches in intending to provide care, compared to the other two instructors. In the flexibility strategy there were six approaches mentioned between the three instructors, where Henry had mentioned five of them, four of them being unique to himself which included incorporating flexible policies, adjusting assignment dates, giving break to students and being positive and

adjustable. The three instructors had all mentioned that they intend to generally be flexible, and Melissa had uniquely specified that she likes to be flexible when it comes to her office hours. For a few of the strategies, Henry and Jacob were both seen to mention similar approaches. Of the five approaches mentioned to be a clear communicator, Henry and Jacob had both spoken about their intent to explain the relation of all the in-class activities and assignments to the learning outcomes of the course, and explaining why students' feedback was or was not implemented. Additionally, Henry had also talked about how he likes to give clear and concise rubric instructions. What was typically seen in a few of the strategies as well was how a lot of the approaches Melissa mentioned were unique to her. Even in this strategy regarding clear communication, Melissa mentioned two unique approaches which were to give better instructions for assignments generally as well as sending regular announcements and updates.

In the implementation of student feedback and providing an organized and well-planned system of learning strategies, it was seen that the instructors had mentioned an equal number of approaches compared to the other strategies. In the implementation of student feedback strategy, Henry and Jacob had mentioned their intent to respond generally and not specifically, Henry and Melissa had explained the importance of filtering useful and not useful student feedback, while Jacob and Melissa had both talked about the speed of implementing the feedback and how it is important to give feedback in a timely manner. The only unique approaches were offered by Henry who mentioned he intends to add "a common themes" slide as a method of implementing the feedback, and Jacob who explained how he does not like to simply listen to the students when implementing the feedback. There were more commonalities seen in the providing of a well-planned and organized system of learning strategy, where all three instructors mentioned how they generally intend to be the ones responsible for planning the in-class activities, assessments, and methods of demonstrating material. Henry and Jacob had also depicted their intention behind considering students' assignment clashes with other courses while Henry and Melissa stressed the importance of making sure all of the in-class activities and assessment were aligned with the course learning outcomes.

As mentioned earlier in this chapter, the Competence and Responsibility elements only had one strategy mentioned each and for the Competence element, the strategy

mentioned was to assess the students. There were three approaches mentioned between the instructors in relation to this. To assess the students from their learning outcomes was talked about by Henry and Melissa, whereas Henry and Jacob explained how they intend to talk to students in and out of the class. Talking to people generally was a good form of assessing students as mentioned by Richardson (2005), and was also seen by Melissa and Jacob when they stated their intent in also talking to other faculty members as a means to assess students. In the Responsiveness element, the strategy talked about was to obtain feedback from students and there were six mentioned approaches between the three instructors to obtain this feedback. All the three instructors explained the importance of checking their SPOT comments as well as conversing with students generally to ask about how they are finding the course and the teaching. Melissa had explained how she likes to use mid-term evaluations to obtain feedback while Jacob likes to use exit surveys to fulfill the same purpose. Meanwhile, Henry emphasized his intent in obtaining feedback from his students by giving them general class reflections where students can reflect and give feedback on what has and has not been working in class. Henry also said how he liked to look at the comments about the instruction section on CATME as a way of obtaining feedback.

6.3: Answering RQ 2 - Instructor's enactment of care in the classroom

It was not surprising to see that from the three observations carried out in each of the instructor's classes, there was a much smaller proportion of approaches that were observed and actually enacted in the classroom from each strategy, compared to what the instructors had intended to do so as mentioned in their interview. The greatest degree of alignment in terms of what was intended to what was observed in the classroom was seen in the Attentiveness element, and this was the case for the three instructors. Similarly, the element where not a lot of alignment was seen from the three instructors was the Responsibility element. Of all the instructors, the greatest number of approaches that were observed was from Henry, and he also had the highest degree of alignment.

The attentiveness element was seen to have the greatest degree of alignment in terms of what was intended by the instructors to enact, and what was actually enacted in the

classroom. This is also perhaps because each approach that was mentioned was unique and was easily observable in the class. The instructor walking around the classroom and the instructor being in close proximity with the students, are both examples of approaches that are unique to each other and are easily observable in the classroom. In the attentiveness element, Henry had mentioned seven different approaches in terms of how he intends to implement care in his classroom and from these, the only approach which was not observed was him giving check-in questions to his class. In saying this, he was observed to put up a question slide which allows students to put up any questions they may have, which serves a similar purpose. Along with this, it was interesting to see how in spite of him not emphasizing availability in his interview, he was seen in the classroom to continuously tell his students that they can ask him or the TA questions at any point. Jacob's degree of alignment was similar to Henry's since he has mentioned four approaches he intends to implement in the classroom in relation to the Attentiveness element, and out of them, three were observed in the classroom with the exception being not seeing him carry out any team check-ins. Melissa was the same in terms of degree of alignment, having observed three of the four mentioned approaches. In Melissa's case however, the one approach she mentioned that was not seen was to monitor team dynamics through CATME. This was one of the approaches in this element which was not observable since she would be doing this in her own time and on her laptop, hence, it cannot be stated whether this was something she did or not.

The Responsibility element, as mentioned, had the lowest degree of alignment in terms of what was mentioned and intended by the three instructors, and what was enacted and observed in the classroom. Under the student relevance strategy, Melissa had only mentioned intending to suit the different student learning styles, and this was also seen in the classroom. Interestingly, she was also seen using inclusive and relevant examples which was not an approach that she had mentioned, but Henry had, and this was observed in her class. From the three approaches Henry had mentioned in this strategy, he was only seen to use inclusive examples and was not seen to build on students' prior knowledge or focus on their prior struggles. This however could be because these two approaches are traditionally addressed in the starting of the semester and the first observation in this study was only carried out in Week 5 of the semester. This is explained more in detail in the Limitations section at the end of this chapter. Of the two approaches Jacob mentioned, none of them

were seen in the classroom. With the strategy of making students do the work, there were many different approaches instructors had mentioned, yet only a few of these were seen in the classroom. This however does not mean that there was not a good degree of alignment since many of the approaches are similar to one another and go hand in hand. An example of this is the approach concerned with making students do the work. This was intended and enacted by the three instructors. Along with this however, instructors also mentioned approaches such as guiding and not handholding, being facilitators and giving students the freedom to explore. These approaches are directly a part of making students do the work, and so while these were more subtle actions that were difficult to observe, they are all a part of making students do the work. Imparting lifelong learning onto students is also an approach that cannot be observed in the classroom. The approaches mentioned by Henry in this strategy that were not seen at all in the classroom were to coach students in finding resources, and to help them find their mistakes. Jacob had intended to use open-ended prompts in his class, and this was also enacted in the classroom, however, like Henry, he had also intended to help students in understanding their mistakes, but this was not seen. Melissa intended to provide passive instruction before the classroom and give reflections after the classroom, and neither of these were observed.

With regards to the instructors promoting verbal interactions amongst their peers in the classroom, this was seen in all three of the observations for all three instructors. The three instructors, in their own way, were able to include activities which incorporated and promoted verbal interactions between the students. The specifics of these can be found in the findings section of this dissertation. With the flexibility strategy, the approaches mentioned again were quite similar to the approach of being generally flexible. A part of being generally flexible is to give breaks to students, be adjustable and have flexible policies, which are all other approaches that were mentioned in this strategy. In saying this, it is important that the instructors mentioned these approaches in their intentions and described them in detail since it would be vague to mention that they intend just to be generally flexible. In saying this however, if we were to observe one of these approaches, it can be said that the instructor is generally flexible. Jacob had intended to be generally flexible, and Melissa had done the same as well as being flexible with office hours, yet these were not observed in the classroom. This is again perhaps because of a limitation of this study which will be explained

at the end of the chapter. Henry intended to give breaks to his students, be positive and adjustable, have flexible policies and adjust assignment dates, however, he was only seen to enact the last one in the classroom. With clear communication, from the three approaches Henry had mentioned, only one of the approaches was seen on an occasion where he explained why he does a certain assignment in a certain way. What was interesting to see though was that even though he didn't intend to regularly send out announcements and updates, this was observed in his classroom. Melissa intended to give good instructions for assignments and send out regular announcements and updates, and this was enacted in her classroom too. Jacob on the other hand had only intended one approach, and this was not seen in the classroom. Similar to Henry, however, did not intend to send out regular announcements and updates since this was not mentioned in his interview, but he was seen enacting this in the classroom.

In relation to implementing student feedback, both Jacob and Henry had intended to respond to the feedback generally and not specifically, however, this was only seen in the classroom by Jacob. There were no instances where Jacob was seen to not listen to the students, and the approach relating to the speed of implementation of the feedback is hard to observe in the classroom. Along with responding generally, Henry had also intended to put a "common themes slide" as a form of implementing student feedback, and this was also seen in the classroom. The one approach Melissa stated in her interview was to filter out the useful feedback from the not useful feedback, and this was not possible to physically observe. The last strategy mentioned in the Responsibility element was to provide a well-organized and planned system of learning. With relation to this, the three instructors were all seen to run very organized classes and had consistently come to class with planned activities to be carried out, and material to be presented. Melissa and Henry had mentioned how they intended to also align all their in-class activities and assessments with the learning outcomes of the course, but this was difficult to observe in the three classroom observations. Jacob and Henry also intended to consider assignment clashes with other courses, but since this usually occurs at the start of the semester and the first observation was carried out in Week 5, this was not observed either.

To satisfy the Competence element, the only strategy mentioned by the instructors was to assess the students, and between them, three main approaches were identified as

seen from the Table. Henry mentioned that he intended to implement all three approaches, while Jacob and Melissa only intended to implement two of them. The one and only approach that was clearly visible in the classroom was the instructors talking to the students to gain a better understanding whether they are understanding the material or not. The assessment of learning outcomes as an approach includes the regular assignments and projects students had to do, and using SPOTs as an assessment strategy is not possible to observe in the classroom. In the Responsiveness element, there was also only one strategy mentioned by the instructors, and that was to actively solicit feedback from the students. Again, the one approach that was intended and seen by the three instructors was to converse with students generally to ask them about how they think the class, or the teaching team, is doing. Of the approaches Henry had mentioned, CATME and SPOTs is something that can not physically be observed in the classroom, and in the three observations carried out, there were no class reflections seen. Jacob intended to use exit surveys as a way of getting feedback, and this was observed in all three of his observations, while even though Melissa had not intended to use exit surveys in her class, she was seen to do so for one of the periods. The mid-term evaluations, like CATME and SPOTs, is not something that can be observed in class.

6.4: Answering RQ 3 - Instructors' enactment of care that students described as being helpful.

In analyzing the students' SPOT comments to understand what they described the instructors doing that most helped their learning, it was seen that most of these actions fell under the Responsibility element, with very few actions coming from the Responsiveness element.

In relation to the Attentiveness element, students appreciated Henry to silently walk around the classroom to monitor them from afar, as well as being in close proximity with them when needed, since he was accessible to them in this way. They had also described Henry to regularly emphasize his availability by constantly mentioning to ask questions to him and the TA, and to come to the office hours. Along with this, they also appreciated him regularly checking in on each student team. There was however, no mention of Henry providing questions slides for students, starting the class by asking how everyone is going, or interacting with students outside of class time. Students described Jacob to also be very

approachable and appreciated how much he emphasized his availability. They also found it helpful that he would regularly connect and check-in with each team throughout the semester. Interestingly, students had also liked how Jacob would have question slides and space for Q&As integrated in his presentation, even though this was not something he intended, or was observed in the classroom to do. Students did not mention anything related to him walking around the classroom, or starting the lesson by asking them how everyone is. There were many student comments describing how Melissa was very attentive by walking around the classroom, would always emphasize her availability and would regularly check in on the teams. Students went into a lot of detail in detailing the different ways she satisfied each of these approaches; the details of these can be found in the Findings section.

With the student relevance strategy in the Responsibility element, students mentioned how they found it helpful when Henry used inclusive examples and presented material in a way everyone could understand. Students had not said anything about Henry building on their prior knowledge or focusing on their prior struggles however. Melissa was the same in that students appreciated her also using inclusive and real-world examples, but there was no mention of her suiting different students' learning styles. It was interesting to see that Jacob's students also appreciated him using inclusive examples even though this was not something he intended. Students also reported to appreciate how he would try and put himself in the students' perspective and would try and relate to his students. Students had not described anything related to Jacob forming a culturally/technologically relevant course however. The strategy about making students do the work had the most student comments in relation to what they found the most helpful for their learning. Jacob mentioned a total of eight different approaches to satisfy this strategy, and seven of these approaches were described in detail by many students as to how they were very helpful for their learning. There was no student mention regarding Jacob helping them understand their mistakes. Henry's students were similar in this way in that they had also mentioned all the approaches Henry intended to, barring helping students understand their mistakes, and active learning. Students interestingly also described how they found it helpful that Henry gave students a lot of freedom and just guided them, even though this was not something he mentioned explicitly in his interview. Melissa had only mentioned four approaches in this strategy, and giving passive instruction before the class and reflections after the class were not something

students had talked about. Along with active learning and imparting student lifelong learning however, even though Melissa hadn't mentioned anything about allowing students to take control of their own learning, giving them the freedom to explore, coaching students in finding resources and helping them understand their mistakes; these were all approaches that students had gone into detail explaining how helpful it was that she had carried these out.

All of the three instructors' students had reported them to be very good in promoting verbal interactions in the classroom between students and between the instructor and students too. Jacob was seen to have the most detail in his student comments regarding this, and while Henry intended to create this culture from early on in the semester, this wasn't mentioned by the students. In the flexibility strategy, the three instructors were described by their students as being generally flexible, lenient and understanding. Henry had spoken about his intent to be positive and adjustable, give breaks to his students and adjust assignment dates, however, no students were seen to specifically talk about any of these. Students did however speak about how they found it helpful that he had flexible policies. Interestingly, even though Jacob had no mention of specifically giving breaks to his students and adjusting assignment dates, these were mentioned in the students' comments as something he did which was helpful in their learning. Melissa's students also described her to specifically adjust assignment dates when required, even though she had not specifically mentioned this. There was no mention however of Melissa being flexible with her office hours. According to Henry's students, he was also seen to satisfy many of the approaches he intended to implement in the clear communication strategy. Students went into detail describing how they found it helpful that he explained the relation of everything to the learning outcomes of the course, that he had clear and concise rubrics and instructions, and even though he didn't mention this as an intent of his, students also explained how he gave good instructions for assignments. There was no student mention however of Henry explaining why feedback was or was not implemented. Melissa's students had also gone into detail highlighting her ability to give better instructions for assignments as well as sending out regular announcements and updates. In spite of not mentioning anything about explaining the relation and alignment of everything in the class to the learning outcomes of the course, her students explained how she did this as well. It was interesting to see in Jacob's comments regarding this strategy that he only intended to implement one approach, and this approach of explaining why feedback

was or was not implemented, was what was not seen. In spite of having no mention of the other four approaches in this strategy, students detailed how Jacob was very helpful in explaining the relation of everything to the course learning outcomes, providing clear and concise rubrics and instructions, giving clear assignment instructions and sending out regular announcements and updates.

The three instructors did not have many student mentions in relation to implementing student feedback. It was in fact only Jacob and Melissa that had one mention from a student that explained how they appreciated that both Jacob and Melissa listened to the feedback that is given by the students and takes it into account. There was no mention of this feedback being implemented by the students and nothing else was described by the students in relation to this strategy. With regards to the strategy about the instructors providing a well-planned classroom environment and an organized system of learning, Melissa had the most student comments out of the three instructors. There were many students who had detailed how each of her classes were very well planned, well-structured and organized. Students also reported how they found it helpful that she would give consistent feedback, and this was always sufficient and timely feedback too. In spite of not mentioning how she intended to consider clashes of assignments with other courses, this was described by the students too. There was no mention however of her actually aligning her in-class activities with the course learning outcomes. Henry was also described as being very well organized and that everything was laid out very clearly. Students also described him being helpful in the feedback he gave his students along with it being timely and sufficient, which is interesting since timely and sufficient feedback was not something he mentioned. No mention was there about him aligning his activities with the course learning outcomes or considering assignment clashes with other courses. Jacob's students also reported that he was organized and would provide good feedback on assignments, and similar to Henry, students did not talk about him considering assignment clashes with other courses.

In relation to the Competence element, students from the three instructors had reported all of them to talk to them to better understand whether they are understanding the material or not, and what was required of them as a way of assessing them. None of the other approaches were mentioned for either of the three instructors in relation to the assessing students strategy in the Competence element. In relation to the obtaining student

feedback strategy in the Responsiveness element, again, students did not typically talk about this in the SPOT comments as it being something that was helpful to them in their learning. Henry's students had explained how he did carry out class reflections to get their feedback as well as talking to them in class as another means of obtaining feedback out of them. Melissa's students also reported her to talk to them during class to ask how things are going with the class and obtain feedback. No other approaches were mentioned by the students for these two instructors and Jacob did not have any student mention relating to the Responsiveness element generally.

6.5: Instructor Alignment across Research questions

One interesting finding that came out of this study was the level of alignment between what how instructors intended to implement care in the classroom, how they were physically seen to enact care in the classroom, as well as what students described instructors as doing that most helped their learning. To a fair degree, there was alignment seen for all the three instructors across these three research questions that guided this study. Tables 6, 7, and 8 below summarize this alignment seen across the three research questions for Henry, Jacob, and Melissa respectively. The tables are organized such that all of the first-cycle codes are listed down the left-hand side and these are the different approaches that were initially obtained after analyzing the instructor's interviews regarding their intentions with implementing care in the classroom. These were then further refined after observing their enactment of this care in the classroom and seeing what students had also reported as something instructors had done which helped them most in their learning. The grey shaded color indicates whether the approach was mentioned, seen or reported, and the white color indicates an absence of this approach.

Table 6 - Henry's alignment across the three research questions

Theoretical Element	First-cycle codes	RQ 1: What were the instructor's intentions with implementing care in the classroom?	RQ 2: How did the instructors end up enacting care in the classroom?	RQ 3: What do students describe to be helpful for their learning in what instructors have enacted?
Attentiveness				
	Walking around classroom			
	Close proximity to students			
	Emphasizing availability			
	Question slide			
	Starts each lesson - "how's things going"			
	Monitors team dynamics through CATME			
	Team Check-ins			
	Check-in Questions			
	Student interaction outside class			
Responsibility				
	Culturally/technologically relevant courses			
	Putting oneself in students' perspective			
	Building on prior knowledge			
	Prior Struggle Focus			
	Using inclusive examples			
	Suiting all learning styles			
	Active Learning			
	Facilitation			
	Students taking control of learning			
	Freedom to explore			
	Guide students, not handhold			

	Students do the work and learn from mistakes			
	Imparting lifelong student learning			
	Coach students in finding resources			
	Help students understand their mistakes			
	Open-ended prompts			
	Passive instruction before classroom			
	Reflection after classroom			
	Activities incorporating student engagement			
	Early engagement culture			
	General Flexibility			
	Be positive and adjustable			
	Give break to students			
	Adjusting assignment dates			
	Instructor flexibility with office hours			
	Flexible Policies			
	Explaining relation of everything to ILOs			
	Clear and concise rubrics and instructions			
	Explains why feedback was/wasn't implemented			
	To give better instructions for assignments			
	Instructor sending announcements and updates			
	Common themes slide			
	Doesn't simply listen to students			
	Responding generally, not specifically			
	Useful vs not useful			
	Varying assignments			
	Speed of implementation			
	Aligning activities/assessments with ILOs			
	Sufficient and timely feedback			
	Planned and organized system of learning			

	Considering assignment clashes with other courses			
	Giving students feedback			
Competence				
	Assessment of learning outcomes			
	Talking to students in and out of class			
	SPOTs			
Responsiveness				
	CATME - comments about instructor			
	General class reflections			
	Exit surveys			
	Mid-term evaluations			
	Ask/converse with students generally			
	SPOTs			

Table 7 - Jacob's alignment across the three research questions

Theoretical Element	First-cycle codes	RQ 1: What were the instructor's intentions with implementing care in the classroom?	RQ 2: How did the instructors end up enacting care in the classroom?	RQ 3: What do students describe to be helpful for their learning in what instructors have enacted?
Attentiveness				
	Walking around classroom			
	Close proximity to students			
	Emphasizing availability			
	Question slide			
	Starts each lesson - "how's things going"			
	Monitors team dynamics through CATME			
	Team Check-ins			
	Check-in Questions			
	Student interaction outside class			
Responsibility				
	Culturally/technologically relevant courses			
	Putting oneself in students' perspective			
	Building on prior knowledge			
	Prior Struggle Focus			
	Using inclusive examples			
	Suiting all learning styles			
	Active Learning			
	Facilitation			
	Students taking control of learning			
	Freedom to explore			
	Guide students, not handhold			

	Students do the work and learn from mistakes			
	Imparting lifelong student learning			
	Coach students in finding resources			
	Help students understand their mistakes			
	Open-ended prompts			
	Passive instruction before classroom			
	Reflection after classroom			
	Activities incorporating student engagement			
	Early engagement culture			
	General Flexibility			
	Be positive and adjustable			
	Give break to students			
	Adjusting assignment dates			
	Instructor flexibility with office hours			
	Flexible Policies			
	Explaining relation of everything to ILOs			
	Clear and concise rubrics and instructions			
	Explains why feedback was/wasn't implemented			
	To give better instructions for assignments			
	Instructor sending announcements and updates			
	Common themes slide			
	Doesn't simply listen to students			
	Responding generally, not specifically			
	Useful vs not useful			
	Varying assignments			
	Speed of implementation			
	Aligning activities/assessments with ILOs			
	Sufficient and timely feedback			
	Planned and organized system of learning			

	Considering assignment clashes with other courses			
	Giving students feedback			
Competence				
	Assessment of learning outcomes			
	Talking to students in and out of class			
	SPOTs			
Responsiveness				
	CATME - comments about instructor			
	General class reflections			
	Exit surveys			
	Mid-term evaluations			
	Ask/converse with students generally			
	SPOTs			

Table 8 - Melissa's alignment across the three research questions

Theoretical Element	First-cycle codes	RQ 1: What were the instructor's intentions with implementing care in the classroom?	RQ 2: How did the instructors end up enacting care in the classroom?	RQ 3: What do students describe to be helpful for their learning in what instructors have enacted?
Attentiveness				
	Walking around classroom			
	Close proximity to students			
	Emphasizing availability			
	Question slide			
	Starts each lesson - "how's things going"			
	Monitors team dynamics through CATME			
	Team Check-ins			
	Check-in Questions			
	Student interaction outside class			
Responsibility				
	Culturally/technologically relevant courses			
	Putting oneself in students' perspective			
	Building on prior knowledge			
	Prior Struggle Focus			
	Using inclusive examples			
	Suiting all learning styles			
	Active Learning			
	Facilitation			
	Students taking control of learning			
	Freedom to explore			
	Guide students, not handhold			

	Students do the work and learn from mistakes			
	Imparting lifelong student learning			
	Coach students in finding resources			
	Help students understand their mistakes			
	Open-ended prompts			
	Passive instruction before classroom			
	Reflection after classroom			
	Activities incorporating student engagement			
	Early engagement culture			
	General Flexibility			
	Be positive and adjustable			
	Give break to students			
	Adjusting assignment dates			
	Instructor flexibility with office hours			
	Flexible Policies			
	Explaining relation of everything to ILOs			
	Clear and concise rubrics and instructions			
	Explains why feedback was/wasn't implemented			
	To give better instructions for assignments			
	Instructor sending announcements and updates			
	Common themes slide			
	Doesn't simply listen to students			
	Responding generally, not specifically			
	Useful vs not useful			
	Varying assignments			
	Speed of implementation			
	Aligning activities/assessments with ILOs			
	Sufficient and timely feedback			
	Planned and organized system of learning			

	Considering assignment clashes with other courses			
	Giving students feedback			
Competence				
	Assessment of learning outcomes			
	Talking to students in and out of class			
	SPOTs			
Responsiveness				
	CATME - comments about instructor			
	General class reflections			
	Exit surveys			
	Mid-term evaluations			
	Ask/converse with students generally			
	SPOTs			

From the tables above, it can be seen that in terms of complete alignment (i.e., the approach was mentioned in the interview, it was observed in the classroom, and this was also described by the students as something the instructors did that most helped their learning), Henry was seen to have full alignment for 8 approaches, Jacob had full alignment for 5 approaches and Melissa had 9. From Henry's aligned approaches, 3 came from the attentiveness element, 3 from responsibility, 1 from competence and 1 from responsiveness. Of Jacob's 5 approaches, 1 came from attentiveness, 3 from responsibility and 1 from competence. From Melissa's approaches, 3 came from attentiveness, 5 from responsibility and 1 from responsiveness. Out of the 22 aligned approaches that were seen between the 3 instructors, 7 of these came from attentiveness, 11 from responsibility, 2 from competence and 2 from responsiveness. This is not surprising to see since the greatest number of approaches were mentioned in relation to the Responsibility element, followed by the attentiveness element.

6.5.1: Difference between Instructor approaches

It was seen in the Findings section of this dissertation along with Tables 6, 7, and 8 that Henry and Melissa's approaches with their intentions in implementing care, how they were seen to implement care in the classroom, and even to an extent, the kind of approaches students mentioned they did that was most helpful for their learning, were more similar to each other than Jacob's approaches. In his interviews and in the in-class observations, Jacob was seen to emphasize approaches such as being engaging, being enthusiastic and energetic in the classroom, capturing students' attention, and how being an instructor essentially means how you have to be a good performer. Students had also reported in their SPOT comments that Jacob's enthusiasm and energy had helped them in their learning. It is clear that Jacob is a more extroverted personality, and he used these qualities to implement care in the classroom.

Henry and Melissa however came across as being much less extroverted personalities. While Jacob emphasized the importance of showcasing a performance in the classroom, Henry and Melissa had more subtle and less intrusive ways of implementing care in the classroom. Neither of them had emphasized the importance of enthusiasm and energy in the

classroom, nor did they find it necessary to be loud and capture students' attention. They did, like Jacob, emphasize the importance of engaging students in the classroom and allowing students the chance to engage with themselves and the instructing team, along with their peers, and were reported and seen to carry out in-class activities to fulfil this. An interesting finding that came out of this is how despite the different instructor personalities and approaches to implement care in the classroom, it was seen from the findings section and from Tables 6, 7, and 8 that all the three instructors did end up touching on each of the four different ethical elements in the care framework. What was also interesting to see was how all instructors prioritized the same strategies and also had very similar approaches they liked to use to satisfy these strategies. There were only slight differences in instructor's preferred approaches in order to satisfy a strategy. Furthermore, in relation to the four elements in the care framework, it was seen from student's SPOT comments that there were not any specific approaches that instructors carried out in order to satisfy a strategy, that students had preferred. The SPOT comment showed that students had equally appreciated Henry and Melissa's approaches of continuously asking students questions to keep them engaged in the classroom, as they did with Jacob's enthusiasm and energy. From these findings, it can be concluded that instructors do not need to exhibit certain personalities or qualities in order to implement care in the classroom, and that it is possible to any instructor to find a set of strategies that feel authentic to them and will be effective in enacting care.

6.5.2: Reflections on Alignment

Upon analysis of all these approaches, it has been shown how complete alignment was seen in some approaches, while some approaches that were mentioned in the interviews were not seen to be enacted in the classroom or even mentioned by the students as being something that helped them in their learning. In saying this however, it cannot be concluded that the approaches where full alignment was seen are necessarily the most important approaches to consider and should be given more importance than the other approaches where this alignment was not as clearly seen. Firstly, it was discussed earlier in this chapter that all of the approaches and strategies that have been mentioned by the instructors have already appeared in literature as being beneficial in some way for students. Secondly, since the

purpose of this study was to understand how care can be enacted in the classroom as opposed to understanding which specific strategies are most beneficial to student learning, choosing only a few specific approaches and summarizing that they should be given higher priority than others, is difficult to conclude from this study and was neither the purpose. It is also mentioned later in the limitations that there were very few classes that were observed, meaning that just because an approach was not seen to be enacted in the classroom, does not mean that instructors did not enact this approach at all throughout the entire semester. Thirdly, since certain approaches were mentioned by students to be most helpful for their learning, this does not mean that these approaches were necessarily the most effective for their learning. While it has been discussed how allowing students to take control of their learning to a certain extent can be beneficial for their learning, literature also shows that what learners prefer may not necessarily always be what is best for them (Kirschner, 2013). Hence, what students thought instructors did that was most helpful for their learning may not technically be the case.

In saying this however, what was an interesting finding that came out of the approaches where complete alignment was seen, was that these were approaches that were easier to also physically observe in the classroom. Approaches such as walking around the classroom, being in close proximity to the students, carrying out team check-ins, conversing with students in and out of the classroom and asking them questions about the content of the course as well as how the course and the instructing team are doing generally, and carrying out activities that incorporate student engagement are all some approaches where there was complete alignment seen. Other approaches however such as flexible policies, having culturally and technologically relevant courses, instructors putting themselves in the students' perspective, building on students' prior knowledge and focusing on their prior struggles were approaches that were barely mentioned by students as being something that they found helpful for their learning. These approaches are also of the nature as being more difficult for students to physically see the instructors as implementing within the classroom.

There seems to be then a pattern where students are more likely to view an approach as being beneficial for their learning and are more likely to see care being implemented in the classroom if they can physically see this approach. Hence one implication from the findings of the alignment of the different approaches, is that instructors could focus on ensuring that the

approaches they are using to implement care in the classroom are as physically observable as possible by the students. Especially with approaches that require the physical presence of instructors, such as walking around the classroom, actively asking students questions and checking in on student teams and individual students, when these approaches are being carried out, instructors should be aware to try and make their presence to the students known as much as possible.

In saying this however, there are also clearly many different approaches that are just not possible to physically show in the classroom. Approaches such as creating culturally and technologically relevant courses, building on students' prior knowledge and ensuring appropriate activities and assessments are planned throughout the course, are not approaches that students typically notice or are aware of being a strategy that can be beneficial for them. For these approaches, what can be helpful for instructors to do is to make students aware of all the decisions they are making in structuring and delivering the course in a certain way, and clearly explain their thought process behind implementing specific approaches. This was mentioned by the instructors as something they liked to do with implementing specific in-class activities and assessments, and how they liked to explain clearly to the students as to how these relate in achieving the learning outcomes of the course. Similar to this, since there exists a common theme of if the students can see an approach being implemented, or are aware of this, then it is more likely to be beneficial for them, this strategy of instructors communicating all of these approaches clearly to the students is highly recommended.

Along with this, Tables 6, 7, and 8 also showed how there were multiple approaches that all the three instructors had not mentioned in their interviews, but this was sometimes seen being implemented in the classroom, and more interestingly, this was also something students described them as doing that most helped their learning. Hence, another implication from this study is for instructors to be very aware of the different approaches they are implementing in the classroom, to be intentional with these approaches and to also understand the benefit it can have on the students. It is seen from the tables that there are certain approaches that all three instructors are doing, that even they are not aware of. In Henry's example, he had not mentioned that he likes to emphasize his availability in his interview meaning that this is perhaps something he does without even knowing he is doing

it. Since the previous two implications relate to instructors intentionally trying their best to make it evident to students, either through the way of physically showing them or by clearly communicating to them, about the different approaches they like to implement in the classroom and its benefits, then instructors firstly need to aware of everything they are doing. One recommendation could involve colleagues carrying out more in-class observations of other colleagues to help bring light to some of these approaches that instructors are doing that perhaps even they are not aware of themselves. Another recommendation is to also be clear about how each different approach that is being implemented is benefiting the students. Having a clear understanding as to how implementing a certain approach or strategy helps students in the classroom, will help instructors be able to better emphasize and communicate this with their students. That is where the findings of this study can also be of use as instructors can clearly see what some different approaches they could implement are, how that relates to them being either attentive, responsible, competent or responsive with their students, and the positive benefit that poses.

6.6: Contributions

6.6.1: Theoretical Contribution

The theoretical contribution this study has made is that it has taken an existing theoretical framework that was developed in another field and for another setting, and it has been operationalized to fit in the context of this study. Joan Tronto's ethics of care framework was the theoretical framework that was chosen for this study and this framework was developed focusing on feminism and feminist discourse. This framework however lends itself to broader application and her four phases of caring which inform the definitions of her four ethical elements of care, are also general such that it can be taken and applied in another context. Tronto mentions how instead of care being a set of rigid rules and principles, it is rather just a practice. This means that as opposed to care being a concept that has a list of morally designed precepts, it can take a more ambiguous form (Tronto, 1993). This means that even though the ethics of care framework was developed focusing on feminism and feminist discourse, it was possible to apply this framework in other fields. Vivienne Bozalek used

Tronto's ethics of care framework and developed and applied it to the creation of professional development workshops for university teachers (Bozalek et al., 2014), and this was possible because of the general and applicable nature of this framework. Bozalek had in fact operationalized this framework and had added an additional ethical element, Trust, to the framework. This study had first talked about Tronto's personal views and beliefs about care, before discussing how her four phases of caring informed the formation of her four ethical elements of care. The definitions of these elements were used in Chapter 2 of this dissertation to better understand how this could look like in the engineering teaching and learning setting. By combining the definitions of these elements along with current literature, this study looked at what teacher behaviors could be evidence of each of the four elements in the ethic of care framework.

What emerged from this study was that Tronto's framework enabled the analytical disaggregation of common instructor actions, such as walking around the class and talking to students, that usually tends to be conflated, into more specific behaviors to understand the purpose each particular strategy serves. On top of this, since the definition of each ethical element was operationalized for the teaching and learning setting in this study, it also grouped a lot of common instructor approaches and strategies together, to show how they can combine together in order to implement care in the classroom.

6.6.2: Empirical Contribution

Using these behaviors as a platform and after continuing to better understand and operationalize this framework in the teaching setting, the interview questions developed in order to understand how the instructor participants intend to implement care in their classroom, were done so in congruence with the definition of each element. Each interview question came directly from the definition of each of the elements in this ethic of care framework. This meant that the instructor's intentions in implementing care could be categorized under the different elements of the framework, and these same observations and behaviors could be looked out for in the classroom and grouped in the ethical element accordingly. This meant that Engineering Education teaching as a practice, was able to be

looked at into more detail from a care perspective. Effectively as a result, the study had taken a framework being used for feminism and feminist discourse and operationalized it to the teaching environment to better understand how care is enacted in teaching in a first-year general engineering program.

This study was conducted with the purpose of creating a setting where I was most likely to see care being implemented in the classroom and it is because of this that the instructors that were chosen were expected to be good teachers and were generally likely to show care. The teaching-related awards they obtained are an indication of this on top of the fact that they have taught the course of interest in this study at least 2 times previously. The course of interest chosen in this study is also ideal since it is a more project-centered and problem-solving course compared to other technical courses, meaning it may be easier to get students to do more of the work, and also show more care. In spite of this study using the ideal-case scenario, it can be found that most of the actions and behaviors the instructors have shown in order to implement care, are entirely attainable strategies. Some strategies such as the extent to which you can make students “do the work” and give them the freedom to explore may vary according to the type of course and the level of it, however strategies such as walking around the classroom, checking in on students, making the course relevant to students, being flexible, clear communication, obtaining and implementing student feedback, and assessing them can be seen as being achievable in most courses. These findings could be used to provide guidance to new engineering educators. Along with this, the study also showed that there are many different ways to show these strategies, and you do not have to exhibit very specific characteristics to implement care in the classroom. The three instructors in this study all have different personalities and approaches they mentioned and enacted in the classroom, yet all of them were able to satisfy the four different ethical elements in the care framework.

6.6.3: Methodological Contribution

One interesting finding of the study was the overall alignment between instructors’ intentions to implement care, their enactment of care in the classroom, and the instructor actions that

students described as being helpful in their learning. To a large extent, most of whatever approaches and strategies the instructors had said they wanted to implement in the classroom was seen in the three observations carried out on each of them. Some of the approaches that were not seen may be attributed to the limitations of the study, discussed later. Literature shows that one reason this alignment between the instructor's intentions and their enactment exists, may be attributed to the fact that the instructors play a part in the design of the course, the curriculum, and the different activities that are implemented in the course (Cooper et al., 2022). On top of this, there was also seen to be alignment between the instructors' intentions and actions, and what students described as being helpful in their learning.

Many of the students' SPOT comments regarding what they found to be most helpful for their learning were similar to what the instructors had mentioned they intended to implement in the classroom along with what they actually implemented. Reeves (2006) explains that in order for a learning environment to be effective, and for students to learn and appreciate what instructors want them to, there are eight critical factors in the course that must be aligned. This includes the nature of the objectives (course learning outcomes), the nature of content (the specific material being presented), instructional design (the arrangement of in-class activities, resource etc.), learner tasks (strategies used to engage students), instructor roles (specifically allowing students to take more control of their learning and playing a facilitator role), student roles (doing more of the work and taking control of their learning), technological affordances (providing the necessary tools and resources to help students succeed in their tasks), and assessment strategies. All of these eight strategies were either mentioned by each instructor, enacted in the classroom and/or described by the students as being something they did that was helpful to their learning. This study has shown that achieving this alignment is possible in a first-year Engineering Education program.

6.7: Implications for Practice

6.7.1: Implications for Pedagogy

The main findings that came out of this study show that there exist some very specific approaches that can be used by any instructor to implement care in the classroom. Along with this, each of the approaches and strategies that were found come under a certain element of care, meaning that it can be understood what element of care is being shown when a certain approach is being implemented in the classroom. This allows instructors to have a list of approaches made available to them and have them organized such that they understand the benefit that the implementation of each approach will have on the students. The approaches and strategies that were found were done in an environment where care was likely to be seen (i.e., specific instructors were chosen who were teaching a specific course from a department that values its teaching pedagogies). In saying this however, most of the approaches and strategies that were found in this study are attainable. While some approaches may be slightly easier or difficult to implement depending on the context, all of these strategies are attainable. Another finding of this study was the differing experiences and personalities of the participants used in this study. One participant was far more extroverted and prioritized energy and theatrics in the classroom, while the other two participants were quieter in nature and more introverted. The findings of the study show that all three participants were still able to touch on all the different four elements of the care framework. This means that, not only does the context not play a very important factor in being able to implement care, but neither does your personality. The findings of the study show that no matter what your personality is or what the context in which you are teaching is, there are very specific approaches and strategies you can use to implement care in the classroom.

6.7.2: Implications for Policy

The strategies and approaches that can be used to implement care in the classroom that have been found from this study, have been done so in an environment where care was likely to be seen. As mentioned previously, this was through choosing a project centered course in a

department which values its teaching pedagogies, and specific instructors were also chosen who had been recognized for their teaching by having obtained teaching-related awards. In saying this, it can be seen that almost all of these approaches and strategies are attainable provided the context of the classroom. There are a few policy arrangements that institutions can keep in mind to ensure their faculty has the best chance of implementing care in the classroom.

The first is the number of students in the classroom. The classes used in this study had approximately 72 students and this made particular approaches feasible by the instructor. If class sizes were to exceed this size, it could be harder for instructors to carry out approaches such as checking in on individual students and teams of students. It may also be more difficult to individually interact and form connections with students, and it can also be harder to cater to individual student needs. It is understandable that class sizes may have to be much larger than this, and if this is the case, it is recommended that more resources are allocated to each instructing team. Class sizes with over 100 students should comprise of an instructor, a few graduate teaching assistants (GTA), and even the possibility of undergraduate teaching assistants (UTA). The instructor will be responsible mainly for delivering the lectures, organizing the course material, dealing with specific administrative work and making any major course decisions. GTAs will be in the classroom with the instructor so that they can help in going around the classroom to be attentive to and available for the students, and any other approaches that have been found from this study, which they can help in implementing too. The larger the student population is in the classroom, a greater number of GTAs should also be present in the classroom. The GTAs and UTAs can also take a significant proportion of the grading in the class that needs to be done so that the instructor can focus on their other responsibilities.

The type of classroom is also an important factor to consider. Classrooms that are structured so that the entire width of the classroom is occupied by just rows of students is not ideal since this setting makes it more difficult for students to interact with other students, and it also makes it more difficult for students to walk and attend to specific students. Classrooms that have groups of tables arranged amongst the classroom are ideal, specifically in a project-based course where students will be working together in teams, since students can just sit with their groups, and teachers can attend to different groups with ease. If this is

not possible and rows are needed, then splitting the class into some columns helps teachers be able to walk around with more ease and creates a more engaging atmosphere. Along with this, having a big enough gap in between each row so that a person can walk through is also ideal since instructors can physically attend to specific students with more ease, and it also allows for the possibility of students to move around the classroom in order to engage with their peers. Having the classroom technologically friendly with access to many power plugs on the desks, having big enough desks, as well as a functioning projector also opens the possibility for instructors to present material in different ways and use these technologies to help them in implementing care in the classroom.

Another factor that institutions should consider when developing courses is the amount of content and learning outcomes that need to be covered through and achieved in each course. Many of the approaches that were mentioned in order to implement care in the classroom revolve around allowing students to “do the work”, being flexible with assignment deadlines, taking the time to ask students if they have questions about content and going through these again if unclear, giving breaks to students, as well as building on their prior knowledge and focusing on prior struggles. These approaches were intended and were able to be implemented by the instructors in the classroom since the course load for the instructors to get through in each week is manageable. If courses have a much higher workload, then not only is this difficult for students, but instructors will also find it difficult to implement some of the approaches that were just mentioned previously.

Lastly, it was mentioned earlier in this dissertation that a policy should be implemented where instructors teaching similar, or the same courses should undergo a peer evaluation of teaching. This will allow the instructor whose class is being viewed to understand what caring approaches they are implementing and what they could do better, and this also gives the opportunity for the observer to learn as well as reflect on approaches that perhaps they could also do a better job at implementing in the classroom. An interesting policy that could also be added in departments is to have an informal award for the most caring instructor in the semester from the different courses taught within that department. Upon observing each other’s classrooms, this award can be decided by all of the instructors in the department. This could provide a good incentive for instructors to actively try and implement care in their classroom, since these efforts are also being rewarded.

Chapter 7: Conclusion

There are a few problems that exist in the teaching of engineering. Firstly, the sense of belongingness that some first-year engineering students face is problematically low. Pearson et al. (2018) found that the engineering culture works to undermine the belief that a student even belongs in engineering, and to a certain extent, Engineering Education generally has been seen to foster an exclusionary environment which makes new students feel as though they don't have any sense of belonging in this new academic environment. What is more troublesome is that instructors have also been seen to play a part in the problems that undergraduate engineering students are facing. Hong & Shull (2010) carried out a study looking at the concerns and challenges engineering students face, and it was found that students found it disappointing when they felt like their professors didn't even care about them, causing them to feel demotivated. What is interesting to note is that implementing care in teaching is shown to negate all these disadvantages by forming a connection between the instructor and student, leading to the instructor becoming more approachable and students being allowed to feel more vulnerable, creating a positive atmosphere filled with student motivation which are ideal conditions for learning.

Since literature shows that teaching by implementing care can connect with students and has been recognized by them as providing ideal conditions for their learning (Meyers, 2009), this dissertation carried out a case study looking at how three specific instructors implement care in their teaching practices, in a first-year general engineering program at Virginia Tech. This study used Tronto's political ethic of care framework and operationalized it so that it can be used in a teaching setting. In doing so, this study put forward a framework of care that is characterized by the four ethical elements which include Attentiveness, Responsibility, Competence, and Responsiveness. This study has come up with a set of teaching strategies and approaches satisfying each of the four ethical elements in this care framework and has proved to be successful in a first-year team-based general engineering course.

In order to satisfy the attentiveness element of the framework, instructors should be consistently available to their students and must be in close proximity to them. They should also conduct regular student check-ins to make sure each student and/or group of students

are doing okay and if they may have any questions. To satisfy the responsibility element, instructors must make the course and material presented in the course relevant to students. Along with this, they must ensure that it is students that are doing the work and verbal interactions in the class must also be promoted between students and between the students and the instructor. Instructors should also be flexible throughout the course of the semester and must practice clear communication with the students. This involves not only clearly communicating assignments and announcements, but also communicating how each of the activities and assignments in class are related to the course learning outcomes. Along with this, it is necessary to also consider implementing the feedback given by students, as well as to have an overall well-planned and organized system of learning in the classroom. The main strategy to fulfill the competence element is to assess students, and this can be through the assessment of learning outcomes, or any informal form of assessment to better understand whether students are achieving the course learning outcomes, and whether we are satisfying any other needs they may have. To satisfy the responsiveness element, instructors are required to obtain student feedback to gain an understanding of how students are viewing the teaching being given by the instructor, and how they are viewing the overall course too. The specific approaches that are used to satisfy each of these strategies can be found in Table E1 listed in Appendix E.

The size of this class section is approximately 72 students which may differ from other class sizes. On top of this, instructors that are teaching more theoretical or exam-based courses may have to use a slightly different subset of approaches and strategies, however, it has been shown through some of the approaches and strategies identified in this study, that caring for your students is not an intangible possibility. Along with this, the study has also shown that any instructor personality trait can implement care in their classrooms. The three instructor participants that were used in this study, as seen in the Teacher Portraits chapter, are quite different in terms of personality traits. Their trajectory into teaching first-year engineering was also quite different, and so it was not surprising to see that each of them had mentioned unique approaches and strategies to implementing care. Each instructor however, found their own way of intending and enacting each of the four ethical elements in the care framework, which was seen to also be recognized and appreciated by the students.

7.1: Limitations

This case study serves as a first step towards understanding how care can be enacted in teaching. There are however, several limitations in this study. The first and main limitation of this study is that there were only three classes that were observed for each instructor. In the semester, there are approximately 16 weeks, and students in this course meet twice a week. This means that out of the 32 classes that had taken place, only 3 were observed, meaning just under 10% of what was observable was observed. As a result, even though there was alignment seen between what instructors intended to implement and were seen to enact in the classroom, many of their intentions were not seen to be enacted in the classroom due to this small number of observations. An example of how these small number of observations generally reduce the possibility of seeing approaches and strategies instructors mentioned, was with regards to the flexible strategy. In order to be seen as being flexible, this typically arises if there is something to do with an assignment, such as introducing it and talking about the deadline of it. It is these opportunities where you are more likely to see if instructors will give extensions and be flexible, however due to the limited number of observations carried out, in no observation was it seen that an instructor was introducing an assignment and got the opportunity to show more of their flexible approaches in the classroom.

Secondly, the first observation that was made was in Week 5 of the semester. This is a limitation because a few of the strategies and approaches instructors mentioned in their interviews would have been seen in the first few days and weeks of class. Checking for assignment clashes with other courses is an example of an approach instructors would use near the start of the semester so they can adjust assignment deadlines from up front. Henry had also mentioned that he likes to focus on prior struggles as well as build on students' prior knowledge. These approaches are also something that is more typically seen near the start of the semester, before week 5. None of these approaches were seen in the observations however because of when the first observation took place.

The final limitation of the study is the transferability of its findings in another context (Case & Light, 2011). The context of the study was such that a very specific course was chosen from a specific department. Engineering Education is a department that values good engineering teaching and makes an active effort to practice this. Along with this, the course

chosen from this department was a team-based course where students predominantly work in groups to complete a project by the end of the course. This meant that instructors were able to make students do more of the work, take control of their learning and could act as more of a facilitator since there was not much intense technical content that needed to be taught. On top of this, the instructors that were chosen for this study were also intentionally chosen since they are known to be good teachers. All three instructor participants have obtained teaching awards in the past and also have experience in teaching this course since they have taught it at least twice before. Hence, it may be a little difficult to expect to find these same approaches and strategies in another context such as a much more theoretical or exam-driven technical course that is being taught by an instructor teaching for the first time. As a result of the case being so specific, the transferability of the results can be questioned. It should be mentioned that while this study is perhaps not transferable, it does not aim to be since it is aiming to understand how this issue of implementing care in teaching practices is taking place in this one specific context. While this study is not necessarily transferable, it can be stated that the results that are generated from this study, and the overall lessons that were learned, were useful to help bring light to similar issues regarding showing care in teaching, in other educational contexts.

7.2: Future Work

There are many different directions future work for this study could head. One direction is to firstly include different instructors teaching the same course in the department. The instructors chosen for this study were known to be good teachers through obtaining teaching awards and were experienced. Studying instructors that are new and less experienced would be interesting as we could compare the different approaches and strategies they mention and enact, compared to what this study has found. It could be interesting to see whether less experienced instructors come up with approaches to care that haven't been found in this study.

Further research could also be conducted by choosing a different context. As mentioned previously, the context of this study was chosen so that the most ideal conditions

of care could be seen. The same study can be carried out in another engineering department which has more technical courses and are more test and exam-driven to see whether the instructors in these contexts mimic the strategies that were found in this study, or whether there are different approaches that they come up with to implementing care in the classroom. The experiences of these instructors could also be varied in this context to compare and contrast the different caring behaviors seen.

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Appendices

Appendix A – Participant Invitation Email Template

Dear [enter participant's name]

I am in the process of commencing work for my Ph.D. dissertation and am hoping to commence data collection soon. My study is focusing on teaching practices in first-year engineering, and is specifically looking at ENGE 1216.

I am reaching out to you to formally ask you if you would be happy to participate in my study. I am inviting you to be a participant since you are teaching this course next semester, you have taught it at least twice before, and you have been recognized for your teaching with awards.

All of the official information and more details of what is expected is included in the information sheet that I have attached to this email.

If you agree to participate, I will then follow up to schedule a time for the initial interview with you which I am hoping to complete before the end of this semester. I am happy to stay in touch via email or get on a zoom call to talk more about this.

If you have any questions or concerns, please feel free to email me at ssiddharth96@vt.edu

Sincerely,

Sidd Kumar

Appendix B – Information Sheet for Participation in a Research Study



Information Sheet for Participation in a Research Study

IRB#: 22-1012

Topic of Study: Focusing on Teaching Practices in a First-year engineering course (ENGE1216).

You are invited to participate in a research study. You have been chosen as you are one of the few instructors that have taught this course (ENGE 1216) at least 2 times before, and you have been recognized for your teaching by obtaining an award. This form includes information about the study and contact information if you have any questions.

I am a Ph.D. student in Engineering Education at Virginia Tech, and I am conducting this research as part of my Ph.D. dissertation.

➤ **WHAT SHOULD I KNOW?**

If you decide to participate in this study, you will first participate in an interview that I will be conducting. In this interview I will be asking you some general questions about what got you into teaching more generally, what got you into teaching at Virginia Tech specifically, as well as different aspects of teaching that you believe are important. The interview itself will be scheduled for an hour and a half, but realistically should only take approximately an hour. The extra half an hour is just lee-way time so that we don't need to rush.

The second part of the research study involves in-classroom observations. In this part of the research study, you are not expected to do anything. All I will be doing is sitting in on some of your classes to simply observe your teaching. That will only take place during the Spring semester of 2023, and I can send you a separate information sheet about it closer to the time. I will also be asking you for your SPOT surveys for this course, and I will anticipate having a second interview with you during the middle of the Spring 2023 semester.

We do not anticipate any risks from completing this study.

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and remain in the study. During the interview, there are obviously no right or wrong answers, it is only your opinion and experiences that I am interested in.

➤ **CONFIDENTIALITY**

We will do our best to protect the confidentiality of the information we gather from you, but we cannot guarantee 100% confidentiality. Your identity will only be known to me and my committee members, and apart from that, I will be anonymizing the reporting of the study, as well as the institution.

Along with this, I will also be sharing a draft of my dissertation to you, along with any other conference paper I may wish to do regarding this study, before it is published. If at any point, there is any information that you wish to retract, you are more than welcome to. After the interview, I will also be sharing the transcript of the interview with you. You are again more than welcome to remove anything you wish to from these transcripts before I share them with my committee.

Any data collected during this research study will be kept confidential by the researchers. The interview will run through Zoom. If you do permit it, I will record the interview and use the captions to transcribe the interview. Once again however, the transcriptions will be coded using a pseudonym (false name), and if at any point during or after the interview, you want to remove any information, you are more than welcome to do so, before it is shared with my committee.

➤ **WHO CAN I TALK TO?**

If you have any questions or concerns about the research, please feel free to contact Sidd Kumar, ssiddharth96@vt.edu. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research participant, contact the Virginia Tech HRPP Office at 540-231-3732 (irb@vt.edu).

Please do let me know if you would like to participate in this research study by Sunday 27th November, 2022.

Appendix C – Final Instructor Observational Frameworks

Table C1: Henry

Ethical Element	Definition	Examples of Observations
<p style="text-align: center;">Attentiveness</p>	<p>If we are not attentive to the needs of others, then we cannot possibly address those needs. At its simplest level, care requires the recognition of a need and that need has to be cared about, and that is why the first moral element of care is to just be attentive.</p>	<ul style="list-style-type: none"> • Has space in his slides for students to ask questions. • Teacher walking around the classroom, seeing what students are doing, Emphasizes proximity with students. • starts class by asking how everyone is doing/going and asks general questions to the students. • Tries interacting with students before/after class starts to ask them questions about how they are doing. • Clearly emphasizes availability by saying they can ask him and the TA's questions at any point.
<p style="text-align: center;">Responsibility</p>	<p>Responsibility relates to understanding and focusing on what has and hasn't been done in order to contribute towards a particular solution, and then taking ownership of positively influencing that solution.</p>	<ul style="list-style-type: none"> • Teacher going up to the students to address their concerns. • Providing basic announcements and a brief outline to the class. • Instructor providing a supportive environment and including inclusive and relevant examples. • Makes students "do the work", provides more of a supporting role. KEY (does this a lot by asking them questions about what they THINK something means) • Providing a clear structure to the lesson. Organized, well-structured, and planned activities that are aligned with the ILOs. • Does the "tell me something I don't know".

		<ul style="list-style-type: none"> • Student engagement by constantly asking them questions and having whole-class and smaller group discussions. • Flexibility – instructor allowing student to submit assignment at a later date. • Clear communication – explains to students why he has 4 CATME’s and how this has been effective. • Addresses general concerns in a slide. • Added a slide where he gave feedback to students about an assignment that they did.
Competence	It is not enough to just intend to provide good care, and even accept responsibility for it. At the end of it, what is most important is whether the need for the care was met or not.	<ul style="list-style-type: none"> • Asks questions to students directly, specifically about the course content to see if they have understood the material. Evidence of different types of assessment to help understand how students are doing. • Constantly keeps asking students questions to make sure everything is well understood.
Responsiveness	This is to do with the responsiveness of the care-receiver to the care being provided. Responsiveness has everything to do with understanding how the care receiver is responding to the care being provided.	<ul style="list-style-type: none"> • Asking students questions about how the course is going, and how the instructor is doing more specifically. • Mentioned/spoke about CATME once.

Table C2: Jacob

Ethical Element	Definition	Examples of Observations
<p>Attentiveness</p>	<p>If we are not attentive to the needs of others, then we cannot possibly address those needs. At its simplest level, care requires the recognition of a need and that need has to be cared about, and that is why the first moral element of care is to just be attentive.</p>	<ul style="list-style-type: none"> • Teacher walking around the classroom, seeing what students are doing and if they are okay. • likes to start class by asking how everyone is doing, and asking if they are okay/stuck. • Emphasizes students can ask questions anytime.
<p>Responsibility</p>	<p>Responsibility relates to understanding and focusing on what has and hasn't been done in order to contribute towards a particular solution, and then taking ownership of positively influencing that solution.</p>	<ul style="list-style-type: none"> • Teacher going up to the students to address their concerns. • Very engaging with students. Banged two sticks together to get their attention, asked questions for purpose of conversation. Did think pair share (not explicitly mentioned in interview). • Providing basic announcements and a brief outline to the class. • Makes students "do the work", wants them to make mistakes on their own, and he will guide them, or hope that they can understand where they made mistakes. Provides more of a supporting role. • Constant rhythm of smaller group discussions, and then bringing it back to ask questions and to do whole-class discussions. Engagement. • Open-ended prompts. Likes to try get the perfect balance between instructions, but also giving students the freedom to explore. • Implementing student feedback. • Giving students his own feedback from assignment they submitted.

		<ul style="list-style-type: none"> • Providing a clear structure to the lesson. Organized, well-structured. • Communicating with a diverse range of learners. • Providing a supportive and inclusive environment.
Competence	It is not enough to just intend to provide good care, and even accept responsibility for it. At the end of it, what is most important is whether the need for the care was met or not.	<ul style="list-style-type: none"> • Asks questions to students and teams, specifically about the course content to see if they have understood the material. Evidence of different types of assessment to help understand how students are doing.
Responsiveness	This is to do with the responsiveness of the care-receiver to the care being provided. Responsiveness has everything to do with understanding how the care receiver is responding to the care being provided.	<ul style="list-style-type: none"> • Asking students and teams questions, but specifically about how the course is going, and how the instructor is doing. • Exit Surveys

Table C3: Melissa

Ethical Element	Definition	Examples of Observations
<p>Attentiveness</p>	<p>If we are not attentive to the needs of others, then we cannot possibly address those needs. At its simplest level, care requires the recognition of a need and that need has to be cared about, and that is why the first moral element of care is to just be attentive.</p>	<ul style="list-style-type: none"> • Teacher walking around the classroom, seeing what students are doing, and asking if they are okay/stuck. • Goes up to each team to ask if they are okay and whether they need help with anything. • Telling students to put their hand up if they have a question, or to just come up to her.
<p>Responsibility</p>	<p>Responsibility relates to understanding and focusing on what has and hasn't been done in order to contribute towards a particular solution, and then taking ownership of positively influencing that solution.</p>	<ul style="list-style-type: none"> • Teacher going up to the students to address their concerns. • Providing basic announcements and a brief outline to the class. • Instructor actually carrying out the different learning styles. Evidence of videos, some sort of pre-reading, basic lectures, group work etc. • Providing a clear structure to the lesson. Organized, well-structured. • Allowing and making students actually "do the work". • Student engagement by constantly asking them questions and having smaller group discussions. • Communicating with a diverse range of learners. • Providing a supportive and inclusive environment.
<p>Competence</p>	<p>It is not enough to just intend to provide good care, and even accept responsibility for it. At the end of it, what is most</p>	<ul style="list-style-type: none"> • Asks questions to students and teams, specifically about the course content to see if they have understood the material. Evidence of different types of assessment to help understand how students are doing.

	important is whether the need for the care was met or not.	
Responsiveness	This is to do with the responsiveness of the care-receiver to the care being provided. Responsiveness has everything to do with understanding how the care receiver is responding to the care being provided.	<ul style="list-style-type: none"> • Asking students and teams questions, but specifically about how the course is going, and how the instructor is doing. • Exit Survey

Appendix D – Codebook for Instructor Interview 1

Table D1

Question 1 - Reasons behind getting into teaching	Codes	Henry	Jacob	Melissa
	Parental Influence		✓	
	Enjoys university setting		✓	
	Convenience/Availability			✓
	Past teaching/course design experience	✓	✓	✓
	Industry to academia transition	✓		✓
	Unplanned	✓	✓	✓
Question 2 - Reasons behind teaching 1st year engineering at VT				
	Wanted change from previous job	✓		
	Convenience/Availability		✓	✓
Question 3 - Important aspects of teaching				
	Good teaching pedagogy	✓		
	Organized/clear expectations	✓		
	Facilitators, not teachers		✓	
	Help students develop understanding/applying information		✓	
	Engaging students		✓	
	Improvisation		✓	
	Empathy			✓
	Caring and Helpful			✓
	Lifelong learning			✓
	Good subject knowledge	✓	✓	
	Students are priority	✓		✓
Question 4 - What do you do well in teaching?				
	Professional, but relaxed environment	✓		
	Clear and flexible policies	✓		

	Students are whole individuals	✓		
	Inclusive	✓		
	Performing and improvising		✓	
	Engaging		✓	
	Enthusiastic/Energetic		✓	
	Creativity and Imagination		✓	
	Secure and Confident		✓	
	Responsive/Timely feedback			✓
	Regularity of class rhythm			✓
	Flexible and accessible			✓
	Organized	✓		✓
Question 5 - What to improve on in teaching?				
	Differentiating student success, and grades	✓		
	Have students learned?	✓		
	Inclusive of all students (e.g., autism/on spectrum)	✓		
	Aligning assignment with ILOs		✓	
	Patience (could be same as one below)		✓	
	Internal emotional response		✓	
	Be more engaging			✓
	Right balance between lecture/demo/hands-on			✓
Question 6 - What makes you appear as a caring instructor?				
	Patience with questions	✓		
	Flexibility	✓		
	Student engagement		✓	
	Secure and Honest		✓	
	Creative		✓	
	Job excitement		✓	
	Giving students a positive outlook			✓
	Smiling face			✓

	Emphasizing availability			✓
	Explains why course occurs a certain way	✓	✓	
Question 7 - To what extent is care an important part of teaching?				
	Important, less with learning	✓		
	More rewarding and effective	✓		
	Student identity	✓		
	Students will learn and apply this care	✓		
	Student Motivation	✓		✓
	Student well-being	✓		✓
Question 8 - How do you implement care in the classroom?				
	Student interaction at personal level	✓		
	Reducing power dynamic	✓		
	Consciously secure	✓		
	Weekly check-ins	✓		
	Engaging		✓	
	Interactive performer		✓	
Question 9 - Responding to 'it isn't the instructor's job to care'?				
	Development of bad student habits and behaviors		✓	
	Technically not necessary	✓	✓	✓
	Ineffective learning experience	✓	✓	✓
	No point if you don't care	✓	✓	✓
	Higher student motivation associated with personal connection	✓	✓	✓

Appendix E – Codebook for Instructor Interview 2

Table E1

Theoretical Element	Second-Cycle Codes	First-Cycle Codes	Henry	Jacob	Melissa
Attentiveness					
	Availability/Proximity				
		Walking around classroom	✓	✓	✓
		Close proximity to students	✓		
		Emphasizing availability		✓	✓
	Student Check-ins				
		Question slide	✓		
		Starts each lesson - "how's things going"	✓	✓	
		Monitors team dynamics through CATME			✓
		Team Check-ins	✓	✓	✓
		Check-in Questions	✓		
		Student interaction outside class	✓		
Responsibility					
	Student Relevance				
		Culturally/technologically relevant courses		✓	
		Putting oneself in students' perspective		✓	
		Building on prior knowledge	✓		
		Prior Struggle Focus	✓		
		Using inclusive examples	✓		
		Suiting all learning styles			✓
	Make students “do the work”				
		Active Learning	✓	✓	✓
		Facilitation		✓	

		Allowing students to take control of their own learning	✓		
		Freedom to explore		✓	
		Guide students, not handhold		✓	
		Students “do the work” and learn from mistakes	✓	✓	
		Imparting lifelong student learning	✓	✓	✓
		Coach students in finding resources	✓		
		Help students understand their mistakes	✓	✓	
		Open-ended prompts		✓	
		Passive instruction before classroom			✓
		Reflection after classroom			✓
	Promoting Verbal Interactions				
		Activities incorporating student engagement	✓	✓	✓
		Early engagement culture	✓		
	Flexibility				
		General Flexibility	✓	✓	✓
		Be positive and adjustable	✓		
		Give break to students	✓		
		Adjusting assignment dates	✓		
		Instructor flexibility with office hours etc.			✓
		Flexible Policies	✓		
	Clear Communication				
		Explaining relation and alignment of everything to ILOs	✓	✓	
		Clear and concise rubrics and instructions	✓		
		Explains why feedback was/wasn't implemented	✓	✓	
		To give better instructions for assignments generally			✓
		Instructor sending regular announcements and updates			✓
	Implementing Student Feedback				

		Common themes slide	✓		
		Doesn't simply listen to students		✓	
		Responding generally, not specifically	✓	✓	
		Useful vs. non-useful	✓		✓
		Speed of implementation		✓	✓
	Providing well-organized and planned system of learning				
		Aligning activities/assessments with ILOs	✓		✓
		Sufficient and timely feedback			✓
		Organized activities to demonstrate material	✓	✓	✓
		Considering assignment clashes with other courses	✓	✓	
Competence					
	Assessing students				
		Assessment of learning outcomes	✓		✓
		Talking to students in and out of class	✓	✓	
		Talking to other faculty members		✓	✓
Responsiveness					
	Actively Soliciting Student Feedback				
		CATME - comments about instructor	✓		
		General class reflections	✓		
		Exit surveys		✓	
		Mid-term evaluations			✓
		Ask/converse with students generally	✓	✓	✓
		SPOTs	✓	✓	✓

Appendix F – Instructor alignment between Research Questions 1, 2, and 3

Table F1 – Henry

Theoretical Element	First-cycle codes	RQ 1: What were the instructor’s intentions with implementing care in the classroom?	RQ 2: How did the instructors end up enacting care in the classroom?	RQ 3: What do students describe to be helpful for their learning in what instructors have enacted?
Attentiveness				
	Walking around classroom			
	Close proximity to students			
	Emphasizing availability			
	Question slide			
	Starts each lesson - "how's things going"			
	Monitors team dynamics through CATME			
	Team Check-ins			
	Check-in Questions			
	Student interaction outside class			
Responsibility				
	Culturally/technologically relevant courses			
	Putting oneself in students' perspective			
	Building on prior knowledge			
	Prior Struggle Focus			
	Using inclusive examples			
	Suiting all learning styles			
	Active Learning			

	Facilitation			
	Students taking control of learning			
	Freedom to explore			
	Guide students, not handhold			
	Students do the work and learn from mistakes			
	Imparting lifelong student learning			
	Coach students in finding resources			
	Help students understand their mistakes			
	Open-ended prompts			
	Passive instruction before classroom			
	Reflection after classroom			
	Activities incorporating student engagement			
	Early engagement culture			
	General Flexibility			
	Be positive and adjustable			
	Give break to students			
	Adjusting assignment dates			
	Instructor flexibility with office hours			
	Flexible Policies			
	Explaining relation of everything to ILOs			
	Clear and concise rubrics and instructions			
	Explains why feedback was/wasn't implemented			
	To give better instructions for assignments			
	Instructor sending announcements and updates			
	Common themes slide			
	Doesn't simply listen to students			
	Responding generally, not specifically			
	Useful vs not useful			
	Varying assignments			

	Speed of implementation			
	Aligning activities/assessments with ILOs			
	Sufficient and timely feedback			
	Planned and organized system of learning			
	Considering assignment clashes with other courses			
	Giving students feedback			
Competence				
	Assessment of learning outcomes			
	Talking to students in and out of class			
	SPOTs			
Responsiveness				
	CATME - comments about instructor			
	General class reflections			
	Exit surveys			
	Mid-term evaluations			
	Ask/converse with students generally			
	SPOTs			

Table F2 – Jacob

Theoretical Element	First-cycle codes	RQ 1: What were the instructor's intentions with implementing care in the classroom?	RQ 2: How did the instructors end up enacting care in the classroom?	RQ 3: What do students describe to be helpful for their learning in what instructors have enacted?
Attentiveness				
	Walking around classroom			
	Close proximity to students			
	Emphasizing availability			
	Question slide			
	Starts each lesson - "how's things going"			
	Monitors team dynamics through CATME			
	Team Check-ins			
	Check-in Questions			
	Student interaction outside class			
Responsibility				
	Culturally/technologically relevant courses			
	Putting oneself in students' perspective			
	Building on prior knowledge			
	Prior Struggle Focus			
	Using inclusive examples			
	Suiting all learning styles			
	Active Learning			
	Facilitation			
	Students taking control of learning			
	Freedom to explore			

	Guide students, not handhold			
	Students do the work and learn from mistakes			
	Imparting lifelong student learning			
	Coach students in finding resources			
	Help students understand their mistakes			
	Open-ended prompts			
	Passive instruction before classroom			
	Reflection after classroom			
	Activities incorporating student engagement			
	Early engagement culture			
	General Flexibility			
	Be positive and adjustable			
	Give break to students			
	Adjusting assignment dates			
	Instructor flexibility with office hours			
	Flexible Policies			
	Explaining relation of everything to ILOs			
	Clear and concise rubrics and instructions			
	Explains why feedback was/wasn't implemented			
	To give better instructions for assignments			
	Instructor sending announcements and updates			
	Common themes slide			
	Doesn't simply listen to students			
	Responding generally, not specifically			
	Useful vs not useful			
	Varying assignments			
	Speed of implementation			
	Aligning activities/assessments with ILOs			
	Sufficient and timely feedback			

	Planned and organized system of learning			
	Considering assignment clashes with other courses			
	Giving students feedback			
Competence				
	Assessment of learning outcomes			
	Talking to students in and out of class			
	SPOTs			
Responsiveness				
	CATME - comments about instructor			
	General class reflections			
	Exit surveys			
	Mid-term evaluations			
	Ask/converse with students generally			
	SPOTs			

Table F3 – Melissa

Theoretical Element	First-cycle codes	RQ 1: What were the instructor's intentions with implementing care in the classroom?	RQ 2: How did the instructors end up enacting care in the classroom?	RQ 3: What do students describe to be helpful for their learning in what instructors have enacted?
Attentiveness				
	Walking around classroom			
	Close proximity to students			
	Emphasizing availability			
	Question slide			
	Starts each lesson - "how's things going"			
	Monitors team dynamics through CATME			
	Team Check-ins			
	Check-in Questions			
	Student interaction outside class			
Responsibility				
	Culturally/technologically relevant courses			
	Putting oneself in students' perspective			
	Building on prior knowledge			
	Prior Struggle Focus			
	Using inclusive examples			
	Suiting all learning styles			
	Active Learning			
	Facilitation			
	Students taking control of learning			
	Freedom to explore			

	Guide students, not handhold			
	Students do the work and learn from mistakes			
	Imparting lifelong student learning			
	Coach students in finding resources			
	Help students understand their mistakes			
	Open-ended prompts			
	Passive instruction before classroom			
	Reflection after classroom			
	Activities incorporating student engagement			
	Early engagement culture			
	General Flexibility			
	Be positive and adjustable			
	Give break to students			
	Adjusting assignment dates			
	Instructor flexibility with office hours			
	Flexible Policies			
	Explaining relation of everything to ILOs			
	Clear and concise rubrics and instructions			
	Explains why feedback was/wasn't implemented			
	To give better instructions for assignments			
	Instructor sending announcements and updates			
	Common themes slide			
	Doesn't simply listen to students			
	Responding generally, not specifically			
	Useful vs not useful			
	Varying assignments			
	Speed of implementation			
	Aligning activities/assessments with ILOs			
	Sufficient and timely feedback			

	Planned and organized system of learning			
	Considering assignment clashes with other courses			
	Giving students feedback			
Competence				
	Assessment of learning outcomes			
	Talking to students in and out of class			
	SPOTs			
Responsiveness				
	CATME - comments about instructor			
	General class reflections			
	Exit surveys			
	Mid-term evaluations			
	Ask/converse with students generally			
	SPOTs			