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The Influence of Professional Development as Perceived by In-Service Military Instructors

Blaise Cornell-d'Echert, Jr.
Walden University

Walden University

College of Education

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Blaise Cornell-d'Echert, Jr.

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Dr. Edward Kim, Committee Chairperson, Education Faculty
Dr. Kathy Zientek, Committee Member, Education Faculty
Dr. Wade Fish, University Reviewer, Education Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

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Abstract

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Blaise Cornell-d'Echert, Jr

MS, Kansas State University, 2005

BA, Methodist College, 1989

Project Study Submitted in Partial Fulfillment

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Abstract

At a new military school, leaders worried that professional development (PD) for their novel curriculum did not induce consistent changes in their military instructors. Transformative learning theory suggested reconstructing frames of reference could help inform practices for military instructors. To fulfill the purpose of the study, current research provided a conceptual framework to assess the effectiveness of the PD effort. The research questions examined instructor perceptions of the school's instructional strategy, their willingness to modify lessons, and to conduct assessments of learning outcomes. School leaders proffered 18 of their most effective instructors as a sample population for a case study. Data were collected from 10 participating instructors and compared with information from direct observation, student comments, and semi-structured interviews. Member checking, data triangulation, and a blind peer-review provided confidence in the 4 emergent themes of an inductive data coding process. Results pointed to strong instructor appreciation for PD and a desire for more. Instructor performance was influenced by peer coaching, a lack of developmental feedback, and inconsistencies in assessment strategies. Instructor collaboration efforts suggested the utility of a professional learning community (PLC) as a way to improve PD effectiveness. The results of this study apply to the broader military and higher education domains where PD programs are routinely found lacking. In terms of positive social change, skilled instructors significantly improve learner outcomes. Learners, with robust assessments of their competencies, should enhance the effectiveness and productivity of the communities they join as graduates. Effective PD is a way to accomplish this positive social change goal.

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Dedication

This study is dedicated to the anonymous officer student whose annotation in big red letters on an end-of-course review said "Don't waste my time!" and with the further recommendation to "read Wlodkowski." I was reviewing the end of course comments for the population of students at a military graduate school for mid-grade leaders. The college has a 10-month curriculum and prepares leaders for their next ten years of military service. While senior leaders in their addresses often tell students this is the best time of their military life and that it is only reading if you do it, the program in its various incarnations over a 139 year history has been a cornerstone for the development of senior military leaders. I was honored to be selected as an instructor.

Those anonymous comments however created a profound dilemma for me. I questioned if my military experience was sufficient. Further, I wondered how much I really knew as an educator. I decided to find out and undertook a Master of Science in Education program. That program opened my eyes and my mind so much that I have been on the path of the science of teaching and learning since 2005. I hope, that in some small measure, for the thousands of military learners I have engaged since – that I have not wasted their time.

Acknowledgments

The first acknowledgment must go to my long-suffering spouse of 42 years, who, though recognizing my constant immersion in the science of learning, questioned what I was going to do with a doctorate at my age. Her unswerving support and gentle nudges "to get it done" helped smooth out many of the rough spots along the way.

I would be remiss in not recognizing two fine scholar/educators. Drs. Cheryl Polson and Sara Jane Fishback who convinced me of the importance of comprehensive research – deep reading and analysis of everything, even things diametrically opposed to my world view. I would not be the scholar I hope I am today without their encouragement.

A fine friend, and a colleague, Dr. Gary Riccio, taught me the importance of divergent exploration and the benefits of colliding opposite perspectives to find some new precipice from which to glance upon an idea or concept anew. For that continuing experience I am deeply grateful.

Finally, to the many hundreds of military educators I have worked with over the last 20 years. Their mostly unheralded work, essential as it is, and as difficult as it is, continues to produce and sustain the finest military force this world has ever known. May it continue so and be a beacon to the rest of the world.

Table of Contents

iii

List of Tables

Section 1: The Problem

Local Problem

There is a problem in a Department of Defense (DoD) school that serves active-duty U.S. military personnel and operates in the Southern part of the United States. The problem is that a service-required PD course, combined with a school-required program for instructor PD offered to instructors do not appear to induce consistent changes in the teaching performance of all participants.

In the still immature field of developing faculty skills in higher education, there are different terms used: professional development is the preferred term for military and government sponsored educators, faculty development is also used frequently in describing programs in post-secondary education settings, while an emerging term of art appears to be educational development. For this study, the term professional development (PD) will be used.

The study site conducts an additional 40-hour PD workshop to remediate shortcomings found in the service-required 80-hour instructor development course. Course managers and other school leaders commented that some instructors who have attended the 80-hour mandatory instructor course and the additional 40-hour workshop do not appear to practice what they learned after participating in both sessions.

Instructors at the school are considered subject matter experts (SMEs) for the topics of computer operating systems, networks, and how to protect these systems from hostile actions. School leaders are concerned about the problem of instructors not transferring their learning about teaching and student learning into their practice because of the effect it has on the mission

of the school. The mission of the school demands producing graduates with competencies needed for success in defense of the cyber domain. Therefore, the school's strategy (DoD, 2016c) is to focus teaching and learning design on the student experience to develop competencies involving critical thinking, problem-solving, and teamwork rather than solely acquiring new knowledge and skills.

Instructors who cannot implement a competency-based curriculum negatively impact students because they are not developing the competencies cited above – and expressly stated by the school leadership in their strategy statement. The Deputy commandant of the school suggested many possible factors that contribute to this problem including: (a) shortcomings in the PD program, (b) lack of instructor autonomy, (c) lack of coaching or mentoring support, and (d) instructor misperceptions regarding their responsibilities.

This study will contribute to the body of knowledge about PD needed to address this problem by determining, from the perspective of a select number of instructors, what most influenced them to be effective instructors as desired by the leadership of the study site.

In 2014, an arm of the United States DoD created a new branch within the DoD as growing threats in the cyber domain required action. The cyber domain is far more than the internet. Essentially, anything and everything connected over networks can be vulnerable to attack; industrial control systems, power distribution grids, pipe lines, computer-controlled ventilators in hospitals; the list touches almost all aspects of 21st century life.

The creation of this new branch recognized that increased DoD dependence upon information technologies also created new vulnerabilities. Additionally, the ubiquity of the cyber

domain in the U.S. is such that it has become a major vulnerability to our national security. Subsequently, to fill this branch with qualified and competent people, the DoD established a school with a mission "to train, educate, and develop skilled people able to operate in the cyber-domain" as specified in the official organizing document (DoD, 2017c). Students who attend this school come from multiple branches of DoD, (Army, Navy, Marine Corps, Coast Guard), different components (Active Duty, Guard and Reserves), as well as from multiple U.S. governmental agencies. The school operated three campuses in three different states; though currently, they are beginning to co-locate at the study site.

The school uses instructors who are from the military (uniformed force), federal service civilians, and contracted civilians. Students who attend courses at this school range from initial entry (meaning new to the service) through all ranks up to and including field-grade officers. Consequently, curriculum varies from introductory level immersion into computing systems, networks, and electronic warfare to real-world problems involving protecting the cyber domain and infrastructure.

Leadership and instructors to operate the school in a limited capacity were in place in 2015, and instruction commenced by October of 2015. The school began borrowing facilities, and the instructor staff is still growing to reach its full operational capacity (FOC), which will likely occur between 2020-2023. FOC means that all facilities are available, all instructor positions have people assigned, and the school can adequately support the expected student load to populate the service needs. The annual student population (in 2018) was between 700 and 800

students. When at FOC, the school will be able to sustain a student load of up to 2800 learners an almost four-fold increase.

As a new military branch created to address a new military challenge of cyber operations, school leaders also chose to adopt a different method of instruction compared to what is common in the service branch. Military regulations (Department of Defense, 2017a; 2017d) describe the standard methods of instruction used by the service branch as direct instruction and small-group experiential learning, as originally described by Kolb (1984). In 2011, a new learning concept document (DoD, 2011) recognized the shortcoming of these traditional service instructional methods. The precis of the document was that learners educated under the traditional system failed to take the initiative, adapt, or problem-solve in unique ways that new forms of warfare in the 21st century required.

The educational method selected by the new school's leadership had to help prepare students for the complex and uncertain nature of their duties in the new domain of cyber operations. As noted in an early school strategy statement (DoD, 2015) the leadership recognized that the rapid changes in technological innovation and new threats precluded a fixed curriculum and chose instead to develop a "community of problem-solving adult learners."

Requirements for problem-solving and rapid changes in technology created a challenge for the school. Multiple researchers focused on cyber and Science, Technology, Engineering, Mathematics (STEM) learning such as, Bicak, Liu, and Murphy (2015); Knapp, Maurer, and Plachkinova (2017); and Li (2015) have noted that instructors must build and revise their lesson plans to remain at some parity with the rapid pace of change in information technology. Most

schools in this service branch do not follow this practice; they instead comply with regulations (DoD, 2017d) and only update the curriculum on a 3 to 5-year cycle. Consequently, lesson planning and design are not part of the curriculum in the service's instructor development course. Because of this shortcoming, school leadership require lesson design and planning for all instructors to ensure their capability and skill to create and implement outcome-oriented, competency-based lesson plans.

Gap in Practice

Most students who attend courses at the DoD school do so because of their demonstrated cyber skills, and many already have either relevant experience or advanced degrees. Instructors need expert-level content knowledge for these courses and must be excellent teachers as well. According to the Director of Training, the current service-required 80-hour instructor course was not adequately preparing instructors either to develop or to teach a learner-centric curriculum. Of the 62 instructors then assigned to the school, 48 completed the 40-hour PD workshop, which the study site administers quarterly. School leaders noted that, based upon in-class observations, analysis of student end-of-course comments, and quality assurance evaluations, 18 of 48 certified instructors demonstrated learning transfer from the PD program. Typically though, such measures of PD learning transfer are more subjective than objective.

Objective measures of PD effectiveness are rare, and there are few examples of evaluations that examine teacher-learner interactions. Soebari and Aldridge (2015) especially found little evidence of measures from a student's perspective as it relates to PD initiatives and PD effects. Nonetheless, school leaders found comparing the effectiveness of implementing

learner-centric strategies, and using active learning methods was considered indicative of positive learning transfer.

Further analysis by school leaders indicated that some instructors had not changed their teaching practice in ways that the school desired and appeared to be unaffected by the PD workshop. Reportedly, some instructors attempted to implement new methods (active learning strategies, problem-based learning, and competency assessment tools, among other techniques), but lacked the support of a mentor. Many just returned to their prior teaching practices of lecture, demonstration and practice. While there might be some information gained by probing why the PD program did not affect all instructors uniformly, school leaders were more interested in understanding what did work for the 18 instructors that school leaders saw as most changed. The problem to be studied was to understand the influence of PD on in-service military instructors.

School leaders defined (DoD, 2017f) effective instruction as (a) multiple learning activities within a learning period, (b) active learning techniques that engage learners with content, (c) learning activities that develop competencies involving critical thinking, problem-solving, and teamwork, and (d) development and use of learning activity assessment metrics for both formative and summative assessment of learning outcomes.

Problem Within the Larger Educational Situation

In their command brief (DoD, 2016b), leadership at the school described using an outcomes-oriented competency-based education teaching approach whereby instructors as experts help knowledgeable learners develop real-world problem-solving skills under the performance coaching of instructors. The Deputy commandant has stated that given the unique

nature of the school and its students, instructors need skills as teachers (for advanced beginner learners), as coaches for more experienced and competent learners, and as mentors for those learners with talent mastery acquired through operational experiences. Each of these roles (teacher, coach, and mentor) depends upon knowledge, skill, and attributes (KSAs) that instructors can develop over time and with experience. School leaders can use PD sessions and workshops as a substitute for experience to accelerate instructor performance in terms of different roles to help meet learner needs.

Several researchers studying PD program design and development (Gulamhussein, 2013; Martin, Kragler, & Frazier, 2017) described a problem of school leaders and program developers who make assumptions about what instructors need. Frequently those efforts fail to be effective. The New Teacher Project (TNTP) in a 2015 multi-year, multi-school study contended that there is a minimal base of evidence about what helps teachers improve and that, when teachers do improve, it is not clear that the PD program was the cause. This recalls the earlier statement about the rarity of objective measures of teacher PD effectiveness.

The Learning Policy Institute published the work of Darling-Hammond, Hyler, and Gardner (2017) who studied 35 different PD programs and suggested that the majority of PD efforts did not produce a useful change in either teacher or learner performance. PD can be a helpful bridge between theory and practice. However, as Gaumer Erickson, Noonan, Brussow, and Supon Carter (2017) noted, PD does not always lead to learning outcomes that improve teacher performance and therefore require a more in-depth analysis of what works for instructors to change their practices.

Rationale

Evidence of the Problem at the Local Level

The instructor staff of the new DoD school is responsible for conducting 19 different courses in three different states. The majority occur at one campus that also is the study site, and the courses will all consolidate there when the institution is at FOC. As a course manager described it, the student audience ranges from inexperienced but advanced beginners to the deeply-experienced and highly proficient. That range of experience alone imposes teaching challenges for instructors.

Similarly, from a military learner perspective, the learner population ranges from initial-entry personnel to mid-to-senior grade personnel with extensive operational experience returning to school for further development. For perspective, the students at the school include future keyboard operators, line supervisors, team supervisors, team leaders, technical specialists, staff officers, and executive decision-makers. There are significant cyber and military experience disparities in their student population. Therefore, the school's strategy statement (DoD, 2016c), is explicit that a traditional approach to training and education of these students is rife with risk and calls for a wholly different teaching and learning approach.

To implement the new military learning concept (DoD, 2015), instructors assigned to teach at the school must themselves be life-long learners, and able to promote deliberate thinking, problem-solving skills, and have the capacity to both coach and mentor as needed. More significantly, there is a difference (Webster-Wright, 2009) between learning as a student when compared to learning new concepts as a professional, as is the case with instructors

undergoing PD. Because the school and branch are both new, there is not a large and experienced military staff to draw upon to fill instructor positions. Many instructors therefore are contractors, some with prior military service, but all selected because of their expertise. With such a diverse student population and a wide gamut of topics, many instructors have niche expertise to fulfill specific course needs. Differences in terms of experiences, knowledge, and backgrounds introduce problems in establishing a cadre of instructors that use standard practices coherent with the school's strategy.

As described in the original school strategy (DoD, 2015), "cyberspace changes faster than training", meaning that that traditional training paradigms cannot keep pace. This idea is why school leadership seeks to adopt a competency-based approach to learning. This service branch of the DoD has recently re-framed its learning strategy (DoD, 2017e) and is still exploring both outcomes-oriented and competency-based learning. The strategy is a compromise and has some perspectives that differ from broader academic understanding of competency-based education (CBE). A competencies-based learning approach helps the school align functional knowledge and skills with job requirements. Curriculum designers, as noted by (Ford & Meyer, 2015) often use KSAs of value to a profession as a way to build the learning content to ensure graduates satisfy workforce needs.

Many researchers maintain that both outcomes orientation and competency focus are not new to educational models practiced in the developed world, though it is to the DoD. However, as reviewed by Gallagher (2014), Morcke, Dornan, and Eika (2013), and Simonds, Beherns, and Holzbauer (2017) there are different ideas about when the concepts emerged and how various

adherents use them. For its part, the DoD (2017b) considers competencies to be a cluster of job-related KSAs to assure success in the performance of tasks associated with a military function. From the perspective of school leadership, instructors will use KSAs to set conditions that allow learners to solve real problems under the coaching of expert instructors. Some research (Girardi & Crew, 2016; Simonds et al., 2017) indicated that such an instructor role is consistent with the individualization and mastery learning that has long been part of the model of CBE.

Within the service branch, traditional instructor development focuses on preparing instructors to deliver learning content produced by professional curriculum developers. PD that the studied school is implementing involves making instructors capable of developing initiative in students and solving unique problems unlike those taught in the classroom. As commented upon by the school's education analyst, the PD program "seeks to develop instructors who are more confident in developing outcomes; learner-centered, problem-based learning activities and active assessment measures." Further, the program promotes instructors' awareness of the importance to develop broad competencies involving problem-solving, critical thinking, adaptability, and teamwork – consistent with the school strategy.

After several iterations of the 40-hour workshop, most participants appeared enthusiastic about using what they learned upon their return to their classroom. As reported by the school's education analyst, some instructors reverted to using previously developed learning products because they lacked confidence in their ability to build learning products on their own. The same education analyst proposed some additional reasons why there was some resistence. Some included instructor belief that they must exactly use a command-sponsored product as designed.

Further, that quality assurance evaluation checklists do not support the new method of teaching.

Additionally, instructors received uncertain and insubstantial feedback from classroom observers

who were not familiar with a learner-centric curriculum, and this did not instill confidence in the

novice instructor. Other school leaders at the study site, including course managers and senior

instructors, reflected that instructor confidence "was high" (meaning a willingness to try

something new or different) immediately upon completion of the PD workshop. This confidence

decreased over time if there was no compelling reason to apply those newly learned skills.

Anecdotally, a course manager mentioned that when instructors were engaged in team-based

development of new learning activities, often participants remained enthusiastic when

developing in-class activities using phrases "like we did in the PD workshop" to help describe

their intentions.

Evidence of the Problem from the Professional Literature

There are many problems associated with PD, especially in education. Many researchers

(Abu-Tineh & Sadiq, 2017; Lauer, Christopher, Firpo-Triplett, & Buchting, 2014; Lee,

Longhurst, & Campbell, 2017; Parsons, Ankrum, & Morewood, 2016; Ridgway, Ligocki, Horn,

Szeyller, & Breitenberger, 2017; Smylie, 2014; Soine & Lumpe, 2014; Teodorovic, Milin, &

Vujacic, 2016) described a consistent theme of significant, and persistent problems in the world

of PD. One issue appeared to be teacher PD itself and how it is defined, measured, implemented,

and supported. Some of the other issues with PD involved when it starts, how it is applicable

only to in-service teachers, and its applicability to self-directed learning.

These issues are actually not new in the field of teacher PD. Each of these issues appeared in an extensive literature review conducted for the National Institute for Education in 1985 by Howey, Matthes, and Zimpher (1985). The perspective of teacher PD, lacking an effective definition, from international authors (Guskey & Huberman, 1995) in subsequent years adopted a more programmatic view, yet still lacked a definition of teacher PD. There were efforts though to focus attention on a definition. Lacking an operational definition, any program engaging teachers could be called PD. Evans (2002), described how an emerging commentator about teacher PD, Darling-Hammond, failed to define teacher PD in the 1994 book about the topic she edited. However, with a persistent scholarly focus in journals, between the mid-1990s and 2017, Darling-Hammond et al., (2017) reported that a consensus definition of teacher PD seemed to coalesce.

Another consistent theme described by several researchers (Bayar, 2014; Condon, Iverson, Manduca, Rutz, & Willett, 2016; Martin et al., 2017; Postholm, 2012) was that teacher PD is one of the best means of improving learner performance – in other words, better teachers improve student achievement. In many studies, at least evident since 1999, researchers of PD such as Desimone (2009, 2011), Guskey (2002), Karabenick and Conley (2011), and Light, Calkins, Luna, and Drane (2009) had suggested that a traditional workshop approach to PD was not wholly sufficient to generate a sustainable effect on teacher performance. Or, as Darling-Hammond et al. (2017) stated, workshops do not produce the desired outcome of improved student achievement. A one size fits all (the workshop) approach to PD is inadequate. Thomas, Harden-Thew, Delahunty, and Dean (2016) found in their research and Levesque-Bristol et al.

(2019) subsequently confirmed that programs with both discrete beginning and ending points might build foundations but do little to support continued learning. As teachers learn through experience, without validation and support they could be learning the wrong strategies, approaches, or practices.

Intention of the Study

School leadership at the study site had already determined that the service standard instructor development course (the CFDP-IC previously described) did not fully meet their needs. The additional 40-hour PD workshop seemed to increase the number of instructor-designed learning activities, active rather than passive learning, and some practical exercises that promoted competencies, but inconsistent results puzzled school leadership. The school leadership identified their 18 most effective instructors and wanted to understand their perspectives and how they implemented techniques as a result of the PD program. This could provide insights into the future development and implementation of the PD program. School leadership at the study site pledged to make available the names of their most effective instructors. Because of the mix of military, civilian, and contractor instructors, a selection of approximately 10 to 12 of these instructors provided a sufficient number to interview as part of a qualitative case study. Twelve instructors agreed to participate in the study; however, only 10 were available to interview. I used a case study to explore, from the perspectives of effective instructors, how the PD program (80-hour course and 40-hour workshop) affected these instructors' teaching practices. I investigated how military cyber instructors perceived learner-

centered and outcome-oriented competency-based teaching as a way to develop problem-solving, critical thinking, and teamwork KSAs as desired by school leadership.

Definition of Terms

Competencies: In education literature there are several definitions of competencies as a product of learning or development. Within this service branch of the DoD, the learning policies regulation (DoD, 2017d) says that a competency involves knowledge, skills and attitudes needed for success in a job that can develop through learning and is measurable against performance standards. The study site replaces the word attitudes with the word attributes in their definition of competencies.

Course Manager: A person (military, civilian, or contractor) assigned duties to monitor all aspects of learning activities involving planning, course start through graduation, and post-execution analysis to determine learning objectives and desired learning outcomes (DoD, 2017d).

Instructor: The DoD does not have a defined term for an instructor, though the term instructor often appears in other definitions of learning and content delivery (DoD, 2017b). In this study, the term will apply to school personnel who are assigned duties which involve regular contact with assigned students delivering planned learning content or charged with developing learner competencies.

Professional Development Program: The service branch, much like other institutions does not fully describe what a PD program is or does. The putative guidance (DoD, 2018) for PD programs merely notes that the program is to "prepare…[people] that have a role in training,

education and professional development" (p. 7). As currently implemented at the study site, their

PD program consists of three major components. The first is the service-required 80-hour

instructor development course. The site also requires participation in a 40-hour immersive, active

learning workshop. The workshop teaches in-service instructors how to describe desired

learning outcomes, design learning activities, and create assessment metrics to measure learning

objectives and outcomes associated with developing competencies of interest. The third

component is validation (compliance with expected practices) through senior instructors'

observations of teaching performance to certify the instructor to teach unsupervised.

Senior Instructor: A person (military, civilian, or contractor) who has taught multiple

iterations of a course (usually with more than 1 year of experience) who is also responsible for

monitoring and mentoring newer instructors. As poorly described, but often mentioned in service

regulations (DoD, 2017d), the position of senior instructor is an unclearly defined, but generally

understood term of art within the military teaching community.

Service branch: The U.S. DoD consists of several service branches. There are also,

within each service, branches of service, which involve military functions such as infantry,

artillery, aviation, logistics, and military policing, for example. This information is merely to

inform that there is a constant state of competition and one-upmanship between the services (and

branches within services) – for resources, for primacy, for leadership. The challenge for the

study site, as noted earlier, is that many services and many branches attend courses at the study

site.

Service-required instructor development course: The proper term for this course is the Common Faculty Development Program-Instructor Course (CFDP-IC) more commonly known as CFDIC. This course is an 80-hour curriculum designed to introduce military leaders (including civilians and contractors assigned to instructor positions) to sanctioned teaching methods and some education theory. It also provides opportunities for the practice of both direct instruction and collaborative and interactive learning group methods of instruction. As a disclosure statement, I was part of the design and development team for the CFDP-IC. It was not entirely implemented service-wide until August 2017.

Teacher (Instructor) Professional Development: The consensus definition of teacher PD that Darling-Hammond et al., (2017, p. v) described that has evolved over the last two decades is "structured professional learning that results in changes in teacher practices and improvements in student learning outcomes." The regulating guidance for the service PD program (DoD 2018) does not define PD, merely noting that the program prepares participants for positions of responsibility as faculty, and that they will display competence in instructional techniques and subject matter expertise.

Significance of the Study

Significance of the Study to the Broader Audience

The focus of this study is on instructors at a military school. However, the research can be useful to any postsecondary learning venue. This is especially true for those institutions that employ subject matter experts to transfer their expertise to novices or learners such as trade schools or community colleges. The need for faculty PD in higher education is so widespread

that it appears even as a topic in popular magazines. Erhlich and Fu (2013) described how few

college teachers ever attended courses about education. Oleson and Hora (2014) studied the

learning experience of 53 STEM instructors at three institutions and found that only 18 faculty

members acquired any formal instruction about teaching and learning. Timperly (2013) similarly

noted that there are shifts of focus as an instructor acquires experience over time but the

transitions from novice to expert cannot be assumed as confidence in teaching accumulates.

Manduca (2017) said that college-level STEM teachers often strive to stay current in their

discipline, but found that STEM teachers did not work as hard to remain current in their teaching

skills. Manduca noted as well that colleges needed to adopt a broader perspective about PD and

offer more services to make it easier to improve teaching skills.

Condon et al. (2016) said that effective faculty PD not only improves faculty

performance in the classroom and student learning, but also provided impetus to affect other

dimensions of college life. The common PD cause and effect logic model described by Manduca

(2017), and that Condon et al., considered as well lacks credibility because most PD program

analysis derives from participant self-reporting. Understanding how instructors (teachers,

professors, trainers) perceive their PD experience can provide better insights into the design of

the program and increase the probability of implementing new practices. Several studies

(Banasik & Dean, 2016; Severs, 2017) have said that the importance of PD for teaching faculty

is growing as more colleges and universities hire more part-time and non-tenure track instructors.

The Bureau of Labor Statistics (2018) noted that postsecondary education jobs will

increase about 15% between 2018-2026. McFarland et al., 2017 reported that 48% of all faculty

at degree-granting school were part-time. Part-time contracted faculties in post-secondary institutions share many of the characteristics of instructors in military schools. Both are experts in their field but have limited autonomy in the classroom and few development opportunities for acquiring teacher knowledge. Understanding what most effects teachers through PD will improve PD programs in military schools and in civilian post-secondary institutions.

Significance of the Study to the Military Service Branch

The service branch of the DoD that the study site is a part of maintains 37 permanent schools and conducts courses in 270 colleges and universities in the U.S. and its territories. According to a command briefing (DoD, 2016d) these institutions combined have more than 500,000 students in attendance annually. To teach all of these students obviously requires instructors. For the most part these instructors are drawn from operational assignments in the force where they acquired their subject matter expertise. While Sautelle, Bowles, Hattie, and Arifin (2015) elaborated on known attributes that point to the success of teachers or instructors, the military does not select instructors using attributes of value except for rank and experience in their specialties. There is a growing body of evidence that supports the idea that effective instructors have similar attributes or behaviors. The emerging thought of talent management in the military is beginning to consider such concepts.

Active duty military instructors teach for 2 or 3 years before they return to duties in units within the operational force. Civilian and contract instructors can and usually do, remain in teaching positions for more than 3 years. All new instructors must attend an 80-hour (two-week)

course to learn the rudiments of teaching and the regulation for learning policy (DoD, 2017d)

also directs re-certification after 5 years of teaching in a military school.

In most cases, the two-week course is the single development opportunity to transform a

successful trainer (their learned experience in the operational force) into a successful educator

(behaviors needed in a school setting). The military supports self-development as a semi-

structured, permissive learning opportunity, inspired and resourced by the learner. Unless an

instructor chooses to practice self-development (and knows what things to study), that single 80-

hour instructor course is the only formal teacher development they will receive for the rest of

their time as instructors. The leadership at the study site chose to require their instructors attend

an additional 40 hours of PD, after completing the 80-hour standard course. This requirement is a

part of instructor certification at the study site. The final certification requirement involves a

senior instructors' observations of their teaching. According the site's education analyst, and

several course managers, these observations are more concerned with the accuracy of curriculum

content delivery as opposed to an assessment of instructional abilities.

In 2011, the service published a new learning concept (DoD, 2011) that directed

instructors to incorporate adult learning methods to replace the passive learning techniques

(lecture, PowerPoint presentations) most frequently used by instructors in service schools. The

learning concept published in 2011 was revised in 2017 to broaden the scope and purpose of both

training and education in the service. Subsequent learner responses to surveys and analysis of

end of course data (DoD, 2016a) showed lower student satisfaction than the service desires;

setting a 60% satisfaction threshold which was indicative of some problems in the learning

environment. A 2012 advisory body formed by the service to study service education practices, produced a report for the training component of the service branch. Among other findings, (Williams et al., 2012) described a need for specific instructor competencies if the service branch intended to accomplish their learning mission. The authors of the report suggested that it is possible that the service standard instructor preparation course is an adequate introduction for novice instructors learning how to teach. However, the advisory body also reported that student dissatisfaction (as measured in annual surveys) with their learning might decrease if new instructors received additional, and continuing PD focused on developing essential proficiencies as instructors. Queries of the training command have to date shown that there have been no further studies or analyses to determine if recent interventions (since 2012) in instructor preparation produced demonstrable results.

The leadership of the study site (DoD, 2016b) described their vision to produce cyber operators with the KSAs necessary to defend the United States against cyber threats. The cyber learning strategy (DoD, 2016c) recognized that because the cyber domain changes often and in unforeseen ways, instructors need to develop competencies involving critical thinking, problem-solving, and teamwork in all learners. Though current thinking, such as expressed by Girardi and Crew (2016) is that competency-based education (CBE) is more appropriate for underprepared college learners than for well-educated learners, Simonds et al. (2017) said that there are essential requirements for instructors to implement this kind of CBE curriculum. For example, instructors will invest more time, require significant commitment, and must be competent using projects and rubrics to assess performance.

The school leadership uses a 40-hour PD workshop to amplify the teaching and development skills of the service's 80-hour foundational instructor preparation course. The 40-hour workshop involves designing learning activities, promoting competency development, and assessing the quality of desired learning outcomes. However, Giraldo (2014), Gulamhussein (2013) and Lee et al. (2017) all reported that PD workshops by themselves are no more effective than pre-service learning interventions.

In an annual survey study conducted by the service branch (DoD, 2016a), ninety percent of assigned instructors within the branch have more than ten years of military experience as trainers. Still, as the study site command brief (DoD, 2016b) makes clear the cyber curriculum requires learner-centric instructors that encourage critical thinking, problem-solving, and teamwork. The study site uses lesson plans that provide broad guidance, objectives, and outcomes for instructors to personalize and make relevant for learners. School leadership understands this creates burdens on instructors at the school in terms of creativity, imagination, and instructional expertise. The study-sites' education analyst described that these burdens are more significant because of the highly educated students they teach.

Challenging Aspects of Designing PD Programs and Models

Attempting to develop PD programs for instructors is not that different from developing learning programs for other learners, and many of the same program development elements should apply. Caffarella (2002) and Caffarella and Daffron (2013) presented the idea of an 11-component interactive model of program design for adult learners. A key aspect of their design

model is that it must simultaneously address the needs of program stakeholders (school leaders and course managers), learners, and instructors to create an effective program for adult learners.

Similarly, Schmidt and Biniecki (2016) described that adult learning programs in organizations need to link several organizational layers to be successful. Organizational layers such as leaders, managers, administrators, and instructors need consideration. If the program needs to promote change in the participants, some of the program elements pointed out by Caffarella and Daffron, such as a needs assessment, context, goals, objectives, and learning transfer, require focused attention by the developer to assure success. Many teacher PD program developers still adhere to models that suggest what should happen in the program, as opposed to what should happen to the learners. In some cases, professional developers see a need for a methodological approach as described by Abu-Tineh & Sadiq (2017), Ali and Wright (2017), Avidov-Ungar (2016), Dysart and Weckerle (2015) and Ridgway et al. (2017). However, other PD developers, such as those studied by Gaumer Erickson et al. (2017) perceived a need to measure the quality of learning only to determine the effectiveness of the PD program. The work of Darling-Hammond et al. (2017) is especially helpful to PD program developers because it reviewed 35 different PD methods. More importantly they included an assessment of which programs produced consistent and repeatable results, and why. These sources can be very useful to PD designers.

One of the lesser-studied aspects of teacher PD involve studies seeking to understand what teachers believe that they want or need for their personal or, professional development. Teachers, said Chang, Lin, and Song (2011) should have concerns about their efficacy,

especially if they are new to the practice. However, several researchers that studied the results of PD programs (Levesque-Bristol et al., 2019; Liljedahl, 2014; Zhang, Parker, Koehler, & Eberhardt, 2015) commented that considering the needs of the novice, or in-service instructor does not appear to be a primary design concern. Nor did McMillan, McConnell, and O'Sullivan (2016), analyzing participant feedback from previous PD sessions find these data to have much impact in other PD program designs either. Researchers Koc, Demirbilek, and Yilmaz Ince (2015) analysing responses from 228 PD participants found their needs (teaching techniques, research, technology use, and self-improvement) were not satisfied. Sinelnikov, Kim, Ward, Curtner-Smith, and Li (2016), whose study focused on content knowledge in PD, identified more themes such as new teachers with managerial challenges (time management, transitions, lesson pacing). Apparently, teachers have a good sense of what they need, but it is infrequent that teacher-learner needs merit consideration by program designers.

Cheung (2013), as well as Mohammadi and Moradi (2017), paid particular attention to how practice, attitudes, and perceptions changed as a result of PD. It was Matherson and Windle (2016) who argued for PD programs using themes that coincide with general ideas of andragogy: (a) interactive, engaging, and relevant to their students, (b) model a more practical method to deliver content, (c) teachers want a voice in their professional development, and (d) teachers desire sustained professional growth over time.

Other researchers have adopted broader perspectives on understanding teachers-as-learner needs in PD programs. External educational reforms as reported by (Zhang et al., 2015) sometimes appear to drive teacher PD needs. Drawing upon 118 science teachers over 3 years of

study, teachers reported needing improvement about their learners, about how to teach and how to conduct assessment. The reports of these teacher needs are not insignificant, and recognize that teachers as learners are not the blank slates some PD designers consider traditional learners to be. As Koc et al. (2015) said, teachers can provide information useful to design PD programs that meet multiple needs, that quite often coincide with school improvement efforts. Liljedahl (2014) took a more pragmatic than programmatic view of teachers-as-learners' wants and needs compared to Zhang et al, and Koc et al., and suggested that most program developers do not understand what teachers want in professional development. The emergent themes of the study pointed to engagement, autonomy, and dealing with resistance to change as needs teachers consider essential elements of PD design.

There are many studies that examine teacher willingness or motivation to change, an important element if PD is about changing teacher performance. There are several studies whose authors seek to examine teacher willingness or motivation to improve. Aelterman, Vansteenkiste, Van Keer, and Haerens (2016) described how a study of 80 teachers found that satisfying psychological needs led to increased sense of efficacy and greater likelihood to implement changes. Gorozidis and Papaioannou (2014) framed their research with self determination theory but still found that autonomous motivation was more significant than controlled motivation imposed by external factors of the PD program. In another study, Pyhalto, Pietarinen, & Soini (2014) found that initial teacher responses focused on themselves, but over 2 years teachers tended to adopt a more collaborative attitude and accept a more holistic view of teaching reform. Research reporting by Tzivinikou, 2015 and Yuan and Zhang, 2017, described similar results.

When program developers do not take motivations into account, program results are less than uneven; sometimes, they generate negative impressions about learning and PD on the instructors. Developer and program manager concerns (Avidov-Ungar, 2016; Evers, Kreijns, & Van der Heijden, 2016; Gaumer Erickson et al., 2017; Soine & Lumpe, 2014; Warner & Osman, 2016) about motivation for change seems to be significant enough that some researchers aim to develop instruments that will establish metrics for the extent of motivation within a given population. Generally participant perceptions of PD are mixed as Karabenick and Conley (2011) reported on a national study of 552 teachers' experience with PD. They found 64% of the teacher population experiencing PD found it to be a positive experience, yet 13% reported a negative experience, and 18% considered the program useless. Still, 45% indicated that their experience with past PD did motivate them to participate again. Martin et al. (2017) in their year-long meta-analysis of 72 pertinent studies of PD reported that teachers expressed disappointment in their PD learning activities. Not that they did not learn anything, but perhaps they did not learn things they wanted to. McMillan et al. (2016) alluded that it is unclear how much reported motivation is a reflection of prior past exposure to less-than-impressive professional development, and how much it is a measure of developmental inertia in a system that does not value innovative practices or something else entirely.

Significance of Solving the Local Problem

For the study site, the study results might indicate what elements of PD transferred, and why those elements were useful. The study results might also suggest that PD had a negligible or marginal impact on instructor effectiveness. The deputy commandant stated that with more than

one campus, instructor PD should be similar at each campus to produce equivalent student achievement; success at one campus should mirror success at others, and that PD programs consume resources, mostly time. Instructors enrolled in PD programs are not teaching for the time that they participate in PD programs. Instructor utilization effectiveness (a metric used by the service branch) creates a scheduling challenge for planning PD sessions. The PD program requires instructors to conduct the program, as well as to design and manage it. The instructors to lead the PD program will come from the school's instructor resources as they are not part of a separate staff-section devoted to that function. As the student enrollment load (and instructor commitment) at the study site escalates as planned over the next few years (2020-2025), these resources are consequential.

As Guskey (2002) described, and both Desimone (2009) and Darling-Hammond et al. (2017) confirmed, supervisors and decision-makers are most often looking for evidence and rarely ask for proof of PD program effectiveness. This study may provide school leadership with evidence they need to either continue or improve their PD program or adopt other means to strengthen instructor abilities to enhance student outcomes. As indicated by program evaluations used at the study site, if this study does not occur it is unlikely school leadership would understand how, and why, some instructors are more effective than others, or the extent that the PD efforts might have shaped those instructors. As Soine and Lumpe (2014) noted, not every PD effort is equally effective in the improvement of instructor performance. For the broader military service branch audience (other schools and centers), there is a need for research-based evidence about the utility of continuing PD beyond the initial indoctrination of military instruction.

Several researchers (Gaumer Erickson et al., 2017; Soine & Lumpe, 2014; Warner & Osman, 2016) have developed short, comprehensive instruments that demonstrate when instructors have been positively affected by PD programs.

Guiding Questions

Studies of PD programs now have data that concludes (Condon et al., 2016; Soine & Lumpe, 2014) that better teachers result in better students. Most institutions of higher learning and many secondary school districts have resourced learning centers or offices devoted to teaching excellence, promoting learning science, and improving instructor effectiveness. Within the DoD, each service branch has established a university structure to inform or influence instructor or learning improvement. This service branch of the DoD does make provisions (DoD, 2018) for local schools and installations to address the PD needs of their instructors. Still, as the Director of the Staff and Faculty division at the service university related, many local institutions struggle to make their higher organizational leaders aware of the importance of resourcing PD functions.

Sorcinelli, Berg, Bond, and Watson (2017) reported about a challenge for PD program developers knowing what makes some instructors more effective than others that have all attended the same PD sessions. By probing the perceptions of those instructors that leaders judge as most effective, insights into their understanding of what makes them effective might influence PD programs either initial or continuing. By investigating what it is that effective instructors think about that has made them effective, an analysis can infer some conclusions about the purpose, content, structure, and duration of the schools' current – or future PD sessions.

Conversely, not considering what influenced changes in instructor performance might lead to program designs based solely on good intentions rather than models that will shape the changes required to promote learner-centered instruction.

With these ideas in mind, the questions that guided this qualitative case study were:

RQ 1: How do uniformed and civilian cyber instructors perceive learner-centered and outcome-oriented competency-based teaching as a way to achieve a school's vision of developing problem-solving, critical-thinking, and teamwork-capable cyber operators?

RQ 2: How does PD encourage uniformed and civilian cyber instructors to modify their teaching practices to be learner-centered, outcome-oriented, and focused on developing competencies involving problem-solving, critical thinking, and teamwork?

RQ 3: How do uniformed and civilian cyber instructors perform assessments of desired learning outcomes involving problem-solving, critical thinking, and teamwork?

Review of the Literature

Search Strategy

The Walden Library was the primary search tool used to locate current (within 5 years) or foundational journal entries about the topic of teacher PD. The multiple databases Education Resources Information Center (ERIC), EBSCOhost Education Source, Thoreau, Google Scholar, and ProQuest embedded as part of the Walden Library search function offered access to a wide range of professional, peer-reviewed journal entries. Search terms used in this study were: professional development, continuing professional development, teacher professional development, faculty development, constructivism, transformative learning, transformation,

teacher autonomy, teacher motivation, in-service teacher development, and teacher development. Additionally, though not mentioned until now, I considered transformative learning theory (TLT) as an element of the conceptual framework for this study. I periodically reviewed the website of the Transformative Learning Network (TLN) and, more specifically, reviewed the proceedings of their bi-annual conferences as another source for peer-reviewed research. Another site I considered was the National Institute of Learning Outcomes Assessment (NILOA) because of their broad efforts to encourage curriculum built upon outcomes and competencies – ideas complementary to the study site's intentions for their PD program.

Conceptual Framework

TLT, as first espoused by Mezirow (1978, 2000), serves best to describe how a PD program can positively change instructor practices because TLT is about transforming perspectives and transforming actions. Ten Cate, Kusurkar, and Williams (2011) reported that there is strong support for self-determination theory (SDT) in PD programs as well. They did note as well though, that SDT does not align well with most PD programs or agenda. A challenge is that the current study is exploring how instructors perceive their obligations to create learning environments that develop competencies when, without reflection, instructors might not even be aware of their perceptions. In other words, there could be some concern about how well instructors can describe how their learning might have transformed their practice. Instructors already have an extensive body of experience with learning, be it as a learner, or an instructor, and without some critical reflection, they might not be able to discern what has influenced their instructional practice the most. Meijer, Kuijpers, Boi, Vrieling, and Geijsel (2017) cited findings

from Berry (2009), who noted that educators often lack knowledge of what they know

consciously and have difficulty articulating their teaching practice knowledge for their reflection

and the betterment of others. Unver (2014) noted as well the inherent challenges for novice

instructors aligning theory and practice in a methodology that encourages student success. As

selected to fill instructor positions by either personnel assignment instructions (in the case of

military personnel) or hiring decisions (in the case of civilians or contractors), future instructors

have experience with the content that they will deliver. Aelterman et al. (2016) commented on

the importance of teacher beliefs regarding the effectiveness of innovations or new techniques

offered in PD sessions as compared with their own experiences as determinants of endorsement

or implementation.

Mezirow (1978, 2009) said that the learner experienced 10 phases of transformation,

beginning with a disorienting dilemma that resulted in a change of perspective about what their

experience means. Plews (2016) reported that the idea of perspective transformation continues to

remain a central element of TLT in both theory and practice though framed it as meaning

making. Mezirow (2000) used the phrase frames of reference to encompass meaning schemes,

meaning perspectives, and habits of mind as elements of what changes in transformative

learning. The centrality of the perspective transformation gets a thorough exploration in how

MacKeracher (2012) described transformative learning through her own experiences as a

teacher. Martin et al. (2017) suggested that TLT describes the gradual development of teacher

professionalism over time. As teachers reflect, solve problems, and collaborate with others,

changes in thinking and practice occur that become enduring. However, Martin et al. also noted

that teachers of long experience find such transformation much harder to do when changes are necessary, such as with a new curriculum, new teaching model, or original content.

What seems to matter most about TLT for developing instructors is the process of critical reflection needed to deconstruct and reconstruct beliefs, values, and attitudes (Daniel, Auhl, & Hastings, 2013; Meijer et al., 2017). These beliefs, values, and attitudes are the operational mental models in the minds of the teachers-as-learners in a PD session. Strauss (1996) referred to the idea of reconstructing mental models and suggested that it is insufficient to know the learners' mental models because this knowledge is different from knowing how to engage those mental models. Hinterecker, Knauff, and Johnson-Laird (2016), Johnson-Laird (2004), Rook (2013), and World Bank (2015) describe what serves best as a working understanding of mental models. Collectively they agree that they are internal (mental) representations of an external reality based upon prior experiences and a way to understand the world.

Rook (2013) considered mental models to be the foundations of tacit knowledge that affect thinking and doing in ways that are often unrealized or un-remarked upon by the person thinking. Klein (2001) suggested that mental models help a person describe, explain, or predict and are a critical component of an adults' thinking and shape how a person will act. Fox, Harkins, and Fischer (2013, p. 4) describe teacher mental models as "the nuts and bolts of how a teacher perceives the art of teaching, the process of learning, and the educator's responsibility in this interface." As such, the mental models of a novice, or in-service, instructor about their roles and functions as an instructor are prime targets for the professional developer. Holcombe and Kezar (2018) suggested that it is not the mental models of faculty only that matter for a PD

program. All of the operational mental models of the institution (instructors, managers,

administrators, and leaders) could be in conflict or contention, and the program developer should

consider them.

Dix (2016), Fox et al. (2013), Meijer et al. (2017), and Strauss (1996) reported that

teacher mental models accreted over time through prior learning and the experience of teaching

shape their teacher-as-learner needs. These mental models are expressions of teachers' beliefs

and are suggestive of their learning needs to implement change in practice. Psychological need

satisfaction and challenging mental models (teacher operational beliefs) are components of any

PD program concerning shaping teacher beliefs (re-shaping mental models) about proposed

teaching innovations (Aelterman et al., 2016; Van den Bergh, Ros, & Beijaard, 2014). Although

Mezirow never used the term mental models, he did explain why perspective transformation was

essential to change a learners' frame of reference composed of habits of mind and points of view

(Mezirow, 2000, p. 5). Adults not in the habit of mind of critical reflection or challenging the

status quo would discard (or ignore) ideas that did not conform to their point of view.

Effective teacher PD. Based on the analysis of 35 teacher PD programs that Darling-

Hammond et al. (2017, p. 4) conducted and that appeared to be effective, seven components are

considered critical to an effective teacher professional development program. These components

are: (a) content focused on the strategies most appropriate to the classroom context, (b) uses

active learning strategies to increase learner engagement, (c) encourages active collaboration

between teachers as learners, (d) teacher practitioners model various methods and strategies for

learning, (e) participants benefit from active coaching and expert support, (f) participants have

time for reflection and to receive credible feedback, and (g) the program continues over time to allow practice, implementation, and reflection of new methods.

A contrasting, but broadly cited alternative to Darling-Hammond is found in the characteristics of PD as described by Desimone (2009) and Desimone and Pak (2017) who contended that there are both core features of effective PD, and a core framework to conceptually measure PD effectiveness. Desimone (2009, p. 185) who was a reviewer of the earlier Darling-Hammond work cited earlier claimed that five core features of PD would increase teacher knowledge, skills, attitudes, and beliefs. Those five features are: (a) content focus, (b) active learning, (c) coherence, (d) duration, and (e) collective participation.

However, a description of an even more comprehensive view of developing teachers and faculty in higher education emerged. Surveying 385 PD practitioners in higher education Beach, Sorcinelli, Austin, and Rivard (2016) reported on services offered by departments or centers of teaching and learning and many similar names at well-resourced institutions. Instead of a specific program with outcomes and objectives, these centers offer a range of services in support of both the institution and the faculty.

There are many studies of PD that suggested a broad range of PD programs, types, methods, and characteristics. Zimmerman, Knight, Favre, and Ikhlef (2017), as well as de Vries, van de Grift, and Jansen (2014), among others, consider the utility of PD in terms of changing teachers' perceptions of their ability to encourage student learning. Some researchers deliberately sought to isolate components or characteristics of PD that spanned many programs. The idea of such research was to help others build PD programs rather than events or one-off sessions. Other

researchers examined specific and focused programs that to greater or lesser extents still reflected some utility and resulted in improved teacher performance. Considering the similarities between Desimone's (2009; 2011) and the Darling-Hammond et al. (2017) characteristics of effective teacher PD, this section will review how TLT and teacher PD interact to produce meaningful change in teacher perspectives, attitudes, knowledge, and beliefs. Though less evident in the literature reviewed, there are still those researchers who maintain that a training perspective is sufficiently effective (Nagnibeda-Tverdohleb, 2017) to modify teacher practices. Within a military institution, such ideas (training rather than education) can resonate because of the effectiveness of military training to develop critical skills.

Content focus. Both Darling-Hammond et al. (2017) and Desimone (2009) commented that content focus is a significant benefit to PD programs. The idea is that teachers need to focus on the course content (to promote content mastery) as well as how students learn that content best. Two PD approaches that favor a content focus have numerous studies that support the concept. One, known as TPACK, that Ali and Wright (2017) described as Technology, Pedagogy, Content Knowledge, seems most often associated with science or technology education. Zhang et al. (2015) reported that pedagogy content knowledge (PCK) is the other content focused PD paradigm. Both constructs support the idea of content focus and linking pedagogic techniques to improve teacher performance. They also appear (Dysart & Weckerle, 2015) to enjoy broad endorsement, especially in technology-focused instruction. Other efforts, such as those reported by Sinelnikov et al. (2016), indicated that better teacher content mastery improved teacher-student interactions and teacher confidence overall in the classroom. For

technologically intensive instruction, Wilkerson, Andrews, Shaban, Laina, and Gravel (2016)

reported that mastering the technology is as important as the content and requires careful

consideration in PD program design. Hoekstra, Kuntz, and Newton (2017) found that in 47 of

116 examined learning episodes their respondents (teachers) struggled to find optimal methods to

teach course content.

A different approach to delivering content knowledge, the flipped instruction model (a

strategy with a mixed pedigree), seeks to use technology to deliver content knowledge. Sammel,

Townend, and Kanasa (2018), Wallace, Walker, Braseby, and Sweet (2014) describe the method

as using classroom time to develop a more in-depth understanding of the content. The teachers-

as-students acquired content learning on their own (reading, observing video lectures, or via

online discussions) and moved to higher levels of cognitive development during face-to-face

(F2F) sessions in the classroom with the instructor and other learners (Foldnes, 2016;

Slomanson, 2014). In schools where PD is voluntary (Hardin & Koppenhaver, 2016) the flipped

instruction PD model was helpful in responding to low turnout and reduced antagonistic

participation by teachers that perceived no benefit from previous PD sessions. From a TLT

perspective, the content focus of PD recognizes, or addresses the disorienting dilemma, the self-

examination steps of the TLT phases, and assists the learner in the third phase, a critical

assessment of assumptions (Mezirow, 2009). As useful as the flipped instruction model might

appear to be, Towey (2015) published a cautionary lesson from a flipped classroom that failed

mostly because the learners were not ready to assume increased responsibility for their learning.

PD developers need to consider the readiness and willingness of the learners to make the extra effort this model requires.

       Active learning. Krahenbuhl (2016) suggested that active learning is the essence of constructivist pedagogy, but this is from the perspective of what the teacher offers the learner. Darling-Hammond et al. (2017) noted that active learning is learning that counters traditional, lecture-based, and mostly passive, transmission-style learning. Desimone (2009) believed that interactive feedback was an essential component of active learning, an idea that resonated with novice teachers learning to use active learning strategies (Stephens, Battle, Gormally, & Brickman, 2017). The ideas in the book, *Evidence-Based Training Methods* (Clark, 2015), dismantled many myths of active learning, especially those assumptions that suggest physical activity and motion are demonstrative of learning. The key, as Clark pointed out, is the difference between physical and psychological engagement – and Willingham (2009) described how cognitive science points to this concept as well. However, the lecture method of instruction (Farrah, 2004) – a passive transmission teaching method, and an often maligned technique (Freeman et al., 2014) might not be as ineffective (Psotka, 2013) for learning as it is said to be. A unique research effort to understand mind-wandering during lectures found that most wanderings were intentional. Wammes, Boucher, Seli, Cheyne, and Smilek (2016) found that the lecturer posed an idea that distracted the learner from the talk (of the address) but still aligned with the topic and the learner's experience. Such an idea might suggest that more experienced learners respond better to lecture than novice learners do, though that premise was not a finding of the research.

Collaborative learning. Desimone (2009) referred to collaborative learning as collective participation by which teachers from the same school or learning venue all participated in a learning program. The advantage of this technique is that all instructors share similar challenges and have a shared context and conceptual language (Daniel et al., 2013) for the learning problems in their school. Darling-Hammond et al. (2017) noted that collaborative PD sessions encouraged teachers to solve their local issues together, which enhanced positive student achievement. Teacher PD that uses collaborative learning could align with phases 3-7 of TLT (Mezirow, 2009). By discussing and sharing common problems and challenges, teachers are critically assessing their assumptions (phase 3), making connections with the source of their discontent (phase 4), exploring new avenues for change (phase 5), planning how to implement those changes (phase 6), while seeking new ways (phase 7) to achieve those plans.

Gerken, Beausaert, and Segers (2016) reported that some PD efforts seem focused solely on collaborative learning as a social and informal form of learning. These forms are like professional learning communities (PLC) and (Jensen, Sonnemann, Roberts-Hull, & Hunter, 2016; Zhao, 2013) reported they seem to be most prevalent in Asia. PLCs are sometimes referred to as or confused with communities of practice (CoP) because they share many similarities. Svendsen (2016) noted that a distinguishing characteristic of the learning communities is the shared mental structures between the individuals of the group that increased their confidence and skills in reflection. Alternatively, de Vries et al. (2014) noted that 260 secondary school teachers in their study tended to participate much more in updating skills and collaborative activities than they did in reflective activities.

Another form of PD that facilitates collaborative learning is a peer-to-peer professional development network (PDN). A PDN according to (Trust, 2017) leverages the power of the internet, and easy access to web-design tools to share lesson plans, have discussions, even observe other teachers. They are similar to online CoPs, yet different by their focus on members using the space to solve problems or learn new methods. The difference is for the PDN, members occasionally dip into the reservoir of knowledge, while in a CoP, participants tend to immerse themselves.

Modeling. The intention of teachers using modeling for teacher PD is so that the teachers-as-learners have experience learning as their students would, while simultaneously increasing awareness of the technique or method in use by the PD instructor. Desimone and Pak (2017) examining ten years of cross-sectional studies, said that PD experts helping school systems create PD programs, assumed the teacher-as student was learning from the experts' modeling. This assumption might not be valid unless there is evidence of the teacher-learner acting with the knowledge acquired from the modeling observation. Darling-Hammond et al. (2017) noted that modeling assists teachers in visualizing practice in ways that would support their development as a teacher. Every program studied by Darling-Hammond et al., (a total of 35) included modeling as a component. Modeling (Kumari, 2014) also improves teacher reflections of practice as they contrast their experience (Smylie, 2014) with their own beliefs. Modeling also stands out as an instructional method, primarily exemplified in science or technology topics (Wilkerson et al., 2016). The underlying pedagogic assumptions of modeling do not seem to get scrutiny beyond the belief that modeling promotes replication.

Coaching. Most expressions of coaching in teacher PD (Darling-Hammond et al., 2017; Margolis, Ryoo, & Goode, 2017) are about expert support, delivered on-site in the instructor's classroom. However, not all teachers will respond equally. For some, resistance (Aelterman et al., 2016) will increase with the more ingrained experience accumulated by the teacher. Nonetheless, some researchers (Derri, Vasiliadou, & Kioumourtzoglou, 2015; Fox et al., 2013), agree that teaching skill increases when coaching accompanies PD and more notably so, for novice teachers. Fox et al. also noted that coaching is a device that improves critical reflection, leading to higher-order thinking about performance, which translates into better meaning-understanding and improved teacher performance. Kumari (2014) noted as well the close relationship between coaching and critical self-reflection, especially for less-experienced teachers. From the perspective of traditional (workshops, conferences, meetings) versus non-traditional approaches to PD, Bayar (2014) reported that coaching is seen by some researchers (along with mentoring and peer observations) as a more effective method to transform teacher practices.

Coaching is particularly well suited to constructivist methods. Darling-Hammond et al. (2017) claimed that coaching is a form of scaffolding by experts that support teacher efforts to implement new practices. Other researchers conflate coaching and mentoring in ways that, if not confusing, may be unhelpful. There are differences as other researchers report (Alderfer, 2014; Jones, Woods, & Guillaume, 2016; Ochanji, Twoli, Bwire, & Maundu, 2017) in the behaviors and interactions between a coach and the performer and a mentor and the protégé. In the one case, the coach is focused on performance analysis to enhance potential, and in the other, a

mentor is seeking to develop with long-term intentions in mind. Still, whether coaching or

mentoring Martin et al. (2017), Matherson & Windle (2016), Ochanji et al. (2017), along with

Saric and Steh (2017), have described better results than more informal or purely collaborative

learning approaches. Desimone and Pak (2017) said that coaching by itself is a model of

effective PD because it addresses the five critical components of teacher learning.

Feedback and reflection. From a TLT perspective, feedback and reflection (Ali &

Wright, 2017; Daniel et al., 2013; Giannoukos, Besas, Galiropoulos, & Hioctour, 2015) are

critical for the learner as it supports the learner completing the transformative process. As the

learner tries out new roles (TLT phase 8), they require feedback to increase their competence and

opportunity to reflect on building self-confidence in those roles (TLT 9th phase) (Mezirow &

Taylor, 2009). Darling-Hammond et al. (2017) suggested that PD programs should have time

allocated to support reflection, regardless of the extent that the teachers receive regular feedback.

Reflection is an action associated with professionalism (de Vries et al., 2014) and is necessary to

take action to introduce change. Intentional time for reflection is beneficial following

observation of modeling or receiving expert support from a coach or mentor. It is an intentional

time for reflection (Jensen et al., 2016), and quite a lot of time, that differentiates the PD

programs in the highest performing schools.

Van den Bergh et al. (2014), described a PD program that taught teachers how to provide

feedback to students in an active learning environment and offered categories of feedback that

are also useful to teachers. Feedback can focus on the task and the processes of teaching. It can

also be of a constructive nature that encourages metacognitive reflection. Van den Bergh et al.

further noted that feedback could take on different functions, such as to be facilitative, directive, or encouraging. Similar ideas and different mentor roles, are described by Mauri, Onrubia, Colomina, and Clara (2019), describing as well their effects on the teaching practices of both the mentor and the protégé. In a separate study (Stephens et al., 2017) reported on four types of feedback (supportive, critical, directive, and nondirective) that changed future faculty beliefs substantially, though not all were equally effective. Of interest, both facilitators and peers tended to offer the same kind of feedback, either directive, nondirective, critical or supportive. However, the teachers only preferred directive or critical feedback from the facilitators but often, due to their inexperience, were defensive and unable to use the input. Although feedback and reflection are central to learning and development, as a tool for learning, novice learners do not always value it.

A different approach (Plews, 2016) to feedback and reflection can occur through the use of a portfolio for both development and performance assessment. The teacher-learner, selecting experiences to serve as exemplars of their practice, is making a statement about their development. These portfolio examples (Lynam, 2016; Meijer et al., 2017) serve as markers that are useful not only for self-reflection but enable the efforts of the coach or mentor as well. The practice of building a portfolio (Quinn, Grove, Paretti, & Grandy, 2015) encourages reflection, recognizes different skills, and improves the quality of communication between teachers and school leaders. It could be that portfolios serve the additional purpose (Lowe, Gray, Prout, Jefferson, & Shaw, 2019) of identifying positive values in veteran teachers and potentially as models of experimentation to share between novice and more experienced teachers. Portfolios

create an opportunity for both the learner and the mentor to establish a guided review of practices that are illustrative of the teacher's perceptions, beliefs, and attitudes about teaching.

Duration. In their study of 35 PD efforts Darling-Hammond et al. (2017) noted that often researchers do not suggest an appropriate length for PD. However, researchers point out that the traditional short duration workshop does not work. DeMonte (2013) said that, regardless of duration, or content, teacher PD is a broken feature. DeMonte also suggested that some PD of only 14 hours duration proved useful, in sharp contrast to (Desimone, 2009) that recommended a minimum of 20 contact hours extended over time. However, research by Lauer et al. (2014) suggested that design matters more than the duration, and even short-term sessions (30 hours or less) could still change teacher practices. While duration may have bearing, content and practice perhaps are more important.

Desimone (2009) said that it was difficult to determine what period or what number of hours would create a change point but noted that interventions should be spread out over time and probably add up to at least 20 hours or more. Bayar (2014) indicated that of the two forms of PD (traditional versus nontraditional), the traditional style gets criticized because it is of shorter, and more fixed duration – and tends to be less effective. Smylie (2014) concurred with other researchers about the low effectiveness of short-duration workshops. Soine and Lumpe (2014) explicitly asked participants to evaluate those features and found that duration was not a significant characteristic of interest. What does seem to matter is that developing teachers (Darling-Hammond et al., 2017) have the opportunity to practice new concepts, and more practice opportunities increase the potential transformation of teaching practice. It could be that

shorter-duration sessions, spread out over time, could be more effective, allowing the teacher the opportunity to experiment with new ideas or practices. This increased duration (and practice) enables the refinement of their understanding.

Duration (Desimone & Pak, 2017) has essential value when aligned with the element of coaching and expert support. As a practice of PD, coaching that occurs continuously throughout the academic year, is supportive of the idea of longer duration, producing better results for teacher PD. Hammond and Moore (2018) reported on the positive effects on changing instructor performance after only five coaching sessions, 2-3 weeks apart, suggesting the value of coaching to change performance quickly. Abu-Tineh & Sadiq (2017) reported positively that a more extended duration PD, providing multiple opportunities to observe modeled practices and interaction with proven expert teachers, improved the effectiveness of the PD program. As part of a PD program in more prolonged duration coaching (DeMonte, 2013), teachers tended to collaborate. They used what they learned through coaching in discussions with other teachers and made efforts to implement new ideas.

Implications

The reviewed literature showed that PD is most effective when it is comprehensive (Smylie, 2014), continuous (Aelterman et al., 2016), and supported by school leadership (Martin et al., 2017). A slightly different view emerged from Zhang et al. (2015), who concluded that pedagogic content knowledge (PCK) should determine the intent and actions of PD. Some of these characteristics are absent from the study site's current solution. Compared to the Exxon Education Foundation study of faculty PD (the first-ever study of faculty development in higher

education in the U.S.) conducted in 1976, the studied sites' approach to PD (McKee, Johnson, Ritchie, & Tew, 2013) looks like the PD methods of workshop, seminar or program events popular then. A challenge for policy and decision-makers is to find an approach to effective PD (Darling-Hammond et al., 2017; TNTP, 2015) that uses available resources wisely without diminishing the capacity of the instructional staff to meet their core mission.

The study site may benefit from an approach to PD that does not exhaust their current cadre of instructors, fits within their schedule of courses, and promotes a collaborative action learning group as the research literature suggested. Developers should consider the available time for instructors to participate in learning, to innovate, and to reflect on the effects of their innovations. Using TLT as a conceptual construct, the program chosen should consider how to probe instructors' beliefs (Aizer, Hastie, Papanagnou, & Bitterman, 2016; de Vries et al., 2014; McComb & Eather, 2017) about both teaching and learning to have a useful point of departure.

Using a quarterly workshop approach as the study site does is reminiscent of (Howey et al., 1985) PD efforts from the 1970s and 1980s, and what current literature (Darling-Hammond et al., 2017) derides as drive-by PD. Learning demands in the 21st century (Wagner, 2017) are more expansive than the knowledge and skills curriculum of the 20th. The U.S. military is as much technology-enabled as most of the rest of the modern world. As such, its learning demands are far beyond the direct instruction methods that made the U.S. successful in past military conflicts. At the same time, due to the extensive human interactions that describe the contemporary military conflict, as Zhang et al. (2015) seemed to propose, it is essential to not lose the teacher's perspective by adopting a technician approach to learning. This study is about

understanding how PD can change (or transform) instructor performance to promote competency development and assess the quality of learning outcomes. It will be essential to elicit information about what instructors believe PD should offer to be effective, as well as what PD should do to the instructors to produce a long-lasting effect.

Summary

The purpose of this study was to understand how a structured three-component PD program changed the perceptions of military cyber instructors. The expected change was to modify thinking and practice to implement a learner-centered, outcome-oriented, competency-based learning environment capable of promoting problem-solving, critical thinking, and teamwork. The study site leadership recognized that their learners needed highly competent instructors due to the unique and vital functions they provide to national security in the 21st century. Leaders at the study site also concluded that the service-required instructor preparation course was insufficient. It did not prepare instructors for the demands the school imposes on both learners and instructors. Mainly, according to the sites' education analyst, because there is no emphasis on competencies, outcomes, or learning activity design. Their solution (DoD, 2016b) was to introduce an additional 40-hour PD workshop to build competence in their faculty as instructor-writers who can create learning activities that conform with andragogy, promote active learning, and develop the competencies of critical thinking, problem-solving and teamwork.

There are cognitive demands placed on instructors, just as there are practical demands. Instructors also have unequal experiences as both learners and teachers – each of which affects their performance as instructors. What is unclear for the study site, (Srivastava & Dhar, 2016) is

to know what is needed to align (or change) the thinking and practice of instructors, acquired through a lifetime of learning and teaching, with the school's expectations. TLT is appropriate for teacher PD because (Martin et al., 2017; McComb & Eather, 2017; Watkins, Marsick, & Faller, 2012) it creates a learning environment that encourages the learner to critically question what they think they believe about, in this case, teaching and learning.

In Section 1, I described the local problem while linking to the more significant and broader issues with teacher PD, as described in the literature. Section 2 will provide information about the methodology used to establish a qualitative case study. Section 2 will address the collection of data, techniques for data analysis, and how findings will emerge. Section 3 will propose a learning project to discuss results from the study that can benefit the study site, and potentially assist other institutions seeking to improve their PD programs, especially if limited resources are a constraint. The final section will close with reflections and recommendations for either more research or actions to remediate problems in contemporary teacher PD.

Section 2: The Methodology

Research Design and Approach

Introduction

The challenge of understanding what changes in instructors because of PD shaped my

research inquiry. Merriam (1998) said that qualitative research is about meaning and context and

requires sensitive instruments able to collect data where meaning becomes clear. In this research

project, I sought to understand what influenced instructors who had all attended the same PD

sessions to become more effective than others. Through understanding what transformation

occurs to produce positive changes in instructor performance due to PD, program designers

might make more effective decisions when building PD programs. This research involves

understanding changes in instructors judged to be effective by school leaders and then using that

data to inform a PD program design that produces effective instructors as desired by the study

site.

From a sample of 18 instructors suggested by leaders at the study site, 12 instructors who

have completed the three components of the study site's PD program (80-hour instructor course,

a 40-hour workshop, and instructor certification) agreed to participate in semi-structured

interview. The interview questions focused on how their beliefs and perceptions about teaching

and learning changed as a result of the PD program. More specifically, the questions involved

how PD influenced instructors to transform their practice for designing learning activities,

developing competencies, and assessing the quality of learning outcomes consistent with the

school's strategic vision. Interview responses were coded manually and then examined for

emergent themes for analysis. This section includes necessary permissions to conduct research, consent forms, interview questions, and concepts used for data collection and analysis.

Research Design

Merriam and Tisdell (2016) said that qualitative research is a way to understand the nature of a problem from the perspective of those that are living and working in the problem setting. Creswell (2013) noted that qualitative research positions the researcher within the world and perspectives of the study participants. This positioning, Bogdan and Biklen (2007) asserted, assists the researcher to conduct interviews that probe issues at great depth in ways that quantitative methods cannot. There are often multiple perspectives working in a real-world setting. According to Bogdan & Biklen, qualitative research methods offer a way to give voice to participants and use inductive reasoning. Lodico, Spaulding, and Voegtle (2010) claimed that qualitative research helps to determine what the different perspectives mean. The qualitative research method will provide deep insights into the perspectives, thoughts, and attitudes of instructors who have participated in the study sites' PD programs.

Quantitative research is inappropriate for this study, mostly because as Stake (1995) said, the descriptive variables measured using numeric data cannot answer the research questions, but depend instead upon vivid narratives for understanding. Quantitative research methods will not produce outcomes that provide participant insights, and as Creswell (2012) noted, due to the small population in the study environment might not generate differences of statistical significance. Creswell further pointed out that quantitative research relies on variables and seeks to find relationships between them, usually in the form of a testable hypothesis. Most of the data

from this research study comes from interview questions shaped by the central phenomena of

PD. The research questions do not seek (Merriam & Tisdell, 2016, p.5) cause and effect, make

no predictions, or describe some population's distribution of attributes as quantitative research

does. Instead, I sought to understand the effects of PD on the research participants whose own

words describe them best. Therefore, words are my data (qualitative model), rather than numbers

(quantitative model).

Research Approach

I conducted an intrinsic case study in the forms described by Lodico et al. (2010) and

Stake (1995). Yin (2018) suggested that how and why (p. 4) type questions lend themselves to a

case study research model, while Merriam and Tisdell (2016) noted the qualitative case study

allows for an in-depth analysis of a bounded system. An intrinsic case study is a situation where

there is an interest in understanding the case itself as described by Creswell (2013), Stake and

Yin. In this situation, I focused on how PD influenced instructors to transform their approaches,

methods, and practices to affect learners in ways that are consistent with the schools' desired

outcomes.

Patton (2015) described 16 different frameworks for qualitative inquiry. Several other

commonly referenced research methods texts refer to four, five or six only: Creswell (2009)

described five strategies; ethnographic, grounded theory, case study, phenomenology, and

narrative. Lodico et al. (2010) described four of the same, dropping grounded theory, while

Merriam and Tisdell (2016) explained the five strategies as types (rather than strategies) and

added a sixth called a basic qualitative study. From those, there are some approaches (designs,

strategies, types as described above) such as those that Creswell (2013) related as narrative, phenomenology, grounded theory, and ethnography that might seem to suit this research effort. In conducting this study, I wanted descriptions of how instructors reacted to the PD efforts to enhance their performance in the classroom. Hence, a narrative approach was inappropriate because Merriam & Tisdell recommended that format for its focus on an individual. Using a phenomenological approach would, according to Creswell (2009) limit the study to understanding what happened during the PD session.

In contrast, in this study, I was interested in what happened when instructors returned to their students to teach following attendance in PD. Creswell (2009) described the need for time and sufficient scope to generate a grounded theory which were not available to me. Similarly, Creswell (2012) also elaborated about the extent of information and analysis need to explore cultural patterns of the instructors, which is an aspect of an ethnographic case study research. I had neither the time, nor opportunity to collect data of that nature. The qualitative intrinsic case study was best in this instance because it involved in-depth descriptions and, through analysis, a more thorough understanding of the case.

Just as there are different approaches and types of qualitative research, Lodico et al. (2010) described that there are two significant approaches to quantitative research designs: experimental and non-experimental. An experimental single-subject research approach would not provide answers to the research questions, nor would they adequately address the research problem which is focused on perceptions. Potentially, non-experimental approaches (causal-comparative and correlational) or a descriptive survey study (Lodico et al.) might provide

insights regarding differences in instructor perceptions or behaviors. Still, it would not answer the question of how those perceptions formed nor why they are different. It would also require addressing a significant number of variables beyond the researcher's control. Therefore, the quantitative research approach was not appropriate to answer the research questions in this situation.

A challenge of a case study involves the necessity to determine the boundaries of the system to define the case. Stake (1995) wrote that sometimes the case is selected by its unique aspects, and this is most often true with an intrinsic case study. For this study, instructors who have participated in the two PD sessions required by the school and were identified by school leadership as implementing new techniques established the boundary for the case, and were participants. Instructors who have not participated in the two PD sessions were not part of the study, regardless of their effectiveness as instructors.

Participants

Some factors shaped the sampling strategy to select participants for this study. Merriam and Tisdell (2016) wrote that purposeful sampling helps to ensure the researcher learns the most from the sample to answer the question. Patton (2015) referred to this as a need for information-rich cases. To be certified to instruct at the study site, an instructor must have been qualified to teach via an 80-hour service-required instructor course and complete the additional 40-hour workshop prescribed by the leadership of the study site and complete the certification process. It was essential to identify criteria to ensure that the sample provided the most information about

the central issue. The first criterion for selecting research participants was that they were site-certified instructors.

Additionally, the site leadership nominated instructors who, through routine observation and evaluation, were judged as innovative and implemented methods and techniques promoted in the PD program such as multiple learning activities, competency development, and assessments of desired learning outcomes. From the nominated list of 18 instructors provided by the school leadership and those who expressed interest in participating in the study, 12 instructors agreed to provide insights into their perspectives, thoughts, attitudes, and actions as influenced by the school PD program. During the data collection period, however, only 10 instructors were available to interview, so that was the actual sample size.

While the proposal considered addressing the entire faculty of the study site, subsequent DoD agency approval processes limited the study population to uniformed, active service instructors only. These other agencies of the DoD imposed additional rules and conditions that needed attention to gain final IRB approval and modified original research intentions. Consequently, I had to accept adjustments to my participant pool, as well as recognize that potentially information collected about the PD program at the study site lacked representation – the military instructor's perspective and lacking the more numerous contractor instructor perspectives.

Differences in the instructors' levels of experience provided participant variations as well as other characteristics. At the study site, there are military instructors, there are a few civilian instructors, and the most substantial number of instructors are civilians contracted to teach. The

idea in the process of data collection (Lodico et al., 2010; Merriam & Tisdell, 2016) for

qualitative research is to arrive at a saturation point. Saturation means that no new researcher

learning occurs by continuing the inquiry. In qualitative research, it is the quality of the

participants' responses that matter more than the number. However, since it is the sample that

provides the data, Patton (2015) recommended saturation sampling as a way to address the

challenge of a small sample size. The original intention was to examine a cross-section of

military, civilian, and contractor instructors. As noted earlier, DoD approval limited the research

pool to active duty instructors only. There was a sufficient variety of experiences among the

population that diminished concerns about monolithic perspectives.

Merriam and Tisdell (2016) agreed with other research method authors (Creswell, 2013;

Patton, 2015; Stake, 1995; and Yin, 2018) that the case study design involves two sample

selections. The first sample is selecting the case, the next using criteria to choose samples from

the case. The leadership at the study site identified the instructors; some criteria to select from

this sample were needed to understand the issues of the case study. As each person represents a

case, Creswell (2013) suggested that no more than four or five cases are necessary for a case

study. Nevertheless, sample sizes in qualitative research remains a contested topic, with few

precise definitions, or suggestions (Baker & Edwards, (n.d.); Mason, 2010) beyond that it

depends. For this research effort, with over 18 instructors offered, a sample of 12 instructors was

found sufficient to reach saturation. Even with the lesser number of 10 instructors that were

available to participate, the variation in terms of their ranks (officers, warrant officers, and

NCOs), their duty positions, and their instructor experiences provided enough breadth to assuage

concerns that the sample was too limited.

Procedures to Gain Access

The study site leadership agreed to provide access to the study participants in an email

response and a signed letter of permission (see Appendix B) to conduct research contingent upon

IRB approval, which itself was contingent upon DoD approval. Once these approvals were in

hand, and the study site provided a list of candidates for the interview, it was merely a matter of

scheduling. For the active-duty military instructors, other than acknowledgment of informed

consent, and addressing privacy issues, there were no challenges regarding access. Through

email contacts and coordinating availability via SMS text messages, setting times for interviews

was straight-forward.

Researcher – Participant Work Relationship

I was slightly concerned that every potential participant would know me. I have been the

primary instructor that conducted the study sites' additional 40-hour PD workshops until

February 2020. However, that was their only direct interaction with me in concurrent learning or

work setting. I had no supervisory role over the participants. Other than interacting with them as

learners in the PD workshop, I had little, to no, contact with them, other than passing in the halls

during one of my quarterly visits to conduct another PD workshop, and the invitation to observe

them for a short time. The PD workshops, though a condition of their certification, is not a

pass/fail workshop, so there was no pressure or undue influence on the participants because of

my interactions. I discovered in a couple of interviews that the interview participant did not

recall that I was a leader of the workshop (for some of them, conducted more than three years ago).

Human Subjects Protection

Ethical practice in research involving human subjects requires review by informed but dis-interested parties. Foremost regarding protecting participant rights, the study proposal went through three institutional reviews. A DoD service institutional review board (IRB) performed an analysis to assure compliance with DoD requirements for human protections in research. The DoD service review board did not review until the university IRB provided contingent approval. An additional review requirement emerged because I was conducting interviews. As such, the service branch required a further review by another agency and the issue of a survey control number to verify that the interview was both valid and was cost-effective.

Additionally, this review activity stipulated that demographic information could not be collected. The concern was that with such a small sample size, confidentiality could become easily compromised. Upon completion of these DoD agency reviews, there was the final institutional review by a board established at Walden University. In keeping with academic research standards, I completed the National Institute of Health's Office of Extramural Research course on protecting human research participants. The completion date for this online course was 12 January 2017 with certificate number 2269381 (see Appendix C).

After the Walden University IRB and the DoD service IRB provided approval (Walden IRB 12-10-18-0590728) (DoD SCN DAPE-ARI-AO-19-53), I sent email invitations to prospective participants as identified by the study site leadership. The email (see Appendix D)

invited them to participate while including a general description of the purpose and method of the research study. When selected persons agreed to participate, they received an informed consent statement (see Appendix E). The informed consent form stipulated that there is no requirement to participate, participation was voluntary, that they may withdraw at any time, and that there would be no statements of involvement or lack of participation to anyone at the study site. As specified by one of the DoD approval bodies, the interviews could be audio (only with participant consent), but not visually recorded. The form also provided information about how the study planned to maintain the confidentiality of informants (pseudonyms, or subjects A, B, or code numbers) while reporting comments recorded in interviews.

Data Collection

Merriam (1998) described three data collection techniques for qualitative research; interview, observation, and documents. These three major categories of data seem consistent in the realm of qualitative research. Stake (1995) referred to data gathering rather than data collection but still pointed to interviews, observations, and documents as critical sources of information. Yin (2018) described more sources of evidence (p. 113), adding archives and artifacts, and dividing observations via their category as direct observation, or of the participant (pp. 114-125). Creswell (2013) suggested the value of audiovisual materials from a wide array of potential sources but still found observation, interviews, and documents as the primary data sources. While the details differ only in more in-depth descriptions, Merriam and Tisdell (2016) affirmed the importance that interviews, observations, and documents play in providing the data necessary to conduct qualitative research.

This case study did include observation, documents, and interviews. Interactions during the PD program and invitations to observe an instructor while on-site provided opportunities to observe. Documents were from end-of-course comments generated by students. Because the design of this study sought to understand instructor perspectives about PD effects on their teaching performance, interviews of study participants provided the most significant data needed for analysis and interpretation.

Access to Participants and Data Collection Process

Instructors from the study site, previously identified by site leaders and that had volunteered to participate, became the most important source of data for analysis. The rationale for this was that student responses in end of course comments tended to focus exclusively on the final exam, their most recent learning experience. While potentially informative, that data source was too unstructured and subject to interpretation and did not provide much information vis-à-vis the effectiveness of instructor PD to change instructional practice. Nonetheless, those documents provided intimations about inconsistencies between the school's vision and practices in the classroom. Consistent with Peterson's (2019) observation that the researcher is "the instrument of inquiry" (p. 147) and can analyze participant's experiences in context, the interviews became the most informative data source for analysis.

Document Review and Analysis

I reviewed several end-of-course student comment reports. These were only from the technical college and none from the functional courses. The utility of data from the technical college is that it is a learning module common to many different course offerings at the study

site. Therefore, the range of students (military experience, life experience, cyber experience) is broad enough to suggest some validity from a student perspective. The end-of-course comments focused mostly on a student's satisfaction with learning and the effectiveness of the learning environment; however, there were also questions related to instructional styles. Those questions were considered indicators of instructor behaviors that affect the learning environment.

For the most part, student comments about instruction styles were not particularly informative in ways that helped address the research questions. They were a useful point for triangulation with other data sources. The student comments did provide a perspective about the clear distinctions between effective instructors that sought innovations and the more common instructors that just reinforced the idea of knowledge transfer. Students favored the former and despised the latter. Unfortunately, the study site was inconsistent in its query and reporting formats. Such inconsistency made analysis much more difficult.

Additionally, these reports indicated more about student perceptions about their learning environment and little about the perceptions of the instructors creating those environments. While reviewing these documents created an overall perception of the learning environment, there was much interpretation and guessing about what it might mean for it to be useful to understand instructor reactions to their PD program. What did become apparent was that some instructors who favored active learning and innovation had students that appeared happier and felt they learned more than students with instructors who maintained the status quo of a traditional instructor to student interactions.

Observation Review and Analysis

Observations had two components. The first component observed the changes that occurred during the 40-hour PD workshop. The second derived from subsequent instructor observations in their natural environment – facilitating learning in a classroom setting. During the workshops, most instructors demonstrated evident changes in instructional behavior, moving from a passive to a more active instructional model. Subsequent observations, either in their classrooms, or in discussions with instructors, provided some insights about the effectiveness of the workshop, or the challenges of the institutional obstacles (whether functions of student discontent or administrator/regulatory constraints). These observations, though limited, did provide another opportunity to triangulate with insights garnered during the interviews.

Observations were somewhat consistent with the interpretations of student end of course comments. In other words, those instructors that chose to maximize their autonomy as instructors, charged with creating a learning environment, usually demonstrated some success and greater student satisfaction. Those instructors' content to satisfy minimum requirements were judged adequate by the institution but were considered incompetent (or worse) by their students. Instructors that were striving and innovating tended to be excited about their teaching experience, and their students were likewise excited to be a party to an innovative learning environment.

The downside to the observations is that it was largely interpretive. Perhaps what appeared to be an active learning environment was mostly a function of the charismatic interactions of the instructor. Different analysts, with different perspectives, might arrive at

different conclusions. Such analysis was not a focus of the study and the research questions of this investigation, but it was useful to consider during the data analysis. Arguably, students that are happy in their learning environment are more receptive to learning than those that are unhappy with their learner-instructor interactions. Sadly, opportunities for observations were not sufficient to make any determinations in either direction. That statement made, I would propose that more engaged and receptive students are better learners than students who are angry about the quality and effectiveness of their learning environments. The study focused more on the instructors and their perceptions than the impact of instructors on student learning.

Because I do not live near the study site, opportunities for observations were somewhat random and occurred at quarterly intervals. Essentially, there were two categories of observations, as noted above. The most consistent were those associated with practice exercises in the 40-hour PD session. The more informative were those that were invited by instructors when I was on-site. In the first case, instructors were being assessed (gently) for their abilities to be innovative, engaging, and utilize active learning strategies or methods. Tinging these observations was the checklist the study site agreed to use to measure observation for instructor competencies. Regardless, there were constraints on these observations for the practicum, and because their learners were their fellow instructors. In the second case, the observations were more genuine, but also somewhat contrived in that the instructor was conscious of the observation and striving to demonstrate something to the observer. In those cases, after an ad hoc after-action review with the instructor discussing strengths and weaknesses, I would make some

notes. Upon review, I found that these notes tended to focus on what the instructor felt were constraints on their actions and intentions.

Ultimately, instructor observations could be both supporting or depressing. Clear indications of positive support and interaction for learning would be an endorsement. An observer might see such negative or challenging indicators as a rationale for not making additional efforts to introduce or support changes. In the case of this investigation, the small numbers of instructors that took the bit in their teeth and sought to produce fundamental changes in learning in their classrooms were significant, but, from an institutional perspective, inconsequential. When the institution analyzes broadly scoped reports and looks more at outputs than at effects, it is not surprising that outputs are more compelling than what is happening with graduates in real-world work settings.

Interview Review and Analysis

Face-to-face interviews were, as noted, much more informative and useful for meaningful analysis. As Merriam and Tisdell (2016) noted, an interview's purpose is to provide the questioner with information of a unique nature. In this case, instructor responses to interview questions provided information about their perceptions of the PD program as well as what they perceived that it was that had made them effective instructors. More specifically, the questions probed how their perspectives, thoughts, and attitudes about teaching changed because they participated in the PD program.

I created an interview guide following the recommendations of Merriam and Tisdell (2016) to support a semi-structured interview process (see Appendix G). Patton (2015) described

how the semi-structured nature and array of questions were helpful during data analysis by allowing observable patterns and the emergence of themes to become apparent. The interview guide and structural components of the semi-structured interview supported Creswell's (2013) and Yin's (2018) contention that an interview protocol can increase reliability and provides assurances about a consistent interaction during the interview process. Each of these sources cited above guided my development of the interview protocol.

Instructors received emails, offering them the opportunity to participate in the study (see Appendix D). Those that expressed interest in joining the research study then received informed consent forms (see Appendix E). Additionally, they received opportunities to select their interview format preferences (see Appendix F). My choice was for interviews to occur face-to-face, and that preference matched participant expectations. All the interviews conducted were, in fact, face-to-face.

As the interview commenced, I read a script reminding them that they offered to participate in the study, the study was under the authority of the study site and approval both by a university IRB, as well as a DoD service IRB. I reminded them about confidentiality, and compliant with a DoD activity's requirement advised of privacy rights, and that participation was not a condition affecting their duties. From each participant, I received a confident verbal assurance that recording the interview was acceptable, with the addition of their initials on the consent form. This script was all part of the interview guide (see Appendix G). None of the participants objected to having the interview audio recorded. Each participant file was assigned a four-digit number from a randomized number list — the system of numbering assured

confidentiality but also allowed me to keep various forms and artifacts organized. During the

interviews, I specified that participants should not use any names.

A stand-alone data storage device allowed for the backup of interviews, each lasting from

the shortest (27 minutes) to the longest (94 minutes), on average about 50 minutes of interview

data per respondent. The shortest interview should not be considered inconsequential. The

participant merely had less experience on the platform as they say, but provided useful responses

to every question.

A critical consideration by one of the DoD approval authorities was that any instruments

or devices used would not be attached to a network or any system of record. To meet this

requirement, the information system used was an isolated laptop, not connected to the Internet.

Then the recording was transcribed. Noted research methodologists Merriam and Tisdell (2016)

and Yin (2018) reported that transcription is a tedious and time-consuming but necessary

process. I found this to be true. To facilitate the transcription process, I found a software

application (Transcriptable; available at the Microsoft App store) that slowed down and

smoothed the recording at a rate that facilitated typing on the keyboard. While it was still time-

consuming, the app assured a 100% accuracy rate in the transcription. According to Creswell

(2013), it will be only with a transcription that allows the researcher to apply a coherent coding

strategy to the interview data and able to be used by more than one person. Creswell also said

that coding is a process to identify categories. Both Bogdan and Biklen (2007) and Merriam and

Tisdell (2016) described how transcriptions identify both categories and themes that are

consistent and emergent from the interview responses. These themes according, to Merriam

(1998), will form the basis for further analysis, but coding is not an analysis per se.

Role of the Researcher

As a researcher, I collected the data, analyzed the data, and reported on the implications

of the analysis. I had no formal organizational relationship with the study site in the sense that I

am not part of their organizational structure but do visit there approximately once a quarter every

year since 2016. I did have an instructor-learner relationship with every participant in the

research study. Until February 2020, I visited the study site quarterly to conduct a 40-hour PD

workshop to complete their instructor qualifications. However, the course is not a pass/fail

course, and I did not observe or rate their final practicum. I had a slight concern about what

Creswell (2013) described as reflectivity bias more so than any concerns about power or

position. Because the interview centers on perceptions of PD that influenced their performance,

the participants might want to answer questions in ways favorable to the program.

Similarly, I might unintentionally pose questions in a way that would be favorable to the

program. Two things I did was to ask two colleagues to review the questions to seek out potential

bias. Second, with revised questions, I field-tested the questions with instructors at another

school that has experienced PD (not my version). Feedback from this field-testing was to

measure how long the interviews would take, and any shortcomings in the question formats.

More importantly, the field test indicated that multi-part questions (of which I had several)

needed to be segmented. Additionally, the field-testing informed me of the benefit of providing

paper copies of the questions so that the participant could keep track of the questions to which they were responding.

Data Analysis

Qualitative data analysis is not a stand-alone activity that occurs after all the data is collected (Creswell, 2013; Merriam & Tisdell, 2016; Stake, 1995) but begins almost as soon as data collection starts. As Merriam and Tisdell noted, a qualitative design is emergent, and because of that, there is a dynamism and recursive character in the process of data collection and analysis (p. 195). Creswell likened the process of data collection and analysis to a spiral that mirrors the recursive nature that Merriam and Tisdell described.

As expected, data analysis began with the very first interview. Yin (2018) maintained that it is useful to establish an analysis strategy as part of developing the study protocol to avoid analysis paralysis. The process of working to align the interview questions with the overarching research question was a step to guide the analysis of collected data. In the same way, Merriam and Tisdell (2016) suggested that the researcher conduct simultaneous collection and analysis of data to prevent becoming overwhelmed and lost in volumes of data at the end of the collection process. Merriam and Tisdell pointed out that without concurrent analysis, there is a real danger that the collected data will be unable to answer the research questions.

Both Creswell (2013) and Patton (2015) related that there are several strategies and techniques for organizing data for analysis. Most of these strategies and techniques depend upon coding, patterns, and themes. Merriam and Tisdell (2016) wrote that a researcher could use a step-by-step methodology to analyze collected data. They also suggested that distinct terms of

themes, patterns, and findings are synonymous with category – the essential elements of data

analysis. Saldana (2015) promoted the idea of using a coding approach that depends upon

distinctions between codes that become organized into categories and subsequently synthesized

into themes or concepts. I inclined to follow the ideas of Creswell, Patton, and Saldana, each of

whom sees these terms as both separate and distinct. The rationale for this inclination was the

nature of the intrinsic case study I conducted.

Stake (1995) recognized that intrinsic case studies had some unique characteristics for

data analysis that differed not only from instrumental case studies but also from qualitative

studies in general. Patton (2015) noted that the foundation of all qualitative research is the

description, and that description must come before interpretation. Stake further noted that the

challenge for the intrinsic case study is that for the researcher to understand the case, the

researcher must put most of their analytic effort into direct interpretation. The need for

categories, themes, and patterns can diminish in a straightforward interpretation analysis

strategy. Still, Stake cautioned this can also potentially threaten naturalistic generalizations that

reporting case study findings sometimes use.

As Patton (2015) noted, the case study approach establishes an analytic process. Whereas

there is the broader case of PD affecting instructor behaviors, each instructor represents an

individual case (Stake, 1995). This idea offered an approach to a cross-case pattern analysis that

Patton wrote about. I find that Patton's distinctions between categories (content analysis),

patterns, and themes seemed the most useful, in that each derives potentially from the other.

Saldana's (2015) description of coding as a heuristic and cyclic function appeared to align with

Patton's perspective as well. As I reviewed the contents of an interview, there were ideas, words, and concepts that emerged. These ideas, words, or concepts could become a category if recognized and isolated. For the most part, I was searching for relevant, exciting, or other expressions that appeared to be noteworthy. When more than two or three interviews include ideas fitting a category, then it is possible to suggest a pattern. Patton opined that a repeated descriptive finding establishes the pattern. At the same time, a level of analysis (an interpretation) will determine the categorical nature of the pattern and provide utility to the researcher as a theme.

My analytic approach followed this procedure. During the interview itself, I made marginal notations or other indications where the participant has reflected importance, intensity, or concern. Naturally, my own bias, reinforced by contemporaneous research review, will be attuned to keywords or phrases that Saldana (2015) referred to as pre-coding. These will also be marked, circled, highlighted, or ticked as acquired in the interview, or first transcript review. I would consider this in-stride analysis as the very first effort to code the data. Data analysis combined both manual and computer-assisted methods. Elements noted during the data collection formed possible categories that re-emerged in subsequent interviews. Their re-emergence across several interview responses established a pattern, or what Creswell (2013) described as a categorical aggregation.

The intention was that through the first (during interviews) and second or more (focused reviews) of collected data, key code words would emerge, which can be classified further as patterns and themes for direct interpretation. There was also the likelihood of follow up sessions

with participants for greater clarity that would require reviews and comparisons. Merriam and

Tisdell (2016) referred to this process of reviews as analytic coding. As a way to confirm that

these emergent patterns and themes were not imaginary, conducting a frequency count of

codewords in each transcript was a way to confirm the importance or prevalence of categories

within the participants' responses. An initial analysis approach (Feinberg, 2018) that might be

useful for such a task was to use the computer application known as Wordle that highlights

keywords and terms based on the frequency of use within the supplied text. The intention was

not to use Wordle as a coding tool but to suggest codes, categories, or themes that might have

escaped the manual coding process.

Table 1

Anticipated Potential Codes, Categories, and Themes During First Analysis

Code words & phrases	Category	Theme
Can't; won't; allow; permission; must; should; will; evaluate; QAO; outcomes; testing; throughput	Institutional constraints	School tensions with service practices
Effective; useful; waste of time; hands-on; on my own; feedback; help; peers; new, novel, innovate	Teacher perceptions of PD	Teaching experience is the best PD tool
Coach; assistance; information; models; how-to; methods; techniques; classroom management	Follow-up to PD	Part-time teachers
Difference; different students; different experience; attention, focus; student engagement; interest; participation; questions	Instructor-developed lesson plans	Need to differentiate
Testing; questioning; in-class; models; simulations; scenarios; problem-solving; teamwork; communication; engagement; feedback	Assessment strategies	Unrealized but lost potential of assessments

Another challenge with an intrinsic case study and the emphasis on direct interpretation (Stake, 1995) to help with understanding the case, is that the researchers' interpretation might be biased. If the intention was to arrive at a naturalistic generalization (Creswell, 2013; Stake 1995) that matched the readers' vicarious experiences from the narrative descriptions, it would be helpful if those generalizations were free of biases. There are several ways to assure the accuracy

and credibility of findings from the data analysis. Merriam (1998) offered different methods to provide these assurances. More broadly, qualitative research depends upon the trustworthiness of the findings which result from efforts to account for validity and reliability.

My first effort to assure accuracy was to allow research participants to validate the transcripts of the interview, and then to let them comment on the researchers' analysis of their responses. Merriam & Tisdell (2016) referred to this step as member checking and I did this as soon as the interview transcriptions were complete. I provided every participant with a copy of the transcript of their interview. Only two participants provided any elaboration of their comments. Otherwise, there was no repudiation of their comments as transcribed.

The already described limitations of document reviews and observational data for this research, given the constraints of the study site, might have diminished the value of data triangulation. Patton (2015) suggested using analyst triangulation as a way to enhance analytic credibility also referred to as internal validity. I provided the accumulated qualitative data to another informed investigator and then compared their findings from their independent analysis. A challenge, though, is that an intrinsic case study is not subject to validation in the traditional sense. As Creswell (2013) noted, validation is a process and, depending upon the research approach, might call for a different strategy. What Patton described as analyst triangulation could link with what Creswell cited as peer review or debriefing.

To that end, I requested other people to code the data (blind), meaning without specific awareness of the research question, which can be a way to achieve what Creswell (2013) described as intercoder agreement. The idea was to use another set of unbiased eyes as a

comparative to my analysis. I requested a peer at another school that is involved with the PD of military instructors to perform this task for me. This technique was a way to enhance reliability, sometimes referred to as dependability, in a mostly interpretative study, such as is the case with a qualitative case study. To enhance reliability, Patton (2015) offered the idea of a critical friend review as a way. I have two colleagues within my doctoral cohort and two other professional colleagues who have demonstrated a high degree of credibility in reviewing each other's works over several years of collaboration. Using the critical friend review was one more method to enhance the quality and credibility of my qualitative study. In this instance, it was several critical friends, not just one. The idea of the critical friend review was not essential but added another layer to build credibility. The additional advantage of the critical friend review was that two of these individuals had previously served as senior decision-maker leaders at two major service schools.

Sometimes, a researcher will face the challenge of knowing too much such as from the literature review, assuming too much from the bias of personal interest, and expecting too many things based on personal assumptions about the topic. Merriam and Tisdell (2016) described these challenges as aspects of discrepant analysis and reflexivity. The utility of peer coding, analyst triangulation, and critical friend reviews was to diminish challenges to the integrity of the researcher. With actual data to analyze, it was essential to make my position clear as both a practitioner of PD and a researcher about PD to mediate the credibility of the data analysis. Even using thick descriptions to create a vicarious experience for the reader, the reader needed to

understand how my perceptions might be influencing my direct interpretations of the collected data.

Data Analysis Results

The data meaningful for analysis mostly was via face-to-face interviews. To increase validity and credibility, I used several approaches to analyze the data. Nonetheless, I was most mindful of Patton's (2015) admonition, "the point is to generate substantive insight into the phenomenon" (p. 558). It was this insight that created the biggest problem, because so much of the literature suggests code words, forming patterns, and building emergent themes. Nevertheless, those seemed to me, as I reviewed the transcripts, very narrow and constraining models to data analysis, especially for a case study.

Coding Process

Disregarding Patton's (2015) concern about quantitative aspects inveigling their way into qualitative studies, from a total of 64 potential participants, 18 designated by the study site leadership, 12 instructors responded and were selected. Only 10 ultimately participated in the interviews. Constraints directed by a DoD research approval agency imposed some of this limitation. So, 10 persons were interviewed, which means that there were 10 different cases. Patton (2015) wrote about cross-theme analysis, and since the frames for each of these cases derived by the same, or similar, situations, the utility of this technique was attractive to me.

All of the participants agreed to have their interviews recorded on a digital device. These interviews, archived using a random number assigned to each participant, were transcribed within days, sometimes within hours, of the original recording. While the interview itself could

be considered the investigator's first cut at data analysis, the transcription process was an even

richer second pass. The second pass was richer in the sense that words, phrases, concepts were

not only heard but also typed and seen on the screen. There is an impact in such activities that

can trigger biases, but that can also create intellectual quandaries. Such a quandary was the case

in my investigation. As words appeared on the screen, I thought again, a second (or third) time

about particular phrases and embedded concepts from the participants' responses.

I did not find code words to be useful in my analysis. Instead, there were short phrases or

other indicators of conceptual terminology that were more suggestive of themes. I did attempt to

undertake a word-by-word and a phrase-focused analysis, but it did not produce anything of

significance. Instead, I found myself attracted to terms and phrases that aligned with conceptual

phrases describing effective professional development programs, as well as those that aligned

with the research questions.

After uploading the recorded interviews into NVivo™ software, it was most productive

to use those PD phrases to help organize interview responses in ways that made analysis

meaningful. I had earlier proposed using a Wordle app to identify key or prominent code words.

The NVivo™ software includes a feature that models the wordle effect. Even with multiple

manipulations (such as reducing the number of words, and increasing word character length),

there was not that much benefit using this technique. That is until I applied the following

constraints, limit to words of 8 characters, and limit to the 20 most recurring words. Using those

filters did produce some interesting and supportive artifacts that at least reinforced the coding

nodes and themes that were beginning to emerge in the analysis. More importantly, for my

analysis, patterns began to emerge. For example, a word that stood out and appeared in all but two different code nodes was difference. The listing on table 1 anticipated that this was a codeword. By itself, it seems to be of little significance, but actually, there was something to consider, and it drew me back to another review of the transcripts.

Following a first and then second and third passes with both marginal notations and highlighting of salient phrases, I was still not satisfied. However, it did appear that specific phrases were coalescing into potential themes. I applied these themes and the PD conceptual terms in the NVivo™ software and started to make progress. I built a set of codes (nodes as defined in NVivo) and subordinate codes based on phrases that had emerged from the manual coding processes. Some aligned with the specifics of the three research questions, while others appeared to align with the critical components of effective PD programs, as found in the literature review. That was usefully significant. Now, instead of guessing about the importance of different categories, I had a clear indication of the relative importance to the purpose of the research project.

Nonetheless, I forgot the fact that it was phrases, not words that created patterns that merged into themes. Those themes then lent themselves to variations for useful analysis. For example, there were a priori categories embedded in the research proposal. Three of these were integral to the research questions: perception of the learning model to produce the school's vision; encouragement to modify teaching practices; and performing assessments to measure the desired learning outcomes.

Similarly, there were the components of what the literature research described as components or elements of effective teacher professional development for post-secondary learning. These elements have a high degree of acceptance in the field and suggested that the PD program should address or include: active learning, coaching, collaborative learning, continuing professional development, content mastery, duration, feedback, and follow up. The two tables following illustrate the utility of these ideas to extract meaning from the data collected during the interviews by showing how the interview questions align with the research questions and how PD concepts emerged in participant responses to interview questions.

Table 2

Relationships between Research Questions and Data Collection

Research Question	Supporting Queries
RQ 1: How do uniformed and civilian cyber instructors perceive learner-centered and outcome-oriented competency-based teaching as a way to achieve the school's vision of developing problem-solving, critically-thinking, and teamwork capable cyber operators?	Document Review: No relevant responses. Observation Review: Insignificant responses. Interview Review: IQ 1: How do you think the different components of the PD program have affected your performance as an instructor? IQ 2: How do you think the CFDP-IC (the 80-hour instructor course) affected your beliefs about teaching? IQ 3: How do you think the ASLTE workshop (the 40-hour session) affected your beliefs about teaching? IQ 4: How does the PD program help you understand how to teach the main content of your course? IQ 5: Can you describe how you are using what you learned in PD to implement the kinds of effective instruction the school desires? IQ 7: Can you describe how observing the *modeling* of other instructors in the PD sessions affected your perceptions of teaching and learning to develop competencies?

(table continues)

Research Question	Supporting Queries
	IQ 9: Since the PD sessions you attended, how much has feedback you received a. from a *coach* helped to alter your teaching practices b. from *peers* helped to alter your teaching practices? IQ 10: How do you use things you learned in PD to set conditions that build the competencies desired by the school? IQ 11: Considering the current PD program, and your prior life experiences, what do you believe has had the greatest impact on developing you as a highly effective instructor?
RQ 2: How does PD encourage uniformed and civilian cyber instructors to modify their teaching practices to be learner-centered, outcome-oriented, and focused on developing the competencies of problem-solving, critical thinking, and teamwork?	Document Review: No relevant responses. Observation Review: Insignificant responses. Interview Review: IQ 5: Can you describe how you are using what you learned in PD to implement the kinds of effective instruction the school desires? IQ 6: Describe how you and other instructors *collaborate* to make needed adjustments to the curriculum you teach to keep pace with changes in the Cyber domain. IQ 8: How did you modify your practices to a. design learning activities that promote the development of competencies the school desires b. while also actively *assessing* the KSAs of learners? IQ 10: How do you use things you learned in PD to set conditions that build the competencies desired by the school?
RQ 3: How do uniformed and civilian cyber instructors perform assessments of the desired learning outcomes of problem-solving, critical thinking, and teamwork?	Document Review: No relevant responses. Observation Review: Insignificant responses. Interview Review: IQ 3: How do you think the ASLTE workshop (the 40-hour session) affected your beliefs about teaching? IQ 8: How did you modify your practices to a. design learning activities that promote the development of competencies the school desires b. while also actively *assessing* the KSAs of learners?

Table 3

Codewords, Phrases, and Comments About Effective PD Concepts Derived from Data

Content focus	experience; knowledge; skills; right approach; different group activities; development; technical; one size fits all; design; revising; directed-curriculum; tweak; things do or do not work; outcomes; revamp
Active learning	discussion; facilitated; experiences; not use slides; interactive; outcome; productive; generational learning; passive; active listening; participate; problem-solving; critical thinking; exercises; skills; group; teamwork; opportunity; interaction; respond; feedback from students; let them loose; self-directed; solve in their own way; informal checks; I am here for them; make it active; back off and let them go; I stay engaged with them; I can change things; break into teams; tailor the class to students; draw info from students; get them doing things
Collaborative learning	team meetings; AAR; watch other instructors; discussions about infrastructure; collaborate; chat; observe; talk to each other; message board; work together; community; culture
Modeling	observe; shape your perception; work with successful people; watching instructors; showcase; learn new ideas; learn what not to do; entertained; focus on learning; doing something unique; adapt; see flaws; good and bad behaviors; the good instructors; egotistical; BS the students
Coaching	coach(ing); evaluation; hostile teams; teaching style; confident; works with instructors; observation; formal; informal; process-oriented; need to improve; teach better
Feedback & reflection	feedback; AAR; evaluation; checklist; frustration; push them; strength and weaknesses; inspections; coaching; credible assessor; requirements; formal assessment; process; accuracy; balance experience with education; not professional instructors; operational force
Duration	There were no comments that addressed the duration element of a PD program: there were comments associated with follow up, but they are not the same thing.

For some time, I struggled with the idea that coding and identifying code words would, in some way, point to something significant. Merriam (1998) described, thinking of coding as a mechanistic process, applying a rules-based approach to arrive at some conclusion, which is how

I was thinking. It was not words that were significant; it was phrases that mattered; phrases that expressed an idea, or a concept or a belief. These phrases then required interpretation. I had to grasp what was meant by the interview participant when they chose some particular words. Context matters, and the interview question they were responding to established that context, but the investigator was also present during the interview, and other subtleties can apply; attitude, body language, prior responses, atmosphere, a whole gamut of things that can add to the context. As Hatch (2002) said that "combining inductive and interpretive models so that the steps comingle…" (p. 190) was a helpful idea, that was how I interpreted the collected data.

As an example of how I combined inductive and interpretive models I conducted interviews in the modular classrooms used by the study site because they do not yet have permanent facilities. These modular classrooms are mostly big double-wide trailers adjoined. The walls are thin and poorly insulated, and the air conditioning struggles to keep up with the oppressive heat and humidity of the southeast in late Summer. One participant was responding to a question regarding the differences between AIT students and BOLC students. In perfect synchronization with his explanation, a formation of AIT students happened to march by with the cadence calling and conformity building behaviors of a Drill Sergeant to make his point about AIT students needing a lot of guidance. Their voices raised in both spirit and unison are heard clearly in the audio recording. We had been talking about differentiation, why the same curriculum could not be taught the same way to wholly different student populations. The students marched by with their many voices raised up, and repeating the cadence that the Drill Sergeant called. The context of the situation made the point that young, impressionable,

inexperienced learners want to be told what to do. From their inexperience perspective, just tell

me, and I will do it, don't ask me to solve a problem. This mental model is a contextual

counterpoint to what the school is trying to do. The spirit and teambuilding that works for

combat arms formations such as Infantry, Armor, and Artillery might not be that useful for the

new breed of warriors needed for cyber warfare in the 21st Century. The situation just described

had a sub-text, that the investigator and the participant recognized and shared. But without this

description would not be apparent to the audience. The participant and I just smiled in

recognition of the subtlety of what had just occurred.

Themes

It was a struggle to identify concepts and potential themes that differed from the a priori

categories supported by the research questions and literature review. NVivo ™ offered many

different approaches to visualize the data, and this was what ultimately pulled me from the

morass of data within which I struggled. Manipulating coded data in various ways and using

different visualization tools allowed for some patterns to emerge. These patterns then led to

further scrutiny of the data, and with interpretation, themes to coalesce. It is important to note

that the tight alignment of the interview questions with the research questions was both a benefit

and a limitation.

On the one hand, there was a strong affirmation that the participants answered the

research questions. On the other hand, there was a lot more information of value than was asked

for via the interview questions. This excess of information is a value of qualitative (and case

study) research. In other words, without interpretation, there can be a great deal of data that is

unacknowledged or ignored in a singular focus on responses to the research questions.

Recognizing this and finding emergent themes in the data, the investigator discovered these

themes and found many territories to explore.

Table 4

Emergent Themes Aligned to Research Questions

Theme	Research Question
Different students; same curriculum	RQ 2: How does PD encourage uniformed and civilian instructors to modify their teaching practices…
Frustration – tensions between aspirations and requirement	RQ 3: How do uniformed and civilian cyber instructors perform assessments…
Professional military leaders: part-time instructors	RQ1: How do uniformed and civilian instructors…achieve the school's vision…
Collaboration – the agent of innovation	RQ 2: How does PD encourage uniformed and civilian instructors to modify their teaching practices…

Theme 1: Different students; same curriculum. This theme emerged after noticing the

high frequency of the word (and similar words) of different in many responses and embedded in

various responses to other questions. Further scrutiny of the data showed an overarching concern

by the majority of instructors that the students needed different methods to learn the same

curriculum. However, the lesson plan offered only one technique. Instructors recognized this was

problematic.

As P3304 explained: "And on paper, I have one lesson plan that must be used for all of

my learners. And no good instructor will teach the same way, which truly means that the lesson

plan is worthless. Right?" However, not every instructor seems to have the same sense of their

autonomy or instructional skills once the classroom doors are closed. P4096 commented "They only teach you one method, uh, and I don't have a background in it…" to reflect that most teachers just follow one method.

However, that is not a universal perspective. A more experienced instructor P7869, with many more years of service, saw it differently. "How do I get the, how do I draw information out of the students? Cause, in that case, I might be able to skip material and go to other material where they don't understand it as well." Another instructor P1683, described how he modified the content delivery resulting in happy students this way:

And by the way, we're not going through the slides one-by-one, these are just to help us as a background aid, you could see the eyes of the students light up, junior or senior. Like wow! OK. And immediately, I think that helped because it improved active listening, which then went to active learning…

The more significant challenge, though, is that higher echelons prescribe much of the curriculum. Which is normal, the curriculum describes the concept and objectives. In other words, some agency develops the curriculum learning materials and mandates that instructors teach it as designed. That is a problem. P8096 described it as "It was given to us, we have to teach it that way, it is very dry, it is very prescribed, it is very beat the dead horse. I try to get away from that…" He later commented that some activities "While maybe boring for lieutenants, is very necessary for the lower enlisted guys." Some instructors clearly understand the importance of adjusting content and especially delivery to different audiences.

A much more experienced instructor with more than six years as an instructor saw differentiation as a personal responsibility of the instructor. P4045 said, "The reality is people are people. You have to make sure you are communicating, and you have to make sure that they have got it." Yet another instructor, P3190, with less experience, still saw there was an imperative to do what worked for students, "That a lot of times the end goal and the process that the students are learning is the more important thing. If I don't need slides, then don't provide slides because that is just going to be a distraction anyway." The same instructor went on to say, "…and being able to notice and apply that flexibility I think does; it adds a lot of benefit to the students. And that's, I honestly feel that is what I'm here for, the benefit of the students…"

Many instructors realized that they have an obligation to their students to teach them in ways that are useful, productive, and effective. Somewhat understated, though, is their belief in their agency to undertake such modifications. One instructor with high credentials as an instructor and prior (civilian) experience as a high school and college teacher lamented the lack of lesson plans or instructor efforts to use them. In P3304's words:

> Our instructors are never doing that. They're never writing a lesson plan; it's like the module manager that is making sure that there is a lesson plan in there and then they are just making sure their subordinates are teaching the right KSAs and never make them write that lesson plan that fits into the overall module plan.

The instructor lamented that this is not solely a problem of instructor development but one that, in his opinion was founded on tribal lore. As most instructors understand it, according to the training command, "This course has to be identical for every learner that comes through.

And that is what is done, everywhere." Describing a model of the thought process of fellow instructors, he continued:

> Maybe I'm doing it, maybe I'm not, but I'm not cognizant whether that is the right approach for this lesson, for this content, for these learners…And the reality is, there is absolutely no change in lesson plans for a 17C versus an officer. Right? For lower enlisted, specialists, PFCs to captain and majors coming through. Which means everything is taught to the lowest level.

There was yet another case that was slightly different. This instructor, P3716 with extensive operational experience, was selected to teach audiences about how a particular agency works. Furthermore, he was allowed to design the course based upon his experiences. His students ranged from new soldiers to NCOs in transition, to officers with different ranges of experience. He claimed:

> Definitely, I've learned the hard way that I have to change how I present the material whenever I'm teaching a class full of Marine NCOs who've been in the corps for their career, versus somebody brand new off of the street. That's something, but I had to figure it out on my own kind of thing.

Theme 2: Frustration and the tensions between aspirations and requirements. As noted in Section 1, the study site is, if not unique, at least unusual in that it has described a strategy of using an outcome-oriented, competency-based teaching approach to create a learner-centered environment. Additionally, the school actively supports additional development for its

instructors in ways that many other schools and centers do not. Instructors, for the most part, would prefer that the school be true to its vision and expressed frustration when they are not.

Several participants were pointed in their disdain for the evaluations the study site uses to validate instructors and their performance. One of the tamer comments by P3190:

And I feel like the inspections or the evaluations we have to go through usually are kind of check the block, but it is also kind of hit or miss. You've got the ones that come in and they're like well, I need to do this because the book says I need to do it, but I can't give you bad marks because then I lose an instructor, or you have the ones that come in and don't understand the material [that I am teaching] and so they are like, you didn't do A, B, and C, and it's like A, and B don't apply to this, so I can't give you a lecture on this…Well, you didn't do a lecture, so you're going to get bad marks. I feel like it is generally inflexible…they prescribe a way of doing things, and it doesn't work.

Similarly, the certification process comes under fire from instructors. The typical certification schema is to attend a class as a student, then participate as an assistant instructor (AI), and then deliver a portion of a course (a lesson, or two) for evaluation. If you pass, you are designated as a PI (primary instructor), though that does not mean you will be the PI. Part of that is what P3716 described as:

Yeah, they are 17Cs, but they didn't work a technical role…they struggle to re-learn those skills…may take 2, 3, 4 times as an AI before they can say, OK, you are now a certified instructor. We have instructors on the podium to meet the bare minimum standards, and students are passing…whatever!

Another area that illustrates the mismatch between school aspirations and HQ requirements is the role and functions of outcomes, competencies, and assessments. Instructors, who have the best visibility of student performance and behaviors are generally ignored or at least not consulted for follow-on assignment instructions or recognizing superior academic performance. P3716 expressed his frustration this way:

I had a few NCOs that were coming through here earlier this year, and one guy was a complete turd…I had just basic NCO issues with the guy, constantly having to pull him aside and talk to him. But he was the distinguished honor graduate…because he was very smart…I got into, not an altercation, but a heated discussion with the course manager. Like, why am I wasting my time providing you all of this input…I'll be blunt with you, I'm not putting as much effort or thought into my input because it doesn't matter, in the long run. In the long run, it doesn't matter.

Continuing the theme of the school's stated intent to develop competencies and measure outcomes contrasted with the reality of the learning environment, P3716 expressed frustration that "It doesn't affect anything. …yeah, he is technically smart, and he scored well on a test, but he is a rock! He just tests well." At the same time, instructors are working hard to create a learning environment that mirrors the school's intentions. As P1975 noted, "One of our strengths is that instead of just teaching concepts on the board or a PowerPoint, we are giving them an exercise. We're giving them the opportunity to problem-solve." P7869, however, seemed fully vested in the school's process. "Yeah, so we actually look at the attributes. What we are trying to do here is look at the outcome…and use grading standards as a reinforcement mechanism. What

we…[want] is to assess different ways to evaluate outcomes and then based on the outcome, design lesson plans that feed into the outcome." Even when the instructors' intentions align with the school's intent, there can still be challenges. The concept of outcomes and competencies are still not broadly understood in ways that cause instructional practices to change enough, in the right direction, with the best of developmental expectations. P4096 related that:

> So, I think we are getting into the outcomes-based stuff. We definitely do knowledge and skills, there is content that does, that gets to the creating aspect of Bloom's Taxonomy, but it almost feels like we're only getting in there…so, I feel like we scratch the surface…I don't feel like we quite get there…we don't have enough time…

Still, an instructor at a higher echelon in the school's leadership thinks that the learner-centric orientations and focus on outcomes do make students strive for higher levels of performance. The thoughts of P8096 were that if the instructor focuses on performing indirect assessments of learner performance, they will find that their students "Have a try harder mentality. So, don't leave them high and dry, but don't spoon-feed them either, to get to the outcome." However, the same instructor suggested that the inherent subjectivity of indirect assessments could be at odds with the expectations and mission of the school.

> All of us are different have different strengths and weaknesses, so subjectivity really comes into play…yes, it is cumbersome, yes it takes time, yes it needs to be done, but we need to assign a grade…we need to have something that can hold up, essentially in court…we need to be able to say, it is because of this, not because, well, I didn't think you had it. We have to prove it somehow.

Measuring and grading learning and academic performance consistent with the espoused strategy of the school and common academic practices is another source of tension. The challenge of assessing the quality of learning becomes apparent by one participant's comment that rote learning or memorization is still the metric used. P8096 commented in response to outcomes assessment, "Yeah, how do you know? …It is just a traditional memorization test. What I teach with the technical stuff, right now, version 1 is just memorization." However, there is a more concerning aspect with the stated intention and strategic vision of the school, but that affects student learning as well. P3304 said:

And then I've seen the other extreme that we do a LOT here. We basically didn't teach you anything. When they [students] ask you a question, they [instructors] tell you, go look it up. This is supposed to be an adult environment. You're supposed to be able to figure out answers without asking instructors. Obviously, there becomes some animosity between the instructor who calls themselves a facilitator…it is not really facilitating your learning.

Theme 3: Professional military leaders as part-time instructors. A recurrent pattern that evolved as a theme was a recognition that instructor duty was just that, a duty. However, because these military instructors are professionals with all that the word portends, they do want to perform at their best. Many recognize that while the practice of teaching helps them to continue to improve and refine their instructional skills, it might not be sufficient. As P8096 noted, there is a qualitative difference when all a person does is teach as a profession.

> Because we are not professional instructors, we're part-time, while we are here as
>
> instructors. Some of us may then find a joy of it…but my sister has been teaching 20
>
> years now…that's her profession. Our profession is different, you know, with a part-time
>
> gig instructing.

Another participant P4096 made a comment that is quite revealing "While the business of the schoolhouse is education, we don't really have educators employed here."

As so-called part-time instructors, there are different perspectives about how to adopt the professional behaviors of a teacher and to create a learning environment that will enable or support the strategic vision of the school. The school's PD program seems to provide a scaffold until the instructor feels confident. Participant comments reflected differing opinions, though most are positive. In the words of one, P5768, "I don't think I would be a very good instructor without it." Another, P1683 noted, "The program, the Army's program, and especially the ASLTE workshop has helped, has affected my performance – or the performance of our instructors." Another P3190, commented that the CFDP-IC "Definitely made me realize or made me alter the interaction I had with students."

Some instructors, either with more experience as instructors or with an advanced degree in education, were more cautious in their responses to how PD shaped their perspectives. As related by P3716, "The initial instructor course, I'm not saying it is bad, but…the biggest benefit was just getting over the fear of talking in front of a group of people." Another, P3304 claimed that "it did a pretty good job teaching what I already knew about how to conduct activities…And from what I saw, that was very good for my classmates."

By contrast, there were several comments about the value of experience irrespective of the value of the PD program. P3716 responded "Yeah, I got over the fear of just being in front of a group of people, but really, just the OJT [on the job training] time, that's when I really learned how to be an instructor." A different participant, P4045, commented that experience was useful in their development "Yeah, I got it from experience. And I'm not saying I'm a master at it, but now I know what to look for." One participant, P5768, noted that deep content knowledge could overcome other challenges: "I was terrified my first time. I feel like I'm a pretty decent instructor now, and I enjoy doing it…know what you are teaching, and get up there and teach." Nevertheless, experience and content knowledge can be an unreliable teacher as one deeply experienced instructor, P7869 noted: "But if I'm teaching the wrong thing, but I'm teaching it really, really well, if I'm teaching the wrong thing well, is that really a good thing?"

The question that comes to mind reviewing some of these comments and with an awareness of best practices in faculty PD programs is; what about coaching or follow-up to support newly learned practices? Many of the participants had thoughts about that, and their descriptions follow below.

Foremost were statements that coaches and coaching does not exist. P1683 stated: "So, with regard to like having a coach helping to alter teaching practices, I don't think we have anything like that in place right now." P3304 more bluntly stated, "Yeah. There's no such thing as a coach." P3304 continued, "My official title is senior instructor, and I don't coach anybody." One participant, P7869, while commenting on how they altered their practice over time, noted that a coach did not support it. "From a coach, not so much. There is an absence of coaches. It is

a complete lack, or in some cases, it was more destructive than constructive." Some participants

noted that the school perhaps sees the evaluation process they routinely perform as a form of

coaching.

P5768 stated, "I didn't really have any coaching. Honestly, I guess the biggest coaching

[making air quotes] that we get is when we are evaluated." Another, P7869, commented that the

evaluation is not much focused on teaching skills or behaviors. "I'm coached on the process. But

that doesn't help me with material, mannerisms, subject matter expertise, whereas with my peers,

we get process and application." The conflation of the instructor evaluation process with

coaching seemed to have a mixed value for most instructors. As one participant reported that

their evaluation experience was competing for both recognition as the instructor of the quarter, as

well as for the instructor badge and the feedback was not useful. P3716 commented that:

> I can think of five people that have evaluated me over the past six weeks…two of them
>
> actually gave, were really doing their job well and took it seriously, and gave good
>
> feedback…one person just followed the checklist…she just said, great job, and two
>
> people did that, and one person was like, you suck, you did absolutely nothing right.

The same participant, P3716, also noted that most instructors had a dim view of the requirements

for the process for the award of the instructor badge.

> I'll be completely blunt with you, as far as badging requirements, we have to have four
>
> peer evaluations. We all just pencil whip that shit, I'm not going up to my friend and say,
>
> dude, you suck at this…it's just a formality, a check the block kind of thing that nobody
>
> takes seriously.

Something that most of the participants agreed upon was the benefit of advice or feedback from their peers; though that comes with challenges of its own. For the most part, participants found their peers to be useful for providing insights about how to improve their teaching. P3190 stated that: "In terms of peers…they definitely work with me to refine the kind of the way I'm teaching…hitting certain points students get hung up on." Another, P4045, contrasted the difference between the evaluation process and peer feedback this way, "From the eval I didn't get very good feedback. Because they are not equipped to give it…my supervisor gives tremendous feedback. Because we want to make each other better." P5768 commented that "Peers is pretty much where it is at. My peers have helped me greatly; I feel like I have helped them quite a bit as well…I feel there is more in peer development than there is from the top-down." One participant, P8096, summed it up well with this comment "No, it is more of the peer versus the coach."

A challenge with the influence of peers only to moderate or modify teaching practices is that it could be like the blind leading the blind. Several of the participants recognized this challenge and suggested there is a need for some follow-up or resources to support continuing development. As P3304 noted, "There really is no check on learning for the instructor once they finish [their PD content]." The participant went on to say, "To have somebody on site that works with instructors in small group settings [and] that person is educated and knows how to be an instructor." That would be a significant benefit for instructors looking to improve their delivery.

P3716 commented that there is a paucity of information available to assist instructors that are interested in changing their classroom performance. In response to what resources were

available to help modify their practice as an instructor, the participant said, "Honestly, I don't

know…But as far as a class, or a website or something like that, I don't know where I would

go." P5768 lamented the lack of follow up and the limited resources after the PD process.

> There really is none [follow up]. I did all of the professional development…I got it 7 or 8
>
> months before I started teaching…by that time it was pretty much gone…there is not a lot
>
> of opportunity to get that instructing professional development…technical certifications
>
> you can go to…but there is not a lot of, would you like to go to this senior instructor, or
>
> this workshop, or something like that.

P3304 suggested that the follow-up process needed to be more persistent and present. "It

would be incredibly beneficial if we had follow-up from these classes…if we had someone that

knew how to instruct…that could go over a lesson plan…not, are you meeting the [higher HQ]

check the block?" Another, P4096, commented that there was a hunger for more "Yeah, but if

we had continuing education…Because there is no continuing education…So it is really just me

asking questions on my own…" P4096 continued, "For those that are thirsty for more, it is

really…I see something in the classroom that triggers me to do research more on, how do I

reach, how could I have better dealt with that…so I start looking for more."

Theme 4: Collaboration: The agent of innovation to adapt the curriculum. One of

the most repeated words evident in the interviews was collaboration. Though not a concept or

main idea in the PD program, it appears to be a dominant theme in the day-to-day work of

instructors at the study site, especially those that teach the technical courses.

Collaboration appeared to have both a formal and informal structure associated with it.

Most instructors agreed with P1683 who said:

> I think that on the informal side, which I think was actually more important, it created
>
> communication, where the technical instructors weren't just with their technical
>
> brethren…there was discussion…that was more important than the formalized meetings
>
> and preparation of instruction…

The formal aspects of collaboration tend to be the end of course after-action reviews

(AAR), which many find to be useful but not cross-cutting to affect change in instructor

behaviors. Instead, they had a more technical nature associated with the supporting infrastructure

of a particular course. Even with those limitations, some instructional behaviors do get addressed

as P3304 described:

> These are things we want to build physically in the network…and then instruction
>
> style…you should back off a little when you do this, and we need to coordinate this a
>
> little better, and we need to improve our slides, to make sure we include all of the notes,
>
> we want more uniformity…

The technical side of cyber, coding especially, because there are so many different ways

to accomplish similar things, lends itself to a collaborative and sharing environment. The GIT™

hub, a free cloud-based open-source collaboration environment, is used by the instructors of the

school to modify and revise lesson materials rapidly. More importantly, it is the sharing of new

ideas or different and effective methods. As P7869 described: "We collaborate, probably daily.

Oh, yeah, easily. We use chat channels to talk to each other, use a lot of email correspondence

and then periodically, actually do classroom visits to observe other instructors…" P7869 noted

further that "We have an instructor community that routinely chatter at each other."

Those inclinations to chat with other instructors occur via the use of a Slack™ channel,

another freely available internet resource. This free application and the earlier mentioned GIT lab

are clear examples of the instructors finding ways to innovate despite the scarcity of tools and

resources provided by the school or the higher HQ. P4045 commented, that with the GIT asset,

"The idea is that if you see something, you can change it, and can send it up, and it is merged in,

and now it is instructional material."

Another advantage that seems to be inherent to the cyber community is that rarely can a

single person address all of the learning needs for a course. Multiple inputs seem to produce

higher quality lesson plans or learning activities. However, those inputs do not help much when

the intentions for the content are unclear. As P4096 stated:

"We'll get together in working groups…once we have an idea of the end state…only sometimes

we don't have a clear idea of the end state…"

Ultimately, it seems that the spirit of collaboration permeates the community of cyber

instructors, as P5768 put it: "We're in it together." Another, P7869 noted: "A lot of times we just

make the time, or we work together, and that's more of the community I work in right now…we

have a good culture. The cyber culture is incredibly collaborative; it has to be."

Conclusion

In recalling the problem at the study site, the collected analyzed data shed information

about how to resolve that problem. There was, inherent to the study, a central question. The 3

guiding research questions helped frame the interview questions used with research participants. Constructive alignment helped ensure participant responses would inform potential answers to the questions.

The central question, why instructors do not continue to improve over time following PD or do not continue to model newly learned behavior is contingent upon reinforcement or some form of continuous learning. However, the apparent answer does not fully satisfy, as it appears that instructors are seeking additional learning or developmental resources that are not available. Additionally, the absence of coaching or other positive and developmental feedback is suggestive that novices will only stretch themselves so far. Otherwise, for most instructors, the status quo looks to be safe and lacking controversy; therefore, doing what everyone else does means you are not the nail sticking up, and will not get hammered. Recall that the study site is a military environment with a cultural predilection for metaphorical hammering to ensure conformity.

What seems apparent is that the PD program is either not long enough or robust enough to convince instructors that learner-centered and outcome-oriented competency-based instruction will meet the schools' vision. In other words, the PD program, as it exists, is not transformative enough to compel instructors to adopt wholly new teaching methods that contrast with their prior experiences as learners or teachers. Further, lacking coaching and access to supportive follow-up, there is little incentive or support to sustain adopting teaching methods that are contrary to their own prior learning experiences, or the expectations of their learners. A positive interpretation of the data is that instructors are encouraged to modify their teaching practices to

create a different learning environment than either what students expect, or what instructors might think is expected of them. By itself, such an interpretation is a beneficial result of both the PD program and the expression of the school's vision, but not entirely sufficient. Finally, the data revealed that instructors do not really understand or believe in the learning outcomes assessment strategy that the school seeks to implement.

A highly informative comment that emerged should not be a surprise, really, as it is an inescapable reality and evocative of the challenge of PD for military instructors. P8096 commented that: "We have a part-time gig in instructing." The presumption that the day-to-day professionalism that sustains the military force will automatically translate to the duty of teaching novices does not equate. It seems likely then that there is, for novice instructors, something more needed, like coaching, more developmental opportunities, and different instructional models. While the study site has undertaken the first steps by offering PD beyond the fundamental basics offered by the service instructor qualification course, there is a need for even more. More importantly, it is not solely in the instructors' lane to undertake self-development of their own volition. From a programmatic perspective, there are systemic issues that expand beyond instructors that are suggestive of how the study site can generate movement and momentum beyond the classroom. As is the case with most schools, the institution is a system comprised of lesser systems; instructors should not be the sole audience for professional development to implement the school's vision. Some of those other systems need PD too to understand their roles and functions as they apply to achieving the school's vision.

Summary

Section 2 included descriptions of the research methodology and sought to elaborate on how I would use appropriate methods to answer the research questions. An intrinsic case study has some unique aspects that differ from the more common instrumental case study, and I noted these aspects with a particular focus on elements of data collection and data analysis. I described my efforts to protect research participants' confidentiality, maintain ethical relationships, and reduce the power aspects of the interviewer – participant relationship. Additionally, following the advice of (Creswell, 2013; Stake, 1995) this section described how data were collected, protected, analyzed, and managed to enhance credibility and support naturalistic generalizations that are useful to case study reviews.

Section 3 will describe the project that seeks to address the shortcomings of the current PD program or amplify the salient aspects of instructor PD that might not have produced the results expected. The best exemplars of the cadre of instructors at the study-site expressed their perceptions and interpretations of their duties. These descriptions point to gaps in the current PD program as informed by the literature review. The program offered intends to fill those gaps in the PD program and generate a new program that is sustainable with the resources currently available to the study site.

Section 3: The Project

Introduction

The purpose of this research project was to find a solution to the problem described in Section 1. With data analysis completed, the findings pointed to some potential solutions that will address the gaps discovered in both instructors' practice and the PD program. This section will share literature research about designing, executing, and measuring the effectiveness of PD programs (see Appendix A).

The major problem at the study site was that not all or even a majority of instructors who attended the PD program were using techniques and methods of instruction that were consistent with the study site's strategic vision. The research findings suggested that while the PD program was effective in terms of encouraging adoption of active learning, and facilitating lesson modifications, those effects did not sustain over time. Some elements of effective PD programs defined by the literature review in Section 1 were notably absent in the study site's PD effort.

Responding instructors during data collection pointed to the absence of coaching, lack of meaningful feedback and resources, and concerns about differences in practice of the school's expectations involving measuring learning outcomes compared to the realities of grading student performance. Other findings pointed to some strengths, such as collaboration, peer-coaching, and lesson modifications that can be exploited by the school to enhance their PD program, as well as its continuity and perseverance. The collaboration between instructors and between courses seems to be part of the culture at the school, something that (Sutton & Shouse, 2016) found to be useful for sustained PD. It also appears that middle-management and the cadre of instructors do

not share the same ideas as the executive leaders of the school. Faculty and management discontinuities such as this do not appear to be a functional disconnect but one of uncertain intentions and inconsistent execution.

Section 3 will explore how the project should ameliorate the problem of instructors not applying, consistently, over time, what they learned in PD. The section will define additional components of the PD program that deserve consideration for inclusion. To supplement this project, I explored a rationale for the project, reviewed appropriate literature, described the project, and proposed a project evaluation plan.

Description and Goals

Section 1 described a problem observed in instructor performance following instructor professional development. Primarily, instructor PD offered to instructors did not appear to induce consistent changes in the teaching performance of all participants, and there appeared to be an uneven application of models and techniques for learner-centered, outcome-oriented, and competency-based teaching. The leadership at the study site was more interested in understanding why exemplary instructors performed in ways consistent with the models taught in PD, and in terms of the school's strategic vision than finding out what might be wrong with the PD program.

The inquiry generated three research questions to understand the how and why associated with exemplary instructors. Literature about instructor perceptions and reactions to PD programs in education pointed toward significant shortcomings in many faculty development programs that formed a basis for comparison with the study site's PD initiatives. These constructs provided

useful points for constant comparison across individual cases within an intrinsic case study. They provided meaningful insights into what was affecting or shaping the thoughts and actions of exemplary instructors at the study site.

These insights, when compared to the constructs or elements of effective PD programs, suggested learning and action gaps in the PD program. Labin (2012) claimed that identifying gaps was a useful effort when developing training or development programs intended to improve performance. This gap identification is usually referred to in training design or program development (Beach et al., 2016; Caffarella & Daffron, 2013; Clark, 2015; National Academies of Sciences, Engineering, and Medicine, 2018) as a need's analysis or assessment of both the instructors and the institution. If, as Beach et al. (2016) said, that "excellence in the institution derives from excellent instruction", then gaps or needs in both dimensions need to be addressed. The current study found multiple instances of gaps in terms of understanding, intentions, and execution at multiple levels of the institution that require redress if they are to close. As Lyon (2015) described, there remain challenges as to how expertise can develop via learning programs with developmental intentions.

Program Intentions

The project will propose some additional learning events as part of a holistic PD program, the objectives being to bridge if not eliminate the gaps judged most critical. Findings suggested some disparity between what leaders and administrators expected and what instructors were able to provide. More significantly, this gap was a source of frustration for instructors at

several different levels of instructors, new, experienced, and senior. There was a challenge

caused by the distance between theory and practice.

From a cursory perspective, the study site seemed to be locked into the theory of a

particular educational approach as espoused by their strategy statements. Meanwhile, the

instructors are confronted with the realities of practice and the expectations of their students.

School leaders say one thing, and instructors have to do the best they can. The study site

embraces a three-fold conceptual model for learning: learner-centered, outcome-oriented, and

competency-based. These three instructional strategies make the issue for instructors more

challenging. Each of these models has challenges in terms of implementation, disregarding

conjoining them in a strategy. There are principles and practices associated with each

instructional approach that are sometimes in contention and require leadership intervention to

resolve.

It makes sense then to find a way as Taylor et al. (2017) elaborated, to ensure that the

leadership, the middle managers, and the instructors are working from a coherent perspective

that should lead to consistent results. Within the school, peer-reviews, performance appraisals,

and collaboration for redesign, that are well established in the culture of the school, are things

that administrators can leverage to exploit PD opportunities. Park, Roberts, and Delise (2017)

reported on the application of universal design, an architectural design model, to a teacher PD

effort that offered some insights to the kinds of resistance at both the action and direction levels

that program design ought to consider. The last aspect of the program, an idea that Darling-

Hammond et al. (2017) described would be to ensure that the program is sustainable over time.

The goal of the proposed additions to the current PD program would be to close the gap between leadership expectations and instructor capacity to achieve those expectations in ways that support learner success in their next duty assignment.

Desired Program Outcomes

Desired learning outcomes will vary based on the audience. I have already described that there are three target audiences; leaders, managers, and instructors. The most difficult to influence will be school leadership, but only because their time is as limited as is their availability to attend a workshop, even for one day or part of a day. Middle managers are a significant target as they influence both leadership and instructor staff. Primarily, they serve as the bridge between strategic leadership vision and instructor implementation. Finally, the instructors themselves are the third audience. Given the right kinds of support, they could establish, or invigorate, existing practices in ways that can lead to continuous instructional improvement.

Leadership audience outcome statement. School leaders will justify the importance of using language that is supportive and encouraging to instructors that are the center of gravity of the school. They will reconcile institutional challenges that must be overcome and construct methods to protect instructor autonomy to generate desired learning outcomes and competencies that the school and operational force desire.

Manager outcome statement. Course directors and managers will examine their roles in supporting the institution with an emphasis on building systems that encourage instructor development and innovation. Through deliberation, they will adapt approaches that work to meet

institutional expectations while simultaneously increasing instructor capacity to achieve desired learning outcomes.

Instructor outcome statement. Instructors will examine existing practices that can build a PLC to integrate continuous learning and teaching improvement based on peer development and feedback. Specifically, they will adapt existing collaborative practices encompassing rapid course re-design, building formative assessment strategies, and validating learning outcome assessment tools.

Program combined outcome statement. The faculty cadre of the school will construct a sustainable PD program that characterizes values and outcomes that best serve to produce learners that the cyber operational force requires.

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Rationale

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The data analysis completed in Section 2 suggested several ideas that would benefit instructors and the mission of the school. Foremost was that instructors were mostly bereft of coaching or other support structures to encourage their further development. Many instructors thought that they benefited from the feedback offered by their peers. Additionally, instructors felt isolated or ignored by leaders, managers, and administrators that implemented directives and decisions without concern for potential effects in the classroom. Finally, assessment of, and development of specific competencies and learning outcomes remained an unclear and vague concept when contrasted to the strong focus on cyber knowledge and skills embedded in the curriculum.

While benign neglect of instructors in their classrooms is not the same as autonomy, it is easy to understand how instructors might believe that their efforts to innovate do not matter much to the school as long as the expected numbers of students matriculate to satisfy the needs of the cyber operational force. In other words, meeting the mission of the school. Instructors that do undertake to create the kind of learning environment the school espouses might, over time, with little recognition or reward, resort to doing what everyone else does, in other words; satisfy the status quo. Teacher autonomy, therefore, as described by (Parker, 2015; Vangrieken, Grosemans, Dochy, & Kyndt, 2017; Wang & Zhang, 2014) should be considered an unintentional, yet a desirable effect of any PD program to counter the pernicious aspects of the status quo. With some caution, there is some research (Derri et al., 2015; Vieira, 2017) suggestive that task-based instruction can support teacher autonomy in highly structured learning. A crucial design challenge remains whether the institution chooses a focus on objectives versus outcomes.

A school such as the study site that seeks to break the large institutional model of instructor-centered content delivery, needs to recognize that it is a system comprised of smaller systems. Too often, faculty development efforts focus solely on the instructional staff – the teachers or instructors. Better, more effective development programs include and address the roles of leaders, staff, administrators, as well as instructors (Robertson, 2010). While most of these programs focus on the creation of a center or some other agent that will be the focus of change, the roles described are still useful to institutions that might lack the capacity to create a stand-alone center for teaching excellence. The key idea is to recognize that all components of

the institution are shaping the environment for learning. In the critical PD research performed by Condon et al. (2016), they said that "…a campus must establish strong support for experimentation and risk-taking among all of its faculty…" (p. 123). If the staff, as a whole, does not understand what those risks entail, it is unlikely there will be much support provided in pursuit of experimentation or innovation.

Review of the Literature

In Sections 1 and 2, the literature review helped to establish the context and the basis for the research questions. Importantly, the reviewed literature established what PD for education is, what makes it more effective, and some conceptual ideas about how, or if, PD affects teacher performance. Early in the review, it became clear that there is a significant difference between PD for teachers in primary and secondary education as compared to PD in higher education. Consequently, most of the review conducted focused on either technical training and college teaching. Part of that distinction was recognizing that teachers in primary and secondary schools (Klein, 2016) are generally well supported with resources to support their continuing development, such as via block grants and other initiatives funded by the recent *Every Student Succeeds Act of 2015*. It is easier to acquire resources for PD in primary and secondary schools than for vocational, technical, or post-secondary higher education. Nonetheless, according to (Beach et al., 2016; Ouellett, 2010) colleges and universities have only in the last 40 years recognized the need to provide PD for tenured professors, and adjunct faculty. PD is usually a resource offered via a center for teaching and learning, among other similar names. Unlike grants and financial support offered to primary and secondary schools, higher education is expected to

provide their own resources. The services that are provided at these schools are also usually

accessed voluntarily; rarely has teacher training been mandatory in colleges, though that is

changing.

For this portion, the literature review, informed by the earlier reviews and by the data

analysis, the intention was to find PD programs that worked, or, more specifically, worked using

approaches that had a broad basis of utility. Additionally, this review had to consider how those

programs were applied, and determine their applicability to helping address the issues of the

problem identified in Section 1 and refined through the data collected and analyzed in Section 2.

Using Research to Guide Project Development

The proposed project, creating additional components to the existing PD program used at

the study site, is appropriate because it will address some of the shortcomings found during data

collection. While the study site's PD is more comprehensive than is found at many similar

institutions, based on the earlier literature review compared with the collected data, there are

some challenges. These challenges can be reduced with additional, short, tightly-focused

workshops to expose various stakeholders to new ideas and better practices. Moreover, the

program could be entirely self-sustaining, requiring time and space only as resources.

School Culture and Barriers to Change

Culture is continually changing, but those changes, like planetary geologic changes, are

rarely apparent to occasional observations. Nonetheless, culture is a factor in and within

institutions, and as Condon et al. (2016) noted, it is crucial "to work with that culture to make it

more productive" (p. 121). Neal and Peed-Neal (2010) stated that if one is attempting to

moderate or adjust the culturally biased practices of an established institution; it would be wise to understand that culture and plan interventions accordingly.

Part of the culture of the study site is that most of the leadership, especially at the highest levels, usually have no special qualifications as educators. Such a shortcoming of education is broadly true for most of the schools and centers within this DoD service (Smith, 2019), and the school is doubly challenged by leaders occupying these positions for one or two years only. Wright and da Costa (2016) said that school leaders need as much professional development as does the faculty. The problem of educational leaders without education degrees or experience is not exclusive to military learning institutions. Chang, Chen, and Chou (2017) noted that lacking specific knowledge and skills associated with educational leadership, it is doubtful that the highest-level leaders at the school or center can serve as instruments of change in the institutional domain. However, there are few directors at service schools (like a college dean) that today do not have doctoral degrees, and usually in the field of education.

Next, it is vital to consider the middle-level leaders. These are the course managers and course directors. The problem at this level is that the study site, like other schools and centers in this DoD service (Smith, 2019), follows a military hierarchy, not the structure of an educational institution. Broadly, claims Samuelson and Zeckhauser (1988), the purpose of mid-level managers is to maintain and sustain the status quo, and their bias toward decision making is to sustain the status quo. The expectation is that they will enforce the dictates of those above them for job security. At the same time, Heyden, Fourne, Koene, Werkman, and Ansari (2017) stated that they will also resist innovative changes from those below them for job security.

Nonetheless, Heyden et al. (2017) also suggested that in terms of execution, middle managers are in the best position to cultivate support for change within the body of the workforce. This idea is valid only if the higher leadership undertakes efforts to help managers closest to the workers to understand the rationale for the change. Similarly, Ionescu, Merut, and Dragomiroiu (2014) pointed out the significant roles that managers have that promote or negate change management. For that reason, it is essential to include this middle level of leadership in the PD efforts.

Continuing the theme of acknowledging the military culture of the study site and its hierarchical organization, the faculty of instructors are military, civil service, and civilian contractors. The largest part of the faculty is currently composed of contractors. Contractors have to meet performance targets specified in their performance work statement (PWS). They are accountable both to the military leadership (through a contracting officer representative [COR]) as well as their corporate leadership (through a program manager). Unless the PWS specifically addresses PD as a component of the work requirements, it can be challenging to make contractor attendance in PD programs mandatory. Requiring additional work, not specified in the PWS, such as collaborative working groups, action research, or other alternative PD initiatives, can be problematic.

Imposing additional and alternative PD initiatives on civil service and military instructors is much easier to do except for the problem of time. As noted in Section 1, the study site is a relatively new school for a new branch. Its facilities are still under construction. The instructor staff is still, four years after establishment, not filled, and the requirements to populate the force

with prepared operators continue to increase. A recent government report (GAO, 2019) chided the service for creating organizations that it was unable to fill with personnel. The pressure then to maximize facilities and focus on course throughput will be quite high and the breaks between one course and the next course few and far between.

Through understanding these constraints, I conducted an additional literature review to examine existing PD efforts that might be challenged similarly in their environments. Additionally, some of the themes from the data analysis informed my search. One of the things I had found from the first literature review was that there is a distinct difference between PD for K-12 teachers than there is for post-secondary educators. Such a distinction led me to focus mostly on college, technical school, or faculty development occurring in higher education settings. If anything, the study site resembles a community college more than any other institution of higher learning.

Finding the Right Literature

The Walden University Library was my primary search tool. However, I also searched for specific journal web sites directly to improve finding appropriate literature. Search terms that I used varied, based upon when the searches occurred. For example, while waiting upon the government to provide IRB approval, I conducted searches based on the best guess of what a project might consist of. Those terms were: leadership, teacher-led, teacher reactions, action learning, action research, teacher concerns, modeling, coaching, communities, peers, competencies, and perceptions. Later, just after receiving final IRB approval, I undertook a second search. This search was a bit more focused. Search terms included: expectations, active

participation, professional learning communities, communities of practice, change theory, mindset, assessments, evaluation policy, student feedback, peer observation, peer coaching, and in-service development. A final search conducted after data collection and analysis used the following search terms: teaching observation, action research, professional learning, STEM, mentoring, culture, scholarship of teaching and learning (SoTL), collaboration, 21st Century (skills, and competencies); and community college.

The literature review also led to the discovery of several books and reports of value. Mostly these were associated with faculty development. Examples include works by Beach et al. (2016), Condon et al. (2016), Gillespie, Robertson, and Associates (2010); teaching STEM (Felder & Brent, 2016), as well as newer findings of teaching and learning based on neuroscience (National Academies of Sciences, Engineering, and Medicine, 2018; Taylor & Marienau, 2016). Finally, a report from the American Council on Education (Haras, Taylor, Sorcinelli, & van Hoene, 2017) assessing the impact and outcomes of faculty development.

Conceptual Framework: TLT

In Section 1, I addressed that TLT as elaborated by Taylor (1998) was an appropriate framework with which to analyze and construct professional development initiatives, especially in the case of military instructors. Instead of ordering subordinates what to do, now they must guide subordinate students about how and why to do things. Having established the linkage between the steps or phases of transformation and what could occur in the professional development of a novice or in-service instructor, the next question would be to determine if there is any research to suggest that it applies.

TLT posits that transformative learning begins with and depends upon a disorienting dilemma. I have already established that this dilemma occurs for most of the military faculty at the study site when they transition from being organizational or small unit leaders to a solitary educational leader in a classroom. From the perspective of a PD program, especially one intended to have a continuing characteristic, the TLT concept of perspective transformation, or frames of reference is useful to consider. I addressed earlier the similarities of frames of reference to the concept of mental models and that these alter continuously by on-going experiences. After completing their certification process and then practicing teaching, it is reasonable to believe that an instructor will have different mental models from before they started teaching. Van der Klink et al. (2017) captured this idea well with what they refered to as barriers that may hinder PD, the "fear of change and a lack of interest in innovative ideas" and "unlearning and challenging one's own beliefs and views" (p. 167). The challenge, though, is if those frames of reference are consistent with generating school desired learning outcomes, and this is what a longer duration PD program should consider.

One study, Terras (2017) noted how in-service teachers, some with 15-20 years of experience, experienced the phases of TLT as they changed their teaching from face-to-face to online. One of the things mentioned was the frames of reference that changed and those that were unchanged and the critical reflection imposed by the need to redesign the curriculum. Liu (2015) noted that critical self-reflection is one of the phases of TLT and is often considered essential to the process of transformation. Sometimes forgotten, and as described by Van Seggelen-Damen, Van Hezewijk, Helsdingen, and Wopereis (2017) is the legacy of critical

reflection to the methods first documented as a part of the Socratic method of teaching. Reflection is not just part of learning; it is a fundamental part of how professionals learn on action.

Attard (2017) suggested that reflective self-study is a way for teachers to manage their PD. But Hemans, Gluckman, Ferry, and Hargis (2019) said that college-level educators rarely have the time and opportunity to reflect critically and PD is a way to encourage it by design. Related to their research (Hemans, et al.), though, was the importance of shared reflection and that reflection can lead to observable and measurable transformation of teaching practice.

A study that examined factors affecting teacher PD (Sprott, 2019) found that the provision of time and space for collaborative reflection was essential. The centrality of critical reflection for teacher PD was examined by Saric and Steh (2017), citing over 15 studies from international sources that described the positive outcomes that accrued. As they noted, the utility of teacher critical reflection is to introduce change and transform the institution for better learning.

Transformation is change, and learning can be said to be a form of change. Becker (2016) commented that personal change and TLT always have a close association. What appears to make TLT attractive to some teachers is the intentionality that underlies its usage. In other words, as (Ali & Wright, 2017; Durant, Carlon, & Downs, 2017) described in their studies, the teacher will seek to create conditions that increase the likelihood of perspective transformation. Another study that also used reflection as a feature (Mackinnon, 2017) was a project-based learning event that sought to transform traditional learners into curious learners. Under the self-

directed nature of the projects and the guided structure provided by instructor-mentors, learners

developed high levels of intrinsic motivation to learn. In the process, they learned to satisfy their

curiosity and learn on their own, a valuable skill for any profession.

Some final perspectives on TLT as it applies to PD are in order. Several authors (Hemans

et al. 2019; Lambirth, Cabral, & McDonald, 2019) elaborated on the usefulness of action

research (also called action learning) to create perspective transformation and transform teacher

beliefs and actions. Examination of those will fall under the topic of action research. Another

topic that will get more attention later in this study is the utility of coaching in PD. Corrie &

Lawson (2017) reported that using the TLT framework helps build a learning environment that

focuses on the person making sense of their performance environment and their role within it.

Lastly, a challenge often posed about applying TLT is that it takes too long, and often, the

teacher does not know how effective the effort was. Heddy and Pugh (2015) offered a

perspective that instead of aiming for big transformative learning events, the instructor can gain

more effect with smaller, transformative learning experiences. Instead of seeking the

transformation of the learners' world-view, for example, the instructor instead uses deliberate

and provocative issues to create disorientation with the context of the learning content. This kind

of forced questioning of assumptions can lead the learners through the phases of TLT in the span

of hours rather than days, weeks, or months.

Collaborative Learning and PLCs

Several studies of highly effective faculty PD programs (Darling-Hammond et al., 2017;

Jensen et al., 2016; Van der Klink et al., 2017) have reported on the relevance of collaborative

learning, working groups, PLCs, and CoPs as useful instruments for PD. Benke, Wall, and

Widger (2016) and Daniel et al. (2013) said that CoPs can also arise following PD as

professionals seek to continue the dialog. With the rising ubiquity of social media and other

communities of practice since the turn of the current century, the idea of learning by discussion

(Patton & Parker, 2017) with distant peers has become a potential tool for professional

development. The salient point is that these CoPs allow educators to break out of the silos that

they tend to operate within. Smith, Hurst, and Murakami (2016) reported that participants in

CoPs tend to be mostly novices and a few experts. The novices' question what they think they

know or question the challenges of their experiences, while experts are willing to share their

interpretations of their own experiences. However, well organized and disciplined CoPs, equally

supported by the school and faculty members, can produce change. An advantage is that, as

reported by Armbruster, Moran, and Beitsch (2013), CoPs can help overcame the natural

resistance to change by getting people aligned with the change process. Part of the change at a

large research institution (Mestre, Herman, Tomkin, & West, 2019) was a result of "emergent,

not prescribed" (p. 44) implementation of ideas generated through a network of CoPs that also

benefited from mentors integrated within the CoP.

Engin and Atkinson (2015) studying faculty learning communities, or as they are more

broadly known as PLCs, are slightly different than, but based upon the concept of CoPs. Engin

and Atkinson noted that PLC act as a moderator to the lack of time that faculty regularly

confront, especially for PD. However, they also noted that more problems would be present than

solutions pointing to a limitation in the approach. In another study (Bosman & Voglewede,

2019), did find that CoPs enhanced faculty motivation to adopt reportedly effective teaching practices. Likewise, Aizer et al. (2016) found that participants identified meaningful value in the continuing development of CoPs to share insights into the transformation of practice.

If one considers a PLC as a kind of educational network as Schreurs, Huveneers, and Dolmans (2016) did while studying a one-year-long PD program, then that network can be useful in both formal and informal ways. Formally, it was crucial to build a relationship with a coach, that over time, encouraged instructors to be more collaborative and offer higher quality feedback to their students, as well as to other instructors. It appeared that coaches encouraged follow-up meetings, meetings to reflect, and building a network to share information.

In another research study of a PLC, there appeared to be a distinction between professional learning and professional development. According to Abbot, Lee, and Rossiter (2018), a PLC helped already qualified professionals access, interpret, and implement research into practice. Their five-year study found that the focused research approach to a PLC improved knowledge, skills, attitudes, promoted change, enhanced learning outcomes, and used evidence to inform changes in practice. Their conclusion aligned closely with the Darling-Hammond et al. (2017) work that saw a PLC as a way for teachers to examine their students' work and how instructional strategies energized student learning. An idea about a PLC does not see it as just a PD initiative; it is a PD effort in and of itself that satisfies each participants' needs, as and when they identify that need.

Avidov-Ungar (2018) adopted a slightly different take on PLC which is that if the community is formed by, and for teachers, (rather that the school) it could be considered a

professional development community. The point is valid; Jensen et al. (2016) said that a PLC can be whatever the school, or the faculty, desire it to be as there is no broadly accepted model of a learning community. Whereas Jensen et al. (2016) pointed to several commonalities in different international conceptions of PD, Van der Klink et al. (2017) noted common concerns across different international settings such as "… most powerful learning experiences take place as a result of being part of a community, network, or team…more meaningful than individual learning" (p. 166). This idea is consistent with the emergent themes that Matherson and Windle (2016) found in their survey of what teachers want in their PD programs. What a PLC offers is a PD effort with duration, that is teacher-driven, and offers ways to deliver content in more practical ways.

Coaching and Mentoring: Peer and Expert Support

All of the significant PD studies (Darling-Hammond et al., 2017; Desimone & Pak, 2017; Haras et al., 2017; Jensen et al., 2016) in the last five years have commented on the importance of coaching and providing feedback both for support and to improve the quality of reflection of teachers. The evidence and relative benefit to instructors from coaching seem self-evident, and Darling-Hammond's study found evidence of coaching in 30 of the 35 studies she and her team reviewed. As Desimone and Pak (2017) indicated, coaching instructors is a powerful tool to facilitate teacher-learner as the practice embeds the best features of a PD program. Corrie and Lawson (2017) found an explicit linkage between coaching and transformative learning that suggested the effectiveness of a formal coaching or mentoring program to change behaviors, values, and beliefs. According to Sheridan, Murdoch, and Harder (2015), formal mentoring

programs can have similar benefits, especially in terms of supporting the culture of the school's

processes. The challenge for schools with constrained resources is to provide the benefits of

coaching without having to hire an expert to serve the sole function of a coach.

In a slightly different approach, Tisdell and Shekhawat (2019) found that even mentoring

at-a-distance (E-mentoring) demonstrated effective results which might be a consideration for

schools with limited resources. Possibly, peer-coaching could suffice. Barton, Williams, Halle,

and McGrew (2018) found that not only peer observation but inter-disciplinary peer observation

offered cost-effective teaching and learning opportunity for faculty. Their point about inter-

discipline peer review is relevant because good teaching practices transcend the content delivery,

and quite often, meaningful insights can come from the most unlikely sources. Munroe and

Driskill (2014) provided an unusual but useful perspective of experienced instructional coaches

returning to active teaching assignments, noting that the need for support for experienced

teachers is just as important as the needs of novices.

Peer observation, peer coaching, and peer accountability are several terms that are used

by various researchers. All of them depend upon and are a result of collaboration, which means

instructors are supporting other instructors. Jensen et al. (2016) referred to this as a "soft

pressure" (p.23) that also serves to reinforce the culture and values of the school. In a different

study (Hoekstra et al., 2017), examined what motivated instructors to seek information to

precipitate a change in their practice, one finding of an external prompt for learning was student,

peer, or supervisor feedback. In a similar study (Meadows & Caniglia, 2018) that examined what

co-teachers noticed during peer- observations, said that such an approach could be a useful alternative or addition to PD programs.

Gerken et al. (2016) reported that informal learning by instructors can have more impact than formal programs. Hammond and Moore (2018) described that coaching, whether by experts or peers, is an example of informal learning, but that it depends upon observations and feedback. Significantly, the most effective forms of coaching occurred when the coach was not a supervisor, which a peer would not be. This point, coaching rather that evaluation, is acutely important. Teachers resist coaching when the putative coach has a supervisory or leadership position. Teachers are suspicious that they are under evaluation while the supervisor pretends to pose as a coach. However, Gerken et al. noted, peer observation served the purpose of enabling feedback but also empowered faculty to construct a PD initiative of their own.

A more definitive study (Garcia, James, Bischof, & Baroffio, 2017) that looked at improving tutor's skills through peer-review found a measurable and enduring qualitative improvement in instructors. The use of video clips (of real interactions) and simulated vignettes provided rich content for instructors to consider how they would react in similar situations. They concluded that peer coaching, based on performance results one year later, was a useful tool to develop faculty for problem-based learning and as tutors. This PD approach matches well with findings from Merchie, Tuytens, Devos, and Vanderlinde (2018), who sought to extend Desimone's (2009; 2017) and other's frameworks for evaluating PD programs. They found that these kinds of feedback (peer observations and video reviews) did increase quality, change instructional approaches while also improving student learning.

Peer-observation and coaching is a form of what Macias (2017) referred to as a bottom-up approach to PD. More specifically, Bozak (2018) referred to peer-observation as a "collaborative, developmental activity in which professionals offer mutual support" (p. 75). To be developmental, though, peer observers need training on how to be good observers and how to provide constructive feedback. Many instructors are resistant to observation and are likely to be sensitive to criticism by a peer, especially one not considered an expert.

The whole purpose behind classroom observation (The Reform Support Network, 2015) is to provide teachers with "meaningful and direct feedback about their practice". Peer-observers should have training in ways that enables them to make useful observations and provide meaningful feedback to the instructor under observation. Feedback needs to be coherent (with the school expectations), clear (use precise language), concise (easy for the observer to use, easy for the instructor to understand), and focused (directly related to student success). There should also be room for the observers' perceptions about what works or does not work.

Another advantage of peer-observation according to (Amundsen & D'Amico, 2019; Bozak 2018) as a technique for teacher-led PD is that it can focus on the questions and interests teachers identify in their practice, within their courses, and encouraged by instructors that teach similar topics. However, such an approach should question consistency and coherence with the school's objectives. School objectives, reported Valdmann, Rannikmae, and Holbrook (2016), introduce the perspective of the institution evaluating the efficacy and effectiveness of the PD initiative. Bottom-up PD can be productive, but if it does not advance the schools' strategic

vision, school leaders might not find value in it. The need for the program to align with school

values is where an assessment method and strategy might serve best.

Assessments

There remains, according to (Medland, 2016), within the field of teaching broad

disagreement between those that would seek to assess learning outcomes and those that seek to

evaluate the quality of learning. A significant aspect of this tension stems (Brown, 2017) from

the challenges that beneficiaries of education processes (or at least those that pay for it) have in

terms of accountability. Challenges and contrasts seem to derive from philosophical differences

between objective versus subjective measures. Kulkarni, Kulkarni, Shindhe, and Joshi (2016)

reported that objective versus subjective measures (or indicators) of learning is especially a

challenge for institutions with an outcomes-orientation, such as is the study site. In an extensive

review of articles discussing assessments in higher education, Pereira, Flores, and Miklasson

(2016) found a significant divergence between assessment strategies and teaching and learning

strategies – not necessarily consistent or coherent. However, Merchie et al. (2018), devised an

extended framework to evaluate PD initiatives that appears to align with ideas Pereira et al.

(2016) described.

The institution has challenges for accountability, which is why standardized testing

occurs and is such a common feature in most institutions. Instructors want to measure the extent

of change in the learner. Medland (2016) described how the intention to measure change

perpetuates an often cited dichotomy between a testing culture and an assessment culture. Some

scholars such as (Bearman et al., 2017) have sought ways to bridge the two perspectives by using

assessment design as a vehicle for educational change. As institutions have sought to moderate student discontent with grading by transitioning to an assessment versus an evaluation strategy, research, like that done by (Sadler & Reimann, 2018) has continued to suggest that educators do not understand assessment or assessment practices. Part of the challenge stems from confusion over the assessment of learning contrasted to assessment for learning, and confounded by assumptions that formative and summative assessment strategies serve mostly the same purpose. The argument might be that instructors are more attuned to formative assessments as they are indicators of learning. Whereas, Palermo and Thomson (2019), stated that the institution is more interested in summative assessments as that indicates the extent and quality of learning (adherence to standards) as a result of the program of instruction. However, Bearman et al. (2017) explained that most instructors struggle to describe the real purposes of assessment. The idea indicates different conceptualizations about assessments between the institution and its instructors.

Furthering the contention of differences between assessment of learning (AoL) and assessment for learning (AfL) discussed by Sadler & Reimann (2018), Kutlu and Kartal (2018) introduced the challenges of assessing the soft skills associated with 21st century competencies such as those which are also considered for development by the study site leadership. What Kutlu and Kartal found from the study was that both teaching activities and assessment applications needed a new design to align with the assessment strategy. Such an idea is not inconsistent with the constructive alignment that both Biggs and Tang (2011), as well as Fink (2003), have espoused for many years. Reynolds and Kearns (2017) also recognized that aligned

curriculum and assessment methods yielded more engaged students and better feedback that improved student learning.

The challenge that remains up to this point is that the institution remains accountable to the population it supports, while the instructors must ensure that their students are learning things of value. This tension was evident in some of the responses found in the data collection for this study. Brown (2017) examined some of these external pressures for accountability on higher education and identified seven silos that primarily use assessment results for different purposes. While the seven silos are not a perfect match for the study site, they are close corollaries. Brown concluded that accountability fields (the seven silos) frequently intersected when there was an emphasis on compliance, learning, or performance. Consequently, more engagement between these silos would be beneficial to the overall accountability effort of the school. It could focus more on the quality of learning than the raw metric of graduation rates.

Stevenson, Finan, and Martel (2017) found that if the leaders and managers of the institution have a greater appreciation for assessments of learning outcomes and competencies, they could make a more compelling case for their usage as a valued process. If the instructors had more assurance that their assessments were valued, they would be more diligent in collecting information in support of those assessments. That remains a challenge too. While Cisterna and Gotwals (2018) claimed that generally assessment strategies are associated with formative or summative tools, there is also, according to Demeter, Robinson, and Frederick (2019) the issue of direct versus indirect assessments. For assessments to be meaningful, they do need to be

content-rich to inform the learner, the rater, and, ultimately, the organization that will assign

duties to the former student.

More importantly, though, is what instructors believe about both learning and assessing

the quality of learning. DeLuca, Coombs, and LaPointe-McEwan (2019) explored teacher

mindset (what I earlier described as mental models) with their application of assessment in the

classroom. DeLuca et al. accounted for the teachers' (in)experience as factors of value to the

institution weighing their (teacher's) assessments. As noted earlier, many of the instructors at the

study site manifest concerns as expressed by Leigh (2014), essentially the equivalent of part-time

or contingency instructors at a community college. In other words, experts in their field of study,

but often novices at teaching. Much, it appeared, depended upon their implicit beliefs about

learning, as well as their understanding of the purposes behind assessment as DeLuca et al.

described. As reflected by the literature, feedback-rich assessment (formative) strategies

stimulated learning, while testing and a focus on standardized evaluation (summative

assessment) increased performance gaps. It is clear that military trainers transitioning to

instructors have to undergo a transformative process to be effective; this applies to their

assessment mindset as well. Recall that for military trainers, their perspective of assessment is

binary and absolute: successful (GO), versus unsuccessful (NO GO). However, adopting a

growth or developmental perspective is usually more productive in an educational environment.

DeLuca et al. (2019) pointed out that within new teacher populations, there are mostly two

perspectives, and those perspectives significantly affect assessment methodology. It is these

perspectives that would require a transformation in a PD environment.

Project Description

The project will address three audiences. The most important audience is the one that is closest to where learning occurs: the instructors. However, it is equally important to make provisions for the middle-level leaders (managers, developers, course directors), as well as the senior leadership of the institution. Given the variations in the audience and their differential challenges, Garreta-Domingo, Sloep, Hernandez-Leo, and Mor (2017) claimed that a program with these varied audiences requires elements of design with a focus on learning as opposed to information only. More importantly, since all participants are serving professionals (Hagen & Park, 2016; Knowles, Holton, & Swanson, 2015) described how learning design for these learners will demand attention to adult learning principles to create the impact the program seeks to achieve.

The project will be a series of workshop-style seminars for the three audiences. These will be workshops as described by Caffarella and Daffron (2013) in the sense that the participants, with guided facilitation, will produce deliverables, either products or action plans. The ideal situation would be that each seminar could occur within the same week, but it is not essential. An even better situation would be if the seminars happened in a location not associated with the school itself, creating a space that is neutral to all participants. Over four days, institutional stakeholders will have the opportunity to examine their perspectives as educators and education leaders critically and generate different ideas about how they empower their students through their thoughts and actions.

Project Implementation

The leadership at the study site must approve this research, and the project. They were required to examine it for operational security issues as well as for potentials of negative publicity. The review that matters, though, is the one where leaders agree there is a need for additional elements in the PD program. If they agree, the project will take a total of four days. Ideally, the days will all fall in the same week. However, since this is not always feasible, each day's learning activities are designed to stand alone. The most critical day for the project to produce durable results, is the last day of the project. It is on this day where the faculty (leaders, managers, instructors) together agree to policy and action plans to activate a self-sustaining PD program.

Table 5

Project Timeline

Day	Action	Goals	Assessment
1	Half-day workshop with school leadership.	Affirm learning strategy. Improve awareness about using accurate terminology in defense of the learning strategy. Build an understanding of faculty challenges.	Identify key actions that demonstrate support for instructor innovations.
2	Full-day workshop with course directors, course managers, and training developers.	Creating a PLC that provides information for program improvement, curriculum re-design, and validates assessment strategies. Coaching behaviors and supporting collaboration.	Describe key actions to influence and encourage instructor participation in building a PLC. *Table Continues*

Day	Action	Goals	Assessment
3	Full-day workshop with senior instructors.	How to use PLC to solve teaching and learning challenges. Coaching and mentor behaviors. Enhancing collaboration. Improving questioning skills to support indirect assessments.	Recognize and acknowledge the utility of forming and using a PLC to improve teaching and curriculum.
4	Half-day workshop with all audiences.	Discussions about the interaction of leaders, managers, and instructors to create and sustain a PD effort that empowers instructors.	Develop a combined statement of support for PLC to improve teaching and revise the curriculum.

Systems and Resources to Support

There is an incipient culture of collaboration within some parts of the school. More importantly, the instructor cadre is finding ways to use technological tools to enhance and accelerate collaboration. Currently, this is a localized and isolated phenomenon supporting the technical college only. The idea and the tools used are too important to ignore. It will be important to examine this self-inspired tool and share with leaders and managers and how to exploit them.

Peer-reviews and collaborative support for teaching improvement that is already well-supported by instructors (as reflected in the data) is a system to exploit. Leaders and managers should understand the differences that instructors experience when either evaluated by the school or assessed by their peers. It is not a question if one is better than the other, the better question is if there is a way to satisfy the two competing demands for information. The school desires to

demonstrate that its cadre is of a high caliber using the rating scales and system of their parent organization. The instructors are interested only in becoming better instructors that satisfy the needs of the learners, and that also meets the expectations of the institution.

Potential Barriers

Wright and da Costa (2016) noted that with PD programs time to schedule and implement a program can be a challenge. For the study site, time available to engage with the different audiences is perhaps the biggest challenge to overcome. Considering the intense pressure by the cyber units in the operational force to fill positions as reported by GAO (2019), there will be even more concern at the study site about setting aside time to re-center the school faculty to meet their strategic vision. Instructors will likely be willing to participate, managers might be resistant, but leaders will likely not understand why their participation is crucial. Given these potential issues, it will be critical that leaders have sufficient information to get behind the PD additions and provide the support that transitions down to and through managers and instructors. To arrive at this awareness, it might require either an information paper or even a short briefing with leadership to gain their acceptance.

Roles and Responsibilities

My primary role is to create the program deliverable. Ideally, I will also be the original presenter for the workshops. However, the intention is to create a sustainable program that does not depend upon external resources, so the project program will be structured in a way that will allow a strongly skilled educator to conduct similar workshops as reinforcement in the following years. The office of the Director of Training (DoT) will be responsible to schedule dates for the

workshops and to make resources (see Appendix A) available to support the workshops. The

DoT will also select the participants and issue directives to attend. For this program to succeed,

participation by selected staff must be mandatory.

Project Evaluation Plan

All programs, as Caffarella & Daffron (2013) said, can benefit from having a deliberate

and focused evaluation plan. It is an essential element of developing a program. The most

valuable benefit is that it can inform decision-makers about continuing to sustain the program

initiative. Frequently, Fink (2013) found and reported that many PD evaluation efforts were

content to record participant reactions rather than look for more profound value and over some

time to determine if a change has, or is, occurring. Borg (2018) reported that there is some value

in recording participant reactions even though there is a potentially higher value in detecting

changes in practice after instructors and administrators return to their routines.

For this project, both an immediate participant reaction survey will occur as well as a

longer-term evaluation to determine the extent of change that may or may not have occurred.

Merchie et al. (2018) described a framework for extended evaluation that will inform this

program's evaluation scheme. Such an extended evaluation is vital at two levels. First, adverse

reactions suggest a fundamental flaw in the program, while positive reactions are likely to

encourage participation in future events. Secondly, as Beach et al. (2016) noted, without

evidence of change in teaching practice or student performance, there is little compelling reason

for leaders to devote any resources to support this addition to the existing PD program. Wright

and da Costa (2016) said that it is crucial also to include leaders and managers in the evaluation plan rather than ignoring them as not having effects on teaching and learning.

Project Implications

The most obvious implication of the project would be that the study site is better prepared to implement a coherent education strategy when the three separate campuses are all co-located. Additionally, their PD program will encourage research and continuous improvement for both instructors and learners. While there may be broader implications for this project beyond the influence of the study site, they are hard to imagine given the nature of the institution of military learning. The reality will be that the total faculty (leaders, managers, instructors) need to experience a positive change that can occur. A big part of that experience will only occur if they are committed to conducting the kinds of evaluations and assessments that can detect and measure the extent of change. Unfortunately, that requires additional work beyond just pushing students through the learning mill. If they do follow through on the creation of PLCs, or some variation, success may be infectious and build on success.

More broadly, for the service and the more extensive school system that the study site is a part of, there are usually opportunities to share lessons-learned or innovations that promise better outcomes. Hopefully, the leadership or managers will find it productive to share their results with their peers across the broader service institution. Sharing this information could occur through presentations, workshops, and publishing articles in professional journals.

Summary

Section 3 addressed how the project can help solve the problems identified in the data collection effort. The analysis of a focused literature review should answer the challenges, also described as gaps that were specifically noted. The section included considerations for the school's culture, how to enhance collaborative learning, peer-coaching, and using assessments in ways productive to student learning and school considerations for a curricular redesign. Significantly, there was a re-examination of the conceptual construct of the TLT applied to PD in terms of results from the data analysis. Finally, I provided a description of the project and its challenges to implementation and desired goals.

Section 4 will explore conclusions regarding strengths and weaknesses of the project. I will examine other elements of the culture and environment of the study site. Results of that examination might be topics that will benefit from further research. Additionally, I will address some thoughts about different approaches that might accomplish approximate, or useful results with less time commitment from instructors away from their classrooms.

Section 4: Reflections and Conclusions

Introduction

This project study began with questions about why a small number of military cyber instructors responded positively to PD while the majority of their peers were not as responsive. Initial literature reviews suggested that such reactions were not uncommon, especially in higher education settings. Through an intrinsic case study, I was able to understand how exemplary instructors perceived and reacted to PD as offered by the study site. Using semi-structured interviews, I was able to collect sufficient data to help address the uncertainty that seems to hinder PD initiatives, especially those occurring in institutions with constrained resources. This section will allow me to reflect upon how my perceptions of PD for military professionals have changed throughout this research.

Project Strengths and Limitations

Prominent and recent researchers of PD in higher education (Beach et al., 2016; Condon et al., 2016; Darling-Hammond et al. 2017; Desimone & Pak, 2017; Jensen et al., 2016) have identified critical elements of effective PD programs. A perceived strength of this project is that it addresses many of the concerns about PD initiatives addressed by significant research. Rather than a top-down approach, the project will create conditions for a bottom-up solution that recognizes the contributions of instructors in improving the learning environment. It also accommodates limited resources available at the study site, such as inherent constraints imposed by an industrial-age input-output education model imposed by the larger institution.

Another strength is that the results of the project are wholly dependent upon the

consensus of the stakeholders of the study site. The project does not tell the faculty what they

need to do but provides them with options that they might want to do and why. As noted in the

data analysis in Section 2 and the literature review of Section 3, most military academic

decision-makers and military instructors are not deeply grounded in education theory or learning

sciences, nor do they have extensive practice in education. For the most part, they are all part-

time practitioners, yet the institution they support expects expert performance.

Unfortunately, without a compelling reason to implement and support a reason for

change, the institution itself is very resistant to change. The institution of military learning, writ

large, has insights for a change imperative from the CASAL reports and the AEAB study results

about instructor proficiency. Generally, institutions find that maintenance of the status quo is

sufficient, often described in the military as a good enough syndrome. Leaders of organizations

have to be comfortable with pushing against the current policies in order to implement changes

that might increase resistant reactions to their decisions. Internally from their faculty, and from

external sources such as their leaders at higher echelons, as well as the operational force units

their students will eventually join.

Ultimately, other similar institutions can benefit from this research. Specifically,

community colleges, especially those that support STEM learning, can use this project to

implement a way ahead for building a sustainable PD program for part-time or adjunct faculty

that make up the more substantial proportion of their instructor staff. Vocational and trade

schools could also benefit from this program as their leaders might lack educational experience and they often employ SMEs that may lack educational backgrounds as well.

Recommendations for Alternative Approaches

There might be those, especially within military professional military education, who still espouse a top-down approach to PD. A significant body of research has established the low returns of such initiatives. Still, given hierarchical structures and historical effectiveness, which is the driving force of the good enough model, there will be many leaders and administrators in military education that are willing to continue on the path of the status quo.

I cannot, in good faith, encourage such thinking as it fails to prepare military instructors to prepare learners adequately for military service in the 21st century. The service itself has recognized the flaws in its traditional models of instruction and published two concept documents over the last decade to encourage new thinking about teaching and learning. However, I must recognize that good enough thinking is predominant within the institution. The U.S. military services have a history as one of the best military formations in the world. There are alternative approaches that might be useful to challenge the traditional models and are worthy of consideration.

An alternative approach described by (Gunter & Reeves, 2017) that offers opportunities for meaningful impact in terms of instructor performance is an on-line, just-in-time style web-based instructional application. Given the ubiquity of Internet-capable smartphones, there could be a high instructor demand for short and tightly-focused instructional web applications to address instructor challenges. Observations from the data analysis suggested that instructors

often have questions about their practice, classroom management, and assessments that are not readily available via conventional means. Sharply focused and topical descriptions of methods of instruction, assessment strategies, techniques for promoting higher-order thinking, and approaches to increase learner engagement could be beneficial to instructors with limited time. I have already described the importance and utility of peer-observations to expand instructor thinking about teaching and learning, and a web-based application that substitutes for physical presence can almost be as useful as a lesson in a PD program to change perspectives and perceptions.

Another alternative is to incentivize self-directed, or self-initiated PD. Ostensibly, there might be an expectation by the institution's leadership that such an approach is a normal part of a teacher's academic routine. Sariyildiz (2017) examined both novice and experienced teachers' perceptions about a non-, or semi-supported PD effort dependent upon teacher initiative and found more obstacles than any clear endorsement. Absent a compelling support structure (financial incentive, time, other factors), the numbers that would expend the additional effort needed to pursue a self-initiated PD effort would be quite small.

Scholarship

For me, this was an intriguing endeavor. In 2008, after having implemented outcomes-oriented and competency-based learning in the military for a few years, I found by chance, a teaching-styles inventory I took when I assumed a formal military instructor position in 2001. I decided to re-examine that inventory. The positional change was startling. According to the measure, I had moved from an authoritarian and directive approach to a supporting and guiding

approach in a span of only 7 years. That was somewhat startling. Not knowing what caused this change in perspectives challenged my thinking for several years.

I had my own experiences with an extended professional military and civilian education to consider. The most significant thing I learned over that period was that most education offered to adults ignored the fact that the students were adults, or that adult learners had any ideas of what they needed to learn to be more productive. Practitioners have the context of their practice, and regardless of their PD experience, they have ideas about what PD would be useful to help them be excellent teachers. It has also been my experience that there is enormous room for instructors to maneuver with their teaching methods in terms of what leaders say they want and what leaders evaluate.

Project Development and Evaluation

I have spent almost two decades engaged in the efforts to transform PME – working from the action level, in the classroom, up to policy and direction levels at various headquarters including the Pentagon. As such, I undertook this project with the benefit of deep insights into the challenges of transforming military education. Given such background, I hope that this effort, benefiting from known or previously experienced challenges, can overcome obstacles that are inherent to military learning. Buttressed by research about effective PD programs, especially in higher education, the project should meet the projected outcomes. Program evaluation, primarily as envisioned for this project, is doubly important. In the first case, evaluation results are essential to inform leaders to continue to support the PD effort. Also, evaluation results help with

data that can be meaningful to other program developers and DoTs within the military learning community.

Leadership and Change

A major institutional entity recently established by the study site's service branch seeks to remedy an organizational gap. This means, within the structural framework of a large institution, there is an organization that is missing and not performing necessary functions. The service branch does have many schools and centers, and does conduct instruction at many colleges and universities. But, until 2017, there was no educationally-focused entity that helped manage, direct, and improve the quality of teaching and learning at these disparate learning locations. The new institution, adopting the title and structure of a university system has within its infrastructure the sources that define institutional perspectives about PD. This activity is known as the faculty staff development directorate (FSDD). While still in its infancy as an organization, they are the proponent agency for PD in that university system and seem to confine themselves mostly to supporting the several colleges co-located on the installation where they are based. Nonetheless, the FSDD does have a broad scope because they produce the regulatory guidance that governs all other schools and centers. The service schools and centers scattered around the country mostly are left to struggle on their own in terms of creating PD programs. There are no specific lines of funding and there are no regulations that mandate anything beyond the initial instructor development. These other schools and centers are only tangentially supported by the regulations and guidance emerging from the university, and that guidance rarely conforms to their local situations.

I hope that this research will offer a way for these overlooked, but essential, lesser service schools a way to establish PD programs that far surpass the dated, archaic, and anachronistic perspectives of the university scholarship. An institution that disdains to adopt the revisions of Blooms's taxonomy as proposed by Anderson & Krathwohl in 2001 and widely adopted by academe, because they do not see the need, is one that is very much stuck in a status quo mode of thinking. Similarly, the service university endorses, almost universally, teaching methods based on experiential learning. A lot of research (Dekker, Lee, Howard-Jones, & Jolles, 2012; Kirschner, 2017; Newton & Miah, 2017) over the last decade has discounted the value of learning styles and teaching to accommodate them. Instead research by Chen and Herron (2014), Dernova (2015), Schenck and Cruickshank (2015) has proven that experiential learning is more than accommodating different learning perspectives in place of differentiated instruction. Clearly, there is much more this university system could do for military teaching and learning in the 21st century. It starts with instructor PD.

The intellectual center of scholarship for military learning does not reside in one place only. It could instead be said to reside in the practices of innovative instructors, managers, and administrators at myriad service schools scattered across the Nation. It is possible, that like the application model adapted by Eban Swift in the 1900s (Coffman, 2004; Vandergriff, 2006) and Olmstead's 1974 study of small group instruction that eventually transformed PME in the late 1980s (Jordan, 2004; King, 2008), the new learner needs of the 21st century will lead to a fundamental transformation of teaching and learning in the foreseeable future. This research might be a step in that direction.

Reflection on the Importance of the Work

Personally, and professionally, this work has had great significance. In the process of research over the last several years, I was engaged at several different institutional levels of PD for instructors in military settings. The engagement ranged from program design and development to creating wholly new approaches for deeply experienced instructors that would engage equally-experienced learners undertaking an entirely new mission set.

The opportunity for more in-depth and more abundant thinking about instructor PD these learning experiences created while I engaged with these new challenges was very informative. I could be informed about what the PD experts suggested and I could experience face-to-face just how much those suggestions were problematic. Let there be no doubt, military professionals, pressed into service as instructors, are perhaps more intractable learners than a tenure-track college professor with 20-years' experience in the auditorium. Their experiences convince them that they already know what works, even when the evidence shows that it does not.

The key as Zhukova (2018) stated, and hence the relevance of this work, is that many instructors never consider that there is science behind the better practices that instructors should use in their learning environments. Gaines et al. (2019), and Pelletreau et al. (2018) stated clearly that once exposed to disorienting dilemmas, deeply experienced professionals tend to pay attention, recognizing that what happened to them, can be an essential point of learning leverage for their learners. Too many PD programs are either long on theory as many researchers described (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009; Holcombe & Kezar, 2018), or devoted exclusively to techniques of PCK unique to the discipline as stated by

(Aldahmash, Alshamrani, Alshaya, & Alsarrani, 2019; Qian, Hambrusch, Yadav, & Gretter, 2018). Guneri, Orhan, and Aydin (2017) declared that non-professional educators rarely get exposure to the how and why behind learning strategies, and more importantly, how to be mindful of learning, or the lack of it, in their assessment strategies.

Implications, Applications, and Directions for Future Research

If the project does nothing more than re-affirm the importance of the instructors and their knowledge, skills, and attributes, then it could be considered a success. While it is easy for leaders and managers to say that the instructors are the center of gravity for the institution, quite often, their actions, and decisions, do not suggest that it is true in practice.

The deliverables for the project workshops should introduce the kinds of social change that are valuable to any organization, not just one devoted to teaching and learning. The idea is that all components of the system that shapes the school will be oriented on the same goal, developing competencies that matter to units and leaders in the operational force and creating learning environments that promote achieving the desired learning outcomes. Instructors, empowered by their leaders' recognition of the unique role they fill will be willing to take more significant risks introducing innovative teaching methods. Managers, recognizing their bridging role between instructors and the school leadership, will be more supportive of instructor initiatives and less demanding for compliance. Finally, leaders who already understand their educational role will recognize the obligation they have to protect and enhance time for instructor reflection, research, and commitment to excellence.

One of the exciting things about research is that it almost always leads to more questions that need answers. These questions proved valid for this study, as well. For example, Qian et al. (2018) stated that novice or lesser-experienced instructors are most interested in a PCK-focused PD program. Whereas, according to McChesney and Aldridge (2019) as well as Van der Klink et al. (2017), more experienced instructors are interested in specific, proven solutions or techniques. Most military instructors over a 2 to 3-year assignment might have over 4500 contact hours with students, based on a series of 40-hour courses taught repetitively for 40 weeks over 3 years. Meanwhile data compiled by Flaherty (2018), Jenkins (2016), and McKenna (2018) said that community college instructors would have only slightly more than 2000 contract hours over the same time span. This accelerated acquired experience for military instructors suggests that they have as much classroom experience as a college teacher with twice that exposure. There is a suggestion that with greater teaching experience, military instructors might have greater desires for more PD to improve their performance.

Another area of potential research is in providing bite-sized PD nuggets in a searchable web-based application. The research question could be about the relative effectiveness of web-based solutions compared to more traditional PD approaches. Owens, Sadler, Murakami, and Tsai (2018) explored the use of on-line PD and reported mixed results. Other researchers, such as (de Vries et al., 2014; O'Shea Lane, 2018; Zeggelaar, Vermeulen, & Jochems, 2018) have pointed out that experienced instructors have a good sense of what they want and what they need. Offering a self-selecting menu of learning topics with credible information might work as well as most formal face-to-face programs.

Conclusion

In the preceding sections, I described a problem that existed at a study site. Extensive descriptions of the environment of the study site and the larger institutional environment that it serves helped shape a more extensive literature review. I proposed three research questions that helped to construct an approach to data collection. Data collection and subsequent analysis found that in response to RQ1, instructors realized that they would not be outstanding instructors without PD. RQ2 responses were that instructors wanted to modify teaching practices, but without support and encouragement did not sustain the additional effort required. Responses to RQ3 suggested a wide divergence of understanding both with the school and its instructors on the purpose, utility, and practice of assessing learning outcomes. These responses and emergent themes from the data analysis led to a new round of literature review.

The second literature review returned to the theoretical construct of the TLT, but this time from the perspective of practice and effectiveness as related to PD. Additional topical foci were collaborative learning, coaching, and peer support, as well as practical approaches to conducting assessments. The second iteration of the literature review was to find research-backed practical solutions that could apply to an initiative aimed at solving the refined problem as indicated by the data analysis.

In Section 4, I reflected on my journey as a scholar as opposed to a practitioner only. I found that PD for educators, especially in higher education, shares many of the same challenges regardless of culture or international boundaries. There are, however, limitations in the research. The military learning culture is different from civilian post-secondary and higher education. Both

globally and within the U.S., there is very little research about the SoTL in military settings. What research does exist, there is only a small audience in terms of seeking out research or publication. For me, the mission of social change has taken on much more profound importance. A nation expends many resources for their military and places a great deal of trust in their abilities. Those abilities, enabled by the knowledge and skills they acquire in their training and education, should derive from the evidence of effectiveness. That is my biggest realization – that much more work is needed to convince leaders (both military and political) of the qualitative return on investment in using evidence to validate training and education for all components of the military services.

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Appendix A: The Project

Introduction

At a relatively new military school, there is a professional development (PD) program for instructors that exceeds the service requirements for instructor certification. Leaders at the school expressed concern about the disparities in the performance and practices of instructors that participated in the program. A qualitative case study gathered data about the perceptions and practices of exemplar instructors. Analysis of these data identified several themes that suggested there were some gaps in the PD program. The project that follows is an additional element to the PD program used at the study site. Its' design derives wholly from the data analysis with additional considerations to resource constraints and the culture of the school.

Purpose

The purpose of this multi-day PD initiative is to attune the faculty to the challenges of an outcomes-oriented, competency-based, learner-centered, active learning environment. Faculty, in this case, includes school leaders, directors, managers, developers, and of course, instructors. As faculty, all of these stakeholders have roles and responsibilities, yet often seem to operate and make decisions that are not always helpful in supporting their professed vision of their learning environment. The PD addition will offer the faculty opportunity to develop policies, products, or processes that more coherently align with the school's strategic vision and provide greater support to instructors.

Development

This initiative will be a facilitated workshop in the truest sense. Each targeted audience will produce an action plan. The intention is to offer each audience the opportunity to take ownership of their continuing PD, rather than imposing a top-down, and directed approach.

Target Audience

For this PD initiative to accomplish the purpose, certain parts of the faculty population must participate. Attendance of school leaders will be the most difficult, but they are a key element of the target audience. At a minimum, the deputy commandant, the command sergeant major, the director of training, and members of the DoT staff should attend their half-day session. For the middle-manager audience, course directors from the 17A, 17C, 29E, 170A, 170B, CCTC, CPT, JACWC, COPC, ALC/SLC, CCC, FA29 series of courses must attend. The last critical audience is at least two instructors from each of the aforementioned courses. To be effective, leaders should choose these instructors with the following criteria – one should be the most experienced instructor (regardless of grade), while the other should be a novice instructor with at least 6-months experience teaching the curriculum.

Goals

The goal is that each audience produces an action plan that will implement and sustain a PLC in the faculty. Instructors will identify how they will use action research, peer coaching, and collaborative learning to support continuing PD that they manage themselves based on their perceived needs. Managers (Directors) will describe functions and processes to support the assessment of instructors' practices better while also supporting efforts for action research to

enable curriculum re-design. Leaders will recognize the importance of their role in protecting and supporting the initiatives stemming from their instructors' PLC, while also providing the means to enable their action research and collaboration.

Learning Outcomes

Manager outcomes. Course directors will identify key actions that they can influence that will persuade instructor participation in a PLC that can improve teaching practices, assessment methods, and accelerate curriculum re-design. The design concept follows below to allow the facilitator to get a sense of the direction for the workshop content.

Manager/Administrator Learning Event (Activity) Outline

Title of activity: Manager-level professional development exploration.

Describe the broader purpose of the session – how will the participant differ at the end?

The idea is to assist directors and managers to recognize their unique roles as a bridge between the instructors that are the center of gravity of the school who must contend with daily issues and the leadership that owes obligations to the operational force for high performing individuals that have the competencies and achieve the outcomes that the school espouses.

Describe the action plan of the session in broad terms.

This a facilitation activity, not a learning activity. As such, much of the work that will transpire depends upon the session participants.

Begin with a description of the research that led to this (and the other) sessions. The big idea is that the participants will agree to take steps to adopt bridging strategies that are supportive of both school leaders' desires and instructor needs and expectations.

Propose questions about what things need fixing based on research findings.

Facilitate discussions about alternative forms of professional development

What intangible outcomes (attributes or enablers) are expected to be influenced?

Critical thinking

Problem-solving

What skills or abilities should we expect the participants to acquire or activate?

Adaptability: There are institutional constraints; however, they are not insurmountable given enough reflection and compromise.

Are there particular objectives to focus learning or participation such as; doctrinal requirements, regulatory constraints, or current practices in the school that could prompt an adaptive response or behavior, use current skills, or systems to develop new capabilities.

Examine test control standards vis-à-vis a learning outcome-focused assessment strategy

Examine instructor performance evaluation criteria versus instructor performance assessment

Determine methods to incorporate learning innovations generated by instructor learning solutions

Describe the background for the session. This is a narrative description of the stage setting for the situation, scenario, or activity you are using to create a learning opportunity.

One of the challenges the school's managers and instructors confront is a largely industrial-age input-output factory model. Yet, they must prepare students to contend with information-age threats. Similarly, the service's academic institution compels schools to mimic an instructional strategy that is ill-suited to STEM learning. The question for the participants to grapple with is

how best to satisfy service constraints and restraints while at the same time providing leeway for instructors to prepare their students for the work they will perform.

Describe the flow of events in big blocks (don't get into too much detail yet). This should include such things as an introduction, problem/mission/task, practice, discussion, new problem, practice, discussion, review. The key here is to describe both the actions of the participants and what the facilitator is doing.

Introduction and background

Brainstorming session – what are their most compelling challenges

Curriculum development and content delivery issues

Assessing learning outcomes versus testing knowledge

Methods to improve student performance

How a professional learning community can work in their environment

Develop an action plan to validate assessment tools

Describe the resources you think might be required. Classroom, computer support, AV support, handouts, whiteboards, training aids, etc.

Classroom, or large conference room

Whiteboards and dry erase markers

Butcher paper pads and marker pens

Sticky paper note pads (like post-it notes)

Instructor outcomes. Instructors will recognize the utility of forming a PLC that will improve teaching practices, assessment methods, and investigate appropriate innovations in "how to cyber."

Instructor Learning Event (Activity) Outline

Title of activity: Instructor professional development exploration.

Describe the broader purpose of the session – how will the participant differ at the end?

The idea is to assist instructors in recognizing their central role as the center of gravity of the school. Leadership and management should view continuing PD as an inherent responsibility. While the school may have constraints, they do not impede instructors from taking actions to develop themselves professionally in ways that improve their performance, improves student performance, and furthers the strategic vision of the school in developing the capabilities in the operational force. Many researchers widely cite the idea of a bottom-up, instructor-led PD initiative as both effective and enduring. More importantly, instructors are more likely to participate and contribute if they recognize their ownership of the initiative – with or without leadership endorsement or support.

Describe the action plan of the session in broad terms.

This both a facilitation activity and a learning activity. As such, much of the work that will transpire depends upon the session participants guided by the facilitator.

Begin with something that should be familiar to all instructors regardless of their experience or seniority—such as the relative (in)effectiveness of the service school instructional model, ELM. Propose questions about what things need fixing based on their list of challenges and issues.

Lead activities that explore or expose disparities between school intentions and school actions that affect both instructors and students.

Lead activity that suggests that, as working professionals, they collectively establish a body of knowledge that can be useful to peer-observation, collective learning, and professional development.

Facilitate discussions about alternative forms of professional development. These discussions and activities will be simulacrums of the kinds of activities that would occur in a professional learning community conducting action research.

Offer instructors the opportunity to propose and develop the framework of an action plan, leveraging current processes and practices to support a continuing PD initiative that can benefit the school with adoption.

What intangible outcomes (attributes or enablers) are expected to be influenced?

Critical thinking

Problem-solving

What skills or abilities should we expect the participants to acquire or activate?

Adaptability: There are institutional constraints; however, they are not insurmountable given enough reflection and compromise. Do your leaders compel you to comply, or are they receptive to new ideas and potential solutions? More importantly, instructors usually enjoy far greater autonomy than other supervised positions, so why not take advantage of that?

Are there particular objectives to focus learning or participation such as; doctrinal requirements, regulatory constraints, or current practices in the school that could prompt an adaptive response or behavior, use current skills, or systems to develop new capabilities.

Strategies that support formative and summative assessments of student learning outcomes

Examine instructor perceptions about performance evaluation criteria versus instructor performance assessment

Determine methods to support and incorporate learning innovations generated by instructor learning solutions

Describe the background for the session. This is a narrative description of the stage setting for the situation, scenario, or activity you are using to create a learning opportunity.

One of the challenges the school's instructors confront is a largely industrial-age input-output factory model, yet they must prepare students to contend with information-age threats. Similarly, the service's academic institution compels schools to mimic an instructional strategy that is ill-suited to STEM learning. The question for the participants to grapple with is how best to satisfy service constraints and restraints while at the same time providing leeway for instructors to prepare their students for the work they will perform.

Describe the flow of events in big blocks (don't get into too much detail yet). This should include such things as an introduction, problem/mission/task, practice, discussion, new problem, practice, discussion, review. The key here is to describe both the actions of the participants and what the facilitator is doing.

Introduction and background

Brainstorming session – what are their most compelling challenges

Limitations in curriculum development and the challenges of content delivery to different

learners with varied military and learning experience

Assessing learning outcomes versus testing knowledge

Methods to improve student performance

How a professional learning community can work in their environment

Develop an action plan to implement a PLC

Describe the resources you think might be required. Classroom, computer support, AV

support, handouts, whiteboards, training aids, etc.

Large classroom, large conference room, or small auditorium

Digital projection and sound system with web access

Whiteboards and dry erase markers

Butcher paper pads and marker pens

Sticky paper note pads (like post-it notes)

3x5 (or 5x8) cards

Scratch paper

Article handouts

Leader outcomes. Leaders will value the PD of their instructors for its effect on a

constantly revised curriculum while also achieving the school's vision for outcomes and

competency development.

Leader Learning Event (Activity) Outline

Title of activity: School leadership exploration of continuing faculty professional development

Describe the broader purpose of the session – how will the participant differ at the end?

The idea is to assist leaders to recognize their role as defenders/supporters of the center of gravity of the school. Continuing PD should be viewed as an inherent responsibility of the school to their instructors, but it is not well supported with either resources or by regulation and directives. These leaders, however, do provide more PD than most other schools. There is more, with little in terms of resources required, that could take place.

Describe the action plan of the session in broad terms.

This is both a facilitation activity and, to a limited extent, a learning activity. As such, much of the work that will occur depends upon the session participants guided by the facilitator.

Begin with a description of the research that led to this (and the other) sessions. The big idea is that the participants will agree to take steps to implement PD strategies that are supportive of both school leaders' desires and student needs and expectations.

Propose questions about what things need fixing based on research findings.

Lead a discussion about things that leaders find most vexing about the results of teaching and what operational units report about the students they receive from the school.

Facilitate discussions about alternative forms of professional development.

What intangible outcomes (attributes or enablers) are expected to be influenced?

Critical thinking

Problem-solving

What skills or abilities should we expect the participants to acquire or activate?

Adaptability: There are institutional constraints; however, higher-level leaders are always looking for innovations and solutions that produce extraordinary results.

Are there particular objectives to focus learning or participation such as; doctrinal requirements, regulatory constraints, or current practices in the school that could prompt an adaptive response or behavior, use current skills, or systems to develop new capabilities.

Strategies that produce outsized results in terms of learner performance in the face of extraordinary challenges.

Is there more "greater good" to be gained by a dynamic learning environment guided by research and empirical evidence than blindly adhering to a model that satisfies the good enough model of instruction?

Determine methods to support and incorporate learning innovations generated by instructor learning solutions and student feedback.

Describe the background for the session. This is a narrative description of the stage setting for the situation, scenario or activity you are using to create a learning opportunity.

One of the challenges the school's instructors confront is a largely industrial-age input-output factory model, yet they must prepare students to contend with information-age threats. As a school, there are intense pressures to fill the personnel quotas demanded by an individual replacement strategy that goes back to WWII. Is this what military forces in the 21st Century should have to depend upon? Might it be better for the service if graduates are well-grounded in knowledge, skills, and demonstrate the attributes that organizational leader's value?

> **Describe the flow of events in big blocks (don't get into too much detail yet). This should include such things as an introduction, problem/mission/task, practice, discussion, new problem, practice, discussion, review. The key here is to describe both the actions of the participants and what the facilitator is doing.**

Introduction and background

Brainstorming session – what are their most compelling challenges as leaders in an educational institution

Do the outcomes and competencies matter all that much? Why not stick to a knowledge and skill-based curriculum?

> **Describe the resources you think might be required—classroom, computer support, AV support, handouts, whiteboards, training aids, etc.**

Large classroom, large conference room, or small auditorium

Whiteboards and dry erase markers

Butcher paper pads and marker pens

Sticky paper note pads (like post-it notes)

Article handout

   Overall outcome. The school faculty will accept the mutually derived policies and processes agreed to as a vehicle to implement and sustain a bottom-up instructor-led CPD

initiative that improves student performance and revises curriculum as needed to keep pace with changes in the cyber realm.

Implementation

Ideally, this PD initiative will occur over a 4-day period that has no competing demands. What this means is that all target audiences are available, and space is available for audience participation. While the initiative will work best if the days of interaction are contiguous, it is not critical. What is important is the sequencing. The half-day managers' session should occur first. The two full-day sessions with instructors should follow and must be one day followed by the next for continuity and momentum. The leader half-day session is the next step, and the combined session, where leaders support the initiative, is the last day.

Schedule of Activities

These are not hour-by-hour schedules specifically except by day (day 1, day 2, for example). Those details appear in the lesson plans below. These assist the facilitator's planning, both with organizing and understanding the conceptual framework for the activities.

Day One: Manager/Administrator Learning Event

> **0830-1200** Recon and prep the site

> **1300-1630** Conduct manager/administrator event

> **1630-1800** Recon and prep instructor learning site

Day 2 & 3: Instructor Learning Event

> **0830-1130** AM session

> **1230-1630** PM session

0830-1130 AM session

1230-1630 PM session

Day 4: Leader Learning Event and Closeout

0900-1200 Leader session

1300-1600 Instructors brief their proposal(s) and group discussion of way ahead

Daily Breakout and Facilitation Guides

Manager Half-Day 1 (Refer to the activity outline for the general scheme). The following questions can assist in facilitating discussions.

Facilitator's Guide for Managers & Administrators Session

Agenda (Guidance for the facilitator)	Method, purpose of the activity, expected time to deliver
Overview and Introduction	
Introduce yourself. Ask participants to identify their positions and roles, and specifically which courses they manage.	1300-1330
Describe the background that led to this session. Start with the research findings and the intentions to bring all of the school faculty on board in support of a continuing professional development (CPD) initiative.	

Note that at the end of this short 3 ½ hour session, they should arrive at a collective agreement to either support some form of CPD or at least take action to consider it further. They are invited to attend the larger group session with leaders and instructors three days from now (time and location to be determined).

Discussion

Activity 1: As course managers and administrators, what are the most compelling challenges you deal with concerning instructors, student performance, and the assessment of learning outcomes?	1330-1400 Brainstorming; understanding what they perceive as their biggest challenges.
<Break>	1400-1410
Activity 2: In terms of curriculum development and content delivery, do you feel that learners with various military and learning experiences would benefit from differentiated instruction? Should	1410-1435 General group discussion, facilitator acts as note-taker, capturing key points on a whiteboard

there be different lesson plans for delivering the same content?

1435-1510

Activity 3: Are there requirements for knowledge and skills tests? Is there also room for assessing learning outcomes? How is data collected for the Academic Efficiency Reports? Are instructors capable of doing this?

General group discussion.

1510-1520

<Break>

1520-1620

Activity 4: If the faculty (you, leadership, instructors) organized yourselves as a professional learning community (PLC) what benefits might the school derive? Essentially a PLC would be a self-supporting grouping of faculty that undertake to study a problem, do research, and propose a solution. Imagine that this group would provide briefs to the rest of the faculty during a quarterly design review (QDR), or semi-annually, or even to

Collective work to generate a simple statement of support that can be shared with instructors and leadership on the last day. If the group is too large, it might be useful for you to stay as a leader to collect their thoughts and responses. If it is small (8 or less) they should be able to self-

a meeting of a CTSSB. How would you support   organize and produce

this idea?   something.

What I would ask you to do, in the time remaining,

is organize your thoughts about these two ideas –

- How the school might benefit from action

  research

- How managers and administrators could

  support or assist

Wrap-up Presentation and Discussion   Before 1630

Thank the participants for their support and

engagement. Remind them that they should

participate and share their thoughts with the

combined group of leaders and instructors at

(location, time, date to be determined).

Instructor Day 2 & 3

Facilitator's Lesson Plan & Guide for (Date: TBD) Instructor CPD Exploration

Purpose Statement (Why are we doing this?)

This will be a two-day guided facilitation activity that will encourage instructors (both

novice and experienced) to examine methods, techniques, and strategies to use for a

self-sustaining continuing professional development (CPD) program. By supporting a bottom-up approach, the intention is that instructors will work harder to sustain a program that is essentially theirs especially as they recognize benefits in both instructor and student performance as a result. More significantly, the entire two-day session will be an experience of a professional learning community in action. The variety of activities they will experience will set the stage for them to enact similar sessions but focused on their self-selected topics.

Action components (What are we going to be doing?)

All activities will occur in the meeting place (classroom, conference room, auditorium). Most activities will begin with a short (20 minute) facilitated discussion of a topic, question or problem. In some cases, there will be various mixing of participants. Ideally, each course will have sent a senior (experienced) instructor and a novice (about 6-months experience) to participate in the colloquy. The experiences and perceptions of these pairs will be helpful to allow all participants to maintain the two necessary perspectives for a CPD program.

There will be think-pair-share activities. There will be small group activities with different courses (for example the functional courses, and the leader development courses). There will also be some practice sessions such as framing and asking effective questions, practicing peer observation and coaching, as well as designing and using assessment tools.

The activity will also be a model of an active learning environment, especially one aimed at learner-centered outcomes. The more active learning techniques that can be modeled (without becoming distracting) will be useful for the instructors to experience since most of them only know and have experience with the service's adaptation of Kolb's experiential learning model (ELM).

Desired outcomes or enabling attributes (What will we see happen to individuals?)

Evidence of the outcome will be when the majority of instructors agree to and develop an initiative to establish a professional learning community (PLC) and draft an action plan for the rest of the year. Attributes that should be evident are communication, engagement, and teamwork.

Objectives (Defined and measurable goals to be achieved)

Almost all of these objectives will derive from the affective domain. The conference intends to shape attitudes, behaviors, and values.

- Describe ways that instructors and students will benefit from a CPD program
- Examine how better questioning techniques can create a more active learning environment while also improving formative assessment of student learning
- Recognize how knowledge surveys provide better information than pre and post-tests
- Defend the utility of collaborative learning and peer-coaching
- Differentiate between coaching and mentoring practices

- Clarify how action research is useful to collaborative learning and self-development

- Choose to develop an action plan that will establish a PLC

- Defend the PLC plan way-ahead to a larger audience (managers, leaders, faculty)

Resources required	Planned Usage
Large classroom (suitable for 40), conference room, or small auditorium	Meeting place for facilitated discussions and workgroups
Computer, digital projector, screen (or smart board) and sound system	Display of presentations, example documents, and videos
Portable, easel-style whiteboards (10)	Sharing small group work, data, ideas
Dry erase markers (Black x 10, Blue x10, Green x 10)	Posting info on whiteboards
3x5 cards (50 count x 2)	A-ha moments, idea parking, end of day comments, proposal voting

Printer paper (1 ream)	Note-taking, scratch work, doodling, mind maps, etc.
Fidget tools (metal puzzles, cordelettes, mini Rubik cubes, infinity cube, spinners, etc.)	Mini-distractions for sensory-sensitive learners during discussions to encourage engaged listening
Blank copies of the Instructor Observation checklist	Recording participant evaluations of recorded instructor performance
Agenda (Guidance for the facilitator)	Method, purpose of the activity, expected time to deliver

Overview and Introduction

- Introduce yourself. Describe that the inspiration for this session stemmed from research findings from interviews with instructors of deep experience and that the school chose as exemplars of the kinds of instruction that supported the school's vision while also being highly effective.

0830-0900 Establish interaction with the participants. *(Times are all approximate and mostly only for planning purposes. The facilitator must judge how long to allow discussion or other interactions to continue if it is productive.*

- The intention is that after two days you, as instructors, while have chosen an approach to a self-sustaining continuing professional development program that assists both instructors and students through a program of active research, collaborative learning, effective assessment, and continuous curriculum design and review.

Describe the purpose of the conference.

- The agenda is just big ideas. Mostly though, we will go where your thoughts and desires will take us. This is about creating a CPD program that works for you, and that you agree will be effective.

Describe the base elements of the agenda.

Discussions & Activities

Activity 1: You will note that several of you have small objects on the desk in front of you. Anybody playing with them yet?

0900-0930

Demonstrate the utility of questioning as a means to promote

What reasons do you suppose might be an explanation for why I have provided these fidgets?

Most of you are familiar with the experiential learning model (ELM) that you learned about in CFD-IC. How many of you believe that following the ELM is an effective method to promote active learning?

Why do you believe that ELM is effective?

How much time do you allocate to each of the elements of ELM; the concrete experience, the publish & process, the generalized new information, the abstract conceptualization and the active experimentation?

both active learning and formative assessment.

Building learner comfort with a new setting by promoting opportunities to discuss their experiences and perceptions without concerns about professional knowledge or attribution.

What are the kinds of feedback that you look for from students when you are using a lesson plan built to follow the ELM?

Activity 2: If you are not seated that way, I'd like you to organize yourselves into pairs where the senior and junior instructors from each course are co-located. When you get together, I want each of you to describe what you think are the most significant challenges you face in making sure that all learners leave your course with the competencies that the school desires. You have paper, each of you makes your list as you see it from your perspective. When you are done with your lists, discuss those items with your teammate. Take about 20-minutes to do this, and then we will discuss the top three from each group and see what emerges in common.	0935-1000 Demonstration of the think-pair-share technique and an approach to problem identification as a first step to problem-solving.
<Break>	1000-1010

Activity 3: Each paired group present its top-three challenges. (*Facilitator summarizes them and notes them on a whiteboard or other data capture medium.*) Once all pairs have shared their challenges, invite the audience to group them by similarity. Outliers should be high-lighted and questioned whether they matter or could be put aside.

For this activity to be useful, the challenges need to be distinct from each other, in other words, it helps the audience categorize with clear distinctions. Ideally, the list should be winnowed down to no more than 10-12 items.

1010-1100

Refine the problem. Consider and evaluate the challenges collectively experienced.

<Break> (Short 5 minutes). During break place 3x5 cards at each desk, seat, place.

1100-1105

Activity 4: Voting on the most pressing issues. Frequently when disparate groups assemble and

1105-1130

must agree on how to prioritize efforts it is

difficult to achieve consensus when various

groups are biased to their problems. A weighted

anonymous voting technique can help to get a

better idea of a consensus on what matters.

Each of you has a 3x5 card at your places.

Please enumerate each line (1 through 7, 10, or

however many issues they previously

categorized). Now, each of you will vote on

which issues you feel are most important. (*The*

facilitator needs to decide how many votes each

person gets. The key is more than 50% is needed

to suggest prioritization. So, if there are 10

topics, the total votes each can cast is 6, if there

were 12 topics, the cast would be 7 each, 8

topics would be 5, and so on.)

You may cast all of your votes to the one topic

you consider the most important, or you can

spread them out proportionately. Indicate your

votes using dots, checkmarks, or tally-sticks, but

you can only have a total of (*however many votes you have determined*).

After explaining the procedure, allow them to make their votes. When it is evident that everyone is done, ask one of the participants to collect the cards and then to assist you in tabulating the results. Post those results on the whiteboard where the issues were described. The top three should readily emerge and be evident to everybody. Complete this activity and then tell them there will be more discussion after the lunch break.

<Lunch Break>

1130-1230

Activity 5: Everybody had the opportunity to vote on the most important issues/challenges you, as instructors, deal with. Here we see the top three that were selected. Now, I'm going to

1230 – 1300

Forced provocative discussion.

Demonstration that carefully

call on several of you to either argue why it is important or why it is not. It does not matter how you voted on the topic/issue/challenge yourself. I don't know how YOU voted, and it does not matter. What matters is that we all have an opportunity to consider the issues from a for, or against perspective – regardless of our personal beliefs.

(Select two people and designate one to argue for the issue, and one to argue against – regardless of their personal feelings, or how they voted. If they are not challenging each other, interject and force an intellectual or logic-based position to force argumentation. Remember, in addition to conducting this workshop conference, you are also modeling instructor behavior for active and learner-centric instruction. Do this at least 3 times, calling on different places in the audience.)

moderated discomfort in group settings can be useful learning and development tool.

<Break>

During the break, distribute a copy of the locally used instructor observation form that is used by evaluators and observers of classroom sessions.

1300-1310 Post lunch break. The next activity must be engaging and require activity, otherwise, you have to deal with the lunch coma.

Activity 6: Re-organize yourselves into groups of (4, 5, or 6). *(Determine how many groups you want based on total numbers, but realize that with groups of 5 or more, several people won't feel compelled to contribute).* What I would like you to do is analyze this evaluation form and determine how many items on it are either Administrative, Procedural, or Learning. I hope that we would all agree that the instructors' role is to promote learning and that should be a primary focus of classroom observation. The question is, does this evaluation form do that? Take about 20 minutes to discuss this in your groups and be prepared to support your results when I call upon your group.

1310-1330

Call on several groups and facilitate their discussions.

1330-1350

<Break>

Activity 7: *By this point, several of your*
participants, especially the more senior in terms
of either military or instructor experience will
begin to wonder where this is all leading to. You
have spent the bulk of the day building a
scaffold for them to adopt a new (or different)
perspective and expose them to the depths of
insights that one can find in a varied audience
by just asking the right questions.

Now, they are primed to consider alternatives to
alter the status quo of which they have just spent
the morning exposing the flaws. Recognizing
that something might be wrong, they will be

1350-1400

1400-1420

Mini-lecture. Provide information
and provoke different thinking by
exposing the audience to different
perspectives enhanced by relevant
and current research.

better disposed to consider ways that they can

change their environment, policies, procedures,

and practices.

Main points to address:

- Faculty are the center of gravity of any

  school.

- Faculty are much closer to the needs of

  learners than curriculum developers –

  but are also hostage to learning demands

  imposed by the operational force

  expectations

- Improving student learning is more about

  instructor-learner interactions than the

  quality of lesson plans or the rigor of

  end-of-cycle knowledge tests

- Close with the question, who knows best

  how and what needs to change in the

  curriculum or its delivery than the

  instructors. Caveat – how do instructors

ensure that they are taking on the right

interventions or innovations?

Transition: Earlier we looked at how the

institution validates instructor performance

using the instructor observation forms (and part

of the instructor badging process). Now it might

be useful to consider what actually will improve

instructors' abilities to teach in ways that will

enhance student learning and performance. In

other words, do the multiple observations and

self-assessments associated with the badging

process improve instructor performance as much

as other methods might? How much might peer-

observations and senior-instructor mentoring

serve instructors better? Let's explore this next.

Activity 8: We are going to watch some

instructors in action. These videos are slightly

dated, but they are all from competitors for the

instructor of the year. What I want you to do, is use the EIC evaluation sheets and grade the instructor's performance. Then I want you to compare it with your seatmates. How much variation is there in the marks you made? More importantly, how many things did you observe that were positive or negative behaviors that are not featured on the evaluation metric?

1430-1500

Demonstration of the variability of instructor/evaluator observation reliability when constrained by an evaluation checklist.

<Break>

Activity 9: What is better? A rigid, structured, and formulaic approach to assess teacher performance or a developmental approach that accentuates positive measures with a holistic view of the effect on student learning? What is the difference between coaching and mentoring?

1500-1510

1510-1520

Mini-lecture on the value and benefits of peer-observation and peer coaching to improve instructor performance to enhance learning.

Is it feasible that a lesser-experienced instructor can provide useful feedback to a more-experienced instructor?

Are standards or objective-focused evaluation format useful to enhance or improve instructor performance that improves student learning?

Activity 10: In the next 30 minutes, your task is to design a framework for peer-observation that can provide useful feedback to an instructor of indeterminate experience. Key ideas to focus upon are content engagement, participation, and evidence of learning that extends beyond rote recitation of rules or procedures.

1530-1600

Small group activity to generate a generic instructional observation metric that supports developmental intentions for the observed instructor.

Activity 11: Wrap up. Here is what we have accomplished today. We identified challenges common to all of us in meeting the expectations of the outcome of the school. We discovered

that there are differences between new and experienced instructors in terms of what they need for professional development. We resolved the top three issues in the conduct of your courses that require attention and that could be improved through a continuing professional development program. We recognized that the formal program of instructor evaluation is less about improving teaching than about meeting questionable metrics of instructor excellence and that there might be a better, more developmental approach that could be used.

When we return tomorrow, we are going to focus on how, as instructors, you can adopt a methodology that can be a continuous improvement model that will 1) encourage more learner engagement in active learning environments, and 2) improve authentic formative assessment strategies, and 3) provide

valuable feedback to support curriculum redesign efforts. These sorts of things don't happen by accident. They are the result of focused observations, careful documentation, and thoughtful implementation.

Please take a couple of minutes now to post some thoughts on a 3x5 card about what you found either most useful or most confusing. Just a sentence or two, whatever your most powerful impressions about the day have been.

DAY TWO

Activity 12: Riddles and Puzzles; Tools to provoke creative or critical thinking. Instructors are often challenged to get their students into a mode of thinking, deeply, and get

0830-0900

past the normal, surface-level bias-oriented

Demonstrating how to get students

thinking that is the norm for day-to-day

to engage their brains in both

problem-solving. Riddles and puzzles are a useful tool to do this. A good way to offer learners the opportunity to challenge conventional thinking is to give them mental challenges. Riddles and puzzles provide this opportunity and are sort of fun to do. There is usually an intriguing quality especially when the solution is exposed.

Offer a couple of examples.

Some considerations. Try to avoid "tricky" puzzles or riddles that require much interpretation of the conditions. The ones that seem to work best are puzzles or riddles where the solution has a humorous solution. You don't want to leave your students frustrated, but you do want to challenge their thinking.

You also want to save some time to walk through why most people did not arrive at the "right" solution, as it exposes the limits to our creative and critical thinking pathways.

There are many different puzzles and their solutions easily found on the web using creative or critical thinking puzzles or riddles. Be sure you are accurate explaining the puzzle, and that you can reproduce the solution with ease.

thinking – that we favor the first or most apparent solution (satisficing) rather than making the extra effort to ensure our solution is accurate.

Activity 13: Review and preview. A useful tool of instructors, especially in active learning environments is to encourage reflection (review), and anticipate what comes next (preview).

A couple of ways to do the review. Select some of the stronger statements you collected last night that might suggest discontent or uncertainty. Pose them as questions and ask if there are any thoughts. Another technique might be to call on different persons (especially those less vocal during discussions) to describe their most memorable learning moment from yesterday. If you have a hard time getting

0900-0910

Demonstration. Recall that part of the intention of this workshop is to consciously model techniques useful for active learning. While the agenda review on the first day was to help align participant expectations, this iteration is not only to remind them of where they are and what they have accomplished but also to provide a

participants to volunteer their observations, be ready to offer your own. You likely learned something from your interactions with the participants and it is sometimes useful for participants to realize the facilitator is also learning from the collective interactions of the group.

After the review process has played out you could ask for any unfinished business from the previous day. Recall that you should have a "parking lot" established for ideas that were worthy but didn't quite fit where the workshop was focused. Possibly review those items.

Finally, briefly state the major activities for the rest of the day. First, remind them that they will produce a proposal for a self (faculty) led PD program that will be introduced to school leadership for consideration. Additionally, they

brief opportunity to expose unclear ideas that need clarification or amplification. Just be careful that you don't take up too much time in the clarification that eats into the schedule. Better to make some comments that help, but then to work in the participant's concerns in subsequent discussions or other planned group work.

will explore formative assessment strategies, knowledge surveys vice pre-tests, and how to research to support adopting innovations in either curriculum development, or content delivery.

Activity 14: Effective questioning as a means of formative assessment. A challenge for instructors in learner-centered environments is to perceive what their students are learning, or if they are merely mimicking the one solution provided by the instructor. Is that knowledge or just base-level skill? In most STEM education there is rarely only one correct solution for the problems that present themselves.

A way to assess how much your students know or understand what you have been teaching is to ask provocative questions; in the sense that they inspire deeper thinking, create a sense of curiosity, or generate discussions among the

0910-0930

Mini-lecture. Provide some background information and techniques about how to form, frame, and ask questions that provide information about what the students know or understand about the content so far.

other students about what may or may not work. Unfortunately, generating the kinds of questions that will do this is hard to do on the fly. What to do?

Generate a series of questions for every lesson. The questions can range from simple procedural-type questions to questions that probe an awareness of the principles or underlying concepts to more complex systems.

Here are some ideas about how to structure effective questions that provide you with insights into what the students know or understand, and more importantly, might expose some conceptually flawed thinking that could have implications in later lessons or modules.

Invite the participants to search for this website http://www.nsead.org/downloads/ Effective_Questioning&Talk.pdf

<Break>

Continue Activity 14:	0930-0940

What I would like to do now is allow you to

draft some questions focusing on higher-order   0940-1000

thinking. An easy way to do this is to use

Bloom's Taxonomy, recalling that these are

usually ordered from lower to higher levels.

Recall as well, that there are three domains –

cognitive, affective, and psychomotor. So,

questions can be designed to allow learners to

show knowledge, beliefs, and skills. Take 20

minutes now to generate some questions for

lessons that you teach. Discuss your questions

with your colleague and then be prepared to

offer examples for all of us to discuss. You

might want to also think about the differences

between convergent and divergent questions as

described in the article *Asking Effective*

Questions.

After 20 minutes, call upon different pairs to share some of their questions. Did any frame questions for other than knowledge? If so, you do want to examine some of them. Get the participants involved in the analysis of the question by asking what type of question it was, what level of thinking, was it convergent or divergent, etc.

1000-1020

Carefully frame your questions for this period. You want to model higher-order type questions yourself as an example.

<Break>

1020-1030

Activity 15: How does an instructor, or a faculty for a course know when there are learning challenges that are not being met by instructional practices?
Students struggling to reproduce a model, a concept, or taking too much time to accomplish some task?

1030-1045

This is a problem-posing activity. You will provoke some curiosity by asking these questions. Then, share with them some data collected for a research effort and allow them to sort through what it might mean, and what they would

Or maybe the numbers of students that are performing poorly on an exam or projects that don't accomplish the requirement?

Could there be a better way to plan a revision or curriculum redesign?

Bottom line – how do you know when a change is necessary – or if it is necessary?

On a slide (or VGT, or other means) show the five tables from the research report *Assessment practices in higher education in the United States*. Walk them through how to process the data and determine where a salient feature might be apparent.

For the next 30 minutes, in groups of five, I'd like you to discuss this data. Assume that it was collected from your students. What does the data suggest to you? What are you going to do as a result of these students' responses to the quality

do if they had similar data from their students.

1045-1100

Provide paper handouts with the five data tables printed on them.

1100-1130

of feedback they received over their program of learning? Be prepared to discuss your findings with your peers when we return from lunch.

Lunch 1130-1230

<Break>

1230-1300

Continue Activity 15: After returning from lunch, call upon different groups to describe their reactions to the data and what they might do with it.

1300-1320

Activity 16: What is action research? If you hear the term in the context of teaching and learning, what do you think it might consist of? Thinking about what we just did before lunch, the effective questions, formative assessment, student response to the quality of feedback, would you consider these to be faculty responses to findings from action research? If you agree,

Mini-lecture/discussion framing for the ensuing activity.

how hard would something like this be to do given your circumstances and environment? After all, you already have a setting that lends itself to collecting very compelling data. Most of your classrooms have some kind of observer or AI sitting in the learning environment. Certainly, within the technical college, you have a well-established collaboration tool (GitHub, Slack Channel) to point to shortcomings in some lessons as well as to offer recommended changes. From my perspective, these tools are mostly reactive, rather than proactive. Why should you have to wait upon the end of course critiques or feedback from the operational force to make decisions about how to change the curriculum or adapt your instructional practices to improve student learning and performance? OK, sure, the CTED is already collecting data, right? But whom does that data serve and support? It is programmatic data needed to

support SMDR, and other scheduling, and

instructor assignment decisions. It does not

provide much information you instructors need;

it could be used in ways that are detrimental to

instructor-learner interactions. In other words,

someone could conclude that students are failing

critical tests because instructors are not teaching

well – and the response would be to teach the

test – an all too common result.

Might there be a better way? I submit (and the

research supports this position) that there is.

And that is for instructors themselves to

undertake research to produce valid and reliable

data to counter (or at least contest) the

contentions of leaders, managers, and

administrators that are only interested in

numeric minutia that keeps HQ off of their

backs.

So, that is your task for the next 20 minutes.   1320-1350

What are things that you and your fellow

instructors could undertake to study and analyze that might be useful to 1) protect your autonomy as instructors, and;

2) counter reflexive decisions by people without a strong background in educational sciences? At the same time – some leaders/managers do have a significant grounding in the learning sciences – but they might lack sufficient data to defend what needs to be done in the classroom to facilitate the kinds of learning that need to occur. Something else to consider – data can serve more than one master.

Advise participants to take a break in-stride if needed.

Activity 17: Leverage a professional learning community (PLC). The school systems rated the best across the world all feature some kind of instructor-led research. Usually referred to as a professional learning community, what it recognizes is that instructors, teachers, administrators are all invested in making their

1350-1410

Mini-lecture/discussion stage setter for the group work that will follow.

institution better in fundamental ways. While

many things might need attention, it is useful to

know what is most important, and what can be

solved within the resource or practice

constraints and restraints of the institution.

What you have experienced, more or less these

past two days are the kinds of thinking and

actions of a PLC. Think about how much

thinking you have done about the courses or

lessons that you teach in the past 24 hours. How

often do you have the opportunity to critically

think about your day-to-day practice? That is

part of the benefit of a PLC.

By the same token, we covered a lot of ground,

that might not be possible or useful. However,

do you think it might be useful to, perhaps, once

a quarter meet and agree to explore one research

question that could be useful to your practices as

instructors?

For example, there are mandatory courses that all students must complete, yet many students have differing levels of education, knowledge, and experience. What would the benefits be to create different lesson plans for different student populations? In other words, differentiated instruction. Could various instructors undertake to teach using different lesson plans, more consistent with their learners' needs, collect appropriate data, and then report their findings? What might that accomplish?

Are there other things that could be studied? How about considering the differences between knowledge surveys compared to pre-and post-test assessments? How might that information change the way we teach? How do we, as instructors, collect, analyze and provide information to administrators and decision-makers that know very little about what happens in the classroom, yet feel compelled to comply

with directives because they don't have any

contrary information or data to argue with?

What I would ask you to do now, is discuss this

among yourselves. Then organize in a way that

will produce a plan of action that you,

collectively, will submit to the school leadership

tomorrow afternoon, after I have spent the

morning priming them for the pressing need for

this kind of activity within the school.

To get started, you might want to consider the

topics that you consider are the worthiest of

research. Some topics might be:

- Do end of course or end of module

  exams reflect the quality and level of

  learning?

- Is there a need for formative assessment

  strategies to measure changes in the

  competencies the school desires?

- What techniques work best to create active learning environments given our student population?

Your deliverable is a simple brief format to share with the school leadership to inform them of your intentions and provide them enough information to endorse your plan. The key to this is to consider resources. They can't give you money, they can't (easily) increase time or breaks between courses, and they can't violate regulatory requirements.

With all of that in mind, I leave you to your deliberations. Remember, this is your opportunity to reclaim your autonomy and, more importantly, to build a positive learning environment that results in better learning outcomes for students, and their performance in duty positions in the operational force.

Be prepared to discuss your proposal by 1530.

Take breaks as you need.

Activity 18: Brief and discuss the group results. Hopefully, separate (smaller) groupings of instructors coalesced into a larger group of (instructors). You will have watched the group dynamics and interactions. Inevitably, a leader will emerge that will encourage and facilitate a broad consensus.

1530-1600

Group brief of their deliberations.

The group will be running out of steam by this time of day, so don't spend too much time picking apart their ideas. However, you do want a fairly broad agreement of the proposal that will be offered, as well as the identification of the "leader." This might be problematic, but you should make assurances that the leadership would not support this very learning session if they were not serious about supporting or

implementing the kinds of changes that are

about to be proposed.

Be sure to conduct some kind of vote (show of

hands, card votes, etc.) to provoke commitment

to the proposal and reassurance for the "briefer"

that will present the following day.

Wrap-up Presentation and Discussion   1600-1620

Activity 19: Closeout, wrap up, and final   Hand out 3x5 cards to record

questions.   responses.

We have spent the last two days considering

some very challenging issues for instructors in

higher education. Some objectives that we

addressed were:

- Describe ways that instructors and

  students will benefit from a CPD

  program

- Examine how better questioning

  techniques can create a more active

  learning environment while also

improving formative assessment of
student learning

- Recognize how knowledge surveys
  provide better information than pre and
  post-tests

- Defend the utility of collaborative
  learning and peer-coaching

- Differentiate between coaching and
  mentoring practices

- Clarify how action research is useful to
  collaborative learning and self-
  development

- Choose to develop an action plan that
  will establish a PLC

- Defend the PLC plan way-ahead to a
  larger audience (managers, leaders,
  faculty)

What I would like to do now if ask you to think
about what you have experienced and how it   1620-1630

might have shaped your thinking about both teaching and learning.

Take a few minutes to organize your thoughts and then answer the following question:

Participating in this continuing professional development workshop affected my thinking about teaching and learning by/through/…some means. How was your perspective changed?

Collect 3x5 cards

Final Remarks

- Thank the participants for their engagement and commitment to improving the quality of learning at the school. It is only through engaged instructors that the school continues to stay ahead of the challenges and concerns of the constant changes in the cyber environment.

- Remind them, that they are all invited to

  their proposal briefing to the leadership

  tomorrow.

Leader Half-Day

Facilitator's Guide for (Date TBD) Leader Session

Agenda (Guidance for the facilitator)	Method, purpose of the activity, expected time to deliver
Overview and Introduction Introduce yourself. Ask participants to identify their positions and roles. Describe the background that led to this session. The research findings and the intentions to bring all of the school faculty on board in support of continuing professional development (CPD) initiative. Note that at the end of this short 3-hour session, they should arrive at a collective agreement to either support some form of CPD or at least take action to consider it further. Inform them that both managers and instructors have had their sessions and will be joining the session	0900-0930

in the afternoon to discuss their deliberations and introduce some proposals.

Discussion

Activity 1: Post three topics on the smartboard, or write them on a whiteboard. Propose to the leaders that these are topics derived from analysis of the research findings. They can take them on, or they can propose their discussion topics. Hopefully, they all had the opportunity to read the article that was provided as a read-ahead to provoke some thinking about the topic of military leaders engaged as leaders of academic institutions.

0930-1030

Generalized discussion. This will be a small group, (less than 12), as such facilitation will be simpler using probing, or exploratory type questions.

- The operational force's needs take priority over research-based curriculum development
- The Common Faculty Development Instructor Course is a good-enough design and instructors don't require any further professional development

- There are not enough resources to endorse a dynamic learning environment guided by researching student performance or instructional innovations

<Break>	1030-1040
Activity 2: If the faculty was organized and guided to study questions of relevance about learning, even if those topics might be contrary to established "best-practices" as seen by the service institutional domain, is there value in supporting such an effort?	1040-1130 Small group discussion. Some of this might get into quality assurance, and other school performance metrics used by higher authorities. What is the risk versus reward? With sufficient evidence, is the leadership willing to fight for better learning?
Wrap-up Presentation and Discussion Thank the participants for their support and engagement. Remind them that representatives from	Before 1200

faculty (managers and instructors) are prepared to

present their deliberations in support of establishing a

PLC this afternoon at (location, time, date to be

determined).

Combined Half-Day

This event cannot be planned or outlined because it all depends upon the results of the

three previous learning events. Possibly no consensus or positive direction resulted from the

previous events. Nonetheless, the benefits of placing components of three central elements of the

school in the same location should not be squandered.

The facilitator will have to conduct this event very much attuned to the results of the

previous sessions, but be very sensitive to how the leaders reacted to their session, just hours

before. Begin the session by relating what has transpired over the previous three days and what

the hoped-for expectations are for this session. Reinforce those expectations by relating how

other schools have shown benefits, especially in student performance as a result of continuing

faculty PD. Recognize that time is a premium resource, and opportunities are few, but the

potentials of a small group of like-minded professionals engaged in action research can, over

time, produce information and plans that can be valuable. Leaders especially benefit when armed

with valid and reliable information to make their cases stronger when arguing for approaches that

differ from the status quo. That information can flow from innovations and action research

performed by a faculty that is engaged as a PLC.

After the introduction, the remaining time is left to the groups. Then the leaders will likely want to make a statement of their support of some kind. This should be followed by the instructors presenting their proposal(s). The managers can then present their support or deferral pending further study. Finally, the leaders should either endorse the proposal or make some statements about them. At this point, it is largely out of the facilitator's hands except to provide insights, observations or suggestions.

The session will arrive at a natural end, most likely following the leaders' reactions to the proposals presented. The facilitator should wrap up the activity and should have two closing remarks prepared. One should be based upon a positive conclusion, that the leadership supports and endorses the plan to establish a PLC based upon intentions to conduct action research. The other should be one that assumes resistance by (some, any, all groups) to the ideas. Those remarks should still seek to enhance the positive benefit of these different elements of the school faculty at least engaging with the concepts of CPD, and that possibly, other pathways or alternatives will emerge as a result of the collective thinking that has occurred in the past three days.

Evaluation Plan

Most evaluation plans follow the model of Kirkpatrick and Kirkpatrick (2007) wherein there are four levels of evaluation ranging from reaction to results on implementation. While Kirkpatrick's third level addresses behavior, it can only be applied during or after some action has occurred. How long that takes is problematic and there could be other factors that shaped behavior than the workshop itself. Hence, that model of evaluation is less than optimal.

However, there is another model that might apply in this situation given that this effort is focused on transforming attitudes, beliefs, and values as they affect behavior.

Ajzen's theories of reasoned action and the theory of planned behavior might be the most appropriate mechanisms to evaluate the effectiveness of this workshop. Because it allows the facilitator and the organizational leadership to have a glimpse of how participants have had their attitudes or beliefs changed enough that it might subsequently change their behaviors, especially those behaviors going forward in time (planned behaviors). Though it is somewhat like peering into a crystal ball to gather future intentions, the results can be useful to determine the extent of the changes of thoughts, values, beliefs, and ultimately future intentions and behaviors of the workshop participants. Ajzen (1991) described it as, "The theory of planned behavior traces attitudes, subjective norms, and perceived behavioral control to an underlying foundation of beliefs about behavior" (p. 206). From the perspective of a workshop that challenges existent beliefs, attitudes, and attendant behaviors, and seeks to determine future behaviors, this might be the most productive approach. Zeggelaar, Vermeulen, and Jochems (2018) found Ajzen's approach partly useful to explore what it is that seems to work in professional development to aid in designing interventions and initiatives.

Shown just below is the survey the facilitator will administer. It was built using the Ajzen model to assess future, planned behavior, as influenced by instruction or some other intervention. Administration of this instrument and subsequent analysis of the results could be instructive to the leadership and guide further interventions or supportive actions as appropriate.

Implementing Action Research and a PLC: Perception Survey

You have just completed a few days of considering a different approach to teaching critical military topics to develop leaders in the Cyber Mission Force. This survey is part of an investigation to understand why a military professional *may* or *may not* implement a change philosophy after they have been encouraged to do so. Even though you might not be an instructor, it would be useful for you to consider the question from the perspective of an instructor. Please answer as honestly, or as accurately as you can, regardless of your actual position.

Please read each question carefully. There are no correct or incorrect answers. We are only interested in YOUR point of view. Please, do not put your name on any of the sheets. These results must remain anonymous.

Instructions

The questions in this survey make use of rating scales with 7 places; *you are to circle the number that best describes* your *opinion*. For example, if you were asked to rate "The weather in Rome is" on such a scale, the 7 places should be interpreted as follows:

The weather in Rome is:

Good:___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Bad

     Extremely   Quite   Slightly Neither   Slightly   Quite Extremely

Meaning that the range extends from extremely good to extremely bad.

When filling your responses please note:

* Be sure to answer all items – do not skip any

* Only circle one number per line.

* Please note that each scale is not the same as the one before it. Carefully consider how you respond to the scale that is shown in, or below the question. In other words, read the scale with the same scrutiny as the question.

The actual survey question begins on the next line.

1. An instructor's support of action research topics will influence leaders and will result in increased student interest in the delivered content:

Likely:___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Unlikely

2. Active learning practices and continuous enhancement of the learning environment improves learner engagement and better focus on the content:

Probably: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Doubtful

3. If I support action research my learners will improve problem solving skills and take more ownership of their development because my lessons are more realistic:

Likely:___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Unlikely

4. Even though I am already overworked and there is not enough time available, supporting collaboration and action research will produce sufficient results that make the effort worth it:

True:___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: False

5. Having students with a better learning experience, and for me, a better approach to teaching, is:

Good:___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Bad

6. My supervisor expects that:

I will: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: I will not

Consider how to use an outcomes-oriented learning approach to develop competencies in my lessons.

7. When it comes to doing my job well, I want to do what my commander expects me to do. My commander expects me to develop competencies of value (teamwork, problem-solving, critical thinking, and research skills) in future leaders.

Agree:___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Disagree

8. Any time that there is a change, there are some that will resist. How much are you willing to go against your friend's ideas, especially if your friends are resistant? When it comes to supporting a professional learning community (PLC), most of my friends:

Will:___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Will Not

make extra effort to collect data and research innovations to better learning strategies.

9. When it comes to performance in the classroom, how much do you want to be like your friends?

Very Much: ___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Not at all

10. To what extent do you believe that supporting a professional learning community that supports action research will improve learning outcomes and therefore improve your performance as an instructor and your students' performance as learners?

Great extent:___1___: ___2___: ___3___: ___4___: ___5___: ___6___: ___7___: Little extent

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Appendix B: Permission to Conduct Research Letter

DEPARTMENT OF THE ARMY
UNITED STATES ARMY CYBER SCHOOL
633 BARNES AVENUE
FORT GORDON, GEORGIA 30905-5441

ATSR-CD   7 February 2019

MEMORANDUM FOR:

T. Howard Stone, JD, Director, Army Human Research Protections Office, 2SW417
     DHHQ, 7700 Arlington Blvd., Falls Church VA 22042
Dr. Robert O. Simmons, Army Research Institute, 6000 6th Street, Fort Belvoir, VA
     22060

SUBJECT: Research Access Permission

Name of Researcher: Blaise Cornell-d'Echert, Jr.
Title of Protocol: The Influence of Professional Development as Perceived by In-Service
Military Instructors
Protocol Number: 12-10-18-0590728
Date of Protocol: 10 Dec 18

1. References:

   a. Title 32 Code of Federal Regulations, Part 219, Protection of Human Subjects

   b. Department of Defense Instruction (DoDI) 3216.02, Protection of Human Subjects
and Adherence to Ethical Standards in DoD-Supported Research

   c. Army Regulation 70-25, Protection of Human Subjects in Research

   d. Memorandum for Record, 13 Apr 18, subject: Research Project Endorsement

   e. Army Focus Group/Interview Request (29 Nov 18)

2. Approval. I hereby approve the request for support described below.

3. Scope. I give permission for the U.S. Army Cyber School to provide support to the
above referenced research via access to instructors for structured interviews during the
duty day when they are not actively teaching students. This permission is provided
pursuant to the terms of Reference (d).

   a. I have determined that there is no undue burden imposed in this data collection
effort per DoDI 8910.01.

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    b. The primary investigator has assured me that collected data will be protected using traditional manual methods (sealed envelopes and locked files) and no identifiable data will be exposed to information security systems.

    c. The small and focused sample size does not require licensure per DoDI 8910.01.

    d. Personal information will not be collected in electronic form. However, any personal information the PI might have access to will have protection applied to keep data protected and private per DoDI 5400.16.

    e. This request is concurrent to both ARI and AHRPO approvals. Any changes requested by either office will be communicated and shared.

    f. A cost analysis determines negligible impact per DoDI 8910.01.

    g. An OPSEC review of the final product has been coordinated with the Cyber Center of Excellence (CCoE) Level II Certified Officer per AR 530-1.

    h. Public release clearance will be determined by review coordinated with the Cyber Center of Excellence (CCoE) Public Affairs Officer per DoDD 5230.09 and AR 360-1.

4. Conditions of approval for research involving human subjects: As this activity is research involving human subjects, this approval is provided on the condition of, and with the understanding that, the researcher's institution will:

    a. Provide to my command any human research protection program-related support necessary to implement and oversee the above referenced activity.

    b. Obtain and comply with the terms of its Federal Assurance for the Protection of Human Research Subjects for this DoD supported research involving human subjects (if applicable).

    c. Inform me via my point of contact below regarding any relevant unanticipated problem involving risk to subjects or others, or serious or continuing noncompliance.

    d. Obtain publication clearance review from my command before publishing or otherwise releasing findings from this research to members of the public (e.g., via abstracts).

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5. Affirmation. By endorsing this request, I affirm I have determined the above-referenced activity is mission critical and will be worth the time/cost of Army support. I acknowledge that my office assumes responsibility for ensuring the portion of the activity supported by my area of responsibility meets all applicable regulatory requirements.

6. The point of contact is Dr. John S. Smith, Director of Training, U.S. Army Cyber School, (706) 791-3224 or john.s.smith16.civ@mail.mil.

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NEIL S. HERSEY
Brigadier General, U.S. Army
Commandant

Appendix C: Ethical Research Certification

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Blaise Cornell-d\'Echert Jr** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 01/12/2017.

Certification Number: 2269381.

Appendix D: Research Participants E-mail Invitation

Dear [respondent]

I am a military educational specialist that focuses on faculty professional development. I also am a doctoral candidate in Education at Walden University. My studies are focused on what professional development education in-service instructors need. While instructors are content subject matter experts, they might lack appropriate instructor skills and abilities. I want to know how instructors react to professional development, and how those reactions change their performance and practice.

The ▮▮▮▮ School leadership selected you as an instructor that seemed to model the behaviors and practices the school espouses. There is no obligation for you to participate in this research effort, and even if you choose to participate, you may withdraw at any time. Your participation is voluntary and has no bearing on your relationship with me or the school.

If you do agree to participate in this study, I will ask that you be prepared to participate in an interview that will last at least one hour but may extend up to 90 minutes. The preference is for a one-on-one, face-to-face interview scheduled for a date and time at your convenience. Since we are geographically separated, it might be necessary to conduct the interview via telephone, or video means.

An essential element of the interview process is your permission to record the interview. The recording is voluntary, and you will have the opportunity to review what later gets transcribed for accuracy or intent. Regardless the method used to capture the interview process, the data will remain confidential and be used solely to support the aims of the research project.

Your response (either positive or negative) before [some date] is greatly appreciated.

For further questions or additional details, please contact me at ▮▮▮▮▮▮▮▮ or email me at blaise.cornell-dechertjr@waldenu.edu.

Best regards
Blaise Cornell-d'Echert, Jr.

Appendix E: Participant Informed Consent Statement

Personal Invitation to Participate in a Doctoral Research Study
Understanding the Transformational Aspects of Instructor Perceptions, Beliefs and Attitudes
Following Professional Development

I am inviting you to participate in a research study to understand how professional development programs, workshops (or sessions) actively affect or change instructor behaviors in their classrooms. The school leadership selected you because of their perception that you have modified or modeled behaviors that match school expectations about the learning environment, competency development, or instructor autonomy in the classroom.

There is no obligation for you to participate in this study. The choice to participate is voluntary. You may join the study or decline to join with equal measures of impunity. Even if you join initially, you may withdraw at any time with no issues.

Background:

The purpose of this study is to understand the perspectives of instructors that have changed their instructional practice due to participating in a professional development program. The results of this study are entirely academic. This study is for the researcher's doctoral program and is not part of the researcher's professional duties.

Procedures:

If you agree to participate in this study, you will agree to participate in a face-to-face, one-on-one interview that will take from 45 – 60 minutes. If we are physically face-to-face, I will provide the questions to you on cards as I read them to you. If we are meeting via Skype, I will show the question on a slide as I read it to you. If we are interviewing via telephone, I will have provided a copy of the questions via email prior to the interview. You will be free to return to a previous question at any time. Participants will have an opportunity to review and modify responses to interview questions after the interview has been compiled and transcribed.

Confidentiality:

Your permission to record the interview is voluntary. The choice to allow recording increases the likelihood of accuracy. The participant (YOU) will review the results of the interview as a form of member check. Once verified (by you), I will erase the digital record, leaving only your confirmed copy of the transcript. All data captured and recorded will be maintained in a confidential and secure file storage system accessible by myself only. Every effort, now, and in the future, if this research is published in a journal, will be taken to maintain the confidentiality of the site, the participant identities, or the contents of subjects taught.

Risks and Opportunities:

Your decision to participate in this research effort should pose little, to no risk to your safety, well-being, or employment. All information collected will remain confidential. No personal information will be revealed to expose your participation in the research effort. The university requires that paper data in support of the research effort be maintained for five years, after which I will shred the documents.

Compensation:

There is no compensation – monetary, or otherwise, associated with this effort.

Contact:

Blaise Cornell-d'Echert, Jr is the researcher conducting the study. For responses to questions about the study or its protocols, please contact blaise.cornell-dechertjr@waldenu.edu. Dr. Edward Kim is the committee chair and advisor to Blaise's research. You may reach him at edward.kim@mail.waldenu.edu. Walden University's research advocate is accessible at 612 312-1210 or via email at irb@waldenu.edu. My IRB approval number is 12-10-18-0590728. The Army Human Research Protection Office (AHRPO) concurred with Walden University's IRB determination of ethical research procedures on 14 March 2019. The Army Research Institute conferred a Survey Control Number (DAPE-ARI-AO-19-53) on 19 June 2019. The School Commandant signed an endorsement of the research project on 7 February 2019.

Consent:

Signing this consent form is the only way for you to be a participant. It must be signed before we meet for the interview so that there is no perception of coercion to sign in my presence. Please return it to me via email, or bring it with you to the interview. Upon signing, you agree that you have full knowledge and understanding of the purpose and intent of the study and your rights to confidentiality as a research participant. You will receive a copy of this form for your records.

Signature:

Printed Name: _____

Consent Date: _____

Appendix F: Participant Interview Format and Preference

In a response dated (insert date), you indicated your desire to participate in a research effort. A copy of your informed consent is currently on file, and I appreciate your willingness to support my research effort.

This form is to provide you as much flexibility as possible to make the interview process as easy as possible. Please indicate which formats and locations are more appealing to you:

Face to face interview

Digital video (Skype) interview

Telephonic interview

Though you will be asked again, to ensure a high degree of accuracy, are you willing to allow the interview to be recorded (on tape or via digital means)?

Are there dates in the month of (Xxxxx) that you are unavailable for an interview because you will be teaching?

What dates or times might you be available for a one-hour interview?

Appendix G: Interview Guide

Disclaimer: You earlier indicated your desire to participate in this research study. Your participation in this interview remains entirely voluntary; you may stop at any time or choose not to answer any question(s). The purpose of the interview is to help us understand how your teaching has changed because of the professional development (PD) sessions you attended. To be clear, the PD program includes both the Instructor Course and the ASLTE workshop. It is possible that this information can help to adjust the content of the workshop or provide advice to the leadership of the Cyber School about policy or procedures for professional development.

Do you consent to participate in this interview?

To improve the accuracy of our analysis, do you consent to allow a digital recording of this interview to occur?

                Yes   No
(Please have the participant initial their consent decision.)

You will recall that this school requires instructors to attend both the instructor course and the ASLTE workshop as part of their PD program. The whole PD program involves qualification (CFDP-IC), certification (three phases leading to primary instructor status), and the ASLTE Cyber FDP workshop. The central question of this research is this: how do cyber instructors (military and civilian) perceive learner-centered and outcome-oriented competency-based teaching as a way to develop problem solving, critical thinking, and teamwork KSAs as desired by the school leadership. So, with that in mind:

1. How do you think the different components of the PD program have affected your performance as an instructor?

2. How do you think the CFDP-IC (the 80-hour instructor course) affected your beliefs about teaching?
        a. in a learner-centered environment?
        b. with outcome-orientation?
        c. to develop competencies?

3. How do you think the ASLTE workshop (the 40-hour session) affected your beliefs about teaching?
        a. in a learner-centered environment?
        b. with outcome-orientation?
        c. to develop competencies?

4. How does the PD program help you understand how to teach the main *content* of your course?

5. Can you describe how you are using what you learned in PD to implement the kinds of effective instruction the school desires such as

      a. *active learning*;

      b. competency development;

      c. outcomes assessments?

6. Describe how you and other instructors *collaborate* to make needed adjustments to the curriculum you teach to keep pace with changes in the Cyber domain.

7. Can you describe how observing the *modeling* of other instructors in the PD sessions affected your perceptions of teaching and learning to develop competencies?

8. How did you modify your practices to

      a. design learning activities that promote development of competencies the school desires

      b. while also actively *assessing* the KSAs of learners?

9. Since the PD sessions you attended, how much has feedback you received

      a. from a *coach* helped to alter your teaching practices

      b. from *peers* helped to alter your teaching practices?

10. How do you use things you learned in PD to set conditions that build the competencies desired by the school

      a. critical thinking

      b. problem-solving

      c. teamwork

      d. link to solving real-world problems?

11. Considering the current PD program, and your prior life experiences, what do you believe has had the greatest impact on developing you as a highly effective instructor?

Are there any comments or suggestions you would like to make?

Thank you for your participation.