Assessing Core Skills: A Study of Teacher Attitudes, Self-Efficacy, and Collaboration

by

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ABSTRACT

Most grading done at high schools in the United States results in a single grade for a single class on a report card or transcript. A single number or letter lacks context and cannot effectively communicate a student's proficiency in content or skills. Altering or expanding a school's grading scheme may originate at the district or school level, but that is not where the work is done. A student's grade is often solely constructed by the individual teacher for the individual class. As such, any change to an assessment system must start with teachers. This action research project was designed to involve teachers in an innovation investigating the utility and efficacy of using a competency-based assessment system to assess the school's core skills of collaborating, communicating, observing, questioning, speculating and hypothesizing, evaluating, and applying knowledge. The complimentary study associated with the research questions analyzed faculty attitudes, self-efficacy, and collaboration during the innovation. Quantitative data was collected from a single survey taken at three different times throughout the study. Qualitative data was collected from two focus group interviews and seven individual interviews. The results of the study highlight the important role of student feedback, the tension between a latent versus active curriculum, the need for flexibility when working with faculty, and the promise of professional learning communities. Finally, implications for practice and suggestions for further study and next steps are discussed.

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CHAPTER 1

INTRODUCTION

For high school seniors, the most important part of the college application is the high school transcript. Other information, such as standardized test scores, essays, letters of recommendation, and additional materials may be requested by some colleges and universities, but the high school transcript is required. While there are numerous types of grading systems and transcripts formats, a majority of transcripts in the United States present a student's work in a single course with a single data point, such as a letter grade, a number on a 4.0 scale, or a number on a 100 point scale. The singular grade on a transcript is clear and concise.

What is also generally clear and concise is how transcripts are created and interpreted. The transcript is the communication tool between the sender of the information (teachers) and other stakeholders receiving the communication (students, parents, counselors, and college admissions officers). Baron (2000) found that teachers, students, parents, counselors and college admissions professionals interpreted the transcript in relative agreement. Higher grades meant greater achievement with lower grades meaning lower achievement. College admissions professionals also added that higher grades also meant greater potential of success at the college level. The lack of agreement between these groups was how those grades should be constructed. Baron found that most teachers constructed a student's grade predominately on tests and papers, with homework and participation taking a secondary role. Other "affective" work, such as effort, attendance, discussion, were low on their list. The other lack of agreement among these parties was the level of rigor and amount of time required for each class. Thus,

while there was a general agreement that an A is higher than a B, there was not an agreement on how that A or B was ultimately constructed, what work was required, or how it was earned.

The conclusions by Baron (2000) illustrate three major principles at the heart of this current study. First, the ultimate purpose of a transcript is to communicate achievement in a single class. Second, there is a tacit understanding of how transcripts are communicated and received. And third, it is the teacher who is the party communicating their personal and professional observation, interpretation, and assessment of the student's achievement. Baron highlighted that the transcript is a result of classroom teaching and assessment. If a school wishes to clarify or change what and how it communicates to students, parents, and colleges, then it does not start with the transcript document; rather, it starts with the teachers.

Wellington High School (a pseudonym) is an independent high school founded in the early 2000s. The school exhibits some progressive ideologies in that it utilizes Harkness tables instead of traditional desks, and it embraces discourse and discussion as the foundation of each academic course. A Harkness table is a large oval table that can generally seat up to 18 students. The table itself:

> physically unites the class, bringing teacher and students together to facilitate face-to-face interaction. It enforces the importance of listening and speaking with respect. It also demands of its students both preparation for class as well as sustained engagement during class … [and] encourages the patient and respectful use of the core skills. (Wellington Curriculum Guide, 2021, p. 4) [1]

[1] Curriculum Guide and Handbook name changed to pseudonym to provide anonymity.

Often associated with the Harkness table is a method of discourse often referred to as the Harkness method: "A student-centered, student-directed dialogue among equals where teachers become fellow participants in the search for truth, rather than the dispensers of it" (Wellington Curriculum Guide, 2021, p. 4). The school also touts that core skills they have identified—collaborate, communicate, observe, question, speculate, evaluate, and apply knowledge—are the primary purpose of a Wellington education (Wellington Curriculum Guide, 2021). See Appendix A for the Wellington Core Skills Statement that provides a description of each core skill in detail. In addition, the mission of the school purports that the school "promotes academic excellence and inspires students to be intellectually curious, to use their talents to the fullest, to be people of integrity, and to be contributors to society" (Wellington Handbook, 2020, p. 3).

When the high school was founded, it was decided that the grading scale would consist of a 100-point non-weighted system, ostensibly for simplicity in the college admissions process. All grading done at the high school serves to produce a single, numerical grade for each course on grade reports and transcripts. Yet, there is some question as to what the number signifies and communicates. Does it demonstrate a student's proficiency in the core skills? Does it emulate the values of the mission and vision statements? Does it illustrate a mastery of content knowledge? Is it trying to accomplish all three?

Three years ago, Wellington joined the Mastery Transcript Consortium (MTC) to investigate the possibility of better aligning the mission of the school with its grading practices. The consortium imagines (in general) a living, digital transcript that is less about the content of the class defined by a single number and more about the acquisition,

development, and mastery of the skills and values of the school (Mastery Transcript Consortium, 2019). In an attempt to reconnoiter the possibility of Wellington using such a transcript, as the Assistant Dean of College Counseling and Academic Advising, I conducted two small studies. The first involved interviewing Wellington administrators. They confirmed that Wellington is dedicated to teaching and assessing the core skills at the high school. In a sign of commitment, this sentiment was codified as identifying teaching and assessing core skills in the accreditation action plan for Wellington with the Southern Association of Independent Schools. With this commitment and direction, the second study surveyed and interviewed a portion of teachers at the high school as a Cycle 1 study for this dissertation. I found that, on the whole, teachers in all academic departments are not intentionally teaching, and therefore not assessing, the core skills. When asked whether the core skills are absent from their classroom, they could identify core skills latently resting in their teaching and some assessments. The interviews, however, identified a lack of intentionality of teaching and assessing the core skills. The present action research study built upon this information and studied seven teachers as they piloted the creation of a competency-based assessment (CBA) tool for the core skills at Wellington.

Situated Context

Wellington is a member of the National Association of Independent Schools, the Southern Association of Colleges and Schools, and the Southern Association of Independent Schools, among other organizations. It takes no federal or state money and therefore is not required to follow most state or federal education laws, mandates, or standards. Instead, Wellington is a mission and vision-driven school, funded by tuition

dollars, fundraising, and a growing endowment. Though the original lower and middle school were founded in 1950s, the high school was created in the early 2000s and began upon a relatively blank slate. The existing administration hired a dozen experienced educators from throughout the country, who then spent two years creating and designing the curriculum, facilities, daily schedule, and other considerations with few restrictions before the high school opened. The result was a combination of traditional educational conventions coupled with innovative and progressive practices.

The most visible progressive attributes of Wellington are the Harkness tables, the interactive curriculum, and the core skills. Within this broad view of collaborative education, several components of the curriculum were developed as integrated. For example, the science curriculum was designed as a two-year sequence where biology, chemistry, and physics were not taught in isolation, but integrated together in problem-based lessons. Likewise, the math curriculum was also designed as a two-year sequence where algebra, geometry, and trigonometry were blended together in an integrated classroom. Finally, Wellington has identified teaching the core skills as a priority over content so that students have competency to collaborate, communicate, observe, question, speculate, evaluate, and apply knowledge. These curricular innovations serve to satisfy the mission and vision of the school. Furthermore, the high school was designed as a "school community dedicated to following the highest principles with the greatest love, as characterized by moral integrity, intellectual vitality, discipline, compassion, humor, and joy" (Wellington Handbook, 2020, p. 3).

Despite these progressive and innovative traits, there were several traditional educational practices that were adopted. The school retained a department-centric

organizational structure to ease decision-making. They agreed to offer Advanced Placement courses in all subjects. It was also decided that the grading scale would consist of a 100-point non-weighted system, as previously mentioned. These decisions of offering courses identified with one department, offering AP courses, and using a standard 100-point unweighted scale were made for two reasons. According to David Cone (a pseudonym), a founding faculty member, these decisions offered parents some comfort and familiarity when sending their children to a new school, offered benchmarks for prospective parents to judge Wellington within the realm of the robust regional independent school culture, and made the college admissions process transparent and simple. (D. Cone, personal communication, September 19, 2019). This last factor cannot be overstated, for successful and impressive college admissions results were critical for the success of the school in the early years given the competitive nature of private schools in the area. As a result, all assessments done in the classroom serve to create a single number to simplify the communication between teachers, parents, and colleges.

Researcher Role

I arrived at Wellington in 2005 and have served many roles: teacher, Director of Summer Programs, advisor, coach, and parent of two Wellington graduates. Since 2015, I have been a college counselor and currently serve as the Assistant Dean of College Counseling and Academic Advising. Within the context of these roles, I observed that our assessments (grades and grade reports using a single number system) and communication of those assessments (transcripts) are disconnected with the values of the school as articulated in the Mission and Vision Statements, the core skills, and the Harkness methodology. While the transcript is an easy to read and decipherable

document for college admissions, it does not capture the Wellington experience or directly communicate whether the student is competent in one or more of the core skills. And, as the transcript is a reflection of the teaching and assessment in the classroom, to change the transcript requires working with teachers on what should be the foundation of the document.

Larger Context

Core Skills

Wellington is very clear about identifying what constitutes a core skill. According to the Wellington Curriculum Guide (2021), the core skills are collaboration, communication, observation, questioning, speculation, evaluation, and applying knowledge. In the literature, the term *skill* can be generally described in the coordination and use of a person's knowledge and abilities (Bloom, 1956; Kechagias, 2011). While the core skills at Wellington are well-defined, there is a lack of clarity as to who should teach them, how they should be taught, and how they should be assessed during a student's tenure at Wellington. This issue is not unique to Wellington, as many studies confirm widespread confusion in skills-based learning. First, there is disagreement as to how to define which skills are important and should be universally taught. Both educators and employers argue that there are hard skills (mental or physical skills specifically required for a job, like reading or soldering), and soft skills (people skills, applied skills). However, this dichotomy is problematic, for a particular same skill might be categorized differently depending upon the context in which the skill manifests itself (Kechagias, 2011; Schultz, 2008). Second, several terms are used interchangeably. They are sometimes called enabling, generic, core, essential, necessary, or 21st Century skills. Or,

terms may include key competencies (Binkley et al., 2005; Musa et al., 2012; Kechagias, 2011). What is clear is that there are universal skills generally required for employment regardless of the occupation, and these skills exist independent of content knowledge.

There is no universal agreement as to what constitutes a core skill or a collection of necessary skills, but many countries have created their own definitions and frameworks. For example, in the United States, the SCANS report (The Secretary's Commission on Achieving Necessary Skills, 1991; Kechagias, 2011) outlined three categories of skills:

- Basic skills like reading, writing, mathematics, listening, and speaking.
- Thinking skills such as making decisions, solving problems, seeing things in the mind's eye, knowing how to learn, thinking creatively, and reasoning.
- Personal qualities including responsibility, self-esteem, sociability, self-management, and integrity.

The expansive Measuring and Assessing Soft Skills (MASS) study (Kechagias, 2011), collected these types of definitions and frameworks from the European Union, the United States, Canada, England and Wales, and Australia. Taken together, they share the following commonalities:

- Basic/fundamental skills like reading, using numbers, and using technology.
- People-related skills such as communication, interpersonal, teamwork, and customer-service.
- Conceptual/thinking skills including collecting and organizing information, solving problems, planning and organizing, learning-to-learn skills, thinking innovatively and creatively, and systems thinking.

- Personal skills and attributes such as being responsible, resourceful, flexible, and able to manage own time, and having self-esteem.
- Skills related to the business world like innovation skills and enterprise skills.
- Skills related to the community like civic or citizenship knowledge and skills. (Kechagias, 2011, p. 35; NCVER, 2003)

According to the MASS report, "Apart from the basic/fundamental skills, all the others belong to the category of "soft skills" (Kechagias, 2011, p. 36). It is within this description that the Wellington core skills can be construed as soft skills. As such, a review of the literature for Wellington's core skills are found under the headings of soft skills.

The teaching of soft skills has increased in the last decades (Gallup/NWEA, 2018). This increase is in direct response to soft skills being more and more indispensable for success in the workplace. Employers are concerned that graduates have too much subject knowledge and specific skills for a specific career, while lacking soft skills (Gibb, 2014; Holt et al., 2010). Klaus (2010) found that only one-quarter of an employee's success at the workplace was due to technical, or hard skills. Rather, three-quarters of an employee's success was due to soft skills. This need to develop soft skills has not only led schools to supplement their curriculum, but has also led states to create programs to train workers in soft skills (Isaacs, 2016; Lazarus, 2013). Implementing instruction of soft skills at the high school level is thus deemed important and should permeate all levels of instruction. Sparrow (2018) noted that "this would create and support an institutional culture conveying the [skills] importance," and it would suggest "that these foundation

skills matter in multiple, if not all, settings" (pp. 557-558). Moreover, it is incumbent upon the faculty to model the skills' use in their classrooms.

The issue for educators is not necessarily the decision to implement soft skills into their curriculum. Rather, the issue is how soft skills should be assessed (Lazarus, 2013). According to the Gallup/NWEA (2018) poll, "only about one in 10 teachers say they [skills] are measured 'very well.' In fact, a majority of teachers say that the formal and informal assessments their school uses to gauge these skills measure them 'not at all' or only 'somewhat well'" (p. 8). Numerous reasons for this exist, including a lack of assessment methodology, a lack of a clear definition of a skill and how that skill should be manifested, and a lack of teacher training during their pre-service work (Gallup/NWEA, 2018; Nganga et al., 2015).

It is important, however, to assess skills, ability, and valued knowledge schools wish their students to learn, for assessment is teaching (Sparrow, 2018; Stassen et al., 2001; Wiggins & McTighe, 2005). Fortunately, a path forward exists in assessing soft skills. Gibb (2014), using Nicol and Macfarlane-Dick (2006) as a foundation, published a list of best practices for assessing soft skills. In particular, it balances the flexibility of identifying the soft skills for assessment with defining what an appropriate level of achievement is for the context in which the assessment occurs. Gibb (2014) provided the following best practices in developing assessment of soft skills:

- Connect soft skills explicitly with performance goals (educational or organizational), and clarify what good performance is;
- Be comprehensive;
- Balance both qualitative and quantitative measures;

- Concern [yourself] with both observable behavior and a learners perceptions of their behavior;
- Be fair, giving equal and objective treatment to all;
- [Be] technically sound, using valid and reliable observations, data and inferences, quality information;
- Provide feedback that is useful, and give opportunities to close the gap between current and desired performance;
- [Be] inclusive of self-assessment, reflection in learning;
- [Be] adaptable to new and evolving skill needs, provides information to teachers that can be used to help shape teaching;
- Encourage positive motivational beliefs and self-esteem around learning. (p. 458)

Assessment

The issue of grading—what to assess, how to assess, and how to communicate it—is not a new subject. One of the outcomes of the famous Committee of Ten in 1892 was to emphasize content over skills and institute a standardized curriculum (Kliebard, 1979). This sentiment was, in part, influenced by the successful and expanding industrial revolution. Influenced by Frederick Winslow Taylor and his *The Principles of Scientific Management* (1911), future theorists used Taylor's industrial model and modified it to their own educational theories (Maduakolam, 2016). As a result, education in the United States has become an assembly line of students being promoted year after year with heads filled with information deemed important by others. Within this industrial construct, students are assessed with an equally industrial model that seeks to differentiate the students. In fact, psychologist Max Meyer (who offered the world the A-F grading

system), bemoaned the fact that students were not assessed equally (a good thing), but also that there was not enough divergence within the grading schemes to differentiate each student (Meyer, 1908). As such, most grading systems were invented not to show proficiency, mastery, or competency, but to separate students.

After more than a century of standardized grading, its problems are well known. Kohn (1999) identified three major issues with traditional grading schemes, such as A-F letter grades, 4.0 overall grade point averages, 100-point scales, and the numerous other schemes. First, he suggested that grades tend to reduce interest in learning. The point of an assignment is the grade, not the content or skill. Second, it could reduce a student's attempt at a more challenging task. A student may choose a less challenging task if they know they could achieve a higher grade. And third, grades tend to reduce the quality of a student's thinking. By focusing on the achievement of a number or letter, critical thinking often is overlooked in the student's process of completing the task.

One alternative to traditional grading is competency-based education (CBE) and CBA. In direct contrast with traditional grading, CBE is an educational model that does not judge a student's competence in knowledge, skills, or abilities based upon the time spent in a classroom. According to Curry and Docherty (2017), CBE "focus[es] on endpoint behavioural competence and therefore on assessing direct indications of attained competence throughout the educational experience" (p. 62). According to Henri et al. (2017), common assessments for competency-based learning include online assessments, portfolios, and 360-degree evaluations that include feedback from the student themselves, their peers, and the instructor. There are many terms associated with this teaching and learning style, including standards-based, proficiency, and mastery learning (Bragger,

1987; Laska, 1985; White, 1979). Some researchers differentiate the term, however. For example, White (1979) argued that mastery is "a high degree of integration of the knowledge and skills required" (p. 7), proficiency occurs when a person "can perform [skills] readily, smoothly, without much conscious thought about the constituent steps," and competency "is the possession of sufficient appropriate skills and information to be able to function effectively in society" (p. 19). At a theoretical level, where the goal of education is to help students become proficient, competent, or master a subject or skill, the terms are interchangeable. The term competency will be used throughout this work, unless another term is specifically used by a cited author.

The modern era for focusing on competency rather than differential grading can be traced to 1963, when John Carroll's (1963) *Model of School Learning* and Robert Glaser's (1963) *Instructional Technology and the Measurement of Learning Outcomes* were published. Laska (1985) argued that within the classroom, the major difference between competency and mastery teaching and traditional teaching is time. Traditional teachers offer a limited, fixed amount of time, while mastery teachers allow a flexible time frame so that students can earn mastery over time. Perhaps the most well-known definition of mastery within education is offered by Wiggins (2013):

> Mastery is effective transfer of learning in authentic and worthy performance. Students have mastered a subject when they are fluent, even creative, in using their knowledge, skills, and understanding in key performance challenges and contexts at the heart of that subject, as measured against valid and high standards. (p. 13)

Recently, the MTC was created by a collection of schools to investigate both alternative assessment schemes as well as communicating those results to colleges. The MTC envisions an assessment scheme that treats students individually and does not use

any numerical (or letter) designations to differentiate performance or achievement. All standards are set by the individual institutions. There is no time limit to master the material or skill. Furthermore, the communication tool (transcript) should be digital, nuanced, and layered (Mastery Transcript Consortium, 2019).

Yet, the traditional grading schemes remain. The main criticism of CBA is the view that the purpose of grading is to indeed differentiate students rather than treating them individually within the realm of measuring competency. Through this lens, teachers only recognize talent, ability, or achievement. Traditional grading assumes that there are many students incapable of success, and one can graph the ability of a nation on a bell curve. Guskey (2011) noted, "if, on the other hand, your purpose as an educator is to *develop* talent, then you go about your work differently. First, you clarify what you want students to learn and be able to do. Then you do everything possible to ensure that all students learn those things well" (p. 17). Within this viewpoint, all students can gain a basic level of competency in the classroom. Another criticism of CBA is that in order for proficiency-based assessment to gain traction within education, there must be a standardized rubric, form, or guideline for all to follow. In response to this criticism, Bragger (1987) noted, "Since proficiency is not a method and is therefore in no way prescriptive, it allows us to be ourselves in the classrooms, to choose our own approaches, and to tailor what we do to our students and to ourselves" (p. 34).

Innovation

The current study was an action research project designed to investigate the utility and efficacy of using a CBA system of the core skills at Wellington High School. Entitled the Wellington High School Competency-Based Assessment study (WHSCBA), it

focused on the teachers, as they are the most important components of teaching and assessing the core skills within the classroom. Seven teachers were recruited to participate in the innovation from the full-time faculty of Wellington. The original goal of the innovation was for the participants to work together under the auspices of a professional learning community (PLC) to collaborate and create a school-wide CBA tool for evaluating the core skills at Wellington. However, as the following chapters will describe, the faculty altered the parameters of the study. Instead of creating a school-wide CBA tool for faculty to assess students, the participants created an assessment tool that was centered on students rather than faculty. It allowed students to self-reflect and self-evaluate their use of the core skills, and it provided the participants with evidence of the presence of and extent to which the core skills exist in their classrooms. This new, redesigned assessment tool was created and implemented in Fall 2021.

Research Questions

The study was designed as a mixed-methods research approach (Creswell, 2012). The quantitative portion included a single survey taken at three different times: a pre-survey before the collaboration began, a mid-survey after the assessment tool was created, and a post-survey after the assessment tool had been utilized in their classroom. The surveys were focused on teacher attitudes and self-efficacy related to teaching and assessing the core skills. The qualitative portion consisted of two focus group interviews (the first after the assessment tool was created and the second after it was implemented), as well as individual interviews with each participant at the end of the study. The following research questions guided this study:

1. How and to what extent does the implementation of WHSCBA affect teachers' attitudes toward using competency-based assessment of core skills?
2. How and to what extent does the implementation of WHSCBA affect teachers' self-efficacy towards teaching and assessing core skills?
3. What factors contribute to or impede the formation of a school-wide, competency-based assessment tool by a collaborative, interdepartmental team of faculty at an independent school?

The following chapters provide information on the extant literature guiding this study (Chapter 2), the methodology of the innovation and data collection (Chapter 3), the results from the collected data (Chapter 4), and a discussion of those results (Chapter 5).

CHAPTER 2

LITERATURE REVIEW

This study utilizes several interrelated theoretical and conceptual perspectives. Teacher attitudes and self-efficacy are at the center of the study. Teacher attitudes are discussed within the context of the *theory of planned behavior* (TPB). In TPB, the attitudes a participant holds has a direct impact upon the eventual success of the behavior. Teacher self-efficacy is discussed through Bandura's (1997) *self-efficacy theory.* These two theories are both social cognitive theories and as such share many similarities. Ajzen (1991) noted that within TPB, the concept of perceived behavioral control "is most compatible with Bandura's concept of perceived self-efficacy" (p. 184). Guerin et al. (2019) wrote that self-efficacy and perceived behavioral control are often used interchangeably in research. Overall, the study is rooted in constructivist ideology as an operating world view. The subjective nature of skills-based learning, the structure of independent schools, and the discussion-based curriculum where knowledge is exchanged and constructed are all inherently constructivist in nature. The study also uses two additional concepts related to the innovation. First, the goal to create an assessment tool, and thus the planning and teaching associated with the assessment is rooted in the tenets of competency-based education (CBE) and competency-based assessment (CBA) as an alternative to traditional teaching and grading methods. Second, during the intervention, the study participants worked together as a professional learning community (PLC). It is in the PLC that the assessment tool was created. In addition, the PLC offered a crucible for teachers to share and receive feedback on their own perceptions of their attitudes, self-efficacy, knowledge and skills related to the innovation (Akiba et al., 2019).

Theoretical Perspectives

Theory of Planned Behavior

Teacher attitudes are discussed within the context of TPB. TPB was first articulated by Icek Ajzen and grew out of the theory of reasoned action with the addition of perceived behavioral control (Ajzen, 1991; Ajzen & Fishbein, 1980). As described by Ajzen (2001), within the context of TPB, "People act in accordance with their intentions and perceptions of control over the behavior while intentions in turn are influenced by attitudes toward the behavior, subjective norms, and perception of behavioral control" (p. 43). TPB argues that a strong determinant of human behavior is directly related to the intention of the person conducting the behavior. Ajzen (1991) described intention as a single term that is "assumed to capture the motivational factors that influence a behavior; they are indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior" (p. 181). The greater the intention, the greater the result.

Ajzen (1991) argued that within TPB there are "three conceptionally independent determinants of intention" (p. 188). These are behavioral beliefs (attitudes), normative beliefs (subjective norms) and control beliefs (perceived behavioral control). Fishbein and Ajzen (2010) noted that beliefs come "from a variety of sources, such as personal experience, formal education, radio, newspapers, the Internet and other media, and interactions with friends and family" (p. 20).

The first aspect of TPB centers on attitudes which is the focus of RQ1. This attitude is psychological in nature, and it is often observed in a binary fashion as it is either favorable-unfavorable "good-bad, harmful-beneficial, pleasant-unpleasant, and

likeable-dislikable" (Ajzen, 2001, p. 28). Gagne (1985) suggested that there are three aspects of an attitude: the cognitive, the affective, and the behavioral. The cognitive aspect relates to the idea of the action. As the name suggests, the idea is constructed by the participant through thought, previous experience, and the senses. The affective aspect relates to the feelings associated with the action. Finally, the behavioral aspect relates to the predisposition of the participant towards the action. The second determinant in TPB is the subjective norm which is the external, or social, pressure to perform the behavior or not. A participant will ostensibly perform better if they have external pressure on them. The most prominent feature of TPB is the third aspect, perceived behavior control, or the perceived ease or difficulty of engaging the action. Ajzen (1991) stated that not only does perceived behavioral control influence a participant's intention, but it also has a direct relationship to the behavior, as well. If a participant perceives that they have the knowledge, skills and ability to engage in the act, they have a higher probability of succeeding. Likewise, if a participant perceives that they lack the knowledge, skills and ability to engage in the act, they have a lower probability for success. This concept may appear to have a connection to the adage that past experience leads to future success, but Ajzen (1991) warned:

> Past behavior is best treated not as a measure of habit but as a reflection of all factors that determine the behavior of interest. The correlation between past and later behavior is an indication of the behavior's stability or reliability, and it represents the ceiling for a theory's predictive validity. (p. 203)

To summarize, participants with positive attitudes toward the action, a positive perception of subjective norms, and a perception of control over the knowledge, skills, and ability related to the action, will most likely have a higher intention to act. This

intention will allow them to engage the behavior (Ajzen, 1991; Burns et al., 2018). And, as previously stated, the greater the intention, the greater the result. It is important to note that TPB is not static, but rather fluid in its influence of additional research. For example, some studies have removed subjective norms as an aspect of TPB and instead replaced them with knowledge (Guerin et al., 2019).

The ultimate goal of TPB is not simply to predict future human behavior, but to explain it. It is here that the utility of TPB in education is shown. Guerin et al. (2019) described that, "Specifically, teachers attitude and intention have been shown to play a role, either as barriers or facilitators, to the successful uptake on new practices" (p. 550). Teachers can view these new practices in a favorable or unfavorable light, pleasant or unpleasant, important or unimportant. According to TPB, this attitude can have a direct effect upon their ability to engage in new behaviors (Voet & DeWever, 2020; Ajzen & Driver, 1991). As a result, TPB can help explain why Wellington faculty may have barriers to implementing WHSCBA, or it may explain why they may successfully integrate it into their classrooms.

Numerous studies have confirmed the validity of TPB in education. Using data from extant studies, Ajzen (1991) was able to use existing data to test TPB. He found that, "The combination of intentions and perceive behavioral control permitted significant prediction of behavior in each case, and that many of the multiple correlations were of substantial magnitude" (p. 187). Moreover, he confirmed that attitudes were significant in predicting the intentions of the participants. Kitiashvili (2014) found that teachers generally have a positive attitude towards various assessment methods. The study by Kitashvili was conducted in discussion-based classrooms similar to Wellington and its

use of Harkness methodology. MacFarlane and Woolfson (2013) found that teacher perception of the expectation of their principal predicted behavior, supporting Ajzen's description of subjective norms. Furthermore, teachers who had attended more trainings had more positive feelings about the innovation, and teachers with more experience were more reticent to engage in the innovation.

Self-Efficacy Theory

Teacher self-efficacy is discussed within the context of self-efficacy theory. Self-efficacy is described by Bandura (1997) as a person's belief in their ability to organize and execute behaviors required to produce desired results. He differentiated two specific expectations related to the action. Outcome expectancy relates to the idea that the person's evaluation is that a specific behavior will result in a specific outcome. Self-efficacy, by contrast, relates to the idea that the person is convinced that they have the ability to carry out the behavior (Bandura, 1977). In short, Bandura (1977) summarized the theory, saying that "given appropriate skills and adequate incentives, however, efficacy expectations are a major determinant of people's choice of activities, how much effort they will expend, and of how long they will sustain effort in dealing with stressful situations" (p. 194). Petrovich (2004) added that "self-efficacy theory is synthetic and integrative, encompassing physiological, cognitive, interpersonal, and societal dimensions" (p. 430).

Bandura (1977, 1997) identified four main sources of experiences that influence the creation of self-efficacy. The first influence of creating self-efficacy is through vicarious experiences that are developed through observation, especially observation of valued role models. If people value the desired outcome, if the activity is personally satisfying, and if

the behavior reinforces self-worth, they are more likely to engage in the behavior modeled by others. Petrovich (2004) offered several ways to enhance learning through vicarious experiences:

- Make conscious use of the vicarious learning that is taking place daily throughout the educational experience.
- Provide a variety of role models, ensuring that students have many opportunities to learn from one another, from slightly more advanced peers, from recent graduates, and from working professionals in the field.
- Attend to the instructional element of vicarious learning and create opportunities for self-modeling. (pp. 438-39)

The second influence of creating self-efficacy is through enactive mastery with repetition and practice of the skill that can be done via overcoming challenges and persistent effort. If a failure or difficulty is ascribed to lack of effort or challenging circumstances (but not ability), then self-efficacy is increased. If failure or difficulty is attributed to low ability, self-efficacy is decreased. Petrovich (2004) offered several ways to enhance learning through enactive mastery:

- Provide frequent opportunities for students to practice interventions taught, both in and out of the classroom.
- Provide continuous feedback that selectively focuses on success.
- Structure skill training by breaking the skills down into identifiable subparts and by enhancing student awareness of strategies used.
- Attend carefully to the students' subjective appraisal of each practice application as well as to self-appraisals of past performances.

- Attend to the trajectory of learning so that students experience the overcoming of difficulties over time through sustained effort. (p. 438)

The third influence of creating self-efficacy is through verbal persuasion through encouragement and support from respected others. Encouraging a person with supportive words can increase self-efficacy, while doubting the ability of the person can lower it, especially if the verbal feedback is given by a trusted source. Petrovich (2004) suggested that educators should "provide role models who students can trust and respect and ensure that the verbal support given is explicit, realistic, and accurate" (p. 439).

The final influence of creating self-efficacy is through internal control of one's emotional and physiological arousal. The key to this source of self-efficacy is not necessarily the actual emotional and physiological state, but rather the interpretation of the state (Bandura, 1997; Petrovich, 2004). Petrovich (2004) suggested that educators should "help students become aware of their own levels of physiological and affective states in the face of stressful professional challenges and after related negative appraisals of personal efficacy" (p. 439-40).

Teacher self-efficacy, while simplistic in terminology, is complicated and has incredible influence in a classroom and a school. A teacher's self-efficacy about student performance, lesson planning, curriculum, assessment, classroom management, and interpersonal relationships not only affects their own performance, but influences student achievement as well (de la Torre Cruz & Arias, 2007; Guskey & Passaro, 1994). According to Henson et al. (2001), a teacher's self-efficacy plays an important role in the negotiation between a teacher's skills, knowledge, and abilities. De la Torre Cruz and Arias (2007) stated that if teachers do not believe in the value of their work, such as the

idea that their effort will bear little fruit (i.e., low self-efficacy), then they would be less willing to try new lessons, assessments, or strategies. However, if teachers believed that their work was of high value, then they would be more prone to experiment with new methodologies. As a result, self-efficacy theory can help explain any correlation between a successful or unsuccessful implementation of WHSCBA related to the faculty's self-efficacy associated with the core skills.

Studies have offered support for self-efficacy theory and provide insight as to developing and supporting self-efficacy in teachers. Woolfolk-Hoy (2000) noted that self-efficacy is related to teacher support. Pre-service teachers showed an increase in self-efficacy after teacher training, but it decreased during the first year of teaching, ostensibly due to a lack of support. De la Torre Cruz and Arias (2007) studied potential teachers and compared them with in-service teachers in areas such as personal teaching efficacy and general classroom efficacy. The in-service teachers scored higher on self-efficacy, perhaps due to Bandura's "experiences of control." Petrovich (2004) identified key components of increasing self-efficacy and "enacting mastery," such as persistence, experience, role models, practice, and the ability to break down tasks to smaller components.

Other Relevant Literature

Constructivism

The Harkness table and related methodology described in Chapter 1 takes a central role in the educational experience of a Wellington High School student and was a key consideration in designing assessment tools. While teachers are ever present in classrooms, they are not the sole source of information. Rather, teachers set the academic

and social tone of the classroom, provide instructional material, and mentor students through both the content and skill development. Through collaboration and discussion around the Harkness table, students take the assigned readings, the classroom experience, teacher input, and the insights from their peers to construct their own knowledge. Within this context, a Wellington education is grounded in *constructivism*.

Constructivism originated in the writings of Piaget (1976) and Vygotsky (1978). When first developed, the terms *trial constructivism* and *personal constructivism* were used interchangeably. The term trial referred to active learning that was done via trial and error, and the term personal denotated that knowledge and the meaning of that knowledge was done by the student (von Glaserfeld, 1990). Together, these terms embody constructivism, which refers to education where students "actively constructing knowledge rather than passively receiving it from the environment" (Liu et al., 2010, p. 63). The definition of constructivism, therefore, "is carried in its name" according to Cobern (1993). With a nod to epistemological fallibilism, constructivism does not advocate a single, empirical truth. Learning is the process of deriving meaning and interpretation from previous knowledge and experience. There cannot be a direct transmission of knowledge to all students, since all students have different levels of knowledge and past experiences (Cobern, 1993).

Two specific theories of constructivism have direct relationship to Harkness methodology and instruction. Originating from Vygotsky's social learning theory, *social constructivism* asserts that learning is the interpretation of information grounded in a student's social world (Liu et al., 2010). The learner, teacher, and the material have a social relationship, and the meaning of that material and the pace for student

improvement in skill development will be different for each student. Salomon and Perkins (1998) termed this interaction "social mediation" between learner and subject. In a Harkness classroom, while all students read the same assigned material, they will each interpret it differently and have a different understanding of its content and meaning. The role of the teacher in this context is to work with students as individuals, both in terms of content and skill development, and provide them formative assessments to provide feedback. Yet, social constructivism only addresses the relationship between the individual student and the material.

By contrast, *communal constructivism* stresses the communal creation of knowledge drawing on real life situations more so than the theoretical (Leask & Younie, 2001). According to Holmes et al. (2001), "Communal constructivism [is] an approach to learning in which students not only construct their own knowledge (constructivism) as a result of interacting with their environment (social constructivism), but are also actively engaged in the process of constructing knowledge for their learning community" (p. 1). While the terms social and communal share some similarities, Leask and Younie (2001) asserted that the term communal adds the "connotations of inclusiveness, activity and collaborative working for the common good which the word 'social' does not have" (p. 119). The idea of collaboration towards a greater understanding for the classroom is a major advantage of a Harkness discussion. While students are most certainly developing skills and content individually through their own social mediation, they are also working collaboratively to find, if possible, a common understanding of the content. It is within this context that teachers play a paramount role in providing the environment for this type of learning to occur as well as provide feedback on student achievement and growth.

Several studies support teaching and learning within a constructivist world view. In South Korea, Kim (2005) demonstrated the validity and efficacy of education grounded in constructivism. The results showed that constructivist teaching was superior to traditional teaching methods in terms of student achievement and that students preferred the constructivist teaching methods and experience more than traditional methodology. It did not, however, show that constructivist teaching was effective in student self-concept, although there was some indication of success in terms of increased motivation and lowering of anxiety (Kim, 2005). A study by Hursen and Ertac (2015) indicated that students preferred and enjoyed the constructivist methodology. Students, overall, appreciated the chance to express their opinions and interact with others in the class, but also be able to take the classroom knowledge and speak with their friends outside of class (Hursen & Ertac, 2015). Constructivism does not just make students feel better about their learning, but rather provides important skill development for after high school (Ah-Nam & Osman, 2017). Specifically, it allows students a period of time for discovery and problem-solving, followed by time to communicate ideas, and it allows students to develop the process of design. The results show that the constructivist model is superior to traditional teaching in terms of students achievement. Furthermore, the Hursen and Ertac (2015) study identified that constructivism assists the development of 21st century skills, such high productivity skills that exhibit the ability to "prioritize, plan, and manage for results, effective use of real-world tools, and ability to produce relevant and high-quality products" (Ah-Nam & Osman, 2017, p. 12).

Watson (2001) identified several attributes of teachers that embrace and exhibit constructivism. As previously mentioned, since knowledge is constructed, the teacher-

student relationship changes between a traditional and social constructivist classroom. Basing her observations on Brooks and Brooks (1993), Watson (2001) identified (among others):

- Teachers using constructivist principles encourage and accept student autonomy and initiative.
- Constructivist teachers allow student responses to drive lessons, shift instructional strategies, and alter content.
- Constructivist teachers inquire about students' understandings of concepts before sharing their own understanding of those concepts.
- Constructivist teachers encourage students to engage in dialogue both with the teacher and with each other.
- Constructivist teachers provide time for students to construct relationships and create metaphors. (p. 140-145)

Within this context, the teacher becomes less of as the dispenser of knowledge but rather a facilitator of a student's self-construction of knowledge. Teachers take on the role of a knowledge mentor. According to Watson (2001), "A general framework of social constructivism can promote effective teaching in pupils of all ages and levels of ability and across the curriculum" (p. 146).

Constructivism purports that true learning occurs when students actively construct their own knowledge. Several studies demonstrate that constructivist teaching and learning is more effective than traditional learning (Kim, 2005; Hursen & Ertac, 2015; Ah-Nam & Osman, 2017; Leask & Younie, 2001). Constructivism has significant implications for the profession. First, constructivism contends that students are active

learners and not passive recipients of information. Second, it changes the role of the teacher in the classroom. Teachers are there to facilitate student learning (as constructed by the student) rather than to be the sole source of information. Third, it is a useful foundational theory in the 21st century as it can be easily integrated with modern technology. Moreover, constructivism develops 21st century skills (Ah-Nam & Osman, 2017; Leask & Younie, 2001).

Competency-Based Education

As mentioned in Chapter 1, CBE is an educational model that focuses on identifying endpoint competencies, and then teaching and assessing students throughout their educational experience to achieve competency in the knowledge, skills, and abilities established in those competencies (Curry & Docherty, 2017). Studies have shown that CBE is both valid and successful. At the elementary school level, grading is essentially done with competency in mind. First-grade students are not normally given a letter grade for coloring within the lines. Rather, they get narrative feedback from the instructor, and they are able to color again without consequence. However, given the nature of standardized education that exists today (such as No Child Left Behind and its various incarnations), assessment has become standardized, as well. Cayton (2015) studied the use of rubrics within elementary grade classrooms in North Carolina. This hybrid of standardization (the rubric) within the realm of proficiency grading was deemed successful. The results showed that all parties liked the clarity, that rubrics made grading more uniform, and that it helped the students and parents understand the student's performance.

At the college level, The University of Singapore instituted a gradeless semester for first time freshmen (McMorran et al., 2017). In an effort to alleviate the stress of transitioning to college and focus on the learning instead of the grade, the university offered a gradeless, proficiency-based semester. The university had experience with this practice, as they had eliminated grades for medical students years prior. McMorran et al. (2017) concluded that a majority of students favored gradeless assessment. The most common comment was that it alleviated stress during the transition semester to college. However, concerns were raised about students taking the classes seriously without graded assessments, as well as confusion surrounding the policy. The most commonly cited concern was how gradeless courses would be viewed by graduate schools and future employers (McMorran et al., 2017).

The confusion of implementation is echoed by the experience of the state of Maine following the passing of LD1422, which mandated a proficiency-based diploma system. Entitled *An Act to Prepare Maine People for the Future Economy*, LD1422 was passed in 2012 with the mandate that all schools create and implement a system by 2018. As of 2014, the state was still hopeful, noting "Benefits include improved student engagement, greater attention to development of robust interventions systems and more deliberate collective and collaborative professional work" (Stump & Silvernail, 2014, p. 1). Yet, by 2018, the state asked for a delay in implementation of the program, as schools and districts were unready or unable to comply with the 2018 deadline. The crux of the matter was that most teachers, administrators, and politicians knew little about proficiency-based assessment, and they adopted an existing grading scheme entitled "Proficiency-Based Assessment" that utilized a 1-4 grading platform. By using numbers

instead of narrative comments describing proficiency, the result was “an indecipherable mishmash of numbers and indicators” on high school transcripts (Miller, 2018, para. 7). These varied and confusing transcripts proved perplexing to colleges, students, teachers, and parents. As a result, most districts, in response to understandable concerns by the stakeholders, “returned to reporting traditional grades and GPA on the high school transcript in addition to proficiency scores” (Miller, 2018, para. 7). This anecdote suggests that there may not be an inherent issue with the theory of competency-based grading, but rather with its implementation.

Professional Learning Communities

The field of education has long lauded the constructivist nature of collaborative, participatory learning stemming from the works of Dewey (1916) and Vygotsky (1978). This includes learning of all types, such as adult teachers learning new and innovative methods and techniques to help their students. One method of collaborative learning for teachers is the creation of PLCs. Indeed, research has shown that “consensus exists among educational policy makers, leaders, and practitioners that the implementation of PLCs is one of the nation’s most potent organizational strategies for achieving substantive PK-12 instructional improvement and critical student learning outcomes” (Woodland, 2016, p. 505). Dufour et al. (2005) concur, stating, “The use of PLCs is the best, least expensive, most professionally rewarding way to improve schools” (p. 128).

There is no single definition or model of PLCs. Rather, the term PLC is used for a wide variety of systems where professionals collaborate together to improve their workplace (Woodland, 2016; Yendol-Hoppey & Dana, 2010). Dufour et al. (2016) described a PLC as “an ongoing process in which educators work collaboratively in

recurring cycles of collective inquiry and action research to achieve better results for the students they serve" (p. 10). PLCs are especially useful in the field of education. Bryk et al. (2010) noted, "In an arena such as education, where market mechanisms are weak and where hierarchical command and control are not possible, networks provide a plausible alternative for productively organizing the diverse expertise needed to solve complex educational problems" (p. 6). Good PLCs analyze data, whether it be student, teacher, or institutional, and develop well-researched responses to existing and potential problems (Ronfeldt et al., 2015). However, the ultimate purpose of PLCs is centered on student success. Vescio et al. (2008) wrote that successful and effective PLCs are data-driven and operate toward student improvement with a clear and persistent focus on that goal. PLCs operate in an iterative nature, asking fundamental questions at the center of education: What should students learn and be able to accomplish? How will we know when that is accomplished? and What actions should educators take (or cease) to assist both students who struggle with learning and those who are more successful? (Dufour et al., 2008; Wiggins & McTighe, 2005; Woodland, 2016).

While models and structures of PLCs vary, researchers have identified attributes of successful PLCs. Wenger and Wenger-Traynor (2015) suggested that an effective PLC has three elements. First, the domain of a PLC contributes to and supports group identity through a shared focus and interest. Second, the community of a PLC provides motivation through intentional discussion as well as an opportunity to work for and with colleagues. Third, the practice of a PLC demonstrates that participants have a shared repertoire of knowledge and abilities.

Hadar and Brody (2010) wrote that there are three layers of any successful PLC that illustrates both a linear sequence of events as well as their benefits. First, once teachers begin collaborating with each other, it moves them out of isolation in their own departments and classrooms. PLCs provide a safe space for interaction that includes dialogue and work. This collaboration leads to the second layer. This layer is demonstrated with increased research and improved teaching which, in turn, leads to the third layer, which is demonstrated by increased teacher self-efficacy. And, as shown earlier, a teacher's increased self-efficacy improves student learning.

While many schools have groups of teachers who meet regularly, there is a difference between simply meeting and engaging in an active PLC. It is not just the meeting together that improves student learning: rather, doing the work of a PLC leads to increased achievement. Supovitz (2002) found that forming teams alone did not, on average, improve student learning. Rather, it was the in-depth, on-going, collaborative work that led to increases in student achievement. This collaborative work included common preparation, co-teaching, multiple and reciprocal observations, and even sharing students. Gallimore et al. (2009) concurred, citing large-scale evidence of PLC models and activities at the team level of instruction. Ronfeldt et al. (2015) attempted to explain the success of PLCs and posited that it improves both the individualistic and collectivist mechanisms of knowledge. From an individualist perspective, a single teacher will learn much about different content and methods by working with their colleagues which, in turn, will improve their teaching and thus student achievement. From a collectivist perspective, when a cohesive group (such as a department) collaborates, it provides a tacit learning experience from the entire community, whether or not an individual teacher

changes their behaviors. Finally, Patton and Parker (2017) identified several positive outcomes from PLC use, which includes increased professional development support, increased emotional support, an opportunity to test out new strategies and methods, increased professional capacity, increased collegiality and trust among colleagues, and a more unified faculty.

From Literature to Research

The innovation of WHSCBA rests on a foundation of constructivism, core skills, and CBE. A Wellington education is generally grounded in constructivism where students actively construct their own knowledge rather than accept knowledge passively (Piaget, 1976; Vygotsky, 1978). Students construct information based upon their own social experience, as well as collectively constructing knowledge around the Harkness table with their peers. Literature on teaching the core skills highlight the importance of skill development and proficiency for future education and employment (Gallup/NWEA, 2018; Lazarus, 2013). The literature on assessment and CBE provides an alternative to the common practice of assessment that results in an ill-defined number or letter for an individual course (Curry & Docherty, 2017).

The study of WHSCBA rests on a foundation of the theory of planned behavior, self-efficacy theory, and literature on professional learning communities. The theory of planned behavior states that a person's attitude, intention, and perceived control over the behavior can influence that behavior (Ajzen, 2001). Thus, studying teacher attitudes can help explain why Wellington faculty may successfully use WHSCBA in their classrooms, or as to why they may have barriers to implementing WHSCBA. Self-efficacy theory argues that a person's self-efficacy towards a behavior is a significant determinant of the

level of effort and duration that person will exert towards that behavior (Bandura, 1977). Thus, studying teacher self-efficacy can help explain successful or unsuccessful implementation of WHSCBA in their classroom. And finally, the literature related to PLCs describe them as a group of educators work collaboratively through iterative cycles of data collection, analysis, change, and reflection (Dufour et al., 2016). Both the study and innovation occurred within the context of the PLC.

CHAPTER 3

METHOD

The Wellington High School competency-based assessment (WHSCBA) study was a small-scale innovation conducted under an *action research* (AR) design. Mertler (2017) defined AR as:

> any systematic inquiry conducted by teachers, administrators, counselors, or others with a vested interest in the teaching and learning process or environment for the purpose of gathering information about how their particular schools operate, how they teach, and how their students learn. (p. 4)

Specifically, the study used a *practical action research* design. This method is designed for an educator to study a specific action in their own area of practice where they have direct control over making change within that environment (Creswell, 2012). The intent of AR is action and change within one's own control. One important aspect of AR is the cyclical nature of the research and action. While there are several models of AR (such as Stringer's AR Interacting Spiral, Bachman's AR Spiral, or Riel's AR Model described in Mertler, 2017), they all share common characteristics. AR involves planning, action, reflection, and future change based upon that study. In turn, the study becomes the basis for future planning, action, reflection, and change. If done properly, AR becomes embedded in practice and is not something done on occasion; rather, it is an ongoing process of professional development and improvement of the educational environment under the researchers control. I sought answers to the following questions in this study:

1. How and to what extent does the implementation of WHSCBA affect teachers' attitudes toward using competency-based assessment of core skills?

2. How and to what extent does the implementation of WHSCBA affect teachers' self-efficacy towards teaching and assessing core skills?
3. What factors contribute to or impede the formation of a school-wide, competency-based assessment tool by a collaborative, inter-departmental team of faculty at an independent school?

Setting

Wellington is a private, independent preK-12 school in the southern region of the United States. Wellington High School had an enrollment of 472 students in 2021-22. Of the 111 incoming freshman, 71 attended Wellington Middle School. The other 40 students came to Wellington from approximately 30 middle schools throughout the state. Each classroom except mathematics and certain art classrooms has a Harkness table in it (Wellington Curriculum Guide, 2021). This is a large, single, oval table that replaces traditional desks. The Harkness table size limits class enrollment to 18 students plus one instructor. The average class size is 15 students, and class sizes generally range from 11-18 students. Approximately 21% of high school students identify as students of color, and approximately 21% of high school students receive some financial aid. Tuition and fees for the high school were $34,930 per annum for 2021-2022.

The high school curriculum can be categorized into two large groupings. The courses during the 9th and 10th grade years are generally prescribed for students in all departments in order to satisfy proficiency and exposure requirements for graduation. During these years, students are differentiated by placement tests and prior performance into different levels of a particular course (e.g., Chinese 1 or Chinese 2; Algebra II or Honors Algebra II). As a result, these classes are composed of students of predominately

the same grade at the same level of ability. It is in these two years where the core skills are ostensibly introduced and developed. During 11th and 12th grades, students are free to choose their courses with the assistance of their college counselor to ensure they meet graduation requirements and college admissions criteria. Unlike many schools that set teacher schedules first, Wellington uses student registration to create the master schedule. Wellington offers 22 Advanced Placement courses that require prerequisites of previous coursework or a demonstration of achievement. As a result, most upper division electives consist of self-selecting upperclassmen.

Participants

During the 2021-22 academic school year, Wellington High School had 43 full-time academic faculty; additionally, some college counselors, administrators, fitness, and technology personnel teach one or two courses each per year. Most years, faculty teach more than one grade level and more than one specific course title.

The innovation was scaffolded throughout 2020 and 2021 as part of a larger project of aligning the K-12 curriculum at Wellington. In November 2020, the entire K-12 faculty met at the department level to identify areas of cohesion for a unified curriculum. The core skills were identified as one of those areas of cohesion. Using this work as a foundation, I began recruitment of teachers in spring of 2021 to participate in this small-scale innovation. All full-time high school faculty were invited to participate in the study following a presentation at a faculty meeting. Seven faculty members agreed to participate. This group comprised approximately 16% of all full-time faculty and represented all academic departments. Each participant was randomly assigned a number

to maintain anonymity, and they are referred to as Participant 1 or Participant 2 and so on throughout the study. See Table 1 for participant demographics.

Table 1

Participant Demographics

Characteristic	Frequency	Percent of Total Participants
Department		
English	1	14
Mathematics	2	29
Science	1	14
History	1	14
World Language	1	14
Art	1	14
Gender		
Male	4	57
Female	3	43
Age		
30-39	2	29
40-49	3	43
50-59	1	14
60-69	1	14
Education level		
Masters (MA, MFA, MBA, MAT, MEd)	5	71
Doctorate (EdD, PhD)	2	29
Total years of experience teaching		
10-12	3	43
13+	4	57
Total years of experience teaching at Wellington		
4-6	2	29
7-9	2	29
10-12	1	14
13+	2	29
Grades taught during study		
9th	6	86
10th	6	86
11th	7	100
12th	6	86
Formal training in CBE/CBA?		
Yes	2	29
No	5	71
Formal training in core skills		
Yes	3	43
No	4	57

Note. $N = 7$.

While student success in the acquisition and development of the core skills over time was the ultimate goal of the innovation, students were not an explicit part of what was measured in the study. Rather, this study focused on teacher attitudes and self-efficacy in working together in developing teaching and assessment strategies related to the core skills. Thus, students were not recruited as participants in the study. However, while data was not gathered from the students, students nevertheless were an important consideration for the participants, as the assessment tools they created asked for feedback directly from the students.

Role of the Researcher

While Wellington middle and lower schools were founded in the 1950s, the high school is relatively new, opening in the early 2000s. I arrived at Wellington High School in 2005. As the new school was built from the ground up, faculty have been asked to serve numerous roles during its foundation and growth. I have been a History and Seminar teacher, Academic Advisor, Grade Level Sponsor (Dean), Baseball Coach, Summer School Director, and parent of two alumni. Currently, I serve as the Assistant Dean of College Counseling and Academic Advising. As a result, I have been broadly involved in the student and faculty experience at Wellington, and I was in a good position to help move the school forward in developing their curriculum.

I personally recruited the participants and informed them of the full context of the study prior to their commitment. Before the first meeting, I conducted the pre-survey with the participants related to the research questions. After the initial data was collected, I facilitated teacher familiarization on competency-based education (CBE), competency-based assessment (CBA), and the core skills. This included setting up an online course

page on Wells (a pseudonym), Wellington's learning management system. The page included primers on CBA and CBE, previous work done at Wellington related to the core skills, and sample CBA/CBE assessment tools. I directly observed the faculty's work on developing the assessment rubric and associated teaching and assessment tools, though I did not participate in the decision-making. At the end of this phase, I conducted a mid-point survey and a focus group interview. During the implementation phase, I held multiple professional learning community (PLC) meetings with the participants to observe usage of the assessment tool as well as facilitate collaborative discussion. After the innovation phase was completed, I conducted a post-survey, a second focus group interview, and seven individual interviews. I describe each of these elements in detail below.

Innovation and Timeline

This study examined a group of teachers piloting the creation of an assessment tool for the core skills at Wellington. The WHSCBA emerged from the goal of better aligning the school mission with the curriculum and grading practices. The mission of the school purports that the school "promotes academic excellence and inspires students to be intellectually curious, to use their talents to the fullest, to be people of integrity, and to be contributors to society" (Wellington Handbook, 2020). In addition, the school literature describes Wellington as a skills-based school that uses Harkness tables for student-centered, discussion-based learning. However, I have found instruction, assessments and grading practices to be more generally traditional in nature, including content-oriented assessments, teacher-centered instruction, and grading that culminates in an often ill-defined single number that may lack context. The ultimate goal was to use lessons from

WHSCBA to help begin to bridge the gap between what Wellington says (innovative, skills-based curriculum) and what is currently practiced (traditional instruction and assessments).

In Phase 1 of the innovation, the recruited participants received CBA and CBE orientation in September 2021. They also were introduced to previous work done in defining the core skills articulated in the Wellington Curriculum Guide: collaborate, communicate, observe, question, speculate, evaluate, and apply knowledge (Wellington Curriculum Guide, 2021). In Phase 2, this group of seven participants collaborated as a PLC. They met three times to discuss and create an assessment tool (rubric) to evaluate student competency in the core skills.

In Phase 3, the participating faculty implemented the assessment tool. The faculty was allowed 30 days to implement the tool in order to allow sufficient time to evaluate the core skills on several occasions and use in multiple classes at multiple grade levels. Throughout this implementation, there were several opportunities for collaboration among the participants. First, there was a dedicated "classroom" on Wells for the instructors to post questions in real time. Second, a Google doc folder was created to share assessment tools. Third, there were regular meetings for the participants to discuss the implementation, collaborate on improving the innovation, and address challenges.

Table 2

Implementation Timeline

Timeframe	Actions	Procedures
April 8-22, 2021	Recruitment	• Obtained Administration approval for the study. • Presented at Faculty Meeting informing teachers of the study
September 1-8, 2021	Phase 1 – Pre-Survey and Orientation	• Consent forms distributed and collected • Sent confirmation email • Participants met for Orientation on the study, CBA/CBE, and core skills
September 9-October 1, 2021	Phase 2 – Creation of the assessment tool	• Participants met bi-weekly for formal collaboration in their PLC • Participants collaborated informally via email, google docs, and the study group page on Wells • Participants created a flexible one-page assessment tool
October 2-November 10, 2021	Phase 3 – Implementation of the assessment tool	• Participants met bi-weekly for formal collaboration in their PLC • Participants collaborated informally via email, google docs, and the study group page on Wells • Participants utilized the assessment tool in their classrooms • Participants shared their assessment tools via google docs

Research Design

The study consisted of a mixed-methods design and both quantitative and qualitative data were gathered. Creswell (2012) suggested that mixed methods is ideal "when you have both quantitative and qualitative data and both types of data, together, provide a better understanding of your research problem than either type by itself" (p.

535). Plano Clark and Creswell (2015) added that, "By combining quantitative and qualitative data, . . . the study can develop a more complete picture of the social phenomena that includes both trends and individual experiences" (p. 386). A mixed-methods approach can be especially useful when either quantitative or qualitative data alone is insufficient to fully address the research questions (Plano Clark & Creswell, 2015; Creswell, 2012). Specifically, the study combined elements of *convergent parallel mixed methods* and *sequential explanatory mixed methods* designs. A convergent parallel mixed methods approach seeks to comprehensively understand the issue at hand through concurrent use of both qualitative and quantitative data, viewing each of these data sets as equal, and merging them both during the analysis and interpretation phase of the study (Plano Clark & Creswell, 2015). A sequential explanatory mixed methods design seeks to explain the reasoning behind the quantitative data through qualitative data collection. It is sequential in that the qualitative portion of the study is informed by the quantitative data, rendering the qualitative data as more important in the analysis and interpretation phase of the study (Plano Clark & Creswell, 2015). The current study was a hybrid of the two in that the quantitative pre-survey data helped inform qualitative data collection, but the final analysis and interpretation were analyzed concurrently and treated both qualitative and quantitative data equally.

Instruments and Data Sources

The instruments for collecting quantitative data centered on a single survey taken pre-, mid-, and post-implementation. All participants took each survey via Qualtrics. The purpose of collecting the same survey taken at three different times was to not only view change over time, but also to show the potential impact of each phase of the innovation.

Participants took the survey prior to working on the innovation to gather information on their pre-innovation attitudes and self-efficacy towards CBA. They took it again after collaborating together to create the assessment tool. They took it a third and final time after implementing the tool. This survey was written by me, but it was inspired by existing surveys by Chen et al. (2001), Bandura (2006), Ajzen (2013), King (2017), Tschannen-Moran and Hoy (2001), and Ryan and Cox (2016). The survey consisted of three sections. The first section (Q1-Q9) consisted of procedural and demographic information provided in Table 1. The second section (Q10-23) consisted of general questions related to attitudes, self-efficacy, and collaboration. The third section (Q24-44) consisted of questions specifically related to Wellington's core skills. All non-demographic questions utilized a parallel structure of responses, a 1-5 Likert scale of 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither disagree or agree*, 4 = *agree*, and 5 = *strongly agree.* See Appendix B for the survey.

The methods for collecting qualitative data were focus group interviews and semi-structured individual interviews with all participants. Individual interviews are important when "we cannot observe behavior, feelings, or how people interpret the way around them" (Merriam, 2009, p. 88). The interviews followed the seven stages of an interview inquiry as established by Brinkmann and Kvale (2015): thematizing, designing, interviewing, transcribing, analyzing, verifying, reporting. Using sequential explanatory mixed methods design, the quantitative material from the pre-survey informed and instructed the creation of the interview questions. The questions were not static. Rather, the semi-structured nature of the interview allowed me to follow up on specific avenues of interest not explicitly listed in the individual interview protocol. The interviews lasted

between 10 and 31 minutes in length. See Appendix C for the individual interview protocol.

The two focus group interviews occurred with all participants within the setting of their PLC. The focus group interviews lasted between 18 and 20 minutes in length. According to Patton (2002), "Unlike a series of one-on-one interviews, in a focus group participants get to hear each other's responses and to make the additional comments beyond their own original responses as they hear what other people have to say" (p. 386). Morgan (1997) concurred, stating, "The comparative advantage of focus groups as an interview technique lies in their ability to observe interaction on a topic" (p. 10). In general, a focus group consists of a collection of "homogenous strangers," relies on a relatively structured interview with high moderator involvement, and has 6-10 participants (Morgan, 1992, 1997). See Appendix D for the focus group interview protocol. All focus group and individual interviews were conducted on Wellington's campus. Each interview was digitally recorded on three redundant platforms: Zoom, Otter.ai, and Voice Memos. Each interview was then initially transcribed to text using Otter.ai software. I then reviewed the digital recording and transcript twice to verify accuracy of the final transcript.

All three data sources (quantitative surveys, focus group interviews, and individual interviews) addressed, in some part, all three research questions. In addition, I collected the assessment tool artifacts the participants created during the innovation. This included each participant's individual version of the assessment tool they posted to the Google document for collaboration. These materials, coupled with the existing

Wellington document that identifies and describes the core skills, served to triangulate the quantitative and qualitive data. Appendix A and Appendix E contain these artifacts.

Table 3

Data Collection Inventory

Timeframe	Actions	Procedures
September 1-8, 2021	Phase 1 – Pre-Survey and Orientation	• Pre-survey completed
September 9-October 1, 2021	Phase 2 – Creation of the assessment tool	• Mid-survey completed • First Focus Group Interview conducted
October 2-November 10, 2021	Phase 3 – Implementation of the assessment tool	• Post-survey completed • Second Focus Group Interview conducted
November 15-19, 2021	Individual Interviews	• Each participant interviewed individually

Data Analysis

Data was explored through a correlation design. Specifically, an *explanatory research design* was the framework for both qualitative and quantitative data and analysis. Creswell (2012) described this as a design "in which the researcher is interested in the extent to which two variables (or more) co-vary, that is, where changes in one variable are reflected in changes in the other" (p. 340). This study had multiple variables. The independent variable was the CBA material, while the dependent variables were the pre-, mid- and post-innovation quantitative data. The qualitative data provided a deeper, richer context to the quantitative data. The study was, in part, designed to see if there is a change in attitudes and self-efficacy by using the CBA materials.

Quantitative data was collected via Qualtrics and transferred to the Statistical Package for Social Studies (SPSS) version 26 for Mac and Microsoft Excel for Mac

version 16.57. I first analyzed the data in SPSS, specifically looking at descriptive statistics results and internal consistency reliability via Cronbach's alpha. Given the small number of participants (7) and their low percentage to the overall number of faculty (43), only descriptive statistics were used, namely the mean and standard deviation of the survey results. I did further data analysis in Excel primarily for ease of organizing the data by research question and theme. Within the sequential explanatory mixed method, the descriptive analysis informed the focus group interview as well as the personal interviews. Within the convergent parallel mixed method, I used the descriptive data from SPSS and Excel to analyze any change in attitudes or self-efficacy from one survey to another, most notably comparing pre-, mid-, and post- survey data (Salkind & Frey, 2019).

Qualitative data was analyzed using *qualitative content analysis*. The advantage of using this method is threefold: to reduce data, to be systematic, and to be flexible (Schreier, 2014). Specifically, *directed content analysis* was used. This method uses an existing theoretical perspective or theory as its foundation of study, such as the theory of planned behavior (TPB) or self-efficacy theory. However, the goal is not to defend or refute those theories. Rather, the goal is to use it as a construct to conduct the study, though the new information gained from the study can contradict or enhance the theory (Hsieh & Shannon, 2005). This method involves identifying research questions, collecting data, building a coding frame, and coding the material (Schreier, 2014).

After the interviews were recorded, transcribed, reviewed, reread, and transferred to Microsoft Word for Mac version 16.57, I began to analyze the qualitative data. Coding was initially done using the qualitative analysis software HyperResearch version 4.5.3 for

Mac. I ultimately used four rounds of coding using four different coding methods. First, I organized the data by using *structural coding*. According to Saldaña (2016), "Structural Coding applies a content-based or conceptual phrase representing a topic of inquiry to a segment of data that relates to a specific research question used to frame the interview" (p. 98). This coding technique organized my data by research question, whether the statement was a question or answer, and what major topic was addressed. Representative examples of codes identified using structural coding were Attitudes: Questions regarding CBA, and Collaboration: Questions regarding Change.

My second round of coding used *pattern coding*. Saldaña (2016) described pattern coding as "a way of grouping those summaries into a smaller number of categories, themes, or concepts. Pattern codes are explanatory or inferential codes, ones that identify an emergent theme, configuration, or explanation" (p. 236). In this round, I also connected the codes to the RQ's as an organizational tool. Representative examples of codes identified while using pattern coding include codes such as Attitudes: Bottom Up, Attitudes: Evidence, Self-Efficacy: Assessment, and Collaboration: Time.

The first two rounds of coding focused on organization. The last two rounds of coding moved away from structure towards action, perspective, and values. My third round of coding utilized *process coding*. According to Saldaña (2016), process coding "uses gerunds ("-ing" words) exclusively to connote action in the data" (p. 111). Saldaña goes on to discuss how actions can highlight issues such as prejudice, trustworthiness, values, and self-identity. Representative examples of codes identified using process coding include empowering, isolating, visualizing, hearing, and collaborating.

My last round of coding utilized *evaluation coding*. According to Saldaña (2016), evaluation coding "assign[s] judgments about the merit, worth, or significance of programs or policy" (p. 140). This notion of providing judgement can come from the participants themselves or from the researcher evaluating the data as a whole, such as analyzing a focus group interview. In this round, I labeled statements on the topics as positive or negative in conjunction with the binary good and bad evaluations of attitudes in TPB (Ajzen, 2001). Representative examples of codes identified using evaluation coding include Positive: Student Involvement, Positive: Freedom, Negative: Administrative Priorities, and Negative: Assessment Tool. I found this to be an appropriate way to conclude the coding process. I then moved from coding to developing themes. I printed out the codes with their accompanying text and moved from a digital format using qualitative software to a paper-based system. I organized the data by research question, located coding similarities, and combined that material through multiple observations and analyses, ultimately ending with the themes and subthemes found in Chapter 4. The themes and subthemes were analyzed and organized using a taxonomy approach. The codes, themes, and subthemes were grouped without any implicit or inferred hierarchy. While related, they do not build upon each other, nor is one theme or subtheme more important than another (Saldaña, 2016).

Validity and Reliability

Validity and reliability are important in establishing trustworthiness of the data collection and analysis in a study. Validity is defined by Gay et al. (2006) as "the degree to which a test measures what it is supposed to measure, and, consequently, permits appropriate interpretations of the scores" (p. 134). Gay et al. (2006) also defined

reliability as “The degree to which a test consistently measures whatever it is measuring” (p. 139). Both validity and reliability were ensured by several methods. The major source of validity and reliability of the study was the triangulation of the data. Denzin (1978) identified four types of data triangulation: the use of multiple methods, the use of multiple sources of data, the use of multiple investigators, and the use of multiple theories. In this study, I utilized several methods: surveys, individual interviews, focus group interviews, and artifacts related to the innovation. I collected data from multiple sources: artifacts and observations taken at different times, interviews with multiple people at different times, and surveys from different people at different times. It was also grounded in multiple theories, most prominently the TPB and self-efficacy theory.

Qualitative Data

Specific methods of ensuring validity and reliability with the qualitative data included member checks, reflexivity, intentions of a rich, thick description to improve transferability, and a sufficient and detailed audit trail (Merriam, 2009). A member check entails providing initial data and findings to the participants to verify the accuracy of the information. For this study, I provided general survey results to the group during PLC meetings and sent quotations to participants to verify their authenticity and meaning. Reflexivity is the idea of reflecting on the researchers position within the study for bias and assumptions (Merriam, 2009; Lincoln & Guba, 2000). I engaged in reflexivity in two ways. At a broad level, I designed the innovation to be conducted free from my biases and assumptions. The faculty were free to create any assessment tool they wished. At a narrower level, I kept detailed journal notes of all meetings to highlight both what was said and how I interpreted the sayings. This allowed me to identify and recenter my own

biases and assumptions before the next interaction with the participants. A thick, rich description of the study components are an important component for both trustworthiness and transferability (Creswell, 2012). This includes a detailed description of the researcher, participants, setting, instruments, data collection, and data analysis procedures. These details articulated in this dissertation should provide current and future readers with enough detailed information to evaluate whether this study is relatable and transferable to their practice. And finally, there exists an extensive audit trail of the data collected for this study. This not only includes data in my possession, such as the raw survey data, participant recordings and transcripts, journal notes, and artifacts, but it also includes the material contained within this dissertation such as the procedures, questions, and results.

Quantitative Data

Specific methods for ensuring the validity and accuracy of the quantitative data include content validity and internal consistency reliability. Content validity relates to the extent the survey instrument is generally representative of the content it seeks to measure (Creswell, 2012; Ivankova, 2015). One method of assessing content validity is to utilize existing survey instruments from experts in the field. This study utilized several studies as the foundation for the survey used in WHSCBA. For RQ1, the survey asked questions related to teacher attitudes that were adapted from Ajzen (2013) and King (2017). For RQ2, the survey asked questions related to self-efficacy that were adapted from Bandura (2006), Chen et al. (2001), and Tschannen-Moran and Hoy (2001). For RQ3, questions related to faculty collaboration were taken from these aforementioned surveys, as well. More generally, questions related to CBE and CBA were adapted from Ryan and Cox

(2016). Each of these existing surveys provide its own validity and reliability data. Internal consistency reliability is the idea that a survey instrument is accurately and consistently measuring what it seeks to measure over time (Creswell, 2012; Ivankova, 2015). After the participants took each survey, I conducted a Cronbach's alpha test in SPSS for each of the three topics related to the three research questions, attitudes, self-efficacy, and faculty collaboration. The data is reported in Table 4. Results from a Cronbach's alpha test is reported as a number between 0-1. The higher the score, the greater the indication of reliability. In general, scores of .70 and higher are considered acceptable (Tavakol & Dennick, 2011). For WHBCA, the RQ topics of Attitudes and self-efficacy met the .70 acceptability threshold, ranging from .766 to .950. The results for RQ3, however, were much lower, ranging from .488 to .762. Tavako and Dennick (2011) state that there are two reasons that may explain a low Cronbach's alpha number: too few questions, and weak interrelatedness of the questions. The four questions related to faculty collaboration are guilty of both. First, there are only four questions related to faculty collaboration within the survey as compared to the number related to attitudes (14) and self-efficacy (19). Second, the questions listed as collaboration questions originated from either the attitudes or self-efficacy categories. They were not designed as questions for faculty collaboration; rather, they were written as questions to assess attitudes or self-efficacy that were related to faculty collaboration.

Table 4

Survey Cronbach's Alpha Internal Consistency Reliability

RQ Topic	Survey Questions	Survey	Coefficient Alpha Estimate of Reliability
Attitudes	10,11,14,16,17,19,21,24,27,30, 33,36,39,42	Pre-	.766
		Mid-	.908
		Post-	.916
Self-Efficacy	13,15,18,20,22,25,26,28,29,31, 32,34,35,37,38,40,41,43,44	Pre-	.887
		Mid-	.898
		Post-	.950
Collaboration	19,20,21,22	Pre-	.667
		Mid-	.488
		Post-	.762

Note. $N = 7$.

CHAPTER 4

RESULTS

In Chapter 4, I provide the results of the data collected during the Wellington High School competency-based assessment (WHSCBA) action research study. Quantitative data was collected from seven participants of the study through pre-, mid-, and post-surveys. Qualitative data was collected through two focus group interviews and individual interviews with all participants. This chapter presents the findings from the analysis to answer the three research questions. Supporting evidence for the analysis and findings are provided through participant quotations from the qualitative data, statistical analysis of the quantitative data, and innovation artifacts.

Research Question 1: Attitudes

Quantitative data from the pre-, mid-, and post-surveys, qualitative data from the focus group and individual interviews, and innovation artifacts were collected to address the first Research Question: *How and to what extent does the implementation of WHSCBA affect teachers' attitudes toward using competency-based assessment of core skills?* Three major themes and several subthemes surfaced from the data: *student feedback*, the *role of the core skills*, and *assessment* (see Table 5).

Table 5

Themes, Subthemes, and Assertions for RQ1

Themes and Subthemes	Assertions
Student feedback 1. Student self-evaluation 2. Teacher feedback	Participants felt that student feedback provides valuable self-reflection opportunities for students and important instructional feedback to faculty.
Role of the core skills 1. Student perception 2. Teacher perception 3. Embedded curriculum	The core skills are present in the participants' classroom and are embedded into the curriculum.
Assessment 1. Formative assessment 2. Assessment tool	The faculty advocated assessing the core skills through formative assessment that is informal, ungraded, flexible, and longitudinal.

As described in Chapter 3, the original intent of the study was for the faculty to create a competency-based assessment (CBA) tool that they could use to evaluate student competency in the seven Wellington core skills. The document was envisioned as a teacher-centered document to ostensibly assist in the instruction and assessment of the core skills in their classrooms. In addition, the faculty were encouraged to be creative and experimental with their document. Early in Phase 1 of WHSCBA, the faculty rejected the idea of a teacher-centered document, choosing instead to create an assessment tool that was a student-centered, student self-reflection document. See Appendix E for the assessment tool. Their decision was, in part, following competency-based education (CBE) principles by centering on student self-reflection and student feedback. But, participants indicated that a large part of that decision was to ask the students for feedback on how and to what extent the core skills already existed in their classrooms. They felt strongly that this was an important first step before they might analyze or

change their own instructional and assessment practices. Thus, the direct answer to RQ1 is a resounding "no." Creating and implementing the assessment tool within WHSCBA did not affect their attitudes towards CBA of the core skills.

This development led to a major change to the design of the innovation in the remaining phases. While the innovation was centered on the assessment tool that participants created, the research questions guiding this study are focused on attitudes, self-efficacy, and faculty collaboration. As such, their decision to alter the original concept of the assessment did not fundamentally alter the structure of the study. In fact, it provided important data related to attitudes and self-efficacy. In what follows, I present findings regarding faculty attitudes relevant to the presence, teaching, and assessment of the core skills in the participants classroom.

Student Feedback

The theme of *student feedback* emerged from the qualitative data as a major theme in the study and directly reflects the decision of the faculty to create a student-centered reflection document rather than a teacher-centered grading rubric. Student feedback provides valuable self-reflection opportunities for students and instructional feedback to faculty. Participants reported that the student self-reflections (described below) provided them insight as to the presence and extent the core skills exist in their classroom. The assessment tool also provided valuable feedback to the faculty regarding the perceptions students have regarding the teaching and assessing of the core skills. Two subthemes of the theme *student feedback*, *student self-evaluation* and *teacher feedback*, also arose from the data. The theme and subthemes were identified when analyzing the focus group interviews, individual interviews, and the innovation artifacts.

As mentioned above, in contrast to creating a teacher-centered rubric to assess the students, the faculty created a tool for students to provide evidence of the core skills in the participants' classroom. The assessment tool asked students to rate themselves on a scale from 1-5 according to their "level of performance." See Appendix E for the assessment tool. Faculty used the tool as a study within this study, seeking feedback from the students as to how and to what extent the core skills are present in their classrooms. Qualitative information related to student performance was gathered from various responses to focus group and individual interview questions. Participant 3 stated that, "I sort of saw that [tool] as a first step. How do students see the core skills?" The faculty identified one of the benefits of using the tool as a student reflective document was the collaborative experience between faculty and students. Participant 7 described the experience as "student-partnered." During the focus group interview, Participant 1 described how they used the tool as a foundation for students to "evaluate their own understanding." That teacher then had a conversation with the students to "debrief about what the evidence was after I'd read their answers" related to the feedback provided by the students. A majority of the faculty mentioned in the focus group interviews that they held conversations with their classes after collecting student forms.

Subtheme: Student Self-evaluation

The first subtheme of *student self-evaluation* reflects the nature of the assessment tool created by the participants. For some faculty, it was an opportunity for the students to process their own learning. Participant 2 stated, "I think it made them think about it. I had them process through, 'what are the core skills and what do they mean?' I think that

processing for them was helpful." For some faculty, it was an insight into how the students perceive where the core skills fit into the classroom. Participant 3 noted:

> What those numbers meant was less powerful to me than the fact that they cited evidence. [It] is a reflection on their own learning and gave me a sense of how students perceive the core skills… I think it's a great enhancement for student learning to have them. I think this is one of the best activities that I've done to help them reflect on their learning.

Other faculty appreciated a deeper sense of engagement in the educational process. Participant 5 shared:

> The reflection on the core skills in some ways deepened their experience because they were able to reflect on their experience that day in class and think more deeply about why they were successful or less successful than they might want it to be.

Many faculty shared that there was a heightened level of awareness of the core skills for the students as a result of using the tool. Participant 1 stated in a focus group:

> I think it makes them more self-aware and conscious of what a skill actually is and how to apply their knowledge of that skill. And I think there was a greater understanding as a result of using the core skills rubric, and asking for evidence…. They have better understanding, or a broader understanding, of what those skills look like.

Participant 1 continued during the individual interview, "It shifts it again from teacher-directed description to student-directed evaluation or reflection and that is empowering for the students, which is why I like that model. Because the goal is to make them self-sufficient."

Subtheme: Teacher Feedback

The second subtheme of *teacher feedback* highlights the reciprocity of student self-evaluation. Not only does the assessment tool allow students to reflect on their own level of competency or use of a particular core skill, but it provides important feedback to

the instructor, namely the teacher's perception of a lesson versus the reality of the student experience. This reciprocity is grounded in the notion that the assessment tool was, in the words of Participant 7, "student-partnered." The faculty identified two important types of feedback. First, some faculty discussed affirming or positive feedback that acknowledged the existence and use of the core skills in a teacher's lesson or unit. This feedback helped to corroborate teacher intent and perceptions with student reality. Participant 5 said that their lessons were "validated by some of the student responses." Participant 6 added, "Student feedback made me more aware of what the students think about the core skills. Or, how they view their abilities in the core skills."

Conversely, several faculty discussed non-affirming or negative feedback from students. The faculty shared in the focus groups the idea that when a student scored themselves low on one or more skills, it might communicate an issue with the instruction or class dynamic more than the student's lack of competency or engagement. Participant 3 noted, "Those numbers might scare us a little bit, to know those things, but to me as a teacher, it would be interesting." During the first focus group interview, the group was asked specifically about student feedback and the role students played (either directly or theoretically) in the creation of the document. Most responses addressed were classroom oriented. For example, Participant 5 stated, "I see the questioning in that activity, but they're not feeling it. And so that means that they're not learning it. I mean, they're not experiencing that." Likewise, Participant 3 noted:

> We can let students tell us how they use them and suggest evidence. I hope to be surprised by some of that; let's let them fill in the blanks for us; I think the idea of a student-driven response model was huge and pivotal for my thinking.

Some teachers considered student feedback on a broader level. Participant 7 said the faculty can, "[use] the students' perspective, their point of view, to help us see things that we can't see. This makes the whole school's mission of core skills better."

Role of the Core Skills

The theme of the *role of the core skills* emerged from both the quantitative and qualitative data as a significant subject the faculty wished to address. As the participants were uncomfortable and disagreed with the conclusions of my Cycle 1 study reported in Chapter 1 (that faculty at Wellington are not intentionally teaching or assessing the core skills), they created the assessment tool to provide feedback and evidence of the core skills in their classrooms. The analysis of the *role of the core skills* identified three subthemes: *student perception*, *teacher perception*, and an *embedded curriculum*. The theme and related subthemes were identified when analyzing the quantitative surveys, focus group interviews, individual interviews, and the innovation artifacts.

Subtheme: Student Perception

The first subtheme of *student perception* focuses on what the faculty learned about how students perceive the core skills through the use of the assessment tool. Qualitative information related to *student perception* was gathered from various responses to focus group and individual interview questions. Generally speaking, faculty found value in student feedback. Participant 5 spoke to this when they said, "It's like my student perception of the importance of the core skills changed." First, faculty identified a broad and interpretive range of student perceptions of the role of the core skills that the faculty had not considered. Some faculty offered that simply using the tool highlighted student awareness of the presence and use of the core skills. For example, Participant 1

noted, “I think mine [assessment tool] probably broadened their interpretation of what questioning means.” The teacher then supported that with an anecdote from their class. Students were reading a literary piece that was written by a woman about the status of women in society. A male student in that class reflected, “I applied my own male perspective thinking to that." In contrast to learning lessons in a classroom and applying knowledge to the world outside of the classroom, this student highlighted that in a Harkness classroom, students apply their own knowledge to the material as well.

Second, faculty identified areas of confusion and inconsistency in how students perceive the core skills in the classroom. Since the phrasing of the assessment tool included “level of performance” in the rating scale, some students scored themselves lower when they were not able to “perform.” For example, Participant 5 shared that some students evaluated themselves low on the skill of collaboration and communication because, as one student noted, “I didn't think I communicated very well because my group never really let me speak.” During the focus group interview, two teachers provided anecdotes about students who ranked themselves lower on the skill of questioning because they did not speak in class. They were confused with the material and did not feel comfortable speaking out loud to the class. On the self-evaluation document, they commented that they had numerous questions they needed answered in order to participate in the discussion. In other words, the students were utilizing the skill of questioning, but they scored themselves lower because they did not verbally ask the question to the class or instructor. Participant 2 then summarized a common theme in the focus group interviews in that “some [students] still don't understand what they [the core skills] are.”

Subtheme: Teacher Perception

The second subtheme of *teacher perception* addresses how the faculty themselves perceive the core skills in their classroom through the use of the assessment tool. The qualitative data was collected from the responses to two individual interview questions. The first asked if the core skills were integrated into the participant's classroom, and the second asked if their view of the core skills was altered throughout the study. The most prominent perception was that the core skills exist in their classroom and that they did not alter their classroom instruction in response to using the assessment tool. Participant 1 shared that they did not change their instruction at all "Because I placed a high value on them in the first place" and that the core skills are "absolutely integrated and have been." Participant 3, conversely, was waiting for feedback from the students first to evaluate their own teaching, noting, "I have not gotten as far in the process to change, really, the core of my teaching practices." Participant 4 stated, "I used them [assessment tools] with activities that have already been created. So, I didn't create something to be core skill oriented." It is interesting to note that while no faculty changed their instruction in response to the study or use of the assessment tool, they provided different reasons for not doing so. Some faculty did not change because they were confident with the presence and level of the core skills in their classroom. Others, however, were less confident, and they anticipated future changes that would need to be made, but they were relying on student feedback to inform that change.

The participants also noted that using the rubric raised their consciousness of the core skills in their classrooms. Participant 3 stated:

> I guess I have become more conscious of them [the core skills]. [They] feel more important, because I'm thinking about them consciously. The consciousness of them makes them feel a little bit more important.

Participant 5 concurred, noting, "It gave me a new view of importance of the core skills, not just in a practical sense, but also in a reflective capacity." Similarly, some faculty also identified an increase in clarity as to the role the core skills play in their classroom. Participant 2 was able to glean which skills "are the ones that we primarily use" in their particular department. Participant 5 also highlighted the relationship between the core skills and content development. They said, "I think I know they're necessary for [students] to access the levels of learning and performance that I expect from them." Participant 7 responded to this type of sentiment, identifying the core skills as necessary and organic:

> [I] really like the organic nature in which these core skills are taught at Wellington. [Students] are not beat over the head with this this almost robotic [method]. How can I better sneak the core skills in an almost like Jedi mind trick them into understanding these skills?

Finally, Participant 3 summarized the perception of the faculty and the purpose of the study when they offered, "it is at the core of our identity."

The descriptive statistics presented in Table 6 report the survey responses related to this subtheme of *teacher perception*. As stated in Chapter 3, the faculty took a single quantitative survey three times: a pre-survey before the study began, a mid-survey after they had created the assessment tool, and a post-survey after they had used the assessment tool in their classroom. The non-demographic survey questions used a 5 point Likert scale of 1 = *strongly disagree*, 2 = *disagree*, 3 = *neither disagree or agree*, 4 = *agree*, and 5 = *strongly agree.* Due to the small sample size ($N = 7$), only the descriptive

statistics of mean and standard deviation were analyzed. The data indicates that faculty believe it is important for them to help increase student competency in the core skills while balancing teaching content and core skills. Faculty did not feel strongly, however, that student grades reflect competency in the core skills.

Table 6

Survey Response Descriptive Statistics (Teacher Perception)

Question	Pre-M	Pre-SD	Mid-M	Mid-SD	Post-M	Post-SD
Q11: Student grades are a valid reflection of their competency in the core skills.	3.143	.690	3.286	.488	3.571	.535
Q14: I think it is important to balance teaching content and the core skills in my classes.	4.143	.690	3.857	.690	4.143	.690
Q17: I believe it is important for all teachers to help students increase competency in the core skills.	4.286	.756	4.429	.535	4.143	1.069
I believe that the skill of X is directly related to my subject matter. (Q24,Q27,Q30,Q33,Q36,Q39,Q42)	4.510	.539	4.531	.538	4.490	.576

At least 6 of 7 faculty members responded “agree” “or strongly agree” when asked if they believe it is important for all teachers to help students increase competency in the core skills (Q17). Table 6 shows that the mean average fluctuated from 4.286 on the pre-survey, to a high of 4.429 on the mid-survey, and ending on 4.143 on the post survey. When asked if they thought it is important to balance teaching content and the core skills in their classes (Q14), 6 out of 7 faculty responded with “agree” or “strongly agree” on the pre- and post-surveys, while 5 out of 7 chose “agree” or “strongly agree” on the mid-survey. Table 6 shows that the mean average fluctuated from 4.143 on the pre-survey, dipping to 3.857 on the mid-survey, and returning to 4.143 on the post-

survey. In contrast to the relatively strong response to the previous two questions: on the pre-survey, 4 out of 7 of the participants responded “neither agree nor disagree” when asked whether or not student grades reflected competency in the core skills (Q11). The mean average of 3.143 was the second lowest mean response on the entire survey. The mean average rose slightly to 3.286 on the mid-survey, and it increased further on the post-survey to 3.571. Unlike the oscillating nature of Q14 and Q17, Q11 increased in a linear fashion, increasing 13.6% between the pre- and post-surveys.

The last question in Table 6 reflects a compilation and a mean of means of questions on the survey directly related to each core skill. For example, Q24 reads, “I believe that the skill of *collaboration* is directly related to my subject matter.” Q27 reads, “I believe that the skill of *communication* is directly related to my subject matter,” and so forth covering all seven core skills. Faculty predominately chose “agree” or “strongly agree” when asked if each core skill was relevant to their departmental and course subject matter. Their beliefs remained fairly consistent throughout the study, beginning at 4.510 mean average on the pre-survey, to 4.531 on the mid-survey, and 4.490 on the post survey. There was a range of responses for each skill. For example, the mean average for the pre-, mid-, and post-survey questions related to the skill of collaborating (4.334) scored .428 lower than the skill of applying knowledge (4.762).

Subtheme: Embedded Curriculum

The third subtheme of *embedded curriculum* focuses on the faculty perception of where the core skills reside in the Wellington curriculum. The participants discussed, based upon their own experience and student feedback, that the core skills are embedded and ever present in the curriculum. Some teachers were initially unsure as to the presence

or consistent instruction of the core skills in their classrooms, as the core skills were not a specific goal in their lesson planning. Participant 5 summarized this finding during a focus group interview when they told the group:

> It was clear that we need [students] to give us some feedback about how these skills are already happening right now. We all said at the beginning, 'we're doing these, we just aren't assessing them.' I don't know if that's true.

Instead of terms such as "instruction," "taught," or "assessed," the participants used the terms "integrated" and "embedded" to describe the presence of the core skills. In response to the individual interview question regarding the extent to which the core skills are integrated in the participant's classroom, Participant 2 stated, "I do think they're integrated into the classroom and structure. By doing the assessment it seemed to be clear that the assessment told me 'Oh, we have been doing that.'" Participant 3 simply stated, "I do see them as an integrated part of instruction." Participant 7 offered:

> I like the word integrated because what I found when I shed light on them [through] the survey, although the kids may not have been familiar with the core skills themselves, and I couldn't necessarily list them, they realized that, 'oh, wait a second. I do these.' They are embedded in the DNA of the class.

The same participant highlighted, however, the difference between a skill being present and being taught. When discussing the role of the core skills at Wellington, Participant 7 used the phrase "shadow curriculum" when referring to the core skills.

Conversely, some teachers spoke from the perspective that they intentionally include the core skills in their classroom lessons. For example, Participant 6 stated that "I'm already doing the core skills in my class" and that creating lessons with the core skills was "ingrained in us. Through our department head." Participant 4 agreed and said, "I create my classes to integrate them. I'm mindful of that to begin with. This [activity]

didn't really change that." Other teachers took a more nuanced approach beyond stating whether or not the core skills exist in the classroom. For example, Participant 5 mentioned, "They're already integrated. I think they're integrated to different degrees. And, different core skills are integrated in some assignments more than others."

Assessment

The theme of *assessment* arose from the qualitative and quantitative data and addressed both theoretical and practical approaches to assessing the core skills. During the orientation session, the participants were instructed that the assessment tool that they were to create must include the seven Wellington core skills and must use CBE concepts. Besides those two criterion, the faculty were free to devise an assessment tool of their own creation. The professional learning community (PLC) meetings prior to the first focus group interview were group discussions on what that document should look like. Qualitative information related to *assessment* was gathered from various responses to focus group and individual interview questions. Two subthemes of the theme *assessment*, *formative assessment* and *assessment tool* emerged from the data and those meetings. The theme and subthemes were identified when analyzing the quantitative surveys, focus group interviews, individual interviews, and the innovation artifacts.

Subtheme: Formative Assessment

The first subtheme of *formative assessment* arose from the faculty's preference for ungraded, informal, flexible and longitudinal feedback. Participant 2 explained to the focus group that formal grading would change the authenticity of the feedback:

> That's not something I think [students] want to put in a grade book. They're not going to be as honest if there's a grade associated with the ranking on the

> assessment. I think this is a form of feedback; an informal thing. I think it's very useful, letting them come to that conclusion.

During the individual interviews, the same participant stated that not associating a grade with the rubric was helpful "to see how they [assessed themselves] when there was no pressure, especially when they're bad at it." Participant 3 shared, "As soon as we start to quantify something, start that comparison game, and start to the game it out, the numbers lend themselves to that." Participant 6 was explicit about it the nature of the assessment tool, telling the class, "You're not being graded on this. I just want your honest feedback." Participant 4 highlighted the "student-partnered" notion of the assessment process when they shared:

> I think it's beneficial for both students and teachers. I think the tool for me reinforced the idea that informal assessment and feedback is every bit as important as a formal assessment and maybe more growth. [Just] as much growth can evolve from informal assessment as from formal assessment.

Participant 7 highlighted the unique nature of assessing the core skills when they stated, "Those are soft skills: human or humanist skills. And, that gets in the way of the strict D through A grading in the traditional grading model."

As Wellington uses student discussion around the Harkness table as a central component of the curriculum, many teachers mentioned the idea of a class discussion and debriefing to reflect on the assessment tool and student self-evaluations. Participant 1 told the focus group that, "I gave the students some feedback about what they said. And then we did talk about that." Participant 1 expanded on that sentiment when they discussed:

> Formative assessment versus summative assessment. And I think that if they do a metacognition, or I asked them to reflect on what those skills are, that they used in an activity, then that gives me feedback about how well they understand what I intended them to do. But it also gives them feedback, reflective feedback, and then I can also follow up with [my] feedback on what they say.

Participant 3 found the debriefing time with the students as important. They said it was good to hear students "explaining how they interpreted observation and how they saw it in their own learning. I think that's a really powerful exercise, to kind of have a Harkness discussion." The same participant also noted the time needed for the debriefing, when they stated, "It takes a little bit more devoted [class] time to do this, to have a discussion, [and] not just doing the self-assessment about the skills, but to have the discussion." It should be noted that some faculty did not follow up with the students, but used the assessment tool to only provide evidence of the core skills in their classroom. Participant 5 said, "I didn't then go do the rubric for each kid and then give it back to them," while Participant 4 stated, "I didn't really have a follow up with the kids."

Subtheme: Assessment Tool

The second subtheme of *assessment tool* focuses on the document the faculty created, including the purpose, the level of flexibility, the language, and the format of the document. The assessment tool is found in Appendix E. During the initial PLC meetings that created the document, there was a sentiment that the core skills look different in each department. During the orientation, the participants were provided with a document that had been created by the department chairs that listed each core skill and several bullet points that illustrated how those core skills manifest themselves in a Wellington classroom. See Appendix A for that document. The group rejected that existing document as too prescribed. Without that foundation, there was disagreement as to whether or not a common assessment tool could be viable in all departments. The group decided the assessment tool would list the seven core skills, but it would not include descriptors for

each. Participant 2 told the focus group at the beginning of the study that it was, “bad … trying to make it too similar.” However, Participant 3 disagreed, stating, “I like having a universal document that everybody can use.” By the end of the study, Participant 5 acknowledged that despite the reticence to find commonality:

> I don't think our view of the core skills is different and sometimes the group pretended [the core skills] would look different in my class versus your class. I think probably whatever the department chairs came up with would probably go over fairly well with most, and that this is the jumping off point.

Another significant discussion revolved around the rating system for student self-reflection on the assessment tool. The faculty agreed during the PLC sessions to use the descriptor, “level of performance” and a 1-5 rating scale. This rating system was then open for faculty to add additional descriptors or terms to designate and differentiate each number. Some faculty ignored it altogether. Participant 2 told the focus group, “So for me, the numbers didn't matter at all. It was the evidence of what they said they were doing” that was important. Participant 3 did not use it because the rating scale was ill-defined. They highlighted their problem with the term “performance” when they stated:

> I would like to be a little bit more specific about what those descriptors mean; I think there's the potential for some confusion for students in that I did this skill a lot versus how well I did the skill. That's a different question.

In a similar vein, another participant had the students rate themselves, but then questioned the responses related to the term “performance.” Participant 2 questioned, “Does it matter that they have fives, or is it just matter that they know that they use it?” For those teachers that did utilize the rating scheme, they varied on their interpretation of what the student responses meant. Participant 2 asked students to reflect on only five of the seven core skills. The participant assumed the students would choose their strongest

five. When I asked a follow up question to clarify, Participant 2 added, “Five meant that you use it, you're confident you did well, and use it a lot versus one where you may not have at all.” Others used the rating system to evaluate the strength or weakness of one skill within the context of the seven skills. Participant 5, “I wanted them to see it as a continuum of ‘I kind of did this skill’” but engaged in other skills more often.

The faculty also engaged in a discussion of how often a tool such as the one they created should or could be used effectively. When asked whether using the tool was potentially burdensome, Participant 3 responded with, “Assessing them felt like a very minor added task.” Participant 5 warned, however, “I think, like all things we do here, the more frequently you do it, the more burdensome it becomes. I think your authenticity of the responses goes down because it just becomes a checkbox.”

The descriptive statistics of Table 7 report the survey responses related to this subtheme of *assessment tool*. The data shows that faculty asserted that while student grades are a valid reflection of what they have learned, they do not necessarily reflect student competency in the core skills.

Table 7

Survey Response Descriptive Statistics (Assessment)

Question	Pre-M	Pre-SD	Mid-M	Mid-SD	Post-M	Post-SD
Q10: Student grades are a valid reflection of what they have learned.	3.857	.378	4.000	.000	4.000	.816
Q11: Student grades are a valid reflection of their competency in the core skills.	3.143	.690	3.286	.488	3.571	.535

When asked if student grades were a valid reflection of what students have learned (Q10), 6 of 7 respondents chose "agree." The mean average for Q10 stayed relatively static through the three surveys, consisting of 3.857 on the pre-survey, and 4.000 on the mid- and post-surveys. As previously mentioned under the theme *role of the core skills* above, 4 out of 7 of the participants responded "neither agree nor disagree" when asked whether or not student grades reflected competency in the core skills (Q11). The mean average of 3.143 was the second lowest mean response on the entire survey. The mean average rose slightly to 3.286 on the mid-survey, and it increased further on the post-survey to 3.571.

Research Question 1: Summary of Findings on Attitudes

Results for the first research question are presented above in Table 5. The participants created an assessment tool that centered on student feedback and self-evaluation rather than a teacher-centered document to assess student proficiency in the core skills. This feedback provided evidence to the teachers that the core skills exist in Wellington classrooms. It offered students opportunities for self-reflection and self-assessment, and it provided faculty with feedback from the students on how and to what extent the core skills are present in the classroom. The interviews, survey responses, and innovation artifacts also reflected that while the core skills are present and embedded in the curriculum, confusion still exists, namely in how the skills are defined, how they are used, how they are taught, and how they are assessed. Finally, the participants provided evidence that they would prefer a grading scheme for the core skills that is formative, ungraded, flexible, and longitudinal. They also stated that class discussion on the core

skills and student performance are beneficial to increasing understanding and collaboration.

Research Question 2: Self-efficacy

Quantitative data from the pre-, mid-, and post-surveys, qualitative data from the focus group and individual interviews, and innovation artifacts were collected to address the second Research Question: *How and to what extent does the implementation of WHSCBA affect teachers' self-efficacy towards teaching and assessing core skills?* Two major themes emerged from the data: *increased self-efficacy* and *faculty training*. There are many crossover concepts between RQ1 and RQ2. RQ1 is focused on teacher attitudes and beliefs. RQ2 is focused on self-efficacy. As stated in Chapter 2, significant factors in influencing teacher self-efficacy include both beliefs and feedback (Bandura, 1997; Petrovich, 2004). Therefore, many themes from the data analysis of RQ1 will also be present in the data analysis of RQ2.

Table 8

Themes, Subthemes, and Assertions for RQ2

Themes and Subthemes	Assertions
Increased self-efficacy 1. Student feedback 2. Faculty collaboration	Affirming student feedback and positive faculty collaboration increased teacher self-efficacy.
Faculty training	Faculty receive no formal training in teaching or assessing the core skills.

Increased Self-Efficacy

The theme of *increased self-efficacy* arose from the qualitative and quantitative data and addressed how faculty improved their capacity for self-efficacy from both student feedback and faculty collaboration. Student feedback provided the evidence the

faculty sought to confirm their belief that the core skills are embedded in the curriculum in their classroom. In addition, the collaborative nature of the PLC provided valuable support for the faculty as they utilized the assessment tool in their classroom and analyzed the student responses. The analysis of the *increased self-efficacy* identified two subthemes: *student feedback*, and *faculty collaboration*. The theme and related subthemes were identified when analyzing the quantitative surveys, focus group interviews, individual interviews, and the innovation artifacts.

Subtheme: Student Feedback

The first subtheme of *student feedback* stems from the reflective nature of both the student self-reflection rubrics as well as the overall experience of the study for the participants. The qualitative data for this subtheme was collected from responses to various focus group and individual interview questions. In general, faculty felt validated by the student responses that the core skills do, in fact, exist in their classroom. When asked if they felt more or less confident in using the core skills in their classroom, most faculty said that student feedback made them more confident. Participant 4 stated that the feedback "totally reinforced" their perception that the core skills were taught in their classroom. Participant 5 said they were "validated by some of the student responses." Student feedback prompted Participant 2 to note, "It made me more confident in saying [that] we use most of these skills already, or several of these skills on a normal basis, because it's already integrated." Participant 3, upon reviewing the student self-evaluation rubrics, stated:

> I can see [that] this is something students see as really relevant to this task. This is something that students see is really relevant to this subject matter. And then from there, I think that gives me a little bit more of a baseline to say [that] I can

> actively teach this. This gives me a greater sense of the gaps that exist in the course based on student perceptions of what's happening in class.

Finally, Participant 4 told the focus group that the student feedback was critical for them, since teacher perception and student reality are not often the same. They stated:

> I think a lot of it is hard to observe as a teacher; obviously you can watch and hear the conversations. But, what goes on in their head: they may question in their head but not say it out loud.

The descriptive statistics of Table 9 report the survey responses related to this subtheme of *student feedback*. When asked if they were confident that they could balance teaching core skills and content in their classrooms (Q15), all seven participants responded with “agree” or “strongly agree” on the pre-survey with a mean average of 4.143. It rose slightly to 4.286 on the mid-survey, and remained stable at 4.286 on the post-survey. However, only 6 of 7 faculty responded with “agree” or “strongly agree” on the post-survey. When asked if they were confident that they could increase student competency in the core skills (Q18), 6 of 7 faculty responded with “agree or “strongly agree” on the pre-survey with a mean average of 4.000. It rose slightly to 4.186 on the mid-survey, but jumped to 4.429 on the post survey. On both the mid- and post-surveys, all seven participants responded with “agree” or “strongly agree.” The increase from 4.000 to 4.429 constituted a 10.7% increase in the mean average between the pre- and post-survey.

Table 9

Survey Response Descriptive Statistics (Student Feedback)

Question	Pre-M	Pre-SD	Mid-M	Mid-SD	Post-M	Post-SD
Q15: I am confident that I am able to teach content and the core skills in my classes.	4.143	.378	4.286	.488	4.286	.756
Q18: I am confident that I can increase student competency in the core skills.	4.000	.577	4.143	.378	4.429	.535
I am confident that I can increase student competency in X. (Q25,Q28,Q31,Q34,Q37,Q40,Q43)	4.143	.756	4.224	.708	4.388	.600
I am confident that I can assess student competency in X. (Q26,Q29,Q32,Q35,Q38,Q41,Q44)	3.735	.898	3.918	.900	3.918	.922

The last two questions in Table 9 reflect a compilation and a mean of means of questions on the survey directly related to each core skill. For example, Q25 read, "I am confident that I can increase student competency in *collaborating*," Q28 read, "I am confident that I can increase student competency in *communicating*," and so forth, covering all seven core skills. Faculty predominately chose "agree" or "strongly agree" when asked if they were confident they could increase student competency in a particular skill. Their confidence increased throughout the study, rising from 4.143 mean average on the pre-survey, to 4.224 on the mid-survey, and finally 4.388 on the post survey. There was a wide range of responses for each skill. For example, the mean average for the pre-, mid-, and post-survey questions related to the skills of collaborating, questioning, and observing (4.048, 4.048, and 4.095 respectively) scored much lower than the skill of applying knowledge (4.619).

The participants were less confident in their ability to assess student competencies in the core skills, however. They predominately chose “agree” or “strongly agree” when asked if they were confident they could increase student competency in a particular skill, but the scores indicate a much larger standard deviation. There were more “disagree” answers in this categorical construct than any other in the survey. Their confidence increased throughout the study, rising from 3.735 mean average on the pre-survey, to 3.918 on the mid- and post-survey. Like the previous set of questions, there was a wide range of responses for each skill. For example, the mean average for the pre-, mid-, and post-survey questions related to the skill of collaborating (3.428) scored more than an entire point lower than the skill of applying knowledge (4.476).

Subtheme: Faculty Collaboration

The second subtheme of *faculty collaboration* emerges from the quantitative data. Specifically, two survey questions provide insight into faculty perceptions of assisting other faculty with instructional and assessment assistance. The descriptive statistics of Table 10 report the survey responses related to this subtheme of *faculty collaboration*. The data indicates that while the quantitative data in Table 10 above shows that faculty are confident in improving student competency in the core skills, they are less confident in assisting other teachers in improving their instructional and assessment skills. Furthermore, they are more confident in helping teachers with their instructional skills than helping teachers with their assessment skills. When asked if they felt confident that they could help other faculty improve their instructional skills (Q20), 5 of 7 faculty responded with “agree” or “strongly agree” on the pre- and mid-surveys, while all seven faculty chose “agree or “strongly agree” on the post-survey. Table 10 shows that the

mean averages fluctuated throughout the study, with 3.857 on the pre-survey, dipping to 3.714 on the mid-survey, and rising to 4.143 on the post-survey. The mean average for the question addressing whether faculty felt confident in helping other faculty with their assessment skills (Q22) was even more erratic. The mean averages fluctuated from 3.571 on the pre-survey, dipping to 3.286 on the mid-survey, and jumping to 4.143 on the post-survey, a 26% increase between mid- and post-surveys. Only 4 faculty chose "agree" on the pre-survey (with no "strongly agree" responses), only 3 faculty chose "agree on the mid-survey (with no "strongly agree" responses), but all 6 of 7 faculty chose "agree" or "strongly agree" on the post-survey.

Table 10

Survey Response Descriptive Statistics (Faculty Collaboration)

Question	Pre-M	Pre-SD	Mid-M	Mid-SD	Post-M	Post-SD
Q20: I am confident that I can help other teachers with their instructional skills.	3.857	.690	3.714	.488	4.143	.378
Q22: I am confident that I can help other teachers with their assessment skills.	3.571	.535	3.286	.756	4.143	.690

Faculty Training

The theme of *faculty training* arose from the qualitative data and centered on whether or not the participants had received training in the core skills at Wellington. This theme encompassed multiple areas of potential training, including how to teach and how to assess core skills. I did not ask a survey or interview question relating faculty training to self-efficacy. However, this theme resides under the research question related to self-efficacy because the lack of faculty training is a missed opportunity to increase self-

efficacy of the faculty related to the instruction and assessment of the core skills. The qualitative data was collected from responses to various focus group and individual interview questions. Table 1 in Chapter 3 shows that three faculty indicated that they have received training in core skills (soft skills). However, that training did not occur at Wellington. When asked in the individual interview, "What type of training did Wellington provide you in teaching or assessing the core skills?" all seven participants responded with either "none," "no," or "I don't remember any." Some faculty continued with commentary. Participant 1 stated, "I was shocked that there was no more emphasis or unpacking of those core skills across the curriculum because it was front and center as a talking point" during the hiring process. Participant 2 mentioned, "I think it was in the handbook." Other faculty stated that they recall the core skills being mentioned during new faculty orientation. Participant 2 said that "if it would have been [mentioned], it would have come up with a conversation about the Harkness table, that the Harkness method is one of the best ways to evaluate core skills." When I asked Participant 6 if they remembered discussing the core skills in the Harkness training, they responded they did not know because their department does not use Harkness tables.

Research Question 2: Summary of Findings on Self-Efficacy

Results for the second research question are presented above in Table 8. The data from the quantitative and qualitative data show an increased sense of self-efficacy from the participants. The feedback from the students narrowed the gap between perception and reality of how and to what extend the core skills exist in a Wellington classroom. The faculty felt validated and had increased confidence in regards to teaching the core skills as a result of the student responses. They were less confident on how to assess the core

skills in the classroom. They were even less confident in their ability to assist other teachers in how to teach and assess the core skills. Finally, it was clear that Wellington has no formal training for faculty on the instruction and assessment of the core skills, losing an opportunity to increase faculty self-efficacy on the subject.

Research Question 3: Faculty Collaboration

Quantitative data from the pre-, mid-, and post-surveys, qualitative data from the focus group and individual interviews, and innovation artifacts were collected to address the third Research Question: *What factors contribute to or impede the formation of a school-wide, competency-based assessment tool by a collaborative, interdepartmental team of faculty at an independent school?* Four major themes surfaced from the data: *barriers to collaboration*, *faculty collaboration*, *teacher freedom and flexibility*, and *modeling the core skills*. There are many crossover concepts between RQ1, RQ2, and RQ3. Teacher attitudes (RQ1) are an important component of faculty collaboration. Faculty attitudes can influence the PLC, or they can change as a result of the PLC (Wenger and Wenger-Traynor 2015). Self-efficacy (RQ2) can be influenced by both belief and experience (Bandura 1997; Petrovich 2004). Work done via a PLC can influence self-efficacy (Hadar & Brody, 2010). As a result, many themes from the data analysis of RQ1 and RQ2 will also be present in the data analysis of RQ3.

Table 11

Themes, Subthemes, and Assertions for RQ3

Themes and Subthemes	Assertions
Barriers to collaboration 1. Logistics 2. Leadership	Barriers to the creation of a CBA tool include the creation and support of a PLC due to logistics and administrative priorities.
Faculty collaboration	Faculty are empowered by grass-roots, school-wide, collaborative PLCs.
Teacher freedom and flexibility	Faculty are protective of the freedom and flexibility they hold in an independent school classroom.
Modeling the core skills	Instruction and assessment with a common, interdisciplinary assessment tool reflects and models a student's educational experience.

Barriers to Collaboration

The theme of *barriers to collaboration* arose from the qualitative data and innovation artifacts and centered on both practical and theoretical challenges for faculty to collaborate consistently within a PLC or similar construct. The faculty were asked to collaborate in multiple ways during the innovation. First, they were formed into a PLC and asked to be physically present to discuss the project and assessment tool. Second, they were asked to continue that collaboration outside of the PLC meetings using digital tools such as email and a dedicated discussion board. Third, they were asked to collaborate on the assessment tool both in person and online. Most faculty were able to meet regularly for the formal PLC meetings. Omitting the PLC meeting interrupted by a fire alarm, at least 5 of the 7 participants were present at every meeting, with 6 of the 7 being the norm. Fewer faculty provided feedback on the assessment tool via Google docs (4 of the 7 participants). Even fewer utilized the discussion board: only one member

attempted to use it and gave up when no one responded. The qualitative data was collected primarily from responses to two interview questions. During the first focus group interview, the group was asked directly, "What were the challenges of working with colleagues outside of your own department?" And, during the individual interviews, they were asked, "Is it desirable or possible for the school to set up ongoing teacher collaboration projects?"

Subtheme: Logistics

The first subtheme of *logistics* was a consistent subject throughout the focus group and individual interviews. During the innovation phase, it was difficult for all seven faculty members to attend a meeting during lunch. This difficulty is reflected in their comments. The transcripts are littered with terms such as "logistics," "schedules," and "time." Given the constraints of the rigid and rotational daily schedule at Wellington, Participant 5 noted that "I think we would have to create time that we don't have" in order to continue an ongoing professional development group. Other faculty mentioned the unique feature of Wellington where student course requests take priority over faculty schedules, making it nearly impossible to coordinate faculty schedules within the master schedule for collaborative time. Some faculty mentioned that with proper administrative support, that issue is not insurmountable and such time could be created. It would require, however, administrative intervention. Participant 4 stated:

> Obviously the time constraint is not ideal. [We need] an extended period of time, [where] the level of importance is higher than hav[ing] three or four teachers who only have a 20 minute lunch. Until it has more of a level of importance in our day, I don't think it's going to be beneficial.

In response, Participant 7 added that though additional time could, theoretically, be found or created, they warned that it might not be universally welcome. They stated, “We hire teachers who love kids and actually love teaching, but on the other hand, I feel as though we are selfish about the time that we have. So it's that tension right there. That dichotomy.”

Subtheme: Leadership

The second subtheme of *leadership* was another consistent subject when discussing the barriers to creating an ongoing PLC system at Wellington. Participant 5 suggested it was up to the administration to create the PLC’s, saying, “I think it depends on what leadership wants to do; if that's what you want, then you have to provide the time.” One participant (1) was particularly vocal on the role of the administration. When I asked if it would be possible to create an ongoing PLC system at Wellington, they responded with, “it would be not possible at all given our current structure.” I asked for clarification whether they meant leadership or logistics. They answered “both.”

Faculty Collaboration

The theme of *faculty collaboration* arose from the qualitative and quantitative data and focused on the positive responses by the participants of working together as a PLC. The qualitative data was collected primarily from responses to two interview questions. During the first focus group interview, the group was asked directly, “What were the positive benefits of working with colleagues outside of your own department?” And, during the individual interviews, they were asked, “Is it desirable or possible for the school to set up ongoing teacher collaboration projects?” The participants felt empowered in the study due to the exploratory nature of the activity as well as the lack of any

administrative oversight. More than one participant told me that they noticed, “There were no department chairs in that meeting.” Participant 1 was particularly appreciative of the PLC structure, noting:

> A collaborative model empowers teachers to think. [PLCs] would be desirable in a school where teachers are in charge, where teachers have reasons to believe that they have authority, and they have trust in each other. And they have an administration that empowers and trusts teachers to make the decisions and run with the ball.

Another aspect the faculty appreciated about the collaborative effort was the simple fact of breaking out of the department-centric environment. Participant 7 said early in the study that faculty “seem to be siloed … I've never been in a math classroom; I've never been in a science class; there's a mystery about what core skills would look like in a classroom I’ve never been in.” By the end of the study, faculty praised the collaborative work. Participant 5 enjoyed “seeing what you had in common; the common denominator amongst every department.” Participant 4 appreciated “hearing different perspectives of how it works in your class.” When I asked a clarifying question to Participant 2 if they “also found value in working with other faculty for a long period of time,” they responded “yes.” When asked if an ongoing PLC program would be desirable, all seven participants said yes. For example, Participant 4 stated, “I definitely see a benefit in it. You can make connections across the curriculum.” Participant 3 agreed, noting, “it's very desirable. I grow through those interactions of collaboration with peers from other departments.” Perhaps the best summary of the experience was provided by Participant 7:

> I think one of the things that sets Wellington apart is that we seem to have hired teachers that actually like kids, and teaching, and getting better. And, that was really the first time talking about the core skills, and how we assess [them], how

> we teach [them], and what role they play in our classroom. That's the only time I have felt connected to people who are outside of my department that we're in the same mission.

The descriptive statistics of Table 12 report the survey responses related to this theme of *faculty collaboration*. The data indicates that while faculty believe that they, in general, can help other faculty with instructional and assessment skills, they are less confident in their ability to do so. When asked if they felt that faculty could help other faculty improve their instructional skills (Q19), all seven faculty responded with "agree" or "strongly agree" on all three surveys. Table 12 shows that the mean averages stayed relatively stable throughout the study, with 4.286 on the pre-survey, lowering slightly to 4.143 on the mid-survey, and returning to 4.286 on the post-survey. However, as previously shown in Table 12 for increased faculty self-efficacy, faculty were less convinced in their own ability to assist other faculty in improving their instructional skills. When asked if they felt confident that they could help other faculty improve their instructional skills (Q20), only 5 of 7 faculty responded with "agree" or "strongly agree" on the pre- and mid-surveys, though all seven faculty chose "agree or "strongly agree" on the post-survey. The mean averages fluctuated throughout the study, with 3.857 on the pre-survey, dipping to 3.714 on the mid-survey, and rising to 4.143 on the post-survey.

Table 12

Survey Response Descriptive Statistics (Faculty Collaboration)

Question	Pre-M	Pre-SD	Mid-M	Mid-SD	Post-M	Post-SD
Q19: I believe faculty can help other faculty with their instructional skills.	4.286	.488	4.143	.378	4.286	.488
Q20: I am confident that I can help other teachers with their instructional skills.	3.857	.690	3.714	.488	4.143	.378
Q21: I believe faculty can help other faculty with their assessment skills.	3.857	.378	3.429	.535	4.429	.535
Q22: I am confident that I can help other teachers with their assessment skills.	3.571	.535	3.286	.756	4.143	.690

The mean average for the question addressing whether faculty are capable of helping other faculty with their assessment skills (Q21), fluctuated widely. The mean averages fluctuated from 3.857 on the pre-survey, dipping to 3.429 on the mid-survey, and jumping to 4.429 on the post-survey, a 29% increase between mid- and post-surveys. 6 of 7 faculty chose “agree” on the pre-survey (with no “strongly agree” responses), and only 3 faculty chose “agree on the mid-survey (with no “strongly agree” responses), but 7 faculty chose “agree” or “strongly agree” on the post-survey. Comparatively, as previously shown in Table 10 for increased faculty self-efficacy, faculty were less convinced in their own ability to assist other faculty in improving their assessment skills. The mean average for the question addressing whether faculty felt confident in helping other faculty with their assessment skills (Q22) was equally erratic. The mean averages fluctuated from 3.571 on the pre-survey, dipping to 3.286 on the mid-survey, and jumping to 4.143 on the post-survey, a 26% increase between mid- and post-surveys. Only 4 faculty chose “agree” on the pre-survey (with no “strongly agree” responses), and

only 3 faculty chose “agree on the mid-survey (with no “strongly agree” responses), but 6 of 7 faculty chose “agree” or “strongly agree” on the post-survey.

Teacher Freedom and Flexibility

The theme of *teacher freedom and flexibility* arose from the qualitative and quantitative data and focused on the desire to have a flexible assessment tool that allowed for teacher modification. The qualitative data was collected from responses to various individual interview questions. As previously stated, the faculty only had two restrictions when creating the assessment tool. The document must assess the seven existing Wellington core skills, and it must utilize aspects of CBE. During the training session of the first PLC, the faculty were presented with a document created by the department chairs that provided a foundation for what the core skills look like at Wellington. During the initial PLC meetings, the faculty was reticent to accept a document that could encompass all departments. Participant 3 expressed concern that a prescriptive rubric might limit student improvement and competency in the core skills. They sought a very general document, saying that such a document “create[s] more freedom for student performance, [and] to not limit the student performance by ‘this is what we're looking for.’” Participant 2 shared, “I think a document that has the ability to be adjusted as needed, would be helpful.” Participant 1 was particularly concerned with creating a single, prescribed document for all teachers. Reflecting on the creation of the document during the focus group interview, they stated, “I think the materials that you shared with us from department chairs [is] not what I want. So I have a reaction to too prescriptive.” After implementing the assessment tool in their classroom, they were even more concerned about a universal, prescriptive document. The participant stated:

> Coming to agreement on what one will give up and the other will give up and the other will give up [is] not doing anything but promoting status quo and mediocrity, rather than promoting excellence.

After the faculty implemented the assessment tool, they appreciated the flexibility, and some faculty softened their stance on the prescriptive nature of an assessment tool. Participant 2 expressed, "I like that we had more flexibility about the numbers. I could care less about the number; being open and us being very general was helpful; freedom and flexibility." Participant 5 was more open to the previous work done by the department chairs. They stated:

> I don't think our view of the core skills is different and sometimes the group pretended [the core skills] would look different in my class versus your class. I think probably whatever the department chairs came up with would probably go over fairly well with most and that this is the jumping off point.

Participant 6 simply stated, "I guess there's not really that much of a difference" on how the core skills manifest themselves department by department.

The descriptive statistics of Table 13 report the survey question related to this theme of *teacher freedom and flexibility*. When asked whether teachers should be able to choose what and how to teach in their own classrooms, there was both a non-linear trend for the average means as well as a wide range of answers as seen in the standard deviation for each survey. The mean averages fluctuated from 3.714 on the pre-survey, rising significantly to 4.286 on the mid-survey, and lowering slightly to 4.143 on the post-survey. At least 5 of 7 faculty responded with "agree" or "strongly agree" on all three surveys.

Table 13

Survey Response Descriptive Statistics (Teacher Freedom and Flexibility)

Question	Pre-M	Pre-SD	Mid-M	Mid-SD	Post-M	Post-SD
Q16: I believe that teachers should choose what and how they teach in their own classrooms.	3.714	.951	4.286	.756	4.143	.900

Modeling the Core Skills

The theme of *modeling the core skills* arose from the qualitative and quantitative data. The qualitative data was predominately collected from answers from the focus group interview question inquiring about the positive benefits of faculty collaboration. This theme focused on two specific subjects. First, it addressed the idea that faculty should be modeling appropriate behaviors and skills they wish their students to emulate. Participant 5 stated, "I think the type of faculty that we hire here desires the school aim for a community that is also doing the core skills at the teacher level." The second subject was more theoretical. The faculty found that when they highlighted the core skills through the assessment tool, it reflected a more holistic student experience. Some faculty focused on the holistic experience of the students. For example, Participant 1 stated, "I think it helped us focus on the whole child; the kids aren't siloed. [It] reminds me of all the different kinds of input they're getting in all this time." Participant 5 concurred, noting:

> I've been thinking a lot about the diversity of our students. Students have different skills that they leverage at different times for success. One snapshot of looking at core skills in my classroom is not going to be an accurate reflection of that student's core skills across the board.

Other teachers focused on the holistic nature of the classrooms and departments. For example, Participant 3 said, “it's a broader view, a broader view of the child, a broader view of education, and then seeing what I do in my classroom as part of the puzzle.”

The descriptive statistics of Table 14 report the survey responses related to this theme of *modeling the core skills*. The data indicates that faculty feel strongly that not only is important for faculty to model behaviors and skills for their students, but they feel confident in doing so. When asked if they feel it is important for teachers to model behaviors and skills they wish their students to learn, all 7 faculty responded with “strongly agree” on the pre-survey. It was the only question to earn a perfect 5.000 on the entire survey. The mean average dipped to 4.429 on the mid-survey, and rose slightly to 4.571 on the post-survey. All 7 faculty responded with “agree” or “strongly agree” on the mid- and post-surveys. Perhaps the most consistent question in the entire survey asked faculty whether they felt confident they can model behaviors and skills to their students; all seven responded with “agree” or “strongly agree” on all three surveys. The mean average for all three surveys was 4.571 with a standard deviation of .535.

Table 14

Survey Response Descriptive Statistics (Modeling the Core Skills)

Question	Pre-M	Pre-SD	Mid-M	Mid-SD	Post-M	Post-SD
Q12: I think it is important for teachers to model behaviors and skills they wish their students to learn.	5.000	.000	4.429	.535	4.571	.535
Q13: I feel confident I can model behaviors and skills I wish my students to learn.	4.571	.535	4.571	.535	4.571	.535

Research Question 3: Summary of Findings of Faculty Collaboration

Results for the third research question are presented above in Table 11. The participants were clear that there are two significant barriers to creating an ongoing, inter-disciplinary professional learning community at Wellington. First, the rigid, complicated, and dense nature of the daily schedule at Wellington makes consistent meetings problematic. Second, the administration would need to prioritize this collaboration as important and provide the logistics and direction as needed. The participants felt empowered throughout the innovation for two reasons. First, they were allowed to be creative and experiment with the assessment tool, and second, there were no administrators or department chairs involved in the PLC. In addition, they expressed appreciation of the inter-disciplinary nature of the PLC and felt that it broke down department-centric barriers. The participants value the freedom, independence, and flexibility that is common at an independent school and expressed initial concern of losing that in favor of a universal assessment tool. And finally, the participants appreciated an interdisciplinary activity that better reflects a student's experience at Wellington. They felt that modeling the universal, interdisciplinary nature of the core skills unites the students and faculty and helps break down department-centric practices and ideas.

CHAPTER 5

DISCUSSION

The purpose of the Wellington High School competency-based assessment (WHSCBA) study was originally conceived as an action research project designed to investigate the utility and efficacy of using a competency-based assessment (CBA) system at Wellington to assess the seven core skills of collaborating, communicating, observing, questioning, speculating and hypothesizing, evaluating, and applying knowledge. I sought to research how teacher attitudes and teacher self-efficacy were affected by the project (RQ1 and RQ2). I also sought to investigate which factors contributed to or impeded the creation of an interdisciplinary professional learning community (PLC) tasked to design and implement the assessment tool. The participants met together as a PLC, and while they did create an assessment tool, they altered the original plan of the innovation. The document they created was not intended for faculty to assess students using CBA principles; rather, they created a document for students to provide evidence of the core skills in participants' classrooms as well as an opportunity for students to self-assess (a CBA principle) and reflect on their use of the core skills. I collected data from both qualitative and quantitative sources from all seven participants, and I utilized mixed methods methodology to collect and analyze the data. In this chapter, I will connect these findings to the theoretical perspectives and other literature discussed in Chapters 1 and 2. I will also provide personal and professional lessons learned, as well as suggestions for future research and action.

Results in Relation to Extant Literature

In this section, the findings of this action research study are connected to the theoretical perspectives and other relevant literature presented in Chapters 1 and 2. First, I discuss the results of RQ1 (attitudes) and RQ2 (self-efficacy) related to the theoretical perspectives of the theory of planned behavior (TPB) and self-efficacy theory. I discuss the results of RQ3 within the context of literature related to PLCs. I also discuss the findings of the study related to other extant literature, including the subjects of constructivism, competency-based education (CBE), and core skills.

Results Related to the Theory of Planned Behavior

Teacher attitudes are discussed within the context of TPB. This theory argues that people behave according to their intention and perceived control over the behavior (Ajzen, 2001). A person's intention towards a behavior is important, as it encompasses the motivation and effort that person will exert. Within TPB, there are three types of belief that influence intention: behavioral beliefs (attitudes), normative beliefs (subjective norms), and control beliefs (perceived behavioral control). Gagne (1985) posited that there are three components of any attitude: the cognitive (idea of the action), affective (feelings towards the action), and behavioral (predisposition of the person towards the action). Thus, TPB argues that the greater the intention of the person, the greater the chance for the desired outcome. The findings of RQ1 are discussed within this context, as TPB helps frame the discussion on why and how the Wellington participants created and engaged WHSCBA. The connection between TPB and WHSCBA is illustrated by three major points. First, the faculty altered the parameters of the study. Second, the faculty

included students as a key feature of the new direction of the study. And third, the participants grew more open to change as the study moved forward.

First, the participants changed the nature of the study due to the cognitive and affective aspects of their attitudes towards the foundation of the original study. During the study's orientation meeting the participants were presented with a brief history of why this action research project was created (e.g., SAIS self-accreditation, my Cycle 1 findings), previous work done on the core skills at Wellington (core skills descriptions by the Department Chairs), and information on CBE and CBA to help them with the creation of the assessment tool. The faculty were apprehensive and wary of the information presented to them related to describing, teaching, and assessing the core skills. They were critical when I stated in the orientation meeting that the result of my Cycle 1 research showed that much of the faculty did not intentionally teach or assess the core skills. Their attitude (Ajzen, 2001) related to the orientation materials altered their intention to move forward with the project as designed. As Gagne (1985) suggested, this was due to the cognitive and affective attitudes of the participants. They felt that the direction of the study should be changed (cognitive aspect), and they felt that the core skills do exist in the classroom (affective aspect). This attitude fundamentally altered the direction of the innovation. The faculty no longer intended to assess students on their competency using the core skills, but rather they created a document to verify that the core skills exist within their classrooms. While I did not articulate this to the participants at the time, they essentially redesigned my Cycle 1 study on seeking to discover how and to what extent the core skills are taught and assessed in the classroom. Not surprisingly, by the end of

the innovation they came to the same conclusion. Yes, the core skills exist in the participants' classrooms, but they are not intentionally taught or assessed.

The faculty also rejected the previous work done by the department chairs, prior to this study, that created universal descriptions for each core skill (see Appendix A). This was related to two different attitudes. First, the faculty expressed an affective aspect of their attitude in that they did not want to utilize material that they considered too prescribed. They did not want to feel constrained by the work previously done related to the core skills. Second, they exhibited a cognitive aspect of their attitude when they posited that there are fundamental differences between the departments. They believed that the core skills looked different in each department, and as a result the assessment tool should not have wording that might limit a student's self-evaluation.

Second, the participants felt that students should take a central role in providing feedback to the faculty through the assessment tool. This illustrated the participants' behavioral and cognitive aspects of their attitude towards assessment (Ajzen, 2001; Gagne, 1985). As a school that utilizes student discussion as a key component of the curriculum, Wellington faculty are familiar with student interaction and student self-evaluation. This predisposition towards student involvement manifested itself in the attitude that the students were the best people to discuss the presence and role of the core skills in the participants' classrooms. Furthermore, they felt it was also important for the students to begin the assessment process with their own self-evaluation. As a result of this attitude, the faculty moved from a teacher-centered document to a student-centered document. The feedback from the students provided the faculty with evidence they sought to verify the presence of the core skills in their classrooms, and it provided the

faculty a student's perspective as to their "performance" in using the core skills. This confirming feedback supported the participants' notion of perceived behavior control (Ajzen, 2001) in that the perception of the teacher's intention was reflected by the reality of the student experience.

Finally, the participants were all eventually open to change, experimentation, and feedback. This is predominately due to an increasing normative determinant of intention (Ajzen, 2001) as well as an affective aspect of attitudes towards WHSCBA (Gagne, 1985). After the faculty altered the parameters of the study, they grew more open to change as the study progressed. My field notes of the first PLC meeting include discussions of faculty being protective of their independence in their own classroom, the autonomy of their department, and the idea that the core skills manifest themselves differently in each department and grade level. They sought to create a document that would work for their class, in their department, with their students. During the second focus group interview (after implementation of the assessment tool), the faculty processed the feedback they had received from the students, and they collaborated on how to alter the assessment tool to garner more useful feedback. The subjective norms had grown since the beginning of the study (Ajzen, 2001). The participants were no longer focused on their classroom and their department, but rather were working collaboratively to improve the document, respect the feedback from the students, and consider alterations to their instruction. The collaboration and focus on the student recentered the feelings, attitudes, and norms of using the core skills in the classroom.

Results Related to Self-Efficacy Theory

Teacher self-efficacy is discussed within the context of self-efficacy theory. This theory argues that if a person has the appropriate skills and incentives, that person's self-efficacy will influence their choice of activities, how long they will engage in that activity, and how much effort they will put forth (Bandura, 1997). For teachers, self-efficacy includes their confidence in student achievement, lessons, curriculum, assessment, and relationships. (de la Torre Cruz & Arias, 2007; Guskey & Passaro, 1994). Bandura (1977, 1997) listed four sources of influence in creating and improving one's self-efficacy: vicarious experiences, enactive mastery, verbal persuasion, and internal control.

Building on the work of Bandura, Petrovich (2004) suggested several methods and activities for each of Bandura's influences in order to increase self-efficacy. This included making vicarious learning a conscious decision, providing different role models, and creating opportunities for self-modeling. The participants were afforded several opportunities for vicarious learning. First, the entire project was designed to make the teaching and assessing of the core skills a conscious decision. Second, the PLC was a collaborative effort where faculty learned from each other. The participants respected each other in the PLC, offered suggestions to help others, and received feedback. By the second focus group interview, the participants were sharing their experiences, modeling successful activities, or providing practices to avoid. Finally, the issue of self-modeling as described by Petrovich (2004) was built into the study and innovation. The participants modeled the core skills within their PLC and received feedback from the students through the assessment tool.

In order to increase self-efficacy through enactive mastery, Petrovich (2004) suggested providing repetition through frequent opportunities of practice, providing feedback, breaking down the task into sub-tasks, using self-reflection, and taking time to create a positive trajectory of improvement. The WHSCBA project was designed for this type of improvement. The faculty created the assessment tool, and then they used it multiple times in multiple classes. The repetitive nature of using the assessment tool did not occur as the faculty used it predominately as feedback for evidence of the core skills in their classroom. However, many participants viewed the WHSCBA project as a first step, and they are, indeed, planning on continuing the feedback loops with the students.

In order to increase self-efficacy through verbal persuasion, Petrovich (2004) suggested that teachers should find people they respect associated with the work to provide them with verbal support. Again, the PLC concept was designed to provide this support. Faculty met as a PLC several times throughout the project, including two focus groups where the group was interviewed. During the PLCs, some participants asked for assistance and feedback and were provided much needed verbal support. While the online support systems were not generally utilized, the in-person support system was effective. Moreover, I assert that the most successful area of verbal support provided to the participants came from the students. Faculty felt validated that students saw the core skills in their classroom.

And finally, in order to increase self-efficacy through internal control, Petrovich (2004) suggested that teachers be allowed to interpret their own emotional and physiological state, instead of it being thrust upon them. While difficult to quantify or interpret, I assert that the exploratory and creative nature of the project allowed the

faculty to interpret their own emotional and physiological state. Given the flexible and reflective nature of the assessment tool, the participants were able to interpret the forms from their own students within the context of their own classrooms, thereby negating the possibility of the participants being compared to an external standard of success.

Results Related to Professional Learning Communities

A PLC is a method of collaborative learning and professional development for teachers. There is no single definition of what constitutes a PLC, but rather the term describes various systems where faculty collaborate together to improve their school or district (Woodland, 2016; Yendo-Hoppey & Dana, 2010). Vescio et al. (2008) argued that good PLCs are data-driven, are centered on student improvement, and are iterative in nature. Wenger and Wenger-Traynor (2005) list three components effective PLC's share. First, the PLC has a shared focus and interest. Second, the PLC provides motivation through discussion and shared experiences. And third, the PLC has a shared repertoire of skills and knowledge. The participants agreed the collaborative experience of WHSCBA was beneficial. As volunteers, they were interested in the subject of moving forward to assess the core skills. The PLC meetings offered opportunities for discussion and feedback between the participants. And, all participants were veteran teachers with a significant amount of professional experience to draw from. The PLC experience through WHSCBA also mirrored the three levels of improvement and change for successful PLCs addressed by Hadar and Brody (2010). First, the collaborative work in creating a single assessment tool pulled each participant out of their own classroom and department. The PLC meetings and digital discussion opportunities provided a safe space for dialogue and interaction. Second, the group moved from discussion to increased research. The

participants used the assessment tool less as a tool for assessment and more so for data collection related to student perspectives and feedback. They spent a significant amount of time collecting and analyzing data directly from the students. These first two layers of professional support and feedback from stakeholders then led to the third level, improved self-efficacy. The only missing component of a successful PLC in WHSCBA is the iterative nature of the study. However, it is the intent of myself, the participants, and Wellington to use the findings of WHSCBA for future research and action.

Results Related to Constructivism

The concept of constructivism is embedded in Wellington's curriculum, relationships, and architecture. At its core, constructivism is a theory that knowledge is actively constructed rather than passively received (Piaget, 1976; Vygotsky, 1978). Social constructivism is a sub-theory of constructivism that asserts that knowledge is constructed in the context of society and social relationships (Liu et al., 2010). Communal constructivism, by contrast, focuses more on the communal creation of knowledge (Leask & Younie, 2001). There were many elements of constructivism present during the study. The two most prominent elements were the nature of the PLC and the inclusion of students in the project. The PLC, at its core, is a constructivist organization for school improvement. Participants constructed the assessment tool together. While they implemented the tool individually, they met several times to debrief their experiences in order to help the group and improve the document. Moreover, they decided to implement WHSCBA with student feedback. This added an additional stakeholder to the discussion, expanding the societal input into the creation and use of the assessment tool. In addition, the participants, by virtue of creating a student self-

reflection document via the assessment tool, exhibited several aspects of constructivist teaching (Watson 2001; Brooks & Brooks, 1993), most notably the ideas of shifting instructional strategies based on student feedback, engaging in dialogue with students, and permitting student initiative and autonomy.

Results Related to Competency-Based Education and Assessment

CBE is a model of education that creates endpoint competencies, and directing all instruction and assessment throughout a student's educational experience to achieve competency in the skills and abilities defined by those endpoint competencies (Curry & Docherty, 2017). The Wellington core skills serve as the endpoint competencies within WHSCBA. As stated in Chapter 4, the faculty chose not to utilize CBA principles or practices when creating and implementing the assessment tool. There is parallel between the participants' experience in WHSCBA and the experience of implementing CBA within the state of Maine as discussed in Chapter 2. In Maine, despite years of discussion, educators were unable to implement a grading system or transcript reflective of CBA principles (Stump & Silvernail, 2014; Miller, 2018). Rather, they reverted back to a more comfortable numerical grading scale of 1-4 and titled it "Proficiency-Based Assessment" (Miller, 2018). The participants of WHSCBA did something similar, listing a grading scale of 1-5 related to a student's "performance" of the core skills. I stated in Chapter 2 that the experience of Maine does not necessarily indicate an issue with CBE itself, but rather in the implementation of it. Similarly, WHSCBA can also serve as a case study as to the errors in implementing CBA. My study was unsuccessful in implementing CBE, even as an exploratory exercise. There was no administrative directive, or perhaps I did

not provide enough training or time to make the participants comfortable or confident enough with CBE to give it a chance.

Results Related to Core Skills

There were important parallels with WHSCBA and the literature related to core skills. Sparrow (2018) argued that if teaching core skills is important for a school, then the instruction should permeate throughout all departments and grade levels. This embedded and ever-present instruction would convey to all stakeholders the level of importance the core skills hold at the school. The WHSCBA participants never questioned the importance of the core skills. They sought to garner evidence of the core skills because they already held them as important. Furthermore, while there was discussion as to where the core skills are taught, there was no discussion at any point of the study where faculty argued that the core skills were inappropriate or irrelevant to a particular class or department. The literature also provides potential pitfalls related to teaching and assessing core skills. This includes an assessment methodology, definition of the skill, manifestation of the skill, and faculty training on the instruction and assessment of core skills (Lazarus, 2013; Gallup/NWEA, 2018; Nganga et al., 2015). The participants struggled with all of these concepts related to teaching the core skills. They highlighted the fact that no formal faculty training exists at Wellington related to the core skills. They rejected the document created by the department chairs which both described the core skills and suggested potential manifestations of the skill in the classroom. And, because assessment was not their priority for using the assessment tool, the only assessment methodology used on the assessment tool was the ill-defined 1-5 grading scale on a student's "performance" of the core skill.

Personal Lessons Learned

After three years of doctoral study, with over half of that time planning, researching, implementing, analyzing, and writing this study, I have garnered several personal insights and lessons. The most prominent of these insights are new perspectives on collaborative leadership and the engagement of and the appreciation for wicked problems.

New Perspectives on Collaborative Leadership

Working with these seven participants as a PLC has reinforced my belief in the value of collaborative and shared leadership. This leadership style has a large body of literature supporting its utility and efficacy (Zhu et al., 2018). Shared leadership has been shown to improve student achievement, improve teacher moral and retention, and close the equity gap (Zhu et al., 2018; Friedlaender et al., 2014; Berry et al., 2009). The work done as a PLC was reminiscent of the early years of Wellington where decision-making was a grass-roots effort, collaborative, and empowering for both students and faculty. WHSCBA was conducted by and with members of the faculty who hold no formal academic titles or positions. I found it refreshing that the administration supported and trusted a college counselor to run such a large study. I also found it refreshing that the administration is prepared to move to the next iteration of WHSCBA based upon our findings contained within this chapter.

Appreciation for Wicked Problems

I asked the college counseling department at Wellington a seemingly simple query about creating a different type of transcript that included the core skills around the same time I first was introduced to the concept of wicked problems. Rittel and Webber

(1973) posited that a wicked problem is a problem that lacks clarity in both its purpose and solution, has many stakeholders with different values, and has multiple real world constraints that make progress difficult. One of the advantages of being a college counselor is that you have a broad view of the educational process at your institution. College counselors must be aware of the arts, athletics, academics, discipline, service, extracurricular activities, family dynamics, finances, and even medical situations. This put me in a good position to conduct a study such as WHSCBA. The present action research study is a result of me working through the wicked problem of trying to create a new transcript. If the transcript communicates the core skills, then the core skills must be assessed. If the core skills are to be assessed, they must be taught. And if there is a question as to where and how the core skills are to be taught, then there needs to be a study done on teacher attitudes and self-efficacy related to the core skills. However, this path led to other areas of study, such as faculty collaboration, teacher independence, and professional development. One potential solution always led to another issue. Overall, I gained a deep appreciation for the wicked problem of core skills instruction and assessment at Wellington and its deep and complicated web of issues, stakeholders, beliefs, outcomes, problems, and potential solutions.

Implications for Practice

The findings and results from WHSCBA suggest a number of overall lessons learned with important implications for practice. This section provides findings from the study connected with potential implications for secondary schools to improve their practices. Below, I discuss four important lessons learned with possible implications for school administrators and teachers. The lessons are: (a) student feedback is important, (b)

meet faculty where they are, (c) differentiate between latent and active curricula, and (d) PLC's hold promise.

Student Feedback is Important

At the initial inception of this study, it was decided to focus the work on teachers for two reasons. First, the creation and use of the assessment tool was originally envisioned as a method of prompting and supporting teachers in the instruction and assessment of the core skills. Second, the Wellington administration was wary of the logistics of permissions and IRB protocols for a potentially large number of students. The participants of WHSCBA, however, had different intentions and placed students at the forefront of the study. The participants valued the feedback from their students and provided important context and information for the faculty in working in the PLC to improve their practice. Indeed, student feedback to faculty is one of the top influences towards increasing student success and achievement (Hattie & Timperley, 2007; Wisniewski et al., 2020).

The faculty felt that it was important to gather information from the students as a first step in the PLC work. They were hesitant and/or unprepared to move forward with the innovation as originally conceived without student feedback (the subject of the next implication). The participants asserted that the best people to consult about the role of the core skills in the classroom were the students themselves. The assessment tool created by the participants was collaborative in nature and the study was seen as "student-partnered." Feedback from students provides many benefits to teachers and schools. First, it provides valuable information on the student perspective on an issue. This was notable in the discussion regarding teacher perception and student reality. The feedback provided

both confirming and disconfirming data as to whether the teacher perception of the role and extent the core skills played in a particular lesson was verified by the student experience. Second, student self-evaluation and feedback is empowering for students. It provides students an opportunity to process their own learning and have honest conversations with themselves and their teachers as to their level of performance or proficiency in a particular class. And third, student feedback gives faculty important feedback on their instruction. Positive student feedback that validates a teacher's perception of a lesson can increase faculty self-efficacy (Petrovich, 2004). In turn, as discussed in Chapter 2, increased self-efficacy by the faculty can further increase student success.

Meet Faculty Where They Are

As mentioned above, there was a disconnect between the original goals and the eventual outcomes of the study. During the recruitment presentation to the faculty in the spring, I articulated three themes. First, the core skills are prominently discussed in Wellington's handbook, curriculum guide, and marketing materials. Second, my Cycle 1 study found that the Wellington faculty are not intentionally teaching or assessing the core skills. And third, CBE and CBA may be the best way to view the assessment of the core skills. As such, WHSCBA was created to help bridge the gap between what Wellington says it does with what it actually does in the classroom, while utilizing CBE.

However, the faculty who volunteered questioned the foundation of the study. They were adamant that the core skills were present in the classroom, and they sought feedback from the students to confirm their belief. The idea of using CBE was no longer of value because the faculty needed to confirm the existence of the core skills before they

moved towards any other assessment protocol. Clearly, the participants and I were in a different place with regards to the future of the study. I could have decided to push forward and require the faculty to assess students using CBA principles without their feedback, but that would not have served Wellington well. Rather, I chose to meet the faculty where they were at. They needed to discover for themselves the extent to which the core skills exist, are taught, and are assessed in their classrooms. The conclusion of the study mirrored the premise of the study in April. The core skills exist in a Wellington classroom, but there are still questions as to who is responsible for their formal instruction, how to assess them, how to define them, and how they manifest themselves in a classroom. This is the advantage of an action research study, for my Cycle 1 and WHSCBA studies are not the only studies, ideas, or exploratory activities associated with the core skills at Wellington. They are part of an iterative cycle of data collection, discussion, and improvement. I met the faculty where they were at, and together we have learned much more than answers to the three research questions addressed here. We are now, perhaps, ready to move on to what WHSCBA was originally designed to do, but we are now in agreement with the original premise. Future work will benefit from their experience, and their experience will go a long way in helping other faculty in future cycles of research.

Differentiate Between Latent and Active Curricula

One of the key findings of RQ1 was the theme of the core skills being embedded in the curriculum. As previously stated, the participants recoiled at the assertion that the core skills were not intentionally taught or assessed at Wellington. As a result, they crafted an assessment tool that sought evidence of the core skills in the classroom. They

were relieved and felt validated when the students confirmed the presence of the core skills. However, it did not confirm that the core skills were intentionally taught or assessed. This highlights the dichotomy of a latent curriculum as opposed to an active curriculum. This tension was present at the beginning of the study, when several participants were unsure of what evidence the students would provide in their feedback. This uncertainty of the presence of the core skills is in contrast to content-oriented questions, such as whether students are taught subjunctives in Latin, the Renaissance in World History, or the laws of thermodynamics in physics. Faculty can confirm and identify the presence of those concepts in their classroom because they ostensibly have lesson plans to intentionally teach them. These concepts are actively taught. In contrast, several participants indicated that while the core skills are important and exist in the classroom, they do not have lesson plans that intentionally instruct the students on the formation of, development of, and improvement in the core skills. As an example, a teacher can argue that the core skill of collaboration exists in their classroom because they sit around a Harkness table and discuss the material. The question, however, is to what extent a teacher instructs the students on what proper and successful collaboration is, how it manifests itself in a classroom, the myriad of ways collaboration can be honed and developed, and what improper and unsuccessful collaboration looks like. It is incumbent upon any school that values content and skills to identify those attributes, train the faculty on what they look like and how they manifest themselves in that environment, have teachers intentionally instruct the students on those attributes, assess them, and then have oversight of the faculty and support them in these endeavors. In context of

WHSCBA, this would move the core skills from a latent, embedded, "shadow curriculum," to an active curriculum of intentional teaching and assessment.

PLCs Hold Promise

One of the greatest lessons from this study was the collaboration of faculty in the PLC. Woodland (2016) praised PLCs as "one of the nation's most potent organizational strategies for achieving substantive PK-12 instructional improvement and critical student learning outcomes" (p. 505). Furthermore, Dufour et al. (2005) recommended PLCs as "the best, least expensive, most professionally rewarding way to improve schools" (p. 128). The creation and support of PLCs are worth the disruption to existing schedules and professional development activities.

The participants praised the PLC experience for a number of reasons. First, it broke down barriers, either real or imagined. It allowed them to collaborate with colleagues from multiple departments. This experience forced them out of a department-centric mindset, and it encouraged the discussions on curriculum at both the student and school levels. Many participants shared that they were surprised at how much they had in common with other departments related to the core skills after the study had completed. Second, and in a related fashion, the interdisciplinary dialogue and collaboration allowed them to view students differently. Hearing faculty from other departments discuss students provided them the opportunity to view the student as a Wellington student and not just a mathematics or English student. This holistic view of a student was replicated in the participants' interactions with each other. They were no longer solely viewed as a mathematics or English teacher; rather, they were working together as Wellington teachers. Their work in the PLC was modeling the core skills to their students.

Third, the participants felt empowered. The faculty at independent schools, as the name suggests, generally have great autonomy within their classrooms. Individual teachers have less of a voice at the department or school levels. The participants were empowered to create an interdisciplinary assessment tool, gather data, and suggest ideas for future research and action. They were empowered to voice and protect their freedom and flexibility when designing the assessment tool. This was very important to them.

These experiences ultimately led to the most important lesson of the PLC in that the faculty shared an increase in self-efficacy. The mutual support of the teachers, the group experience of creation and implementation, and the sense of empowerment over the direction of the school were all factors in increasing self-efficacy, and thus in turn potentially improving student success.

While the faculty appreciated their PLC experience and advocate for its continuation, they also provided information that identified barriers to creating and supporting future PLCs. The two consistent themes in discussing barriers to PLCs were the related issues of logistics and administrative priorities. This message was clear from the participants. Creating an on-campus, long-term, interdisciplinary PLC requires a commitment of resources from the school. There needs to be dedicated time for not only meetings of the PLC, but time to work with other faculty outside of those meetings, such as classroom observation. This could include alteration of the schedule, classes taught, or teacher preps. Ultimately, if the resources exist, and PLCs are a priority for the school, then the administration needs to make it an institutional priority and work through the barriers to bring the PLC system to fruition.

Limitations

While the data collected is important and can help Wellington evaluate their current practices and plan for the future, there are nevertheless limitations to this study. The first limitation is the number and makeup of the participants. There were only seven participants in the study. In April of 2021, I invited all members of the high school faculty to participate in this action research project. Ultimately, seven committed to the study. While these faculty members comprised only 16% of the full-time faculty, there was at least one faculty member from each academic department represented. Furthermore, all seven participants volunteered for the project, so it is not necessarily a representative sample of the entire faculty. Due to the low number of participants, as well as the non-random sample of the faculty, only descriptive statistics were used for analysis. However, the participants offered similar themes and insights during their focus group and individual interviews. In addition, the standard deviation of all questions, on all surveys, by all participants was .750 relative to a mean of 4.185 for the five-point Likert scale. Taken together, the qualitative and quantitative data suggest a modicum of cohesive themes, observations, and experiences. While the limitation the number and makeup of the participants does limit using the data as conclusive, the data can, however, be trusted as a foundation for future study.

A second limitation to this action research project is length of study and its disruptions during the duration of the project. During faculty orientation in August, the participants and I agreed on a time frame for each stage of the innovation. They were to complete the assessment tool on or around October 1 and then use all of October to implement the document in their classrooms. Because of the increase of Covid-19 Delta

Variant cases in the area at the start of school, it was decided to delay the start of the project, and thus the orientation for the study did not occur until September 8th. The faculty, therefore, created the assessment tool in only three weeks to meet the self-imposed October 1 deadline. However, they did have over five weeks to implement to the assessment tool in their classrooms, as our final focus group interview was not held until November 10th. As a result, three weeks to create a document and five weeks to implement the assessment tool is too short of a time frame to collect conclusive data for CBE information. Furthermore, the study took place in Fall of 2021 while Covid-19 modifications were in effect. These modifications, either mandated or self-imposed, altered the teaching and learning environment at Wellington and throughout the country. Scheduling was off, teaching was modified, and lessons were altered.

A third limitation to the study is the potential validity of the quantitative data based upon the survey questions. As stated in Chapter 3, the non-demographic survey questions were taken from various sources related to teacher attitudes, teacher self-efficacy, and CBE. Questions related to teacher attitudes were adapted from Ajzen (2013) and King (2017). Each of these extant surveys have their own validity and reliability statistics listed in the original source material. While that is a good foundation to create one's own survey, altering those surveys will, of course, change the nature of the validity and reliability. Not only does this current study collate together different questions from different surveys, but I also altered the wording of some of the original questions to fit the language of Wellington's core skills. As a result, the validity and reliability of the current study does not reflect the validity and reliability data from the original surveys.

This, too, is another reason why only descriptive statistics were used to analyze and present the quantitative data.

The final limitation to the study is the possibility of the Hawthorne effect. Stemming from experiments at Western Electric in the early 20th Century, the Hawthorne effect is the theory that a participant's behavior in a study might be altered if they know they are in a study, as opposed to when they are acting and operating normally (Adair, 1984). This implies that conclusions from any study affected by the Hawthorne effect should be viewed with caution. I sought to minimize the Hawthorne effect in my study using several methods. First, there was no mandated outcome or expectation. The project was pitched to the faculty as an exploratory study where they were free to create any assessment tool of their choosing, and implement it at any time and at any grade level. They were only asked to utilize the existing seven core skills of Wellington and use CBA principles in creating the assessment tool. In fact, with the approval and support of the Head of School and Head of High School, I mentioned at the faculty meeting that one of the hypothetical outcomes was the elimination of the core skills at Wellington if the participants found them outdated or of little use. Second, I promised anonymity to the participants. There were group activities for the participants, such as the PLC meetings and focus group interviews, but all other work and data collection was done privately. Finally, there were no persons of authority present throughout the project. This includes Department Chairs or other administrators. The intent of the PLC was for teachers to work with and support other teachers.

Discussion of Future Research and Next Steps

One of the key components of an educational action research study is the iterative nature of collecting data and improving instruction (Mertler, 2017; Stringer, 2007). As such, the final, and most important aspect of this dissertation is a discussion of future work for Wellington. After the entire WHSCBA project was completed, the last question I asked each participant was, "Assuming the school wants to move forward with assessing the core skills in some form, what would you recommend as next steps?" In this section, I summarize the actionable findings of the study, punctuated by the responses of the participants to that final interview question.

Continue and Expand the Study

Wellington should continue the study and expand it school-wide. The participants all felt that WHSCBA was a first step towards improving the teaching, use, and assessment of the core skills. Participant 7 shared that they would like to "keep it in conversation. You can't have a culture that you don't talk about. And you can't have this shadow curriculum and not talk about it." At minimum, Wellington should continue the discussion of how best to teach and assess the core skills. Moreover, many participants felt that all faculty should participate in using the assessment tool to confirm the use of the core skills in all classrooms and gain valuable feedback on the subject. Participant 4 noted, "I think where we started is the best place to start; we learned so much from the student feedback piece of that, like, I think it would be awesome if every teacher just did that." Participant 6 concurred, stating that, "I think it would be an interesting thing to just do a schoolwide survey much like what we were doing in our classes … [to] find out what the kids think about all these core skills."

Conduct a Larger Study on Skills

Wellington has an opportunity to do more self-reflection on the core skills. A good starting point would be for the Wellington community to confirm that the teaching of the core skills is still an expected outcome of a Wellington education. Participant 3 brought this up when they said, "I'm not trying to trying to poke the beehive, but do we believe in those core skills? Is it really at the core of who we are, what we want to be about?" The next step would be to rethink what constitutes a core skill. The seven Wellington core skills were created by a team of administrators and department chairs the year preceding the opening of the high school. As such, it was created in the theoretical. Now that Wellington High School has been open for over 15 years, it would benefit the community to evaluate the practical application of the core skills. The continuation and expansion of this study is a good starting point. However, there are many skills that Wellington imbues to their students that are not a member of the "sacred seven," as Participant 3 referred to our existing core skills. Wellington's mission statement includes the value of integrity, which is mentioned in the SCANS report (The Secretary's Commission on Achieving Necessary Skills, 1991; Kechagias, 2011). Wellington's arts department values innovation and creativity, both mentioned in the MASS report (Kechagias, 2011; NCVER, 2003). Wellington's Dean of Students' office includes programming for students on social-emotional skills, aspects of which are listed in both reports. Wellington has an opportunity to review, reorganize, and reaffirm what constitutes a core skill and where it resides in the curriculum.

Identify Where the Skills are Taught

Wellington should research where the intentional instruction of the core skills currently exists. Then, based upon that research, they should develop a specific plan to identify where skills are specifically taught. As stated in the findings, the participants of WHSCBA gained feedback from the students that the core skills exist and are used in the classroom. However, it is unclear who is responsible for the instruction of the core skills. Participant 1 had similar questions when they responded to the final interview question with: “Who's going to grade it? Who's going to teach it?”

Institute Formal Training

One of the important findings of this study is that formal faculty training related to the core skills does not exist at Wellington. A veteran teacher, reflecting on the feedback related to the core skills, asked the focus group, “How do I assess questioning? Or, how do I design a lesson around it? So I think I'm still a little bit surprised about how I would ever formally structure something to include a couple of these core skills.” These are the questions that could be answered through formal training of the faculty. The first and most logical place to begin this training is during new faculty orientation that occurs the week before school opens each year. Ongoing support and training could easily occur through department activities. Additionally, school-wide faculty meetings and teacher in-service days also afford the opportunity to train the faculty. I would also argue that this is an important professional development opportunity for individual members of the faculty. The faculty at Wellington is expected to participate in professional development activities every year. Most faculty focus their professional development in their content

area. If the core skills are as prominent as the Wellington Handbook and Curriculum Guide suggest, then engaging in professional development of the core skills is warranted.

Create Interdisciplinary Teams

Wellington should embrace and create interdisciplinary PLCs. Years ago, there was a movement to create time in Wellington's tightly packed and inflexible daily schedule to include time for interdisciplinary collaboration. However, after that time was created, it was allocated to existing group meetings, such as Department meetings, Dean of Students meetings, or Service Learning meetings. The latter two are interdisciplinary, but they have a specific focus and are not academic in nature. Wellington could create multiple PLC teams to collaborate, research, and improve multiple aspects of a Wellington education. Participant 1 suggested:

> It would be interesting, if it were scalable, to have interdisciplinary conversations of staff over a period of time, to have more time built into the day for the procedures so that you could have meaningful, interdisciplinary conversations. How can we grow from that?

These PLCs would consist of members from each academic department, fitness, and college counseling. The topics of discussion and research would change throughout the year and from year to year, but the PLC would remain. Implemented properly, they could become an integral part of the fabric of the school and emulate other collaborative aspects of Wellington, such as the Harkness tables and the faculty/student commons.

Investigate a School-Wide Assessment Tool

Once many of the subjects discussed above come to fruition and are clarified (i.e., identifying core skills and identifying who is responsible for instruction), the school should revisit WHSCBA. Specifically, it should consider creating a school wide-

assessment tool for faculty to use when assessing the core skills in their classroom. This does not necessarily suggest that a single-use assessment tool is desired. Rather, since the skills should be taught to and used by students in every class every year, an entire assessment system should be envisioned. Participant 5 speculated on such a system when they shared:

> The idea of having it as part of a portfolio that the students would view and then maybe even write a reflection to [view] what the teachers have said about you over your four years regarding the core skills in their various tasks. We'd like you to read those comments and then write a synthesis of your use of the core skills during your time here.

This type of assessment mirrors the values of CBE. In addition, as the participants of WHSCBA have already included students in their teacher feedback and student self-reflection, it makes sense to include students in the committees when creating the assessment tool.

Consider Communicating Competency in the Core Skills

Anything that is assessed should be shared and reported to the appropriate stakeholders. Quiz grades are shared with students and parents. Course grades are shared with students, parents, and colleges. The impetus of this study began many years ago in the college counseling office. I asked the question whether the current transcript, with a single class and a single number on a 100 point unweighted scale, sufficiently and accurately communicates a student's competency. I encourage Wellington that if, indeed, the core skills are essential to a Wellington education, they investigate the possibility of communicating that information to students and parents. This could begin small, with teachers assessing the core skills in their individual classrooms and students participating through a self-evaluation process. The next step could include using a feature on Wells to

collate, synthesize, and organize this information into a real time snapshot of a student's competency in the core skills, across classes, departments, and years.

Disseminate the Information

And finally, Wellington should not miss the opportunity to share their experience and disseminate their information to the broader educational community. Henrikson and Mishra (2019) stated:

> If action research is to have larger impact and value, we must consider ways to mobilize and disseminate this knowledge for other situations and contexts. Action research can result in perspectives, viewpoints, practices, evidence, and knowledge that can be transferred to other contexts – making communication crucial to the transfer of innovation.

Disseminating information was included in Wellington's founding documents. Participant 3 remembers:

> I think when I first came here, and it's in our founding documents, we wanted to be a leader in the educational community. I think if we want to be a leader in the educational community, then I think projects like what you're doing needs to be a part of who we are, where you're researching what we're doing here.

If and when Wellington accepts and implements the research and next steps listed above, it can share these valuable lessons and become a key leader in the educational community when it comes to teaching, assessing, and communicating core skills and competencies. The outlets already exist. Wellington is a member of many regional and national organizations, such as the National Association of Independent Schools and the Southern Association of Independent Schools, that have their own journals, magazines, and websites, and who host annual conferences. Furthermore, faculty and staff are members of more specific organizations where dissemination is possible, such as the National Association for College Admissions Counseling for Wellington college counselors.

Conclusion

The impetus for this study began several years ago with asking the question on how to improve the ways a school communicates student achievement to students, parents, and colleges. While a single grade in a single course can provide a data point for differentiation among other students, it does not necessarily communicate an accurate reflection of a student's competency in the content or skills in that class. Thus, assessing core skills in addition to content, utilizing CBE principles, was a logical answer to my query. It falls, then, to teachers to implement such a change. In working with the participants throughout the study, it is clear that they value the core skills both in their classrooms and as a prominent result of a Wellington education. However, Wellington does not provide formal training in the core skills, either at the point of hire or as an ongoing professional development activity. Without this training, the participants moved to their most trusted source of information, the students, to help them identify where and to what extent the core skills reside in their respective classrooms. The study found that the core skills are, indeed, present in the classroom, but that it is unclear where their formal instruction takes place. Throughout the entire study, the concept of collaboration was prominent. The participants and students collaborated in identifying the presence and use of the core skills, and the participants collaborated with each other in the PLC to help create and implement an assessment tool for the core skills. It is with this sense of community that faculty and students can collaborate together to improve instruction, assessment, and student achievement.

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APPENDIX A

WELLINGTON CORE SKILLS STATEMENT

The mission of Wellington begins with the school motto "In Search of Truth," and continues with a commitment to academic excellence. In an academic setting, the Search for Truth involves not only mastery of individual disciplines, but also the development of skills that cut across traditional disciplinary boundaries and enhance one's continuing ability to grow and learn. Accordingly, the core high school academic curriculum consists of teaching students the following Core Skills throughout their time at the high school. Based on this commitment to the Core Skills, all Wellington graduates can be expected to effectively:

Collaborate

- Marry one's own talents, skills, and knowledge with the talents of others within a group
- Enhance community culture by supporting others' achievement regardless of one's own achievement
- Work as a group to create and obtain goals that would not be individually achievable
- Build an inclusive conversation with all group members

Communicate

- Express ideas articulately, clearly, and respectfully
- Listen receptively without imposing assumptions
- Discern false assumptions
- Provide information concisely and effectively across a variety of modes such as auditory, written, kinesthetic and visual imagery
- Use disagreement in the search for truth
- Support or justify a position with evidence
- Contribute in a manner that moves previous ideas forward

Observe

- Be alert to the achievements and contributions of others
- Be alert to spotting and capitalizing on the unexpected
- Watch for patterns
- Design and employ methods of collecting and recording evidence
- Practice the art of awareness of one's self and surroundings

Question

- Discern areas that could benefit from further scrutiny
- Ask questions without expecting certain answers
- Employ questions in the search for truth
- Investigate diverse perspectives
- Learn to compose effective questions

Speculate & Hypothesize

- Propose possible solutions to questions
- Apply induction (extrapolate patterns to general rules)
- Enhance creativity

- Develop assertions that can be examined using objective criteria
- Practice language that infers rather than assumes, i.e. “It seems that…”

Evaluate

- Exercise self-reliance in spotting errors and correcting them
- Assess the validity of arguments or solutions, perhaps by using different evaluative methods
- Determine the relevance and value of sources
- Examine one’s own conclusions through the lens of another
- Analyze and interpret empirical data comprehensively

Apply Knowledge

- Apply skills and knowledge to new contexts
- Apply deduction (apply general rules to specific instances)
- Exercise independence of thought rather than mimicry
- Be open to the possibility of more than one correct approach
- Translate intellectual concepts to practical applications
- Demonstrate resourcefulness

APPENDIX B

SURVEY PROTOCOL

Demographic Information

Q3 - What department do you predominately teach in?

English
Mathematics
Science
History
World Language
Art
Fitness

Q4 - How many years have you been a teacher at any school?

1-3
4-6
7-9
10-12
13+

Q5 - How many years have you been a teacher at Wellington?

1-3
4-6
7-9
10-12
13+

Q6 - Have you had any formal training in competency-based education?

Yes
No

Q7 - Have you had any formal training in teaching 'soft skills,' such as collaboration or observation?

Yes
No

Q8 - Have you had any formal training in assessing students' abilities in 'soft skills,' such as collaboration or observation?

Yes
No

General Information
For the following questions, the 'core skills' refer to collaboration, communication, observation, questioning, speculating and hypothesizing, evaluating, and applying knowledge.

Q10 - Student grades are a valid reflection of what they have learned.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q11 - Student grades are a valid reflection of their competency in the core skills.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q12 - I think it is important for teachers to model behaviors and skills they wish their students to learn.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q13 - I feel confident I can model behaviors and skills I wish my students to learn.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q14 - I think it is important to balance teaching content and the core skills in my classes.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q15 - I am confident that I am able to teach content and the core skills in my classes.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q16 - I believe that teachers should choose what and how they teach in their own classrooms.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q17 - I believe it is important for all teachers to help students increase competency in the core skills.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q18 - I am confident that I can increase student competency in the core skills.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q19 - I believe faculty can help other faculty with their instructional skills.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q20 - I am confident that I can help other teachers with their instructional skills.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q21 - I believe faculty can help other faculty with their assessment skills.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q22 - I am confident that I can help other teachers with their assessment skills.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q23 – Please use the space below for comments and clarifications

Core Skills
Collaborating
Q24 - I believe that the skill of collaboration is directly related to my subject matter.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q25 - I am confident that I can increase student competency in collaborating.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q26 - I am confident that I can assess student competency in collaborating.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Communicating
Q27 - I believe that the skill of communication is directly related to my subject matter.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q28 - I am confident that I can increase student competency in communicating.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q29 - I am confident that I can assess student competency in communicating.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Observing
Q30 - I believe that the skill of observation is directly related to my subject matter.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q31 - I am confident that I can increase student competency in observing.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q32 - I am confident that I can assess student competency in observing.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Questioning
Q33 - I believe that the skill of questioning is directly related to my subject matter.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q34 - I am confident that I can increase student competency in questioning.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q35 - I am confident that I can assess student competency in questioning.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Speculating and Hypothesizing
Q36 - I believe that the skill of speculation and hypothesizing is directly related to my subject matter.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q37 - I am confident that I can increase student competency in speculating and hypothesizing.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q38 - I am confident that I can assess student competency in speculating and hypothesizing.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Evaluating
Q39 - I believe that the skill of evaluation is directly related to my subject matter.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q40 - I am confident that I can increase student competency in evaluating.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q41 - I am confident that I can assess student competency in evaluating.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Applying Knowledge
Q42 - I believe that the skill of applying knowledge is directly related to my subject matter.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q43 - I am confident that I can increase student competency in applying knowledge.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

Q44 - I am confident that I can assess student competency in applying knowledge.
Strongly Disagree
Disagree
Neither Disagree or Agree
Agree
Strongly Agree

APPENDIX C

INDIVIDUAL INTERVIEW PROTOCOL

RQ1 – Attitudes

1. Do you find the core skills to be an integrated part of your classroom and subject matter, or do you find teaching and assessing them an "additional task?"
2. Do you find assessment of the core skills to enhance the educational experience for the student, or do you find it burdensome?
3. Did your view of the importance or use of the core skills change throughout the project?
4. Though the assessment tool moved from a teacher-centered to a student-centered document, it still asked for a scale of differentiation. What was your standard for the numerical portion of the assessment tool?

RQ2 – Self-Efficacy

5. What type of training did Wellington provide you in teaching or assessing the core skills.
6. Did student feedback make you more or less confident in the use of the core skills in your classroom?

RQ3 – Collaboration

7. Is it desirable or possible for the school to set up ongoing teacher collaboration projects?
8. Is it desirable or possible for the school to collectively assess student competency in the core skills?

Next Steps

9. Assuming the school wants to move forward with assessing the core skills in some form, what would you recommend as next steps?

APPENDIX D

FOCUS GROUP INTERVIEW PROTOCOL

Focus Group Interview #1

1. What were the positive benefits of working with colleagues outside of your own department?
2. What were the challenges of working with colleagues outside of your own department?
3. What new concepts or practices did you learn from your colleagues related to teaching, learning, and assessments?
4. What issues or factors contributed to the formation of the assessment tool?
5. What issues or factors impeded the formation of the assessment tool?
6. What role, if any, did students play in the formation of the assessment tool?

Focus Group Interview #2

1. What, if any, changes occurred in your classroom as a result of utilizing the assessment tool?
2. What interesting or surprising observations did you receive on the evidence of the core skills from student feedback on the assessment tool?
3. What new practices or ideas did you learn from your colleagues related to teaching, learning, and assessments?
4. Specifically related to the 1-5 rating system on the assessment tool, what assessment language did you use to identify each rating?
5. What interesting or surprising observations did you receive related to your teaching practices from student feedback on the core skills?

APPENDIX E

WELLINGTON CORE SKILLS ASSESSMENT TOOL CREATED BY PARTICIPANTS

Name: _____

Activity: _____

Core Skills Rubric: Circle the number that indicates your level of performance using the following core skills in the activity. (5 = Best) Then, support your evaluations with evidence from the activity. Select N/A if you think that core skill wasn't utilized in the activity.

Collaborate	**1**	**2**	**3**	**4**	**5**	**N/A**
Evidence:						
Communicate	**1**	**2**	**3**	**4**	**5**	**N/A**
Evidence:						
Observe	**1**	**2**	**3**	**4**	**5**	**N/A**
Evidence:						
Question	**1**	**2**	**3**	**4**	**5**	**N/A**
Evidence:						
Speculate/ Hypothesize	**1**	**2**	**3**	**4**	**5**	**N/A**
Evidence:						
Evaluate	**1**	**2**	**3**	**4**	**5**	**N/A**
Evidence:						
Apply Knowledge	**1**	**2**	**3**	**4**	**5**	**N/A**
Evidence:						

APPENDIX F

ASU IRB EXEMPTION

EXEMPTION GRANTED

Lauren Harris
Division of Teacher Preparation - West Campus
480/965-6692
Lauren.Harris.1@asu.edu

Dear Lauren Harris:

On 4/15/2021 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Competency-based Learning and Soft Skills: A Study in Teacher Implementation
Investigator:	Lauren Harris
IRB ID:	STUDY00013818
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• Focus Group Questions, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Interview Questions, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • IRB Application 4/14 Update, Category: IRB Protocol; • Letter of Permission, Category: Off-site authorizations (school permission, other IRB approvals, Tribal permission etc); • Master Consent Form, Category: Consent Form; • Recruitment Email, Category: Recruitment Materials; • Study Procedures 4/14 Update, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Survey Questions, Category: Measures (Survey questions/Interview questions /interview guides/focus

	group questions);

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 4/15/2021.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

If any changes are made to the study, the IRB must be notified at research.integrity@asu.edu to determine if additional reviews/approvals are required. Changes may include but not limited to revisions to data collection, survey and/or interview questions, and vulnerable populations, etc.

Sincerely,

IRB Administrator

cc: Paul Phillips
Paul Phillips