# MOTIVATION AND LEARNING STRATEGIES IN MANDATED CONTINUING EDUCATION PROFESSIONAL PROGRAMS

By

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## Abstract

Formalization of continuing professional education is intended to keep workforce current with economic, social, technological, and environmental changes; however, it has had a number of unintended and negative effects: decrease in student motivation and engagement, limited pedagogical experience of instructors, lack of accountability and proper assessment. Lack of unifying standards, the short-term format of the programs, and a lack of resources needed to evaluate learning outcomes makes adequate assessment of continuing professional education problematic. This research explores alternative method that can be used to assess such programs. In the absence of measures of learning outcomes, evaluating student learning strategies and motivation to learn can be a useful proxy for assessing student learning outcomes and teaching quality in continuing professional development programs.

This mixed methods study with approximately 400 students from a continuing professional program utilizes multiple surveys and observations to identify student level of motivation and the use of learning strategies. To obtain rich and in depth data about the program, this research employs a person-centered approach to motivation-learning strategy clusters as a composite measure of these highly interdependent indicators. The quality of motivational orientation is related to the choice of learning strategies used by students (Entwistle, et al., 1979).

Findings of this study indicate that students of the researched program formed four motivational clusters with 70% of students reporting high level of intrinsic and high quality extrinsic motivation. However, high motivation clusters reported higher use of not only deep, but also surface learning strategies. Correlating students' personal characteristics with individual learning strategies did not produce meaningful results. Analyzing data on professional

motivation demonstrated that students are mostly intrinsically motivated and their professional motivation should have a positive influence on motivation to engage in learning activities.

These results can be used to expand the current knowledge on motivation and use of learning strategies in mandated continuing professional programs. Further, this study demonstrated the successful use of motivation-learning strategies clustering as a proxy method to assess learning outcomes and teaching quality in short-term continuing professional programs. Finally, based on the results of the study recommendations for instructional and organizational changes in the program are presented.

*Keywords:* continuing professional education, motivation, learning strategies, program assessment

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## Introduction

There is a general assumption and consensus across professions that undergraduate, vocational, or even initial professional certification education is only the beginning of learning that continues throughout professional life (Webster-Wright, 2009). Rapidly changing society, unprecedented development of information technology, globalization, economic, social, demographic and environmental changes determine the need for continuing professional development across various industries. Teaching, nursing, engineering, architecture, government, information technology, and construction are just some of the fields that require lifelong professional learning. The past several decades brought a major change to the field of professional development education, turning program participation from the voluntary engagement of professionals to "a systematized and codified set of activities that has consequences for their continued registration, and in many cases, their right to practice their profession" (Boud & Hager, 2012, p. 17). Continuing professional education in numerous industries is obligatory and substantial quantities of money, resources, time, and effort are allocated to such programs as a way to maintain high quality practice (Webster-Wright, 2009). However, the formalization of continuing professional education has had a number of unintended and negative effects: decrease in student motivation and engagement, limited pedagogical experience of instructors, lack of accountability.

Compulsory continuing professional education can lead to a decrease in students' *motivation* to both participate and learn. Compulsory continuing professional education is measured as the acquisition of points, contact hours, or continuing education units rather than learning, and in many instances attendance is treated as synonymous with course participation

(Boud & Hager, 2012). Compulsory educational programs locate control over learning outcomes within the system, rather than with participants (Rotter, 1966). Instead of professionals taking responsibility for their own development, they are subject to external surveillance (Boud & Hager, 2012). As a result, when students participate in educational program for external reasons, the prevailing student motivation is extrinsic and motivated by rewards or avoidance of punishment, rather than intrinsic motivation, which happens when professionals engage in educational activities to learn (Schunk, Pintrich & Meece, 2008). While students can learn for both extrinsic or intrinsic reasons, research shows that working on tasks for intrinsic reasons leads to greater learning and achievement (Lepper, Corpus, & Iyengarl, 2005; Schunk et al., 2008). In addition, low quality motivation has a direct negative impact on students' level of cognitive engagement, ability to be strategic learners, and use of deep learning strategies (McClintic-Gilbert, Henderlong-Corpus, Wormington, & Haimovitz, 2013; Murayama, Pekrun, Lichtenfeld, & von Hofe, 2013).

Adult students are motivated to continue their education for different reasons. Understanding why people behave as they do is crucial to helping them learn (Wlodkowski, 2008). Knowles' (1980) philosophy of adult education proposes four underlying assumptions of andragogy, the art and science of helping adults learn (Elias & Merriam, 1995). To begin, adults are self-directed and are able to determine their own educational needs; next, they identify themselves in terms of accumulation of a unique set of life experiences (Knowles, 1980). The next two assumptions are particularly applicable for the field of continuing professional education programs. Adults' readiness to learn is linked to the current demands and requirements of their lives and adults will not learn what is not relevant to their stage in life (Elias & Merriam,

1995). Finally, adult students desire immediate application of knowledge (Knowles, 1980), and postponing such application has negative effect on student willingness to learn.

The literature on adult education also indicates that adults are highly motivated learners who seek new learning because of life changing events, an urgent need for knowledge, changes in life circumstances, career advancement, and disruption in one's work identity (Mezirow, 1991; Peterson, 2009). According to Mezirow's (1991) theory of transformative learning, adults become motivated when they encounter a life experience that alters their worldview. However, when adults are participating in compulsory professional development programs they are not seeking education due to a life-changing event, but rather, attendance is required to maintain licensure remain employed. Students in many continuing education programs are therefore externally motivated to attend the training program but are not necessarily intrinsically motivated to learn.

Students' *cognitive engagement,* defined as the use of deep and surface cognitive learning strategies (Fredricks, Blumenfeld & Paris, 2004; Marton & Säljö, 1976; Miller, Greene, Montalvo, Ravindran, & Nichols, 1996) is another important aspect of continuing professional education. Cognitive engagement depends on many factors, such as the quality and level of motivation, teaching methods, individual student learning habits, and prior learning experience. A qualitative distinction is made between deep and surface level strategy use. Students who use deep learning strategies are more cognitively engaged and achieve greater understanding of ideas (Weinstein and Mayer, 1986), deep learning strategies help students construct meaning (Biggs, 1999). Deep learning strategies signify higher order thinking skills and personal commitment to learn material, as opposed to surface learning strategies, which are associated with routine

memorization, a minimum amount of effort, and involvement focused on getting a passing grade (Marton & Säljö, 1976).

Low levels of student cognitive engagement presents a problem for continuing professional education. Learners who apply only surface strategies tend to understand the material correctly but do not create the connections between concepts that deep strategy learners do (Biggs, 1999). In contrast, by creating such connections within their knowledge and understanding, deep strategy learners can transfer learned concepts to a variety of situations and everyday work practice. In addition, low cognitive engagement decreases the level of student academic achievement and learning outcomes, and is associated with reduced knowledge retention and the diminished ability to self-monitor understanding of new material (Simsek & Balaban, 2010; Weinstein & Mayer, 1989). Learning through deep strategies is associated with higher levels of cognitive engagement and facilitates the transfer of new material to work practice. This is especially important in the context of continuing professional education programs where students need to acquire, fully understand, and retain new professional knowledge.

The level of cognitive engagement and the types of learning strategies that students use can be adjusted and facilitated. Cognitive engagement is a function of the individual and the learning context; therefore, students' learning strategies emerge through the interaction between a student's personal characteristics and the contextual conditions of their learning (Biggs, 1999). Cognitive engagement is malleable and shifts in response to variations in the environment or based on their individual characteristics (Biggs, 1999; Fredricks et al., 2004). In other words, the level of cognitive engagement and use of deep level learning strategies can be facilitated by

classroom contexts and instructional practices that include the teacher, peer support, scaffolding, task types, and task characteristics (Fredricks et al., 2004).

In addition to students' motivation and cognitive engagement, the *teaching quality* in compulsory continuing professional programs is another area of concern. Despite the importance of instructional practice, instructors often pay more attention to the content of their programs than pedagogy. The very nature of professional development programs requires teachers to be field professionals with working industry knowledge, therefore, they are less likely to be trained in pedagogy. Professional development programs commonly focus more on delivering content rather than enhancing learning (Webster-Wright, 2009). The situation is further complicated by the fact that most of continuing professional education is offered in the form of short, one-day discrete courses, many of which constitute "episodic updates of information delivered in a didactic manner, separated from engagement with authentic work experience" (Webster-Wright, 2009, p.703). Because instructors have limited pedagogical skills, lecture is the main method of delivery in short-term continuing professional education courses and little attention is paid to ensuring that students learn the material.

A teacher's lack of pedagogical knowledge in the delivery of continuing professional programs can lead to diminished learning outcomes. Instructional practices impact student learning outcomes through the mediating factor of student cognitive engagement (Guthrie & Wigfield, 2000). Further, cognitive engagement has a strong positive correlation with learning outcomes and students achievement (Entwistle, 1998; Guthrie & Wigfield, 2000; Nysrtand & Gamoran, 1991; Sitzmann & Ely, 2011; Zimmerman, 1990). Effective teaching practice facilitates students' use of higher-level cognitive processes; deep and surface approaches are not

fixed characteristics of students, but are reflections of how students relate to teaching and learning environments (Biggs, 1999).

Finally, and perhaps most significantly, continuing professional programs commonly lack assessment procedures for measuring student learning outcomes. The absence of *accountability measures* is a major problem in the professional development field. The issue of accountability has become critical in the world of K-12 education due to the No Child Left Behind Act's heightened emphasis on testing; each state is required to regularly test students in specific grades and subject areas against state imposed standards (Bennett & Gitomer, 2009). Yet, in the context of continuing professional programs, the absence of unifying standards, the short-term format, and a lack of resources needed to evaluate learning outcomes and knowledge transfer makes adequate assessment problematic (Fenwick, 2010).

In addition, formal educational assessments does not play an important role in the continuing professional education field (Athanasou, 2006). Continued competence of the professionals is often evaluated by mere attendance of such programs (Queeney, 2000). The most popular form of program evaluation is students' self-report on their satisfaction with the course. However, in order to evaluate the success of continuing educational programs, the assessment should address "application of knowledge and skills within a practice context" and well as students' "collaborative, judgmental, reflective, and integrative capabilities" (Queeney, 2000, p.379). Without formal assessment, it is important that we have alternative ways of evaluating the success of continuing professional programs in order to inform future programming through evaluation (Ottosen, 2002).

*In the absence of measures of learning outcomes, evaluating student learning strategies and motivation to learn can be a useful proxy for assessing student learning outcomes and*

*teaching quality in continuing professional development programs.* Cognitive engagement is a function of the individual and the learning context and it is also influenced by the level and quality of motivation. As a result, evaluating students' motivation and learning strategies may provide insights into the effectiveness of teaching methods and student learning outcomes. Using a person-entered approach to examine the students' distribution in various motivation-learning strategy clusters, groups of individuals who share particular characteristics or relationships among characteristics can be identified. Such evaluation can produce rich data that can be used to design a targeted intervention to improve quality of teaching.

This study examines a statewide continuing professional development program for construction code enforcement (CCE) officials who are employed either by the State of New Jersey or local municipalities. The primary responsibility of these officials is to enforce the Uniform Construction Code and other related codes in their respective fields while performing building, electrical, plumbing, fire protection, and mechanical inspections to ensure the health and safety of the people of New Jersey. The Uniform Construction Code is a collection of laws and regulations based on best practices, lessons learned from past construction disasters, and the suggestions of engineers and code enforcement experts.

The State of New Jersey Department of Community Affairs as a sponsoring agency together with Rutgers University Center for Government Services as program administrator contributed significantly to the establishment of norms and quality standards for the construction code enforcement officials profession. During the last two decades they developed licensing rules which include an obligatory educational component of initial licensing and continuing professional development. Every CCE official in New Jersey is mandated to maintain licensure by earning educational credits at one-day, five-hour, continuing education seminars offered at

multiple locations in New Jersey. The number of seminars required for CCE officials varies depending on their licensure. The seminars are free of charge, and in order to receive course credit, officials must be present for the entire session. The program is sponsored by the State of New Jersey and administered by Rutgers University's Center for Government Services. At present, Rutgers University Center for Government Services offers approximately 350 continuing education seminars yearly on various topics for CCE officials.

Despite efforts to establish a high quality program, the continuing professional development program for CCE officials shares many of the same problems, as described earlier, that other short-term professional development programs have. The program for CCE officials is compulsory and, therefore, may be potentially vulnerable to low motivation and limited cognitive engagement, it lacks effective assessment mechanisms and does not provide systematic professional development for instructors. As a program manager at the Rutgers University Center for Government Services, I have encountered evidence of low cognitive engagement and motivation: students often mention a lack of motivation to attend the program in their comments on class evaluations, observed level of student involvement during seminars is low, and very few students ask questions, participate in discussions, or offer opinions. Lecture remains the predominant instructional method, and hands-on individual exercises or group discussions are rare. The seminar design does not include mandatory learning assessments; while some instructors use short self-graded tests at the end of a seminar, the results are not formally recorded. A refresher professional development course for program instructors is offered yearly, but the training is not systematic or mandated.

A high quality continuing professional development program is essential for CCE officials as the demands of enforcing the Uniform Construction Code have increased

dramatically in the last decade. The development of modern technology and the rising demand for the accommodation and inclusion of people with disabilities has prompted a greater emphasis on construction and maintenance safety. The universal online access to the Uniform Construction Code and other technical resources increased ability of general public to advocate for compliance. New demands require CCE officials to have a deep and flexible knowledge of the Uniform Construction Code and related codes to be able to readily access this knowledge and critically apply it in everyday practice in a various nuanced settings. Code enforcement is much more than finding the correct page in the code book; CCE officials need to advise, enforce, explain, and educate the general population on the laws and regulations.

For CCE officials to perform these job-related activities, they need opportunities to develop skills and abilities to summarize, apply analogies, teach content to someone else, regroup and connect concepts, question oneself for understanding, and monitor one's individual enforcement practices as incongruent with changing regulations. These are some of the deep learning strategies that CCE officials could learn and develop at the continuing education seminars and apply in their everyday practice. My research addresses the problem of low cognitive engagement and motivation in the Rutgers University Center for Government Services' continuing professional development program for CCE officials. Increasing students' cognitive engagement could result in deeper knowledge and skills being transferred to CCE officials' everyday work practice and improve safety protections and wellbeing of the people of New Jersey.

The purpose of this study is to assess the level of student motivation, cognitive engagement, and use of learning strategies in the construction code enforcement officials continuing education program, and to identify meaningful patterns of these variables in order to

assess the program. Although motivation and cognitive engagement do not directly measure teaching quality, student learning outcomes, or program effectiveness, I relied on motivation-learning strategy clusters as a composite measure of these highly interdependent indicators to serve as a proxy measure for program evaluation. I used a person-centered approach as opposed to a variable-centered approach in order to identify and analyze motivation-learning strategy group differences in patterns of development. This approach allowed me to assess program effectiveness in terms of student learning outcomes and teaching methods. I want readers to understand how short-term professional development programs can be alternatively evaluated. In addition, using the evaluation results, I hope to provide a set of recommendations for improving the CCEO continuing education program, and design a teaching methods intervention to the client base. Please see Figure 1 for the logic model of the study.

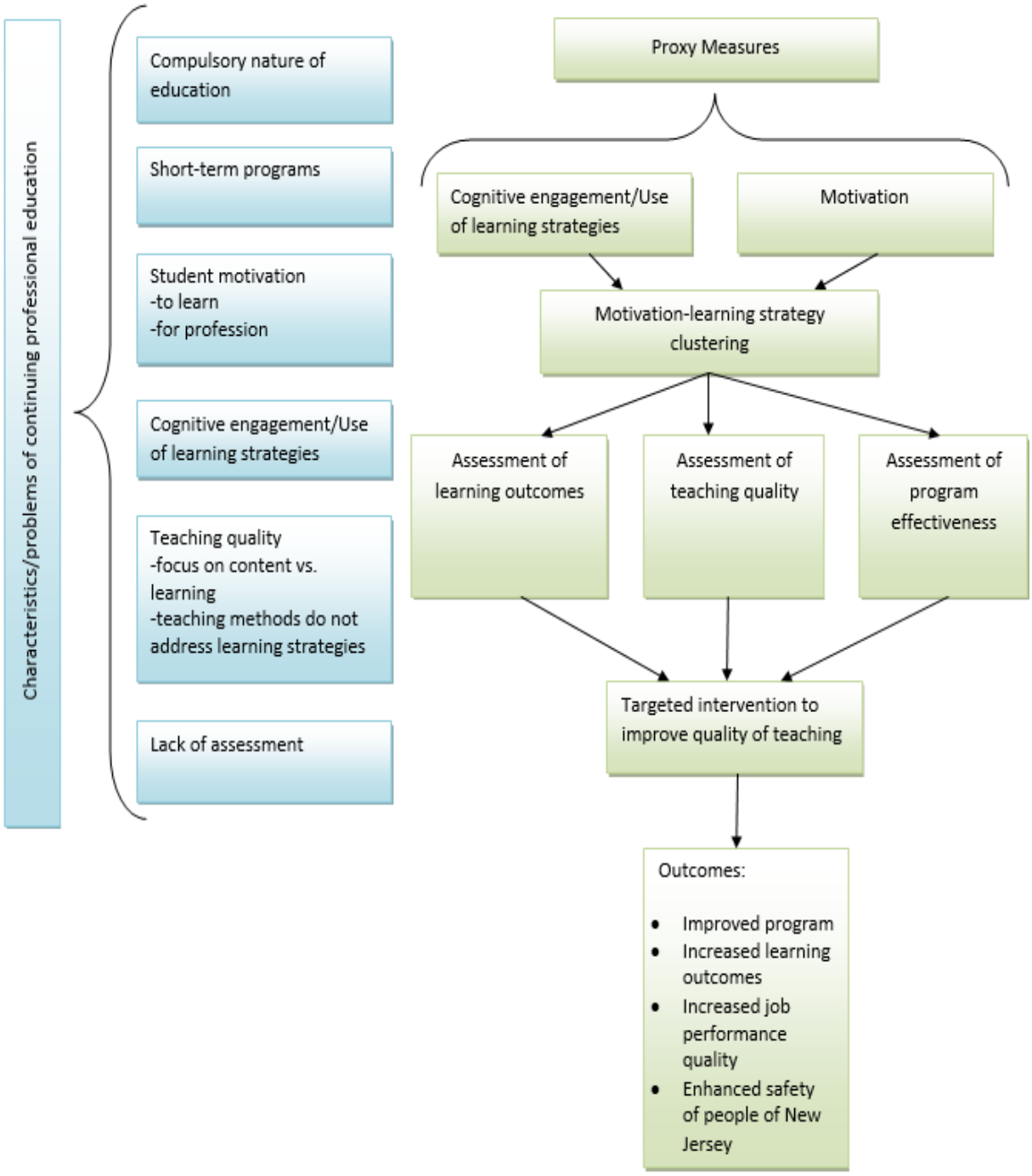


*Figure 1.* Research logic model.

The research questions answered as a result of the study are:

1. What are the implications of the student distribution in motivation clusters in the program?
2. What is the relationship between the students' motivational profiles and their use of learning strategies?
3. To what extent if any does students' use of learning strategies depend on students' personal characteristics?
4. What is the connection between the students' motivational profiles in the continuing education program and their professional motivation?
5. What instructional practices currently used in the program stimulate students' use and development of deep learning strategies?

By investigating how students with different motivational profiles differ in their use of deep and surface learning strategies this research expands the current body of knowledge on motivation and use of learning strategies in adult employer-mandated continuing professional programs. Further, this study reviews the application of motivation-learning strategies clustering as a potential proxy method to assess learning outcomes and teaching quality in short-term continuing professional programs. Finally, it informs the literature on what recommendations can be given to the instructors of continuing professional programs so they help students improve their learning strategy use.

In addition, the results of this study can be used to address the problem of practice and improve the CCE officials continuing education program. Rich data on motivation-learning strategies clusters allowed me to identify the maladaptive and successful learning patterns among the program students. Further, I gained knowledge of what learning strategies are preferred by

CCE officials with different licenses, ages, and years of experience, and how professional motivation influences the educational experience of the student. Combined, this data allowed me to advance the program by designing targeted and systematic training for the instructors to improve the quality of teaching and course design.

In the next chapter, I provide an overview of relevant literature on a) students' motivation through the lens of self-determination theory, b) cognitive engagement and learning strategies, c) the link between motivation and learning strategies, d) teaching practices that enhance students' cognitive performance, and d) the appropriateness of applying a person-centered approach to study student motivation and use of learning strategies.

## Literature Review

To better define the proposed research objective and answer my research questions, this literature review concentrates on two main concepts of the study: student motivation and learning strategies and how they relate to each other, student learning outcomes and teaching quality. In addition, I provide an overview of current research on motivation and learning strategies that employ a person-centered approach to motivational profile clusters. Clustering is the key approach that I use while analyzing research data, and reviewing the results of previous studies provided me with useful inside how clustering data can be used. Investigating the link between motivation, learning strategies, learning outcomes, and teaching quality allowed me to support the theoretical framework of the proposed study. Discussing the literature on motivation, deep and surface learning strategies, and the person-centered approach is necessary to operationalize the essential elements of this research.

I first began by searching peer reviewed journals published between 1975 and 2017 in the ERIC, ProQuest, and Google Scholar databases, with criteria that limited the results to articles related to adult education. Additional search criteria included the topics of motivation, self-determination motivational theory, learning strategies, deep and surface approaches to learning, and a person-centered approach. However, the lack of empirical studies related to these topics in the context of adult education forced me to broaden the search criteria to include studies in the context of young adults, school and college students. To date I have reviewed approximately 100 articles from more than 40 journals.

### Motivation through the Lens of Self-determination Theory

Students in many continuing education programs including the program under study in this research are externally motivated to attend training program for variety of reasons, but are

not necessarily internally motivated to learn. Motivation has a significant influence on student learning, so it becomes important to have a closer look at different types and levels of motivation. My research involves creating students' motivational profiles and clustering them with learning strategies. In this section I discuss the self-determination theory of motivation that I found useful in providing a comprehensive framework for construction of student motivational profiles in the researched program.

Self-determination theory is one of the most studied and empirically tested motivational theories. Initially developed by Deci and Ryan (1985) in the field of clinical psychology, the theory gained the support of researchers in other domains, including education. Self-determination theory is based on the idea that human motivation, performance, and development can be maximized if social contexts provide people with the opportunity to satisfy their innate psychological need for competence, relatedness, and autonomy (Deci, Vallerand, Pelletier, & Ryan, 1991; Vansteenkiste, Lens & Deci, 2006). In other words, if these three needs are satisfied, favorable conditions are created for people to regulate uninteresting processes from external contingencies to internal (Deci et al., 1991). However, the degree to which the process of internationalization occurs varies depending on the social context. With this in mind, Ryan and Deci (2000) argued there is a gradual progression from external to internal motivation.

Through the lens of self-determination theory, motivation is viewed as dynamic and cognitive in nature; it continuously evolves as a construct as the learner confronts various internal and external influences. Self-determination theory focuses on the critical distinction between behaviors that are volitional, emanating from one's sense of self, and those that are the result of pressure and control (Ryan & Deci, 2000). The self-determination framework consists of three orientations to motivation, in order of increasing self-determination: amotivation,

extrinsic motivation (based on rewards extrinsic to the activity), and intrinsic motivation (based on intrinsic interest in the activity, per se). It is possible to classify different types of extrinsic and intrinsic motivation on a continuum according to the extent to which the learner's motivation is self-determined or internalized (Ryan & Deci, 2000). In other words, the learner's personal reasons for engaging in a learning activity result in different types of motivation.

To begin with, *intrinsic motivation* is an innate human need associated with interest and enjoyment. Intrinsic motivation emerges spontaneously and it requires the satisfaction of the basic needs: feeling competent, related to the task, and self-determined. On the other side of the motivational spectrum is *amotivation*, in which students do not experience external or internal motivation. Ryan and Deci (2000) describe amotivation as "the state of lacking an intention to act" (p. 61) caused by not valuing an activity, not feeling competent, or not believing in outcomes. Another reason for amotivation is the learner's inability to perform the task (Reeve, Deci, & Ryan, 2004; Vallerand et al., 1992).

In the context of this research study, extrinsic motivation deserves special attention because many activities in everyday life are performed by people to "attain some separable outcome" (Ryan & Deci, 2000, p. 60), and students in the CCE officials program are required to attend seminars to maintain their licensure. Self-determination theory proposes that extrinsic motivation can vary greatly by the degree to which it is autonomous. Different forms of extrinsic motivation are further detailed by the organismic integration theory (Ryan & Deci, 2000) indicating that extrinsic motivation can become self-determined motivation through the process of internalizing. There are four subtypes of extrinsic motivation, and each one is increasingly self-determined: *external regulation, introjected regulation, identified regulation,* and *integrated regulation.*

The first subtype, *external regulation*, refers to motivated behavior in response to an outside pressure, punishment or reward. The perceived locus of causality is fully external. External contingencies motivate behavior, making this form of extrinsic motivation the least self-determined (Deci et al., 1991). Second, *introjected regulation* refers to mildly more internalized reasons for behavior such as when a person internalizes rules, norms or demands and feels guilty for not abiding. However, this type of motivation is not part of the integrated self, as external control still prevails (Deci et al., 1991). Since the reason for behavior is not based on true choice, this type of motivation is also not considered self-determined. *Identified regulation* of extrinsic motivation refers to behaviors such as personal choice, priority, or the value a learner places on a task. Such behaviors are considered to be more self-determined because the learner considers engaging in these behaviors to be important.

Finally, *integrated regulation*, the most autonomous and self-determined form of extrinsic motivation, occurs "through self-examination and bringing new regulation in congruence with one's other values and needs" (Ryan & Deci, 2000, p. 62). And, while the source of integrated regulation is initially external and not aimed at pure enjoyment, but toward other self-endorsed values, this type of regulation has some similarities with intrinsic motivation, such as its impact on high-quality learning, creativity, and displaying conceptual or intuitive understanding (Deci et al., 1991). In other words, when a student attends the compulsory program because he or she believes in the importance of gaining the knowledge, feels the responsibility for learning, self-monitors understanding of the new material, makes sure that new knowledge fits with existing, this students is using integrated regulation. Integrated motivation also differs, however, from intrinsic motivation because it is based on the importance of the

activity related to the learner's values and goals, while intrinsic motivation is based on the learner's enjoyment of the activity (Reeve et al., 2004).

For the purpose of this research, I am interested in finding out what levels of motivation students have in the program. The CCE officials' continuing education program seminars are not designed to be intrinsically motivating; students are taking the classes because their employment depends on the continuation of their licensure. However, I believe some CCE officials attending the seminars might have higher levels of extrinsic motivation (identified and integrated regulation) resulting in higher cognitive engagement and use of deeper level learning strategies. Studying students' motivation through the lens of self-determination theory allowed me to investigate rich motivational profiles that consist of amotivation, extrinsic external regulation, extrinsic introjected regulation, extrinsic identified regulation, extrinsic integrated regulation, and intrinsic motivation. Moreover, these student profiles combined with data on learning strategies and professional motivation helped me answer three of the four research questions.

**Professional motivation through the lens of self-determination theory.** Comparing student motivation for learning and use of learning strategies in the CCEO continuing education program with student motivation for their job can present an interesting perspective on student motives for engaging in professional learning. Taking a closer look at professional motivation helped me address the last research question of my study.

Multiple researchers have applied self-determination theory to job related activities (Deci, Connell, & Ryan, 1989; Moran, Diefendorff, Kim, & Liu, 2012; Tremblay, Blanchard, Taylor, & Pelletier, 2009). Through the lens of this theory the concept of professional motivation can be broadly defined as the satisfaction of people's intrinsic needs for competence, autonomy, and relatedness on the job (Baard, Deci, & Ryan, 2004; Gagne & Deci, 2005). Satisfaction of

these needs predicts the performance rating and psychological well-being of employees (Baard et al., 2004) and leads to a range of dependent variables such as positive emotional tone, low level of burnout, creativity, conceptual learning, effective functioning perceived confidence, and self-esteem (Deci et al., 1989; Moran et al., 2012; Van den Broeck, Lens, De Witte, & Van Coillie, 2013). Motivation is usually manifested by attention, effort, and persistence (Tremblay et al., 2009).

The most controversial need in the literature on professional motivation is autonomy need. Autonomous behavior through the self-determination theory is seen as being intrinsically motivated. However, many activities in work organizations are not intrinsically interesting and the use of strategies such as participation to enhance intrinsic motivation is not always feasible (Gagne & Deci, 2005). Some researchers consider that intrinsic motivation is less likely to occur in the professional environment because of an inevitable focus on compensation and recognition at work (Baard et al., 2004). The views on motivation in the work place presented in current research literature are rather polarized: the focus is either on promoting intrinsic motivation through participation and empowerment while minimizing the use of extrinsic factors or, alternatively, on using rewards and other extrinsic contingencies to maximize extrinsic motivation while ignoring the importance of intrinsic motivation (Gagne & Deci, 2005).

Self-determination theory proposes that extrinsic motivation can vary in the degree to which it is autonomous versus controlled. The behavior in the workplace is mostly externally regulated, but workers motivation can also result from internalization of the values associated with behavior. Extrinsic motivation can fully depend on contingencies external to person. Alternatively, people's motives can be introjected and driven by "self-esteem, which pressures people to behave in order to feel worthy, and ego involvement, which pressures people to behave

in order to buttress their fragile egos" (Gagne & Deci, 2005, p. 334-335). Finally, extrinsic motivation can be identified with workers values and self-selected goals; or integrated when "behavior is an integral part of who they are, that it emanates from their sense of self" (Gagne & Deci, 2005, p. 334-335).

Research shows that student motivation in work-related educational program is directly related to employer needs, career ambitions, and work motivation (Borup & Shah, 2013; Gagne & Deci, 2005; Tremblay et al., 2009). Deadlines, task-contingent rewards, surveillance, and evaluations tend to be experienced by workers as controlling and, consequently, highly externally motivated (Deci et al., 1989). Mandatory training in the CCE official continuing education program can be perceived by students as controlling hence it might lead to prevailing extrinsic motivation towards this program among the students.

**Cognitive Engagement and Learning Strategies**

Students' low level cognitive engagement presents a problem for continuing professional education because such students tend to have lower learning outcomes, reduced knowledge retention and diminished ability to self-monitor understanding of a new material (Simsek & Balaban, 2010; Weinstein & Mayer, 1989). In addition, such students experience difficulty transferring new material to work practice. The importance of cognitive engagement in the context of continuing professional education programs makes it a second topic of this literature review. In this section, I discuss the concepts of cognitive engagement and learning strategies, provide a broad overview of various classifications and definitions of learning strategies, as well as present empirical evidence from previous research on how cognitive engagement/learning strategies relate to learning outcomes and teaching quality. Reviewing literature on cognitive engagement/learning strategies allowed me to identify learning strategies that are potentially

useful for the short-term continuing professional programs in order to address the first three research questions of this study.

**Cognitive engagement.** For the purpose of this research, I employed the learning and instruction perspective and define cognitive engagement as the use of learning strategies. Literature on learning and instruction broadly defines cognitive engagement as strategic or self-regulated learning that emphasizes the importance of learning strategies (Pintrich, 2002; Zimmerman, 1990). For example, Miller, Greene, Montalvo, Ravindran, and Nichols (1996) considered cognitive engagement in academic work by measuring self-regulation, strategy use, effort, persistence, and achievement. In addition, Pintrich and DeGroot (1990) and Zimmerman (1990) described cognitive engagement as using metacognitive strategies to plan, monitor, and evaluate cognition. Cognitive engagement is also understood as synonymous with active learning and can be defined in terms of the overt activities undertaken by learners in the service of learning (Chi, 2009).

The level of cognitive engagement depends on the type of strategies students use. Learning strategies are broadly defined as behaviors and thoughts that a learner engages in during learning which are intended to influence the learner's encoding process (Weinstein & Mayer, 1986, p. 315) and intentions and processes which generally lead to a qualitatively different outcome (Biggs, 1999; Entwistle, 1998; Marton & Saljo, 1976). A qualitative distinction is made between deep and surface level strategy use. Students who use deep strategies are more cognitively engaged and achieve greater understanding of ideas (Weinstein and Mayer, 1986). Low cognitive level of engagement derives from using surface strategies to learn and yields fragmented outcomes that do not convey meaning intended by the encounter, while using deep learning strategies helps students construct meaning (Biggs, 1999). Marton and Säljö

(1976) presented the idea of deep learning strategies as a demonstration of higher order thinking skills and personal commitment to learn material, as opposed to surface learning strategies which are associated with routine memorization, a minimum amount of effort, and involvement focused on getting a passing grade. In contrast, learners who apply only surface strategies tend to understand the material correctly but do not create the connections between concepts that deep strategy learners do (Biggs, 1999). By creating such connections within their knowledge and understanding, deep strategy learners can transfer learned concepts to a variety of situations and everyday work practice. The ability to easily transfer new material to work practice makes the skill of deep strategy learning especially important in the context of the CCEO continuing education program.

**Overview of classifications and definitions of learning strategies.** To better address the research questions of this study, it is necessary to investigate what constitutes the construct of learning strategies in more details. Learning strategies are defined as behaviors or thoughts that facilitate learning (Weinstein, Ridley, Dahl, & Weber, 1989), and the spectrum of learning strategies covers simple repetition to complex organization of learning material. The authors do not always use the same terminology to discuss the same concept, resulting in multiple interpretations and overlapping models. A number of researchers have analyzed, reported on, and described learning strategies, as well as attempted to group them (Biggs, 1999; Chi, 2009; Entwistle, Hanley, & Hounsell, 1979; Marton and Säljö, 1976; Pintrich, 2002; Sitzmann & Ely, 2011; Weinstein & Mayer, 1986; Winne & Hadwin, 1998; Zimmerman, 2004) (Table 1).

Table 1

*Learning Strategies Frameworks.*

| Framework | Categories | Purpose | Benefits for my Study |
|---|---|---|---|
| **Weinstein and Mayer's (1986)** | 5 groups of learning strategies: rehearsal, elaboration, organization, metacognition, and motivation | Provides comprehensive classification of wide variety of learning strategies | Allows for studying strategies in organized manner |
| **Self-regulated learning strategies: Winne, Hadwin (1998) and Pintrich (2000)** | 4 phases of self-regulation:<br>task definition, goal setting and planning, enacting or using learning strategies, and adaptation to metacognition | Describes stages of academic task processing | Highlights the differences between deep and surface learning strategies |
| **Chi's framework of active learning (2009)** | 4 modes of overt engagement activities:<br>passive, active, interactive, and constructive | Describes the overt process of active learning and underlying learning processes from learner's perspective | Highlights the importance of all types of strategies for learning process |
| **Marton and Säljö's learning strategies framework (1976)** | 2 learning approaches:<br>learning approach focused on understanding a learning approach focused on reproducing | Differentiate approached that students use based on their intentions and demands of the context | Highlights the importance of using deep learning strategies for meaningful learning and better learning outcomes. Focuses on the importance of the context |

***Weinstein and Mayer's learning strategies framework.*** Weinstein and Mayer's (1986) framework groups learning strategies into five major groups: rehearsal, elaboration, organization, metacognition, and motivation. *Rehearsal* strategies are activities that identify and repeat important segments of the content to be learned, such as: memorizing, loud-reading, listing concepts, highlighting, putting special marks, underlining, using mnemonics, taking personal notes, and copying (Simsek & Balaban, 2010; Weinstein& Mayer, 1989). The cognitive goals of rehearsal strategies are to select important aspects in processed material and to transfer them to working memory for future use or study (Weinstein & Mayer, 1986). Selecting important parts of the assignment allows students to recall considerably more information and sets the stage for the effective use of higher level strategies (Peper & Mayer, 1986). However, if students are being taught only rehearsal strategies, they will achieve only limited short-term retention of information (Weinstein et al., 1989).

Learners using *elaboration* strategies symbolically construct new meaning from the content using such methods as using new words in a sentence, paraphrasing information, summarizing, matching, applying analogies, generating metaphors, making comparisons, writing questions, transforming information into another form (chart, graph, diagram, etc.), forming mental images, and trying to teach the content to someone else (Simsek & Balaban, 2010; Weinstein & Mayer, 1989). In other words, students use what they already know to make sense of the content they are trying to learn by retreating information from their long-term memory and integrating it with new knowledge (Weinstein et al., 1989).

*Organization* strategies involve activities that review the content to be learned and when the existing structure to be inappropriate, the student develops an alternative structure, including: outlining, creating tables, classifying, creating hierarchy, re-grouping, connecting pieces,

generating concept maps, and listing differently (Simsek & Balaban, 2010; Weinstein & Mayer, 1989). The cognitive goal of organization strategies is for the learner to purposefully select information to be transferred into working memory and then construct relationships between ideas. This encoding process is being referred as building internal connections (Weinstein & Mayer, 1989).

*Metacognition or comprehension monitoring* strategies are related to student self-awareness, self-monitoring and evaluation of one's capability in a particular content area, and include: self-critique, self-questioning to check understanding, taking responsibility, personal reflection, individual monitoring, and changing study habits (Simsek & Balaban, 2010; Weinstein & Mayer, 1989). In other words, students evaluate their performance and try to come up with better ways of learning; establish learning goals, and assess if those goals were met. And, finally, *motivational or affective* strategies related to students' conscious efforts to perform and feel better, include the following: attention focusing, directing anxiety, effective time management, reducing stress, reducing external distractions, developing interest, encouraging internal motivation, being alert and relaxed, and setting meaningful ideals (Simsek & Balaban, 2010; Weinstein & Mayer, 1989).

Numerous empirical studies (Blumenfeld & Meece, 1988; Simsek & Balaban, 2010) use the learning strategies classifications outlined by Weinstein and Mayer (1983) to investigate the relations between learning strategies and student achievement. For example a study of 278 successful and unsuccessful university students that researched the relationships between the five above mentioned learning strategy groupings and academic performance found positive and significant correlation between the researched constructs indicating that academically successful students used higher variety learning strategies more frequently (Simsek & Balaban, 2010). The

level of strategy use differed between genders and fields of study, female students employed learning strategies more than male students, and students involved in sports used metacognitive strategies the most (Simsek & Balaban, 2010).

Similar results were received in a study aimed to test relationships among the motivational beliefs, learning strategies, class participation, and academic performance of 672 first year medical students (Stegers-Jager, Cohen-Schotanus, & Themmen, 2012). The learning strategies under investigation were elaboration, organization and metacognition as well as time management and effort regulation. This study suggested that participation mediates the relationships between motivation and learning strategies and medical school performance.

Weinstein and Mayer's learning strategies framework (1986) offers a comprehensive classification of learning strategies. A number of strategies from this framework are under investigation in my research as well (memorizing, seeking meaning, making comparisons and relating ideas, self-monitoring), however the framework in its entirety cannot be applied to the limited context of short-term professional continuing education programs.

***Self-regulated learning strategies: Winne, Hadwin and Pintrich.*** Self-regulated learning is described by numerous researchers as active learning when students effectively manage their own learning through monitoring and strategy use (Graham & Harris, 1993; Pintrich, 2004; Winne & Hadwin, 1998; Zimmerman, 1998). Winne and Hadwin (1998) proposed information-processing theory of self-regulated learning that was further elaborated and complemented by Pintrich (2000). According to Winne and Hadwin, self-regulation involves four basic phases: *task definition, goal setting and planning, enacting or using learning strategies,* and *adaptation to metacognitio*n (Green & Azvedo, 2007). Following these phases, students first gather information about the task, develop task standards and criteria for success,

and examine their motivation and beliefs about act of studying to define the task. Based on this information, students then set goals and plan how to accomplish the task. These goals depend on the task standards determined earlier by the student. The enactment stage involves using learning strategies such as searching, monitoring, assembling, rehearsing, and translation. The processes that occur in this stage are cognitive and not metacognitive in nature (Green & Azvedo, 2007). Finally, the last phase is adaptation, when students compare products with standards and determine how to modify their strategy to achieve higher performance in the future. Such metacognitive monitoring may lead to a change of goals and plans.

These four phases are incorporated in COPES (conditions, operations, products, evaluations, standards) typography of tasks where operations are performed in each of the stages under certain conditions with observable products to generate evaluations against certain standards (Winne & Hadwin, 1998). The authors stated that all academic tasks encompass these four phases. The differentiation between deep and surface learning strategies is happening when students, as a result of metacognitive monitoring, choose to use standards associated with profound understanding and knowledge grows (for deep strategies) or performance orientation standards associated with mere task completion (for surface strategies) (Winne & Hadwin, 1998).

Pintrich (2000) further elaborated and complemented Winne and Hadwin's framework (1998) by creating a four by four matrix that includes self-regulation phases (task identification and planning, monitoring and control of learning strategies, reaction, and reflection) and broad categories of cognition, motivation, behavior, and context. Various learning strategies (e.g., rehearsal, elaboration, organization, and critical thinking, planning, monitoring, regulating, managing time and study environment, effort management, peer learning, and help-

seeking) are assigned to different categories (Pintrich & DeGroot, 1990). Pintrich (2002) also argued that certain strategies are applicable across all or most academic disciplines or subject matter domains. In addition, he also discusses two categories to these strategies: superficial processing strategies, which include surface level processing such as rehearsal, and deeper processing strategies, which include elaboration and organization (Pintrich, 2002).

Research studies looked at learning strategies and student achievements through the lens of self-regulated learning (Haverila, Myllyla, & Torp, 2009; Sitzmann & Ely, 2011). A meta-analysis of self-regulated learning at work-related training programs examined the current state of research on self-regulated learning and the effect of self-regulation on learning outcome (Sitzmann & Ely, 2011). This research inspected commonalities of seven leading theories in the field of self-regulated learning and derived a framework of 16 fundamental constructs that constitute self-regulated learning (Sitzmann & Ely, 2011). The results of the meta-analysis were based on the findings of 369 research reports, including 430 independent samples gathered from 90,380 trainees (Sitzmann & Ely, 2011). Only nine of the constructs proved to have a significant effect on learning, including the metacognitive strategies construct which had a moderate effect size (Sitzmann & Ely, 2011). The results of the study also demonstrated that both awareness of the metacognitive strategies, as well as ability to use them are predictors of learning (Sitzmann & Ely, 2011).

Further, several studies highlighted the importance of individual strategies for successful learning (Dobrovolny, 2006; Haverila et al., 2009). Strategies such as reflection, relatedness to prior experience, use of conversations, and authentic experiences were mentioned most often in a case study of self-regulated learning strategies in an adult online course (Haverila et al., 2009). Twenty participants produced narratives describing their learning process in an attempt to

investigate how adults use learning strategies for meaningful learning in web-based courses. Similar results were reported in a qualitative study of how adults use learning strategies in corporate self-paced technology-based programs (Dobrovolny, 2006). Seven participants produced 2,818 coded passages during interviews, "think aloud" protocols, and in their critical incident journals; analysis of this data revealed that during and after the course the strategy students used most was metacognitive assessment of knowledge (Dobrovolny, 2006). Students reported that when they had to compare course materials with their prior experiences, the following strategies helped them to evaluate the need for further involvement in the task: reviewing and rereading, taking notes, authentic experiences, seeking help, reflection, understanding the "big picture", self-check questions and examples, simulations and interactivity, discussions with mentors, and note taking.

The self-regulation learning framework addresses most of the strategies that I plan to study in my research, as well as divides strategies according to deep and surface processing; however, the short-term format and use of a lecture as the predominant teaching style of the continuing education programs present a challenge in using this framework. The duration of each individual class of the program is not long enough to research each stage of self-regulation. In addition, most of time during class students are listening to the lecture and not performing tasks that would require planning, enacting and monitoring of the process.

***Chi's framework of active learning.*** The Chi's framework views learning strategies through the lens of cognitive processes analysis in overt activities. The framework offers a way to classify overt activities and underlying learning processes. It focuses strictly on the learner perspective and does not take into consideration the impact of the instructor or system (Chi, 2009).

The four modes of overt engagement activities that constitute the framework are *passive, active, interactive, and constructive*. When students are oriented towards receiving information, for example listening to a lecture, reading text, or watching video, they are in *passive* mode. Students are in *active* mode when they do something with their hands or bodies, such as copying from the board, underlining text, pointing, repeating, paraphrasing, or manipulating objects. If students generate information beyond what was presented, they are *constructively* engaged. Learning strategies of this mode include comparing-contrasting, posing a question, drawing a concept map, self-explaining, forming hypotheses, reflecting, and self-monitoring. *Interactive* mode is occurring when two or more students are engaged in dialogue using such strategies as peer discussion, reciprocal teaching, joint explanation, building on peer contribution, and challenging a peer (Chi, 2009).

The most productive cognitive processes are happening in the *constructive* mode when a student not only infers new knowledge but also repairs and improves existing knowledge. Constructive mode strategies of comparing, connecting, inducing, analogizing, and generalizing enhance the process of learning and deepen understanding of new and old material (Chi, 2009). Students in constructive mode produce an overt outputs that are not contained or presented in the original learning materials, in other words they potentially can create new knowledge (Chi, 2009). Strategies used by the students in interactive dialogue are similar to the processes that a learner might undertake while being constructive alone (Chi, 2009). Empirical studies corroborate the idea that constructive engagement improves learning outcomes (Kastens & Liben, 2007; King, 1992; Klahr & Nigam, 2004).

Constructive mode strategies are probably the closest in their description and play similar role in the learning process as deep learning strategies (Biggs, 1999; Hadwin & Winne, 1998;

Marton & Säljö, 1976; Pintrich, 2000). Although Chi's framework (2009) also posits the passive and active modes processes as necessary for learning since they activate existing knowledge and encode new information by assimilating it with what is already known, thereby making knowledge more salient, stable, and retrievable. However, learning strategies can be classified as belonging to a certain mode (passive, active, constructive or interactive) only if they satisfy the characteristics presented in Chi's framework (Chi, 2009). For example, for learning activity to be considered constructive, it has to be overt and it has to produce outputs containing new ideas. Otherwise the strategy is not effective and does not contribute to student's cognitive engagement.

Chi's framework of active learning (2009) presents a novel perspective on learning strategies while discussing overt activities and underlying learning processes associated with such activities. For the purpose of this study, however, researching just overt activities presented a challenge, because the short-term format of professional programs, as well as limited amount of active exercises, makes observing overt learning activities difficult. In my research, I have to rely on students to self-report their covert learning activities. In addition, Chi's framework (2009) places a primary focus on the learners from the learner's perspective, independent from what an instructor or system does. As I am also interested in my research in the influence of teaching quality on the learning process.

***Marton and Säljö's learning strategies framework.*** The final learning strategies framework is based on research by Marton and Säljö (1976), who introduced the idea that when university students undertake an academic task they can adopt one of two learning approaches: a learning approach focused on understanding (employing deep learning strategies), or a learning approach focused on reproducing (employing surface learning strategies). Their studies led to

extensive research demonstrating that these different learning approaches emerge across a wide range of academic tasks (Biggs, 1999; McCintic-Gilbert et al., 2013).

Findings of the research based on the Marton and Säljö framework (1976) included evidence that students who adopt deep strategy learning approaches tend to have higher quality learning outcomes (Ibrahim, Freeman, & Shelley, 2012; McInerney et al., 2012). Consistent with Marton & Säljö (1976) research, Entwistle (2000) also found that when students apply deep learning strategies "the intention to extract meaning produces active learning processes that involve relating ideas and looking for patterns and principles on the one hand, and using evidence and examining the logic of the argument on the other" (Entwistle, 2000, p. 3). In addition using deep learning strategies, also known as knowledge transformation, involves monitoring the development of one's own understanding that leads to improved learning outcomes.

Students apply deep and surface learning strategies depending on their intentions and the demands of the situation. Deep strategy approach to learning is used by a student when there is a need to engage in the task appropriately and meaningfully, and, as a result, the student attempts to select the most appropriate cognitive strategies for the task (Biggs, 1999). Such cognitive strategies include elaboration, summarization, critical thinking, organization of information, metacognitive regulation, distinguishing essential versus non-essential information, relating ideas, integrating new information with what's already known, use of evidence, and monitoring comprehension of learning (Entwistle & Ramsden, 1983; Weinstein & Mayer, 1986).

When the intention of a student is to complete a task with minimal effort, while at the same time appearing to meet requirements, low-level cognitive activities are used instead of higher level activities that may be more appropriate for the particular task (Biggs, 1999). Such

low-level activities include applying a surface approach to learning, also known as information reproducing (Biggs, 1999). In the surface approach, the intention is to just cope with the task; students see the course as unrelated bits of information and fail to distinguish guiding principles or patterns (Entwistle, 2000). The goal of the student using a surface approach is reduced to simply reproducing parts of the content by routine memorization of facts and procedures, which leads to more restricted and passive learning processes; such strategies include syllabus-boundness, fear of failure, rehearsal, and routine memorization (Entwistle, 2000).

***The use of learning strategies, learning outcomes and teaching quality.*** A deep strategic learning approach is generally related to high levels of academic achievement and higher quality learning. For example, the results of a study on the influence of work experience on adult part-time student academic success demonstrated that lower academic success was associated with higher negative beliefs, lower intrinsic motivation, and the adoption of a surface learning approach (Ibrahim et al., 2012). Of the 614 part-time adult university students participating in this study, those who used a deeper learning approach displayed greater intrinsic motivation and greater learning orientation (Ibrahim et al., 2012). This study is especially relevant since it is one of few that investigated approaches to learning with adult professional audiences (Ibrahim et al., 2012).

The links between the type of learning strategies used and learning outcomes emerged clearly in study results (Fenollar, Román, & Cuestas, 2007; Rodroguez & Cano, 2006; Simons, Dewitte, & Lens, 2004). A study of 388 university students demonstrated that students using deep learning strategies achieved the highest academic performance, and found that the difference between deep and surface strategy users in terms of their achievements is positively related to the former and negatively to the later (Rodriguez & Cano, 2006). Similar results were

obtained in the study of 553 university students in Spain (Fenollar et al., 2007), and a study which included 184 first-year nursing students (Simons et al., 2004). Meta-analysis which examined a number of studies comparing the use of deep and surface learning strategies, also demonstrated that the use of meaningful, deep cognitive strategies is positively predictive of performance, while surface strategies are negatively predictive (Bernacki, Byrnes, & Cromley, 2012).

Another important idea of Marton and Säljö's learning strategies perspective is that cognitive engagement and choice of learning strategies is a function of both the individual and learning context; the use of learning strategies emerges as a result of the interaction between a student's personal characteristics and the contextual conditions of their learning (Biggs, 1999). Cognitive engagement is malleable and students can demonstrate different levels of engagement during the learning process ranging from memorization to the use of metacognitive learning strategies, as well as both surface and deep approaches to learning in response to variations in the environment or based on their individual characteristics (Biggs, 1999; Fredricks et al., 2004). In other words, the level of cognitive engagement and use of deep level learning strategies can be facilitated by classroom contexts and instructional practices that include the teacher, peer support, scaffolding, task types, and task characteristics (Fredericks et al., 2004). Effective teaching practice leads to students using higher cognitive level processes; deep and surface approaches are not fixed characteristics of students, but are reflections of how students relate to the teaching and learning environments (Biggs, 1999).

Research results provide further support for this idea. For example, a study of types of instruction in the concept-oriented reading experimental program concluded that instructional practices, while important, do not directly impact student outcomes; instead, they indicate

student engagement is the mediating factor in how classroom instruction influences student outcomes (Guthrie, Wigfield, & VonSecker, 2000). Additional research examines how cognitive engagement defined as high-level thinking strategies relates to classroom tasks and teacher behavior. The results confirm the idea that classroom discourse can increase student engagement which in turn has a strong positive effect on achievement, and strategy use was higher when teachers pressed for mastery as well as for participation (Blumenfeld & Meece, 1988; Nystrand & Gamoran, 1991).

To summarize, Marton and Säljö's (1976) learning strategies framework, which was further elaborated and complemented by Entwistle (2000) and Biggs (1999), presents the most useful perspective for studying learning strategies in the CCEO continuing education program (Table 1). This framework highlights the importance of using deep learning strategies for meaningful learning and better learning outcomes. Moreover, a student's choice of learning strategies is seen as both a function of the individual and learning context. The student individual context in my research includes a student's motivation to learn, previous learning experience, work experience, types of licenses, number of years on the job, and age. The focus on the learning context allows me to connect learning strategies with teaching methods used in the program. The instrument used in this study to research students learning strategies, the Revised Approaches to Study Inventory (Richardson, 2005), is also based on this perspective and previous research that utilized this framework.

**Teaching Practices that Enhance Students' Cognitive Performance**

One of the problems of practice addressed in this research is improving the quality of teaching. As mentioned earlier, effective teaching practices positively influence learning outcomes by increasing students' cognitive engagement and use of deep learning strategies

(Guthrie et al., 2000). Reviewing literature on teaching methods that enhance students' cognitive performance helped me in evaluating current educational practices used in the program, as well as, provided background necessary for deciding whether instructional changes are needed.

Multiple researchers agree that the most effective way of encouraging students to use deep learning strategies is direct strategy instruction (Baeten et al., 2010; Butler, Elaschuk, Poole, 2000; Chinn, 2011; Pintrich, 2002; Pressley & Harris, 2008; Weinstein et al., 1989). In other words, naming and explaining the strategy, modelling its effective use, presenting opportunity to practice it, scaffolding it, pointing out when strategy was used, and discussing benefits of using the strategy (Chinn, 2011) provides students with knowledge and skills needed to for successful use of deep leaning strategies in the classroom and beyond. Arguably, learning strategies can be invented by the students. In fact, many teachers assume that students will be able to acquire metacognitive knowledge on their own (Pintrich, 2002). Though helping students become more knowledgeable of and responsible for their own cognition and thinking (Pintrich, 2002) seems to be a more efficient way to go. As Hock & Mellard (2011) commented on developing reading skills in students: poor readers either did not invent their cognitive learning strategies or don't know when to use them.

Further, it is not expected that teaching learning strategies will become a separate course, it is rather a part of the usual content-driven lesson in different subject areas (Pintrich, 2002). Embedding strategy teaching within regular curriculum seemed to provide better results in terms of strategy application (Chinn, 2011; Pressley & Harris, 2008). Another important aspect of teaching learning strategies is connecting them with real life situations and professional needs. Discussing strategy relevance to professional practice and incorporating professional examples

into teaching places additional importance and increase use of learning strategies (Ryan et al., 2004).

Next, the structure of the task and cognitive load play a role in teaching learning strategies to students (Bumenfield & Meece, 1988, Hock and Mellard, 2011, Lodewyk, Winne, Jamieson- Noel, 2009, Winne & Hadwin, 1998). For example, in their attempt to research the link between cognitive factors in learning and instruction on specific tasks within authentic classroom, Lodewyk et al. (2009) reported that students' use of learning strategies depended on how well the task was structured. Another aspect of strategy teaching is addressed in the study by Hock and Mellard (2011). Two hundred and five adult students in an 8-week basic adult education program participated in their study. Instructors in control groups included in their course design multiple learning strategies that supposed to help students acquire, express and store information. An explicit instructional methodology was provided for each strategy. However, the authors found no significant difference between groups for reading outcomes. Based on the findings of the study, authors suggested that cognitive load should be adjusted and strategies should be modified to meet the needs of learners with cognitive difficulties, specifically more practice repetitions and smaller information blocks.

Several other authors provided suggestions how to teach learning strategies. Dobrovolny (2006) proposed to incorporate in instructional design a number of pauses or checkpoints where metacognition will take place, giving students opportunity to self-assess, self-correct, practice or seek help. He also suggested giving students opportunity to explain the course content to another student to vocalize their own strategies (Dobrovolny, 2006). King (1999), in her research of discourse patterns in mediating peer learning, stated that group interaction can promote students' cognitive capabilities. While working in a group, thinking aloud can change structure of

individual knowledge by clarifying and elaborating ideas, evaluating existing knowledge and identifying gaps. (King, 1999). The results of King's work demonstrated that all three discourse patterns researched (complex knowledge construction, problem solving and peer tutoring) have been found to develop group cognitive activity, as well as students' cognitive processes (King, 1999). Furthermore, Schraw (1998) presents an instructional aid to promote cognitive strategies in the classroom. Strategy Evaluation Matrix (SEM) includes information how, when and why to use a particular strategy. In addition to the matrix, Schraw (1998) suggested using Regulatory Checklist (RC) to stimulate students' self-regulation. Based on the research by King (1991), RC "enables novice learners to implement a systematic regulatory sequence that helps them control their performance" (Schraw, 1998, p. 120).

To summarize the literature findings, the deep learning strategies and their prescribed applications taught to students can enhance the quality of individual cognitive capabilities. By choosing appropriate instructional methods, adult educators can further develop the existing learning strategies of their students, introduce them to new strategies, and help students better understand when, how and why to apply specific strategies for use in class and beyond.

**Exploring the Link between Motivation and Use of Learning Strategies**

The two central theoretical concepts of this research, motivation and learning strategies/ cognitive engagement, are not studied in isolation. In order to obtain rich and in depth data about the CCEO continuing education program, I intend to investigate student motivation-learning strategy clusters as a composite measure of these highly interdependent indicators. Reviewing literature on relations between motivation and learning strategies helped me answer the first and second research questions of this study.

Research studies have explored the link between motivation and the use of learning strategies (Entwistle, et al., 1979; McClintic-Gilbert et al., 2013; Murayama et al., 2013). Their conclusions add weight to the argument that the quality of motivational orientation is related to the choice of approaches to learning and, consequently, to the choice of cognitive and metacognitive strategies used by students. Using both self-determination theory and learning strategies theory, a study of 90 middle school students exploring the relationships between motivational orientations and learning strategies (McClintic-Gilbert et al., 2013) and a study examining how motivation, learning strategies, and intelligence predict long-term growth in student mathematics achievement over 5 years (grades 5 through 10) (Murayama et al., 2013) found that higher degrees of intrinsic motivation predicted the use of both deep and surface learning strategies, while higher degrees of extrinsic motivation predicted the use of only superficial strategies (McClintic-Gilbert et al., 2013). In addition, the results indicated that motivational and strategy variables turned out to be significant predictors of growth in academic achievement over time (Murayama et al., 2013).

Because the use of learning strategies is part of a bigger construct of engagement, it is useful to also look at studies exploring the link between engagement and motivation conceptualized through the self-determination perspective. Recent research has shown that intrinsic motivation and higher levels of extrinsic motivation positively predict higher level of student cognitive engagement (De Naeghel, Van Keer, Vansteenkiste, & Rosseel, 2012; Skinner & Chi, 2012; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009). Findings of the studies demonstrated that autonomous reading motivation is positively associated with teacher ratings of student engagement, while reading engagement was positively related to student reading comprehension (De Naeghel et al., 2012); a student's perceived autonomy, competence, and

intrinsic motivation uniquely predicted engagement in the garden, which in turn, predicted academic engagement and achievement in school (Skinner & Chi, 2012); and, finally, students with higher motivation display better cognitive processing (elaboration, critical thinking, organization, and rehearsal), more determination, more meta-cognitive self-regulation, and a higher level of achievement than students with low motivation (Vansteenkiste et al., 2009). In addition, endorsing controlled motives at the expense of autonomous motives undermines various learning strategies and has a negative effect on learning outcomes (Vansteenkiste et al., 2009).

To summarize, research in the field of educational psychology demonstrates the relationship between motivational orientations and use of learning strategies. However, the samples of the studies described above, children, teens, and young adults, are not comparable with the sample of my proposed research study. The adults comprising the sample of CCE officials, have an immediate need to apply received knowledge in a strategic manner in their everyday professional activities, unlike children, teens, and young. And, although findings from the existing body of research have important consequences for the broader discussion of learning strategies use, their limitations suggest the need for additional studies with an adult professional audience.

**Person-centered Approach to Motivational Profiles**

As mentioned previously, highly interdependent concepts of motivation and cognitive engagement/learning strategies of the students in the CCEO continuing education program is reviewed through clustering students in motivation-learning strategies groups. To address the first research question on the distribution of the students of the CCEO continuing education program in motivation-learning strategy clusters I used a person-centered approach.

A person-centered approach to motivational profiles is used to identify groups of individuals who share particular characteristics or relationships among characteristics, and is well suited for addressing research questions that deal with group differences in patterns of development (Laursen & Hoff, 2006). The more traditional variable-centered approach describes associations between variables, and is suitable for research questions that explore relationships between predictor variables and outcomes (Laursen & Hoff, 2006). Relative to motivation, a variable-centered approach is usually focused on the effects of motivational dimensions on student learning and performance (Vansteenkiste et al., 2009). In contrast, a person-centered approach treats variables less as predictors and outcomes, and more as individual properties which are found in different combinations in different individuals; it examines relationships among variables at the level of the individual, and then groups individuals who show similar patterns of relationships into a profile (Laursen & Hoff, 2006; Wormington, Henderlong Corpus, & Anderson, 2012).

Almost all research on self-determination theory has used a variable-based approach. However, since students can display both autonomous and controlled motivational orientations at the same time with respect to the same object (Schiefele, 2009), a person-centered approach to motivational profiles allows researchers to gain better insight into this complex construct. As discussed previously, self-determination theory is based on a multidimensional view of the concept of motivation (Vansteenkiste et al., 2006), and addresses motivation in terms of understanding optimal student functioning in school (Ratelle, Guay, Vallerand, Larose, & Senécal, 2007).

In recent years, some studies have begun to use a person-centered approach in the context of self-determination theory. Self-determination theory, with its motivational orientations, has

been utilized by researchers using a person-centered approach to explain variation in student learning strategies, performance, persistence, effort regulation, and cheating behaviors (Deci & Ryan, 2000; Kusurkar, Croiset, Galindo-Garré, & Ten Cate, 2013; Vansteenkiste et al., 2009). The objective of Vansteenkiste et al.'s (2009) study was to map the motivational profiles of students based on their scores for autonomous and controlled study motivation, as distinguished within self-determination theory, and to investigate how groups of students differed on a variety of learning outcomes, such as student use of cognitive and metacognitive strategies, determination, cheating behavior, and student academic achievement. Cluster analysis of the collected data identified four motivational profiles, and the results indicated that students in the good quality motivation cluster (high intrinsic and high extrinsic motivation) used a greater variety of deep learning strategies (e.g., elaboration, organization) when cognitively processing learning material and more efficiently organized their study time (Vansteenkiste et al., 2009).

Kusurkar, Croiset, Galindo-Garré, and Ten Cate's (2013) study of 844 medical students used combinations of high and low intrinsic and extrinsic motivation to generate student motivational profiles and test whether they were associated with self-reported study effort, academic performance, and level of student exhaustion. The results indicated that a high intrinsic motivational profile is associated with good study habits, deep learning strategies, academic performance, and low study exhaustion (Kusurkar et al., 2013). Academic achievement was also greater in students in the cluster that demonstrated high intrinsic and extrinsic motivation; however, it is interesting to note that the same students also has higher surface strategy use (Kusurkar et al., 2013). A study by Hayenga and Corpus (2010) using the same methodology provided results consistent with previous studies: clusters with high intrinsic motivation coupled with low extrinsic motivation received higher grades. The authors also included a longitudinal

perspective to their study that demonstrated that motivational profiles are not stable and the level of motivation declined over a period of one year (Hayenga & Corpus, 2010).

In contrast with previous studies that used only composite scores of intrinsic and extrinsic motivation for person-centered clustering, a number of researchers (Bioche & Stephan, 2014; Ratelle et al., 2007; Wormington et al., 2012) applied the motivational types outlined in organismic integration theory (Ryan & Deci, 2000). This approach further detailed the different forms of extrinsic motivation, including external regulation, introjected regulation, identified regulation, and integrated regulation. Ratelle et al. (2007) conducted a series of studies with high school and college students that concluded groups of students with high autonomous/high controlled (introjected, identified) motivation had higher degrees of academic adjustment. Similar results were obtained by Wormington et al. (2012) in a study of high school students, and by Bioche and Stephan (2014) in a study of first-year university students. These findings may have useful implications for instructional practice and type of motivation endorsed in the classroom; in addition, the studies strengthen support for using motivational profiles to characterize not only high or low orientations toward self-determination, but also to describe students with fairly equivalent levels of autonomous and controlled forms of motivation (Bioche & Stephan, 2014).

Finally, a person-centered methodology was applied in studies by Van den Broeck et al. (2013) and Moran et al. (2012) to evaluate the motivational profiles of professionals in the workplace. Both studies used self-determination theory to identify motivational clusters in order to relate motivation to organizational factors such as need satisfaction, job performance, work environment perceptions, job satisfaction, work enthusiasm and engagement, and the lowest levels of strain and burnout (Moran et al., 2012; Van den Broeck et al., 2013). The profiles

associated with a high level of autonomous and high level of controlled motivation had the most favorable level of correlates, and these results are consistent with findings of other studies that investigated student academic adjustment (Kusurkar et al., 2013). The results of these studies highlight the importance of studying motivational profiles in the workplace while investigating learning motivation of the professionals. For the purpose of my research, comparing these two types of motivational profiles can present a unique perspective on motivation in continuing professional programs.

In summary, a person-centered approach combined with a self-determination theory motivational orientation leads to the creation of distinct motivational profiles that can offer unique insight into the effect of motivation on cognitive engagement. Using the motivational types outlined in organismic integration theory, instead of the composite scores related to autonomous and controlled motivation, provides a more refined picture and identifies subtle differences in motivational profiles that allowed me to gain a better understanding of maladaptive learning patterns in the CCEO continuing education program. In addition, the person-centered approach to motivational profiles draws attention to motivation diversity and the fact that student motives are multiple and there are various ways to achieve learning and academic success. Identifying different combinations of autonomous and controlled motivation could also help in customizing teaching activities to improve student use of learning strategies for different groups of students.

**Summary**

The review of the literature on motivation, learning strategies and the person-centered approach provided broad definitions of these concepts and allowed me to better position my research study within the current body of knowledge. The self-determination theory of

motivation (Ryan & Deci, 2000) provided a functional framework for studying student motivation in the CCEO continuing education program. Analyzing various learning strategies classifications allowed me to select the most appropriate one for my research. Reviewing empirical research that uses a person-centered approach to motivational profiles clarified the capabilities and benefits of this method.

However, there are certain limitations of the reviewed studies in relation to the CCEO continuing education program at the center of this proposed study. The majority of the current research on learning strategies overlooks the important problem of developing deep approaches to learning in adults. While it is true that people continue to acquire learning strategies throughout their adult life (Pintrich, 2002), it does not necessarily follow that they are doing it effectively without help. Moreover, most of the studies describe long-term courses where there are more opportunities to introduce students to deep learning strategies (Fenollar et al., 2007; Ibrahim et al., 2012; Rodroguez & Cano, 2006; Simons et al., 2004); however, most working professionals are more likely to attend short-term seminars. Also, most of the studies on motivation and cognitive engagement use self-report as the primary data collection method which impact the internal validity of the data. Finally, the studies do not discuss the transfer and use of learning strategies in workplace professional activities. All of these limitations suggest the need for additional research on deep learning strategies and motivation in the context of short-term, practice-oriented continuing education courses for an adult audience.

## Methods

As the purpose of this study is to assess the current level of student motivation and use of learning strategies related to the CCE officials' continuing education program, and to identify meaningful patterns of these variables using a person-centered approach. I used an explanatory mixed-methods design, with quantitative data being collected first, followed by the qualitative data to support and elaborate on the quantitative results (Creswell, 2005). To address the study research questions, I quantified the relations between students' motivation, use of learning strategies, students' personal characteristics, and students' professional motivation (Creswell, 2009).

The quantitative part of the research study employed a survey method using self-administered questionnaires (see Table 5) that helped to generalize from a relatively small sample to a population. Inferences then were made about current motivational profiles of students in the continuing education program and CCE official professions, and their use of deep and surface learning strategies while in the program (Creswell, 2009). To insure that survey modifications are appropriate for this research, a cognitive pre-testing was conducted prior to administering the survey. Next, based on the survey results, I ran a cluster analysis to identify naturally occurring motivational profiles and match them with learning strategy use patterns and patterns of work motivation. In addition, to broaden my understanding of the learning strategies, I investigated the relationship between the use of individual learning strategies and students' personal characteristics such as gender, age, type of license, years of experience, and previous level of education. Finally, students' motivational profiles were matched with students' motivation to do their job, that provided useful data to better understand motivational intend of the program students.

The qualitative part of the study employed an observation method using observation protocol to research current instructional methods in the program. I observed number of seminars conducted by the instructors who taught the classes where surveys were previously administered. The focus of observation was teachable moments that target learning strategies and instructional methods that promote use of learning strategies.

**Sample**

The total size of the research population (N) is approximately 7,000 students. The group of code enforcement officials is rather homogeneous as most have the same background and perform similar professional roles in their everyday jobs. Ninety-five percent of the participants of the program are male and the majority have had blue-color construction jobs in the past and no college education. The participants may have up to nine different licenses, based on their job responsibilities and previous professional experience.

To select participants, this study used a single-stage random sample selection process (Creswell, 2009). I stratified the population only in terms of type of licenses held (Flower, 2002, as cited in Creswell, 2009), since it was possible that certain license type holders might prefer different self-regulation strategies (e.g., electrical inspectors vs. building inspectors). However due to the fact that more than half of the students have multiple licenses, it was impossible to obtain data on correlation between license type and students' use of learning strategies.

A sufficient study sample size of ±5% precision level with 95% confidence level ("Determining Sample Size", n.d.) is approximately 350 students. The surveys were offered at 28 seminars with 707 total number of participants. 405 completed surveys were collected that constitutes 57% response rate. However, this number might be significantly higher because multiple students could take more than one seminar but participated in survey only once. Since

the participation in the survey study was fully anonymous, it was impossible to calculate response rate accurately. As I anticipated, the final sample consisted of predominantly male participants (93%), who are older (57% older than 55), with various amount of years on a job, with less than Bachelor's degree (65% of sample) representing all nine license groups.

**Cognitive Pre-testing**

To address the cognitive validity of the modified survey questionnaires used in this study, a method of cognitive pre-testing was used (Karabenick et al., 2007). Current research in education addresses the measurement validity of self-report surveys, and the term cognitive validity has been used to describe evidence of how respondents process thoughts, feelings, beliefs, or experiences as they respond to survey items (Karabenick et al., 2007). Responding to any survey question involves several tasks the student has to perform: interpreting the question, retrieving information from memory or making a judgment on the spot, and formatting the answer depending on the context (Schwarz, 2007; Karabenick et al., 2007). The purpose of cognitive pre-testing is to investigate whether respondent interpretations of the self-report surveys are consistent with my assumptions and the intended meanings I give to the constructs the items are designed to measure.

Cognitive pre-testing is an interviewing technique designed to obtain data from respondents about their cognitive processing while answering a survey question, and can identify conceptual problems with the survey constructs and inform modifications to improve the existing instrument (Karabenick et al., 2007). Cognitive validity is determined according to whether respondent process descriptions and discussions of the item correspond with theoretically defined validity criteria (Karabenick et al., 2007). I interviewed four program students

individually, asking them to address one survey question at a time, followed by answering three questions about each item:

- How do you understand this question/statement?
- What experiences, thoughts, and feelings did you consider when thinking about this question/statement?
- Why did you choose this answer?

Based on the results of the cognitive pre-testing, I modified the self-report surveys to better reflect student experiences.

The majority of the questions remained unchanged as a result of the cognitive pre-testing. All interview participants agreed that questions dealing with students' personal characteristics were clear and did not require revision. All four participants interpreted most of the questions similarly and close to the intended meaning of the questions. One common theme that came up several times during the interviews was relating answers to the work experience instead of learning experience. As a result, the base questions of each questionnaire, as well as a survey administrator's script were somewhat modified to emphasize more learning experience in the CCE officials continuing education program. Nine questions total were somewhat modified to simplify their understanding and to ensure that participants interpret those questions correctly. Summary and reasons for modifications are presented in Table 2.

Table 2

*Cognitive Pre-testing Question Modifications.*

| **Original Question** | **Revised Question** | **Reason for Change** |
|---|---|---|
| *Academic Motivation Scale* | | |

| | | |
|---|---|---|
| …although it does not make a difference in my professional activity whether I attend them or not. | …because I have to, although it does not make a difference in my professional activity whether I attend them or not. | Most of the questions start with "because". Inconsistency lead to misinterpretation. |
| …because I chose them as means to reach my career goals. | …because attending these seminars will help me to reach my career goals. | Participants' answers were about work, not educational program. Adding "these seminars" helped to refocus participants on educational program. |
| …because I want to be viewed more positively by my employer. | …because I want to be viewed more positively by my boss. | The word employer was confusing and distracting. Many are employed by the city or State. "Boss" or "supervisor" was a clearer choice. |

*Revised Approaches to Study Inventory*

| | | |
|---|---|---|
| I'm not really sure what's important in seminar lectures, so I try to get down all I can. | Often I am not really sure what's important in the seminar, so I try to write down all I can. | The statement was unclear and caused confusion. |
| I often seem to panic if I get behind with learning new material at the seminar. | I often seem to get overwhelmed and get behind with learning new material at the seminar. | All participants agreed that the word "panic" does not apply to the program with no grading and no assessment. "Overwhelmed" fits the program context better. |
| When an interpretation or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence. | When an idea is presented in class or in the readings, I try to decide if there is good supporting evidence. | The word choice "interpretation or conclusion" seemed to distract participants from the focus of the question. |

| | | |
|---|---|---|
| Before tackling a problem or assignment, I first try to work out what lies behind it. | Before doing an assignment, I first try to figure out the problem behind it | The statement was unclear and caused confusion |

Work Extrinsic and Intrinsic Motivation Scale

| | | |
|---|---|---|
| …because I want to be a "winner" in life. | …because I want to be successful in life. | The word “winner” brought negative associations with the recent popular TV show scandal. |
| …I don't know why. We are provided with unrealistic working conditions. | …I don't know why. The demands of the job are too high | All participants found “unrealistic working conditions” word choice ill fit while talking about their jobs. |

## Instruments

**Questionnaires.** This study follows a survey method format using a cross-sectional, self-administered questionnaire with data collected at one point in time (Creswell, 2009). To assess the level of student motivation and accurately place this level on the self-determination continuum, I used the Academic Motivation Scale (AMS) questionnaire (Vallerand et al., 1992) (Appendix B). The questionnaire consists of 28 Likert-scale questions organized into four subscales measuring amotivation and the intrinsic and extrinsic motivational orientations of students ranging from 1 (“does not correspond”) to 7 (“corresponds completely”). The AMS questionnaire has been previously tested in a classroom context and validated for internal consistency (Vallerand et al., 1992). Some changes were introduced to the questionnaire to make it more suitable for the program context, as well as based on the results of cognitive pre-testing

described earlier (see Table 1). None of these changes is significant enough to present a threat to the validity of the questionnaire.

The AMS questionnaire is intended to measure the following motivational sub-types while asking students to indicate the reasons why they attend the continuing education program: intrinsic (e.g. "... for the pleasure I experience when I discover new job-related things I never knew before."), extrinsic integrated and identified motivation (e.g. "... because I choose to invest my time in what is professionally important to me."), extrinsic introjected and external motivation (e.g. "... because I want to be viewed more positively by my boss."), and amotivation (e.g. "... because I have to, although it does not make a difference in my professional activity whether I attend them or not."). Exploratory Factor Analysis (EFA) confirmed the 4-factor structure of the scale (responsible for 59% of variance) and confirmed internal validity of the subscales using Principal Component Analysis as an extraction method. Cronbach's Alpha reliability test (with cut-off 0.7) on each of the four factors demonstrated that questions were correlated enough to be considered reliable: the intrinsic motivation subscale ($\alpha$=.81), the extrinsic integrated and identified motivation subscale ($\alpha$=.93), extrinsic introjected and external motivation subscale ($\alpha$=.73), and amotivation subscale ($\alpha$=.73). The factor loading results are presented in Table 3. There were several questions that had higher loading on a different factor, however no changes were made to the original questionnaire. This decision was made based on several considerations: the AMS is not newly created instrument, but an existing instrument previously tested and validated; changes in the subscales might lead to the change in the definition of the construct (Bandalos & Finney, 2010). And, finally, all the questions that loaded on a different factors measured intrinsic and extrinsic integrated and identified motivation. Based on the previous research these motivational subtypes being the most self-determined on the

motivational continuum, have rather similar effect on the students' cognitive engagement (Deci et al., 1991), that is one of the central questions of this study. The AMS questionnaire provided data for the cluster analysis necessary to answer the following research questions of this study: *What are the implications of the student distribution in motivation clusters in the program?*, *What is the relationship between the students' motivational profiles and their use of learning strategies?* and *What is the connection between the students' motivational profiles in the continuing education program and their professional motivation?*

Table 3

*Factor Loading for Exploratory Factor Analysis with Promax Rotation of AMS Questionnaire Scales*

| Scale | I&I | INT | I&E | AMO |
|---|---|---|---|---|
| 1(INT) | .085 | **.649** | -.045 | -.096 |
| 2(I&I) | **.899** | -.094 | -.093 | .008 |
| 3(I&E) | .240 | -.077 | **.549** | .040 |
| 4(AMO) | .279 | -.294 | .089 | **.754** |
| 5(I&E) | .065 | -.113 | **.794** | -.004 |
| 6(I&I) | **.870** | -.148 | .100 | .010 |
| 7(INT) | **.746** | .058 | .107 | .027 |
| 8(AMO) | .058 | -.078 | .048 | **.780** |
| 9(INT) | .312 | **.575** | -.064 | -.039 |
| 10(I&E) | .272 | -.027 | **.549** | .112 |
| 11(AMO) | -.128 | .233 | -.095 | **.713** |
| 12(INT) | .049 | **.660** | .096 | -.026 |

| | | | | |
|---|---|---|---|---|
| 13(I&I) | .386 | .077 | **.405** | -.133 |
| 14(I&E) | -.070 | .280 | **.629** | -.097 |
| 15(AMO) | -.184 | .205 | .030 | **.713** |
| 16(INT) | **.649** | .245 | -.010 | -.075 |
| 17(I&E) | -.052 | .014 | **.789** | .043 |
| 18(INT) | **.735** | .040 | -.033 | -.057 |
| 19(I&E) | -.162 | .283 | **.573** | .132 |
| 20(I&I) | **.764** | .060 | .015 | .001 |
| 21(INT) | .222 | **.631** | .045 | -.022 |
| 22(I&I) | **.874** | -.003 | -.131 | .158 |
| 23(I&E) | -.011 | -.139 | **.852** | .080 |

Note. Factor loadings >.40 are in boldface. INT = intrinsic motivation subscale; I&I = extrinsic integrated and identified motivation subscale; I&E = extrinsic introjected and external motivation subscale; AMO = amotivation subscale

In order to address the following research questions, *To what extent if any does students' use of deep learning strategies depend on students' personal characteristics?* and *What is the relationship between the students' motivational profiles and their use of learning strategies?,* the cluster analysis data of the AMS was combined with the results of the Revised Approaches to Study Inventory (RASI) (Richardson, 2005) (Appendix C). The RASI questionnaire of 52 Likert-scale questions is intended to measure deep and surface learning strategies used by students on a 5-point scale ranging from 1 ("Never or only rarely true of me") to 5 (Always or almost always true of me"). RASI has been successfully used in previous studies and validated for internal consistency (e.g. Long, 2000; Duff, 2004; Zeegers, 2001). This questionnaire was also somewhat modified based on the results of the cognitive pre-resting (see Table 2).

This study used both, composite scores on deep learning strategies and surface learning strategies, as well as separate scores on each of the eleven assessed learning strategies. The deep learning strategies addressed in this research are critical thinking (e.g." I treat the course material as a starting point and try to develop my own ideas about it."), interest in ideas (e.g. "Regularly I find myself thinking about ideas from program courses when I'm doing other things."), metacognitive self-regulation ("If readings are difficult to understand, I change the way I read the material. I ask myself questions to make sure I understand the material I have been learning at the seminar."), monitoring effectiveness (e.g. "Before starting work on an exercise or a quiz, I think first how best to tackle it."), relating ideas (e.g. "I try to relate ideas I come across during seminars to those in practice or those learned at other seminars whenever possible."), seeking meaning (e.g." I usually try to understand for myself the meaning of what is being taught at the seminar."), and use of evidence ("When an idea is presented in class or in the readings, I try to decide if there is good supporting evidence."). Surface strategies are fear of failure (e.g. "I often seem to get overwhelmed and get behind with learning new material at the seminar."), help seeking (e.g. "When I can't understand the material in this course, I ask another student in this class for help."), peer learning (e.g." I try to work with other students to complete the course assignments"), and unrelated memorizing (e.g. "Often I'm not really sure what's important in the seminar, so I try to write down all I can."). The composite scores on deep and surface learning I correlated with motivational profiles; the individual strategies scores were related to the students' personal characteristics.

Finally, I used the 18-item Likert-scaled Work Extrinsic and Intrinsic Motivation Scale (WEIMS) to assess students' motivation for their profession (Tremblay et al., 2009) (Appendix D). A series of studies by Tremblay et al. (2009) revealed that WEIMS has construct, content,

and criterion validity when used in organizational settings. This questionnaire went through the same type of changes based on the cognitive pre-testing results as previously described surveys (see table 1). The variables measured by this questionnaire on a 7-point Likert scale ranging from 1 ("does not correspond") to 7 ("corresponds completely") were professional intrinsic motivation (e.g. "...for the satisfaction I experience from taking on interesting challenges."), professional extrinsic integrated and identified motivation (e.g. "…because it is important for the safety and well-being of people of New Jersey"), professional extrinsic introjected and external motivation (e.g. "...mainly because this type of work provides me with security."), and professional amotivation (e.g. "...I ask myself this question. I don't seem to be able to manage the important tasks related to this work."). Exploratory Factor Analysis (EFA) confirmed the 4-factor structure of the scale (71%of variance) and confirmed internal validity of the subscales using Principal Component Analysis as an extraction method. Cronbach's Alpha reliability test (with cut-off 0.7) on each of the four factors demonstrated that questions were correlated enough to be considered reliable: the professional intrinsic motivation subscale ($\alpha$=.88), the professional extrinsic integrated and identified motivation subscale ($\alpha$=.94), the professional extrinsic introjected and external motivation subscale ($\alpha$=.81), and the professional amotivation subscale ($\alpha$=.78). The factor loading results are presented in Table 4. No changes were made to the original questionnaire based on the previous research findings by Tremblay et al., 2009 who tested this questionnaire in various professional settings and determined the adequacy of factorial structure. Combining the results of the WEIMS and AMS questionnaires provided an answer to the fourth research question of this study: *What is the connection between the students' motivational profiles in the continuing education program and their professional motivation?*

Table 4

*Factor Loading for Exploratory Factor Analysis With Promax Rotation of WEIMS Questionnaire Scales*

| Scale | PI&I | PINT | PI&E | PAMO |
|---|---|---|---|---|
| 1 (PI&I) | **.997** | -.116 | -.083 | .038 |
| 2 (PI&E) | **.899** | -.047 | -.014 | .033 |
| 3 (PINT) | **.875** | .087 | -.137 | .041 |
| 4 P(I&I) | **.685** | -.190 | .323 | .047 |
| 5 (PAMO) | -.019 | .116 | -.018 | **.807** |
| 6 (PI&E) | -.067 | -.023 | **.885** | .025 |
| 7 (PI&I) | **.458** | **.421** | **-.073** | -.054 |
| 8 (PAMO) | .185 | -.121 | -.045 | **.848** |
| 9 (PI&I) | .340 | .280 | .306 | -.057 |
| 10 (PI&E) | -.243 | **.818** | .173 | .168 |
| 11 (PINT) | **.406** | **.611** | -.162 | .011 |
| 12 (PI&E) | -.071 | .022 | **.917** | -.053 |
| 13 (PAMO) | -.094 | .095 | .049 | **.800** |
| 14 (PINT) | .313 | **.694** | -.085 | -.075 |
| 15 (PI&E) | .075 | **.849** | -.046 | -.005 |
| 16 (PI&I) | **.525** | .253 | .145 | -.056 |
| 17 (PI&E) | .139 | .000 | **.770** | .026 |
| 18 (PI&I) | **.492** | .240 | .243 | -.026 |

Note. Factor loadings >.40 are in boldface. PINT = professional intrinsic motivation subscale; PI&I = professional extrinsic integrated and identified motivation subscale; PI&E = professional extrinsic introjected and external motivation subscale; PAMO = professional amotivation subscale

Over the course of one academic semester, participants of the CCE officials continuing education program were asked to complete three questionnaires combined into one package. The package also contained an informed consent form (Appendix A) and questions about participant personal and professional characteristics, including gender, age, educational level, years of professional experiences, and licenses held (Appendix E). There was a purposeful selection of seminars where the questionnaires were offered to ensure that different seminar instructors and subject areas were represented proportionally. However, since participation in the survey is voluntary, students with higher motivation levels were more likely to complete it. This presents a threat to the validity of the study that can be alleviated by intentional interviewing of students with lower levels of motivation, further triangulating of the results (Creswell, 2009).

**Observation.** In order to address the final questions of the study, *What instructional practices currently used in the program stimulate students' use and development of deep learning strategies?* I used an observation protocol (Appendix F). The instructional practices aimed at promoting students' high cognitive engagement were assessed using the observation protocol. The protocol included two sections: teachable moments (explaining, modeling, prompting to use, scaffolding or providing feedback on using a strategy) and instructional environments that promote high cognitive engagement.

Throughout one semester I conducted eight 2-hour observations of seminars taught by different instructors. The participating instructors were purposefully selected: all observed instructors earlier taught the classes where surveys were administered. I played the role of complete observer without participating in the seminar. The records were conducted in semistructured way, while using previously designed questions, I also noted down additional

relevant information (Creswell, 2005). The notes were later analyzed for common themes. Detailed description and discussion of these themes is offered in the following chapters.

Due to my experience as a manager of a program, I brought certain biases to this study (Creswell, 2005). Although every effort was made to ensure objectivity, these biases might have formed the way I viewed and understood what was happening at the seminars. I personally know all instructors and I have attended their seminars in the past. I commenced this study with the perspective that the instructors are highly respected professionals in their field with years of teaching experience and their instructional practices have been somewhat effective in the past. I also brought my beliefs that explicit teaching of learning strategies will increase the learning outcomes of the students and will compliment current instructional methods.

The instructors were not informed about the purpose of my observations. Although the IRB approval for the observations was obtained, I was also granted a waiver of informed consent. The knowledge that they are being purposefully observed might have altered the usual instructional methods used by the instructors.

Table 5

*Summary of Instruments.*

| # | **Collected Data** | **Research Question(s)** | **Category of Analysis** |
|---|---|---|---|
| 1 | Consent Forms | n/a | n/a |
| 2 | Cognitive Pretesting Interviews | n/a | Research questions |
| 3 | Academic Motivation Scale (AMS) | 1, 3, 4 | Academic motivation (Likert-scale) |

| | | | |
|---|---|---|---|
| 4 | Revised Approaches to Study Inventory (RASI) | 2, 3 | Deep and surface learning strategies (Likert-scale) |
| 5 | Work Extrinsic and Intrinsic Motivation Scale (WEIMS) | 4 | Professional motivation (Likert-scale) |
| 6 | Student Data (gender, age, type of license(s), years of professional experience, level of previous education | 3 | Students personal characteristics |
| 7 | Observations | 5 | Instructional methods that promote and develop deep learning strategies |

**Data Analysis**

A short overview of the quantitative and qualitative methods used in the study to answer corresponding research questions is presented in Table 6. All statistical calculations performed in this study were done using IBM SPSS Statistics, version 20 software.

Table 6

*Summary of Data Analysis Techniques*

| Research Question | Overview of Quantitative and Qualitative Analysis |
|---|---|

| | |
|---|---|
| 1. What are the implications of the student distribution in motivation clusters in the program? | Agglomerative hierarchical cluster analysis, *k*-means clustering, multivariate analysis of variance (MANOVA) |
| 2. What is the relationship between the students' motivational profiles and their use of learning strategies? | MANOVA, ANOVA, Tukey post-hoc test |
| 3. To what extent if any does students' use of learning strategies depend on students' personal characteristics? | MANOVA, ANOVA |
| 4. What is the connection between the students' motivational profiles in the continuing education program and their professional motivation? | MANOVA, ANOVA, Tukey post-hoc test |
| 5. What instructional practices currently used in the program stimulate students' use and development of deep learning strategies? | Observation analysis |

This study employs a person-centered approach that allows researchers to identify naturally occurring profiles rather than divide participants into artificial groups that do not necessarily reflect how motivations combine in the real world (Wormington et al., 2012). A

person-centered approach to motivational profiles is used to identify groups of individuals who share particular characteristics or relationships among characteristics, and is well suited for addressing research questions that deal with group differences in patterns of development (Laursen & Hoff, 2006). The analytic model behind the person-centered approach is based on the assumption that "the population is heterogeneous with respect to how the predictors operate on the outcomes" (Laursen & Hoff, 2006, p.379).

Cluster analysis is a statistical procedure associated with the person-centered approach (Vansteenkiste et al., 2009). In order to answer the first question of the study, cluster analysis was used to generate motivational profiles based on students' responses to the items assessing motivation. Motivational subtypes were grouped as follows: intrinsic motivation; extrinsic integrated and identified motivation; extrinsic introjected and external motivation; and amotivation. Individual raw data was used for the cluster analysis. These variables were discussed earlier while describing the AMS questionnaire. Cluster analysis aimed to maximize both between-cluster heterogeneity and within-cluster homogeneity (Hair, Black, Babin, Anderson, 2010). A combination of hierarchical and nonhierarchical clustering methods was chosen for this study to take advantage of each approach benefits (Hair et al., 2010). An agglomerative hierarchical clustering method was used to explore the number of clusters that naturally emerge, using complete linkage method as algorithm and squared Euclidean distance as similarity measure (Hair et al., 2010). Based on the previous research the final amount of clusters was determined to be between 3 and 5, with 4 cluster solution best fitting the data. (Hayenga & Corpus, 2010, Vansteenkiste et al., 2009, Wormington et al., 2012).

The next clustering method used was an iterative, nonhierarchical (*k*-means) clustering technique to fine detail clusters (Hair et al., 2010). In *k*-means clustering, the number of clusters

is selected prior to performing analyses. The first step of *k*-means clustering was iteratively finding the *k* centers starting with an initial set of centers obtained through the hierarchical clustering and then modifying them until the change between two iterations is small enough (Hair et al., 2010). After the initial cluster centers had been selected, each case was assigned to the closest cluster, based on its distance from the cluster centers. After all of the cases have been assigned to clusters, the cluster centers are recomputed, based on all of the cases in the cluster (Hair et al., 2010). The change in the clustering criterion that would result if the object were relocated to a different cluster is calculated, and those objects whose move caused the largest change in clustering criterion are transferred to a different cluster (Pastor, 2010). The procedure repeats until no cluster center changes considerably. At this point, final cluster centers that can be used to describe the cluster are established. To insure that clusters exhibit are distinct in terms of inner-cluster differences, MANOVA was conducted to examine the degree of heterogeneity for each new cluster.

A person-centered approach combined with the self-determination theory led to the creation of distinct motivational profiles that can offer unique insight into the effect of motivation on student use of learning strategies; it also simplifies the process of interpreting findings and makes study results more applicable to practice (Vansteenkiste et al., 2009). A one-way multivariate analysis of variance (MANOVA) was conducted to examine cluster differences in terms of preferred type of learning strategy used by students. Two measures of learning strategies were assessed: the use of deep and surface learning strategies. The detailed description of these variables is offered earlier while describing the RASI questionnaire. The clustering procedures resulted in four distinct motivational clusters that became independent variables for

MANOVA procedure. A follow-up post hoc test was performed to determine which of the clusters differ from each other.

In order to address the third question of the study, I again used a one-way multivariate analysis of variance (MANOVA). This statistical method considers the values of all dependent variables together so that comparisons can be made between groups by analyzing the differences in the means of the dependent variable between groups (Olejnik, 2010). The learning strategies under consideration were critical thinking, interest in ideas, metacognitive self-regulation, monitoring effectiveness, relating ideas, seeking meaning, use of evidence, fear of failure, help seeking, peer learning, and unrelated memorizing. These variables were measured using the RASI questionnaire (described earlier). The independent variables were represented by the following personal characteristics of the students: gender, age, level of education, number of professional licenses, and years of experience in the field (Appendix E).

A one-way multivariate analysis of variance (MANOVA) was also conducted to examine motivational cluster differences in terms of students' professional motivation and provide an answer for the fourth question of this study. Four composite scores of professional motivation sub-types were assessed: professional intrinsic, professional extrinsic integrated and identified motivation, professional extrinsic introjected and external motivation, and professional amotivation. Professional motivation was correlated with four distinct motivational clusters determined earlier. I also conducted a follow-up ANOVA to determine if any scores for motivational constructs were statistically significantly different between the clusters (Olejnik, 2010). Tukey post hoc test was performed to determine which of the clusters differed from each other.

In the next chapter I provide the detailed results of the statistical procedures and seminar observations conducted for this study.

## Results

The purpose of this study is to document motivational profiles and their learning-strategies-related correlates among the participants of the construction code enforcement officials continuing education program, and to identify meaningful patterns of these variables in order to assess the program. In addition, the outcomes of this research address the problem of practice and contribute to the improvement of the CCE officials continuing education program, by investigating the relationship between learning strategies that are preferred by the program students and their personal characteristics, as well as by examining how professional motivation influences the educational experience of the student. Combined, these results provide rich data needed to evaluate the effectiveness of the program, as well as to provide a set of recommendations to improve program instruction.

The study results are presented in five sections. First, I describe the findings from the cluster analysis, which generated motivational profiles for the students based on their motivation to participate and learn in the CCE officials continuing education program. Second, I present the relationship between students' motivational profiles and students' use of learning strategies, which was determined using one-way multivariate analysis of variance (MANOVA) and a post-hoc test. Third, I examine the extent to which students' use of learning strategies depends on their personal characteristics, such as gender, age, level of education, number of professional licenses, and years of professional experience. To obtain these results I conducted a series of MANOVA tests. Fourth, the final set of statistical results presented in this chapter provides a different lens of assessing the program: it connects the students' motivational profiles in the continuing education program with the students' professional motivation as a CCE official. The fifth and final results attend to classroom observations of the program instructors to address

learning strategies in their teaching. The statistical results offered in this chapter follow the order of the study's research questions.

**Motivational Profiles: Cluster Analysis Results**

To generate students' motivational profiles in the continuing education program, I used scores based on participants' answers from the motivational questionnaire on the following motivational sub-types: intrinsic, extrinsic integrated and identified motivation, extrinsic introjected and external motivation, and amotivation. Students' combined self-report on the motivational sub-types formed an individual motivational profile. The purpose of a cluster analysis is to match and combine individual motivational profiles that exhibit most of similarity into a cluster (Hair et al., 2010).

Prior to conducting cluster analysis, the frequency procedure addressed the distribution of the data and outliers. With acceptable level of skewness and kurtosis ±1, the data on students' motivation in the program is normally distributed. No outliers were detected by comparing minimum and maximum values. The results of the frequency procedure are presented in Table 7.

Raw data was used for the cluster analysis. The results of agglomerative hierarchical cluster analysis using complete linkage method as algorithm and squared Euclidean distance as similarity measure (Hair et al., 2010) determined that a four-cluster solution best fits the data. Based on the previous research the final amount of clusters was determined to be between three and five (Hayenga & Corpus, 2010, Vansteenkiste et al., 2009, Wormington et al., 2012). A three-cluster and five-cluster solutions did not produce theoretically distinct groups and did not differ in terms of outcome variables, that consequently led to a four-cluster solution (Hair et al., 2010). Outliers were included because they represent a valid and relevant group. A follow-up procedure, *K*-means clustering, was then used to refine the clusters and to produce cluster centers

for the final cluster solution (Pastor, 2010) (see Table 8). Figure 2 depicts motivational profiles based on the final cluster solution. Motivational subtypes determined the labels for the motivational profiles.

Table 7

*Frequencies. Motivational Subtypes.*

| | | Intrinsic Motivation | Extrinsic Integrated/ Identified Motivation | Extrinsic Introjected/ External Motivation | Amotivation |
|---|---|---|---|---|---|
| N | Valid | 368 | 368 | 368 | 368 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 4.524 | 5.330 | 3.033 | 2.60 |
| Std. Deviation | | 1.2998 | 1.1598 | 1.2015 | 1.2759 |
| Skewness | | -.538 | -.898 | .287 | .608 |
| Std. Error of Skewness | | .127 | .127 | .127 | .127 |
| Kurtosis | | -.046 | .973 | -.074 | -.203 |
| Std. Error of Kurtosis | | .254 | .254 | .254 | .254 |
| Minimum | | .714 | 1.000 | .000 | .000 |
| Maximum | | 7.000 | 7.000 | 6.714 | 6.750 |

Table 8

*Number of Cases in each Cluster and Final Cluster Centers (Means)*

| | N | Intrinsic Motivation | Extrinsic Integrated/ Identified Motivation | Extrinsic Introjected/ External Motivation | Amotivation |
|---|---|---|---|---|---|
| Self-Determined | 138 | 4.972 | 5.841 | 2.718 | 1.716 |
| Additive | 126 | 5.344 | 5.886 | 4.171 | 3.095 |
| Moderate | 44 | 2.617 | 3.964 | 1.679 | 1.881 |
| Low | 60 | 3.174 | 3.997 | 2.362 | 4.167 |

The first cluster was labeled “Self-Determined” and it was characterized by the high level of intrinsic, integrated and identified motivation, and low level of introjected, external motivation and amotivation. It comprised 37.5% of the sample (n=138). This cluster received the label “Self-Determined” because students that comprise this cluster showed above-average levels of intrinsic and identified motivation, the highest motivation levels on the continuum according to the extent to which the learner’s motivation is self-determined or internalized (Ryan and Deci, 2000).

Next, 126 students (34%) formed the second cluster labeled “Additive” where students showed high level of intrinsic, integrated and identified motivation and medium level of introjected, external motivation and amotivation. The measures of intrinsic, integrated and identified motivation for students of this cluster were comparable with the results from a previous cluster, however, the results demonstrate that students of the second cluster had higher score on absence of motivation.

Students with moderate level of intrinsic, integrated and identified motivation, and very low level of introjected, external motivation; and amotivation formed the third cluster labeled "Moderate". It comprised 12% of the sample (n=44). The main difference between this cluster and the forth cluster labeled "Low" (16% of the sample (n=60) was the difference in the score for amotivation. The students from the last cluster demonstrated high level of indifference towards the educational activities in the program.

These results indicated that each of the clusters exhibit somewhat distinctive characteristics. Also, no clusters contained less than 10 percent of observations that made results more meaningful for the analysis. In addition, the results of follow-up multivariate analysis of variance (MANOVA), a statistical test used to analyze the differences in two or more vectors of means, indicted that there were significant differences between clusters on all four variables, $F(12, 955) = 99.472$, $p < .0005$; Wilks' $\Lambda = .117$. The significant $F$ statistics provided initial evidence that each of the four clusters was distinctive (Hair et al., 2010).

Validation of the final clusters was achieved by examining differences not included in the cluster analysis but for which strong theoretical support enables the expectation of variation across the clusters (Hair et al., 2010). In other words, validity evidence for cluster solution can be established by demonstrating that the clusters relate to external variables in was anticipated by theory, logic, and previous research (Pastor, 2010). Based on previous research, the quality and quantity of motivation can serve as a predictor of use of learning strategies (De Naeghel et al., 2012; Skinner & Chi, 2012; Vansteenkiste et al., 009). The further described statistical test for differences in preferred type of learning strategies between four clusters, and statistically significant results of this test serves the purpose of cluster validation.

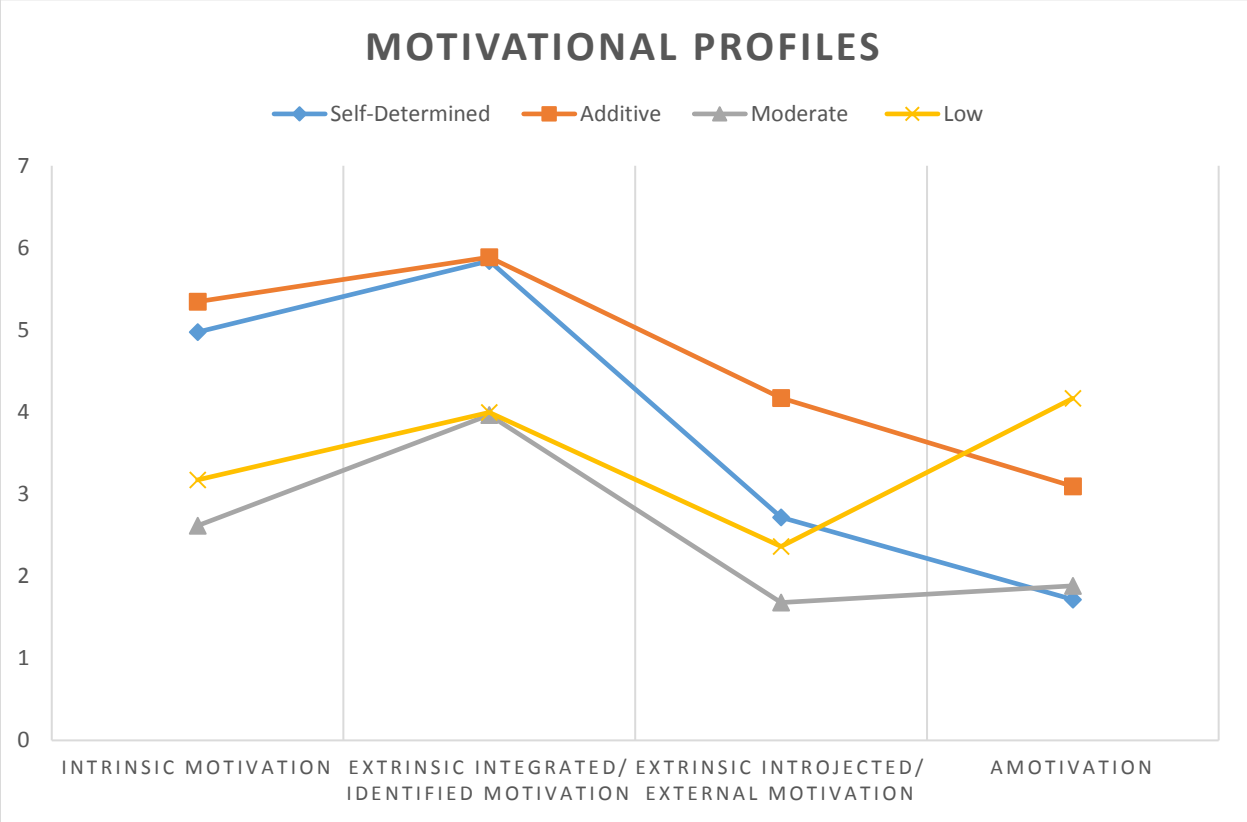


*Figure 2.* Motivational Profiles.

**Motivational Profiles and Learning Strategies**

To examine the relationships between students' motivational profiles and learning strategies preferred by the students, I conducted two statistical procedures. The purpose of the first test, a one-way multivariate analysis of variance (MANOVA), was to examine differences among the four motivational clusters in terms of preferred type of learning strategy--deep or surface--used by students. A composite score of deep learning strategies was based on students' answers from the learning strategies questionnaire on the following strategies: critical thinking, interest in ideas, metacognitive self-regulation, monitoring effectiveness, relating ideas, seeking meaning, and use of evidence. Surface strategies score combined data on such strategies as fear of failure, help seeking, peer learning, and unrelated memorizing. Data were expressed as mean and standard deviation. For the deep learning strategies, clusters demonstrated the following

results: the Self-Determined cluster ($M$ = 3.16, $SD$ = .6); the Additive cluster ($M$ = 3.35, $SD$ = .62); the Moderate cluster ($M$ = 2.24, $SD$ = .63); the Low cluster ($M$ = 2.74, $SD$ = .56) (see Table 3). For the surface learning strategies, the Self-Determined, the Additive, the Moderate, and the Low clusters revealed the following results: $M$ = 2.08, $SD$ = .44; $M$ = 2.33, $SD$ = .58, $M$ = 1.84, $SD$ =.52; $M$ = 1.97, $SD$ = .48, respectively (see Table 9). The differences between the clusters on the combined dependent variables was statistically significant, Wilks' $\Lambda$ = .845, $F$ (6, 726) = 10.621, $p$ < .0005, partial $\eta 2$ = .081. Follow-up univariate ANOVAs showed that both deep learning strategies scores $F$ (3, 364) = 15.107, $p$ < .0005, partial $\eta 2$ = .111 and surface learning strategies scores $F$ (3, 364) = 13.569, $p$ < .0005; partial $\eta 2$ = .101*)* were statistically significantly different between the clusters, using a Bonferroni adjusted α level of .05.

Table 9

*Descriptive Statistics. Motivational Profiles and Learning Strategies*

| | Cluster | Mean | SD | N |
|---|---|---|---|---|
| Deep Learning Strategies | Self-Determined | 3.16 | 0.6 | 138 |
| | Additive | 3.25 | 0.62 | 126 |
| | Moderate | 2.74 | 0.63 | 44 |
| | Low | 2.74 | 0.56 | 60 |
| Surface Learning Strategies | Self-Determined | 2.08 | 0.44 | 138 |
| | Additive | 2.33 | 0.58 | 126 |
| | Moderate | 1.84 | 0.52 | 44 |
| | Low | 1.97 | 0.48 | 60 |

Second statistical procedure, a follow-up Tukey post-hoc tests showed that for the deep learning strategies scores, the Self-Determined cluster had statistically significantly higher mean scores than the Moderate cluster ($p < .0005$), and the Low cluster ($p < .0005$), but not significantly different from the Additive cluster ($p < .613$); the Additive cluster also had statistically significantly higher mean scores than the Moderate cluster ($p < .0005$), and the Low cluster ($p < .0005$), there was no significant difference between the Moderate cluster and the Low cluster ($p = 1.0$). These results are presented in Figure 3. For the surface learning strategies scores, Tukey post-hoc tests showed that the Moderate cluster had statistically significantly lower mean scores than the Self-Determined cluster ($p = .026$) and the Additive cluster ($p < .0005$), but no significant difference with the Low cluster ($p = .560$). The Additive cluster also had statistically significantly higher mean scores than cluster 1 ($p = .001$), and the Low cluster ($p < .0005$), there is no significant difference between the Self-Determined cluster and the Low cluster ($p = .445$). The results are presented in Figure 4.

These results suggested that motivational clusters were different from each other in terms of types of learning strategies preferred by the students within these clusters. The above mentioned statistical procedures identified meaningful patterns of these variables. Consequently, it was possible to use the results on motivational profiles and learning strategies to assess the program in the center of this research.

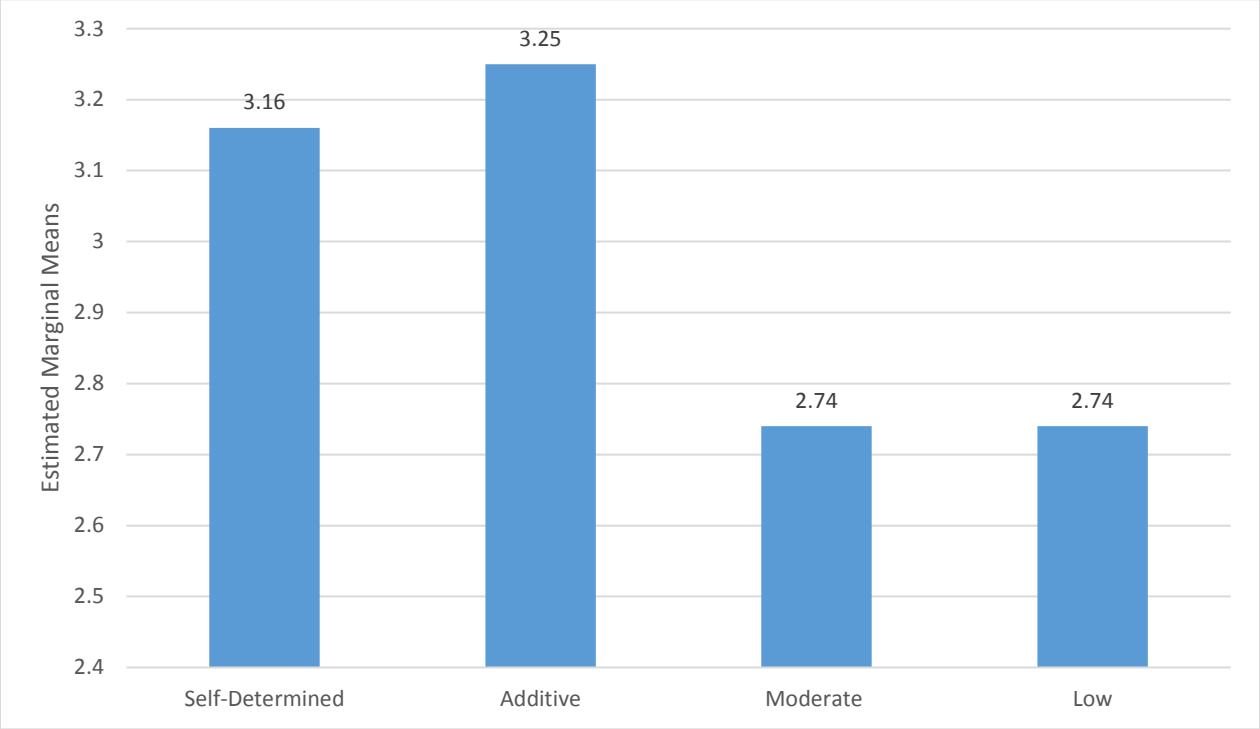


*Figure 3.* Estimated Marginal Means of Deep Learning Strategies.

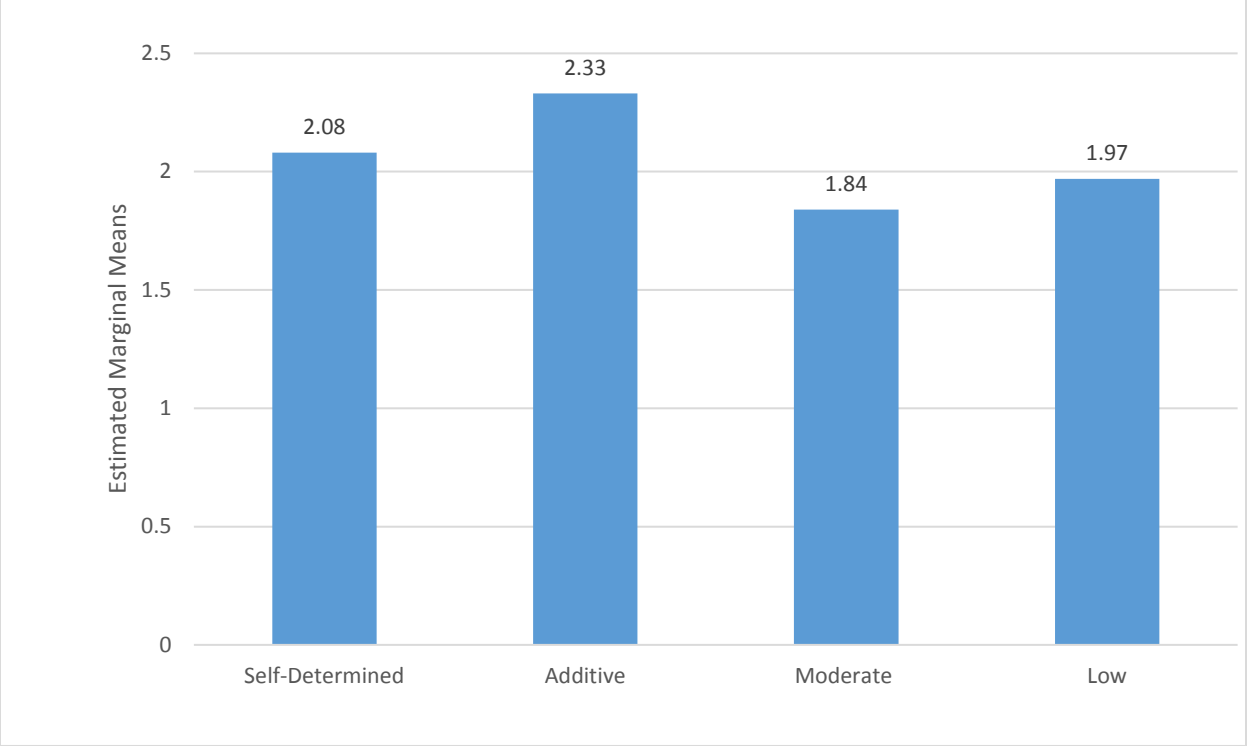


*Figure 4.* Estimated Marginal Means of Surface Learning Strategies.

**Learning Strategies and Students' Personal Characteristics**

To examine whether factors other than the motivational profiles affected individual learning strategies, I reviewed students' personal characteristics. A one-way multivariate analysis of variance (MANOVA) was run to determine the effect of gender, age, level of education, number of professional licenses, and years of experience in the field on students' use of individual learning strategies. Eleven learning strategies were assessed: critical thinking, interest in ideas, metacognitive self-regulation, monitoring effectiveness, relating ideas, seeking meaning, use of evidence, fear of failure, help seeking, peer learning, and unrelated memorizing.

**Gender.** The differences between male and female students on combined dependent variables was statistically significant, $F$ (11, 385) = 2.67, $p < .003$, Wilks' $\Lambda = .929$. Follow-up univariate ANOVAs showed that there is a statistically significant difference in use of metacognitive self-regulation strategy between males and females in the program, $F$ (1, 385) = 5.836, $p < .05$. Male students demonstrated significantly higher usage of metacognitive self-regulation strategy ($M = 2.49$, $SD = .77$) than their female counterparts ($M = 2.12$, $SD = .66$) (see Table 10 and Fig.5).

These findings suggested that male students of the program tend to assess and regulate their own learning more than their female counterparts. However, the gender groups were not equally represented in the program, 369 male vs. 28 females. This inequality might influence the results.

Table 10

*Descriptive Statistics. Gender and Learning Strategies.*

| Learning Strategy | Gender | Mean | SD | N |
|---|---|---|---|---|
| Seeking Meaning | Male | 3.49 | 0.90 | 369 |
| | Female | 3.29 | 0.78 | 28 |
| Relating Ideas | Male | 3.09 | 0.85 | 369 |
| | Female | 3.17 | 0.67 | 28 |
| Use of Evidence | Male | 3.31 | 0.88 | 369 |
| | Female | 3.01 | 0.79 | 28 |
| Monitoring Effectiveness | Male | 2.92 | 0.77 | 369 |
| | Female | 2.88 | 0.71 | 28 |
| Interest in Ideas | Male | 3.38 | 0.89 | 369 |
| | Female | 3.43 | 0.90 | 28 |
| Critical Thinking | Male | 2.69 | 0.90 | 369 |
| | Female | 2.43 | 0.75 | 28 |
| Metacognitive Self-Regulation | Male | 2.49 | 0.77 | 369 |
| | Female | 2.13 | 0.66 | 28 |
| Unrelated Memorizing | Male | 1.81 | 0.71 | 369 |
| | Female | 1.76 | 0.75 | 28 |
| Fear of Failure | Male | 1.48 | 0.73 | 369 |
| | Female | 1.35 | 0.73 | 28 |
| Peer Learning | Male | 2.36 | 0.84 | 369 |
| | Female | 2.21 | 0.80 | 28 |
| Help Seeking | Male | 2.84 | 0.79 | 369 |
| | Female | 2.58 | 0.72 | 28 |

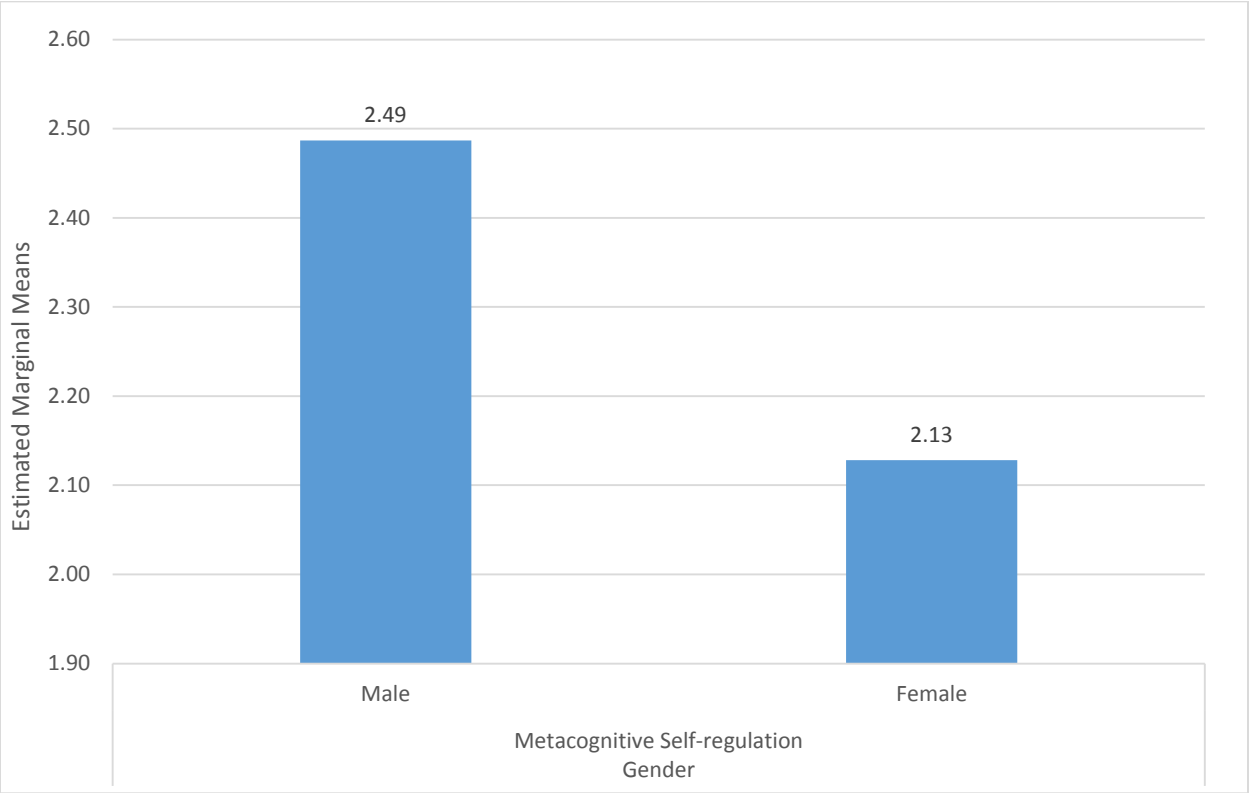


*Figure 5.* Estimated Marginal Means. Learning Strategies and Gender.

**Age.** The program participants were divided in three age groups: 18-40, 41-55, and 56+ years of age. A one-way multivariate analysis of variance demonstrated that the difference between these three age groups on the combined dependent variables was not statistically significant, $F$ (22, 764) = 1.223, $p$ = .22; Wilks' $\Lambda$ = .933 (see Table 11). In other words, the age of program participants did not influence their choice of learning strategies in continuing education program.

Table 11

*Descriptive Statistics. Age and Learning Strategies*

| Learning Strategy | Age | Mean | SD | N |
|---|---|---|---|---|
| Seeking Meaning | 18-40 | 3.33 | 0.94 | 24 |
| | 41-55 | 3.45 | 0.89 | 147 |

| | | | | |
|---|---|---|---|---|
| | 56+ | 3.52 | 0.90 | 224 |
| Relating Ideas | 18-40 | 3.01 | 0.72 | 24 |
| | 41-55 | 3.16 | 0.84 | 147 |
| | 56+ | 3.08 | 0.85 | 224 |
| | Total | 3.10 | 0.84 | 395 |
| Use of Evidence | 18-40 | 2.97 | 0.93 | 24 |
| | 41-55 | 3.32 | 0.85 | 147 |
| | 56+ | 3.31 | 0.87 | 224 |
| Monitoring Effectiveness | 18-40 | 2.89 | 0.70 | 24 |
| | 41-55 | 2.95 | 0.78 | 147 |
| | 56+ | 2.90 | 0.76 | 224 |
| Interest in Ideas | 18-40 | 3.18 | 1.05 | 24 |
| | 41-55 | 3.42 | 0.85 | 147 |
| | 56+ | 3.40 | 0.88 | 224 |
| Critical Thinking | 18-40 | 2.26 | 0.64 | 24 |
| | 41-55 | 2.71 | 0.87 | 147 |
| | 56+ | 2.70 | 0.91 | 224 |
| Metacognitive Self-Regulation | 18-40 | 2.36 | 0.72 | 24 |
| | 41-55 | 2.47 | 0.75 | 147 |
| | 56+ | 2.48 | 0.77 | 224 |
| Unrelated Memorizing | 18-40 | 1.75 | 0.74 | 24 |
| | 41-55 | 1.82 | 0.73 | 147 |
| | 56+ | 1.81 | 0.69 | 224 |
| Fear of Failure | 18-40 | 1.43 | 0.81 | 24 |
| | 41-55 | 1.42 | 0.71 | 147 |
| | 56+ | 1.50 | 0.73 | 224 |
| | Total | 1.46 | 0.72 | 395 |
| Peer Learning | 18-40 | 2.29 | 0.89 | 24 |

| | | | | |
|---|---|---|---|---|
| | 41-55 | 2.41 | 0.84 | 147 |
| | 56+ | 2.32 | 0.82 | 224 |
| Help Seeking | 18-40 | 2.67 | 0.77 | 24 |
| | 41-55 | 2.82 | 0.83 | 147 |

**Level of education.** The level of education of the program participants is represented by three groups. First group "High School" included students who either did not graduate high school, or have only high school diploma or its GED equivalent. Group "Associates" is composed of students who had some college or got Associate degree. And, finally, group "Bachelors and above" consisted of students with Bachelor's, Master's and Doctorate degrees. The differences between three education groups of students on combined dependent variables was not statistically significant, $F$ (22, 760) = 1.385, $p < .112$, Wilks' $\Lambda = .924$ (see Table 12). The level of previous education of program participants did not influence the choice of learning strategies.

Table 12

*Descriptive Statistics. Level of Education and Learning Strategies.*

| Learning Strategy | Educ2 | Mean | SD | N |
|---|---|---|---|---|
| Seeking Meaning | High School | 3.54 | 0.90 | 99 |
| | Associates | 3.53 | 0.92 | 158 |
| | Bachelors and above | 3.38 | 0.87 | 136 |
| Relating Ideas | High School | 3.11 | 0.84 | 99 |
| | Associates | 3.14 | 0.86 | 158 |
| | Bachelors and above | 3.06 | 0.83 | 136 |
| Use of Evidence | High School | 3.26 | 0.89 | 99 |
| | Associates | 3.37 | 0.88 | 158 |

| | | | | |
|---|---|---|---|---|
| | Bachelors and above | 3.23 | 0.85 | 136 |
| Monitoring Effectiveness | High School | 3.02 | 0.80 | 99 |
| | Associates | 2.95 | 0.72 | 158 |
| | Bachelors and above | 2.80 | 0.79 | 136 |
| Interest in Ideas | High School | 3.40 | 0.93 | 99 |
| | Associates | 3.48 | 0.84 | 158 |
| | Bachelors and above | 3.28 | 0.89 | 136 |
| Critical Thinking | High School | 2.67 | 0.91 | 99 |
| | Associates | 2.77 | 0.88 | 158 |
| | Bachelors and above | 2.58 | 0.88 | 136 |
| Metacognitive Self-Regulation | High School | 2.53 | 0.84 | 99 |
| | Associates | 2.50 | 0.71 | 158 |
| | Bachelors and above | 2.39 | 0.76 | 136 |
| Unrelated Memorizing | High School | 1.98 | 0.79 | 99 |
| | Associates | 1.85 | 0.69 | 158 |
| | Bachelors and above | 1.63 | 0.63 | 136 |
| Fear of Failure | High School | 1.62 | 0.70 | 99 |
| | Associates | 1.48 | 0.79 | 158 |
| | Bachelors and above | 1.34 | 0.65 | 136 |
| Peer Learning | High School | 2.45 | 0.90 | 99 |
| | Associates | 2.38 | 0.82 | 158 |
| | Bachelors and above | 2.25 | 0.80 | 136 |
| Help Seeking | High School | 2.88 | 0.74 | 99 |
| | Associates | 2.84 | 0.81 | 158 |
| | Bachelors and above | 2.76 | 0.79 | 136 |

**Professional Licenses.** Program students were assigned to four groups according to the number of professional licenses they have. Group 1 included students with one or two licenses; group 2 consisted of students with three to five licenses, and group 3 was made of students with six to nine licenses. I had also included group 0 for students with no licenses in the researched field. A one-way multivariate analysis of variance demonstrated that the differences between four license groups on the combined dependent variables was not statistically significant, $F$ (33, 1123) = 1.193, $p$ = .211; Wilks' $\Lambda$ = .903 (see Table 13). These findings suggested that amount of students' professional licenses did not influence the choice of learning strategies in continuing education program.

Table 13

*Descriptive Statistics. Professional Licenses and Learning Strategies.*

| Learning Strategy | Lic2 | Mean | SD | N |
|---|---|---|---|---|
| Seeking Meaning | 0 | 3.72 | 0.78 | 15 |
| | 1-2 | 3.37 | 0.92 | 169 |
| | 3-5 | 3.55 | 0.91 | 169 |
| | 6-9 | 3.56 | 0.72 | 42 |
| Relating Ideas | 0 | 3.30 | 0.75 | 15 |
| | 1-2 | 2.99 | 0.87 | 169 |
| | 3-5 | 3.17 | 0.85 | 169 |
| | 6-9 | 3.22 | 0.66 | 42 |
| Use of Evidence | 0 | 3.53 | 0.68 | 15 |
| | 1-2 | 3.13 | 0.92 | 169 |
| | 3-5 | 3.40 | 0.85 | 169 |
| | 6-9 | 3.43 | 0.73 | 42 |
| Monitoring Effectiveness | 0 | 3.05 | 0.70 | 15 |

| | | | | |
|---|---|---|---|---|
| | 1-2 | 2.85 | 0.80 | 169 |
| | 3-5 | 3.01 | 0.75 | 169 |
| | 6-9 | 2.77 | 0.69 | 42 |
| Interest in Ideas | 0 | 3.50 | 0.65 | 15 |
| | 1-2 | 3.29 | 0.95 | 169 |
| | 3-5 | 3.45 | 0.87 | 169 |
| | 6-9 | 3.55 | 0.64 | 42 |
| Critical Thinking | 0 | 2.95 | 0.72 | 15 |
| | 1-2 | 2.51 | 0.91 | 169 |
| | 3-5 | 2.78 | 0.89 | 169 |
| | 6-9 | 2.80 | 0.74 | 42 |
| Metacognitive Self-Regulation | 0 | 2.55 | 0.76 | 15 |
| | 1-2 | 2.40 | 0.80 | 169 |
| | 3-5 | 2.50 | 0.76 | 169 |
| | 6-9 | 2.59 | 0.60 | 42 |
| Unrelated Memorizing | 0 | 1.90 | 0.77 | 15 |
| | 1-2 | 1.77 | 0.70 | 169 |
| | 3-5 | 1.88 | 0.74 | 169 |
| | 6-9 | 1.65 | 0.54 | 42 |
| Fear of Failure | 0 | 1.42 | 0.77 | 15 |
| | 1-2 | 1.47 | 0.76 | 169 |
| | 3-5 | 1.51 | 0.74 | 169 |
| | 6-9 | 1.29 | 0.40 | 42 |
| Peer Learning | 0 | 2.44 | 0.78 | 15 |
| | 1-2 | 2.25 | 0.81 | 169 |
| | 3-5 | 2.41 | 0.89 | 169 |
| | 6-9 | 2.47 | 0.66 | 42 |
| Help Seeking | 0 | 2.93 | 0.96 | 15 |

| | | | |
|---|---|---|---|
| 1-2 | 2.79 | 0.80 | 169 |
| 3-5 | 2.83 | 0.79 | 169 |
| 6-9 | 2.89 | 0.62 | 42 |

**Years of professional experience.** The program participants were divided into three groups according to the number of years of experience as a Code Enforcement official: 0 to 9 years of experience, 10 to 24 years of experience, and 25+ years of experience. A one-way multivariate analysis of variance demonstrated that the differences between these three groups on the combined dependent variables was not statistically significant, $F$ (22, 758) = 1.235, $p$ = .21; Wilks' $\Lambda$ = .932 (see Table 14). In other words, the amount of years students spent doing their job as CE officials did not influence their choice of learning strategies in continuing education program.

Table 14

*Descriptive Statistics. Year of Experience and Learning Strategies*

| Learning Strategy | YoExp2 | Mean | SD | N |
|---|---|---|---|---|
| Seeking Meaning | 0-9 yrs | 3.45 | 0.85 | 144 |
| | 10-24 yrs | 3.47 | 0.94 | 166 |
| | 25+ yrs | 3.54 | 0.89 | 82 |
| Relating Ideas | 0-9 yrs | 3.10 | 0.83 | 144 |
| | 10-24 yrs | 3.07 | 0.83 | 166 |
| | 25+ yrs | 3.14 | 0.87 | 82 |
| Use of Evidence | 0-9 yrs | 3.29 | 0.84 | 144 |
| | 10-24 yrs | 3.29 | 0.86 | 166 |
| | 25+ yrs | 3.29 | 0.95 | 82 |

| | | | | |
|---|---|---|---|---|
| Monitoring Effectiveness | 0-9 yrs | 2.96 | 0.76 | 144 |
| | 10-24 yrs | 2.87 | 0.77 | 166 |
| | 25+ yrs | 2.91 | 0.77 | 82 |
| Interest in Ideas | 0-9 yrs | 3.38 | 0.80 | 144 |
| | 10-24 yrs | 3.39 | 0.86 | 166 |
| | 25+ yrs | 3.40 | 1.06 | 82 |
| Critical Thinking | 0-9 yrs | 2.57 | 0.88 | 144 |
| | 10-24 yrs | 2.74 | 0.89 | 166 |
| | 25+ yrs | 2.69 | 0.87 | 82 |
| Metacognitive Self-Regulation | 0-9 yrs | 2.45 | 0.77 | 144 |
| | 10-24 yrs | 2.45 | 0.78 | 166 |
| | 25+ yrs | 2.53 | 0.70 | 82 |
| Unrelated Memorizing | 0-9 yrs | 1.81 | 0.70 | 144 |
| | 10-24 yrs | 1.85 | 0.74 | 166 |
| | 25+ yrs | 1.71 | 0.64 | 82 |
| Fear of Failure | 0-9 yrs | 1.51 | 0.76 | 144 |
| | 10-24 yrs | 1.44 | 0.75 | 166 |
| | 25+ yrs | 1.43 | 0.60 | 82 |
| Peer Learning | 0-9 yrs | 2.38 | 0.85 | 144 |
| | 10-24 yrs | 2.33 | 0.81 | 166 |
| | 25+ yrs | 2.33 | 0.86 | 82 |
| Help Seeking | 0-9 yrs | 2.82 | 0.76 | 144 |
| | 10-24 yrs | 2.84 | 0.76 | 166 |
| | 25+ yrs | 2.77 | 0.85 | 82 |

**Motivational Profiles in the Continuing Education Program and Professional Motivation**

To connect students' motivational profiles in the continuing education program with students' motivation to do their job as a CCE official, I used composite scores from the professional motivation questionnaire for the following professional motivational sub-types: professional intrinsic, professional extrinsic integrated and identified motivation, professional extrinsic introjected and external motivation, and professional amotivation. Each of the previously established motivational profiles, the Self-Determined, the Additive, the Moderate, and the Low, was connected with each of the professional motivation sub-type.

A one-way multivariate analysis of variance (MANOVA) was conducted to examine differences between four clusters in terms of students' professional motivation. Data are expressed as mean and standard deviation. For the *professional intrinsic motivation***,** clusters demonstrated the following results: the Self-Determined cluster ($M$ = 5.82, $SD$ = .8), the Additive cluster ($M$ = 5.79, $SD$ = .9), the Moderate cluster ($M$ = 4.42, $SD$ = .9), and the Low cluster ($M$ = 4.46, $SD$ = .7). For the *professional extrinsic integrated and identified motivation*, clusters demonstrated the following results: the Self-Determined cluster ($M$ = 5.11, $SD$ = .8), the Additive cluster ($M$ = 5.31, $SD$ = .9), the Moderate cluster ($M$ = 4.45, $SD$ = .9), and the Low cluster ($M$ = 4.5, $SD$ = .7). For the *professional extrinsic introjected and external motivation*, clusters demonstrated the following results: the Self-Determined cluster ($M$ = 4.2, $SD$ = .7), the Additive cluster ($M$ = 4.76, $SD$ = .9), the Moderate cluster ($M$ = 3.69, $SD$ = .9), and the Low cluster ($M$ = 4.49, $SD$ = .7). For the *professional amotivation*, clusters demonstrated the following results: the Self-Determined cluster ($M$ = 1.58, $SD$ = .7), the Additive cluster ($M$ =

2.18, *SD* = .8), the Moderate cluster (*M* = 1.37, *SD* = .8), and the Low cluster (*M* = 1.85, *SD* = .7) (see Table 15).

Table 15

*Descriptive Statistics. Motivational Profiles and Professional Motivation*

| Professional Motivation | Motivational Profile | Mean | SD | N |
|---|---|---|---|---|
| Professional Intrinsic Motivation | Self-Determined | 5.82 | 0.78 | 138 |
| | Additive | 5.79 | 0.92 | 126 |
| | Moderate | 4.42 | 0.91 | 44 |
| | Low | 4.46 | 0.72 | 60 |
| Professional Extrinsic Integrated and Identified Motivation | Self-Determined | 5.11 | 0.75 | 138 |
| | Additive | 5.31 | 0.87 | 126 |
| | Moderate | 4.45 | 0.85 | 44 |
| | Low | 4.50 | 0.66 | 60 |
| Professional Extrinsic Introjected and External Motivation | Self-Determined | 4.20 | 0.68 | 138 |
| | Additive | 4.76 | 0.92 | 126 |
| | Moderate | 3.69 | 0.85 | 44 |
| | Low | 4.49 | 0.73 | 60 |
| Professional Amotivation | Self-Determined | 1.58 | 0.70 | 138 |
| | Additive | 2.18 | 0.80 | 126 |
| | Moderate | 1.37 | 0.75 | 44 |
| | Low | 1.85 | 0.69 | 60 |

The differences between the clusters on the combined dependent variables was statistically significant, Wilks' $\Lambda = .707$, $F$ (12, 955) = 11.164, $p < .0005$. Follow-up univariate ANOVAs showed that scores for all four motivational constructs were statistically significantly different between the clusters (Professional Intrinsic Motivation, $F$ (3, 364) = 29.102, $p < .0005$;

Professional Extrinsic Integrated and Identified Motivation, $F$ (1, 364) = 4965.443, $p < .0005$

Professional Extrinsic Introjected and External Motivation, $F$ (1, 364) = 3925.865, $p < .0005$;

Professional Amotivation $F$ (1, 364) = 810.603, $p < .0005$) (see Table 16).

Table 16

*One-Way Analysis of Variance of Motivational Profiles by Professional Education*

*ANOVA*

| Source | Dependent Variable | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Profile | Professional Intrinsic Motivation | 126.731 | 3 | 42.244 | 29.102 | .000 |
| | Professional Extrinsic Integrated and Identified Motivation | 42.301 | 3 | 14.100 | 10.413 | .000 |
| | Professional Extrinsic Introjected and External Motivation | 46.135 | 3 | 15.378 | 11.686 | .000 |
| | Professional Amotivation | 31.005 | 3 | 10.335 | 9.622 | .000 |

Tukey post-hoc tests showed that for the *professional intrinsic motivation* scores, the Self-Determined cluster had statistically significantly higher mean scores than the Moderate cluster ($p < .0005$), and the Low cluster ($p < .0005$), but not significantly different from the Additive cluster ($p = 1.0$); the Additive cluster also had statistically significantly higher mean scores than the Moderate cluster ($p < .0005$), and r the Low cluster ($p < .0005$), there was no significant difference between the Moderate cluster and the Low cluster ($p = 1.0$) (see Fig. 6).

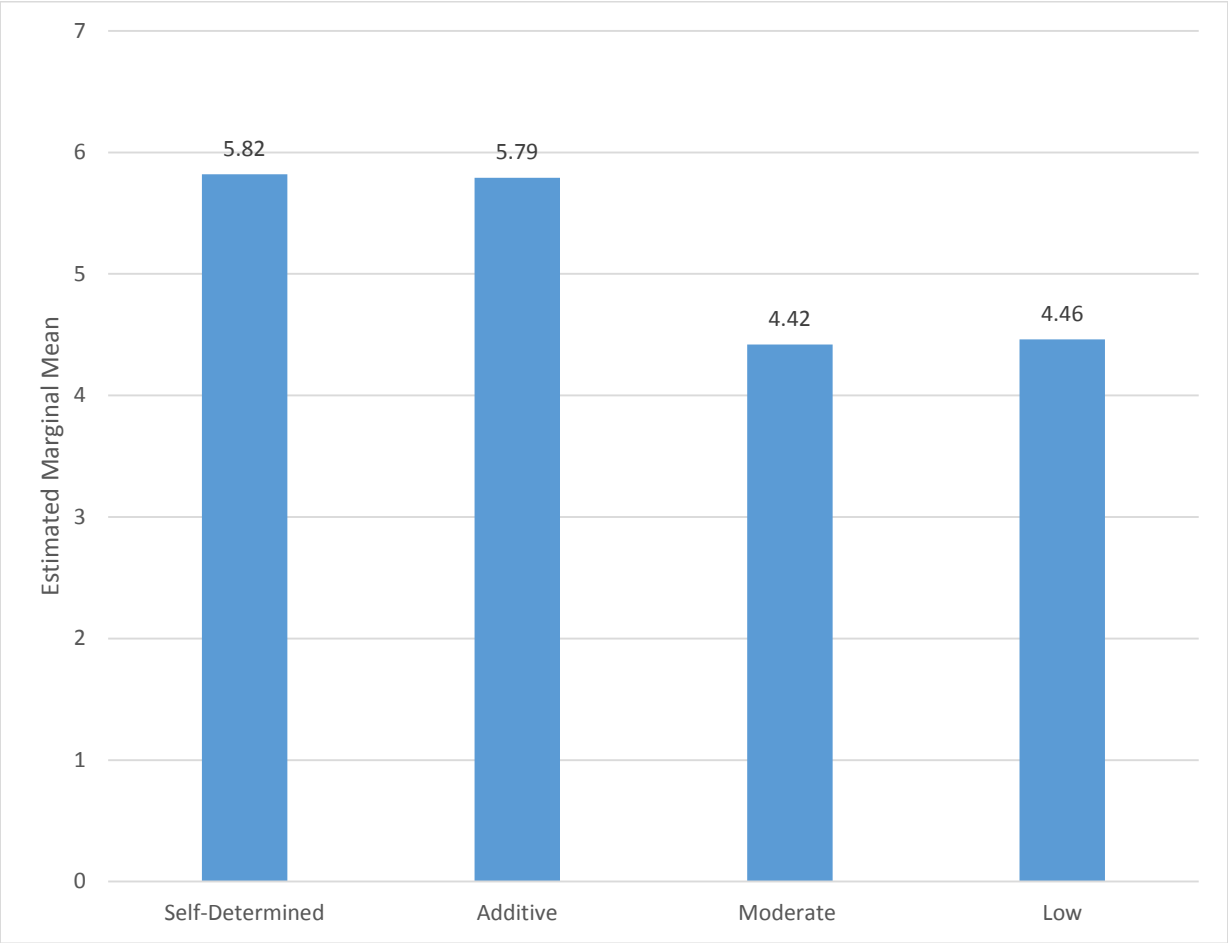


*Figure 6.* Estimated Marginal Mean of Professional Intrinsic Motivation.

For the *professional extrinsic identified and integrated motivation* scores, Tukey post-hoc tests showed that the Moderate cluster had statistically significantly lower mean scores than the Self-Determined cluster ($p = .012$) and the Additive cluster ($p < .0005$), but no significant difference with the Low cluster ($p = .974$). The Low cluster also had statistically significantly lower mean scores than the Self-Determined cluster ($p = .02$), and the Additive cluster ($p < .0005$), there is no significant difference between the Self-Determined cluster and the Additive cluster ($p = .192$) (see Fig 7).

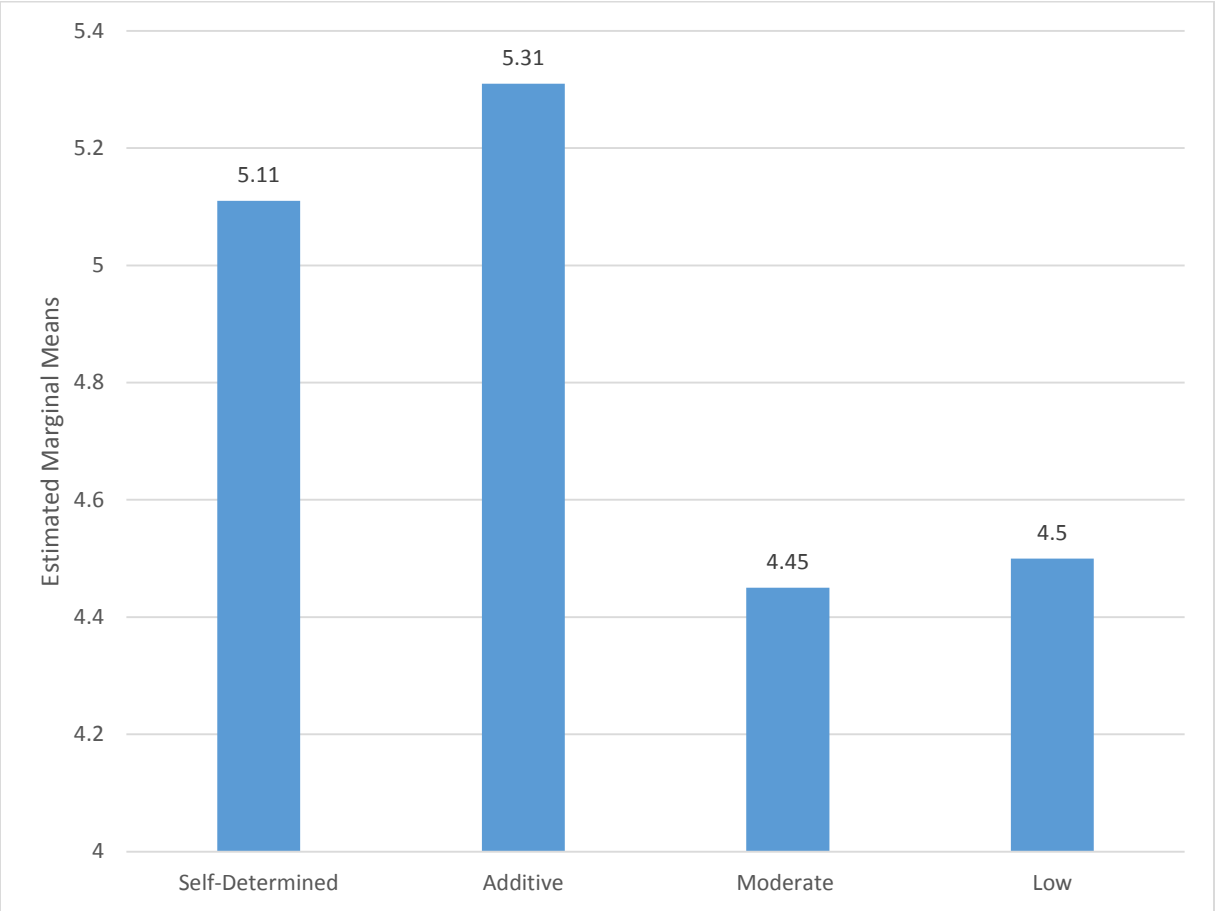


*Figure 7.* Estimated Marginal Mean of Professional Extrinsic Identified and Integrated Motivation.

For the *professional extrinsic introjected and external motivation* scores, Tukey post-hoc tests showed that the Additive cluster had statistically significantly higher mean scores than the Self-Determined cluster ($p = .001$), the Moderate cluster ($p < .0005$), and the Low cluster ($p = .007$). The Self-Determined cluster had statistically significantly higher mean scores than the Moderate cluster ($p = .027$), but no significant difference between the Self-Determined cluster and the Low cluster ($p = .995$), and between the Moderate cluster and the Low cluster ($p = .109$) (see Fig.8).

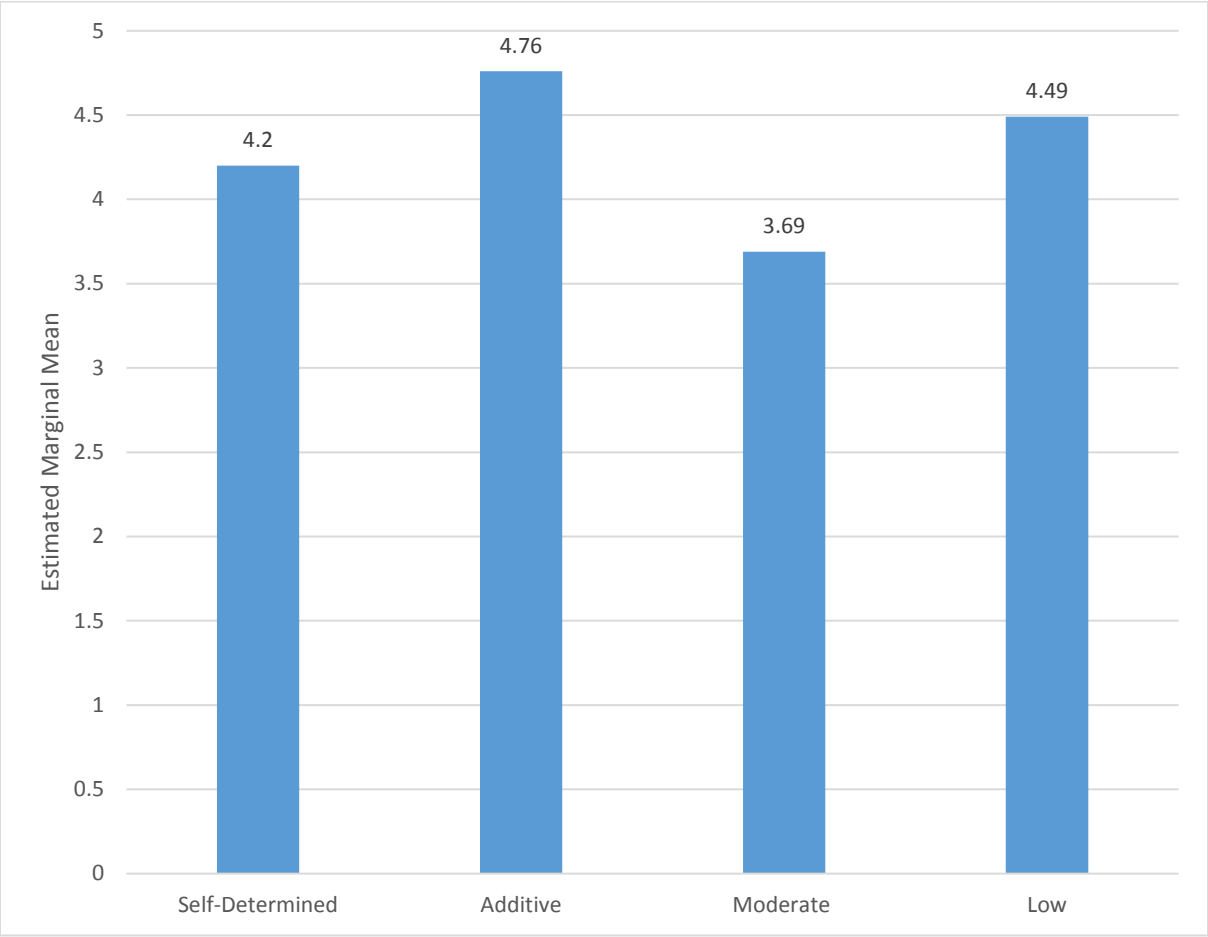


*Figure 8.* Estimated Marginal Mean of Professional Extrinsic Introjected and External Motivation.

For the *professional amotivation* scores, Tukey post-hoc tests showed that the Additive cluster had statistically significantly higher mean scores than the Self-Determined cluster ($p < .0005$) and the Moderate cluster ($p < .0005$). All other cluster comparisons did not show any significant difference between clusters: clusters Self-Determined - Moderate ($p = .623$), clusters Self-Determined - Low ($p = .424$), clusters Moderate - Low ($p = .115$), and clusters Low - Additive ($p = .176$) (see Fig.9).

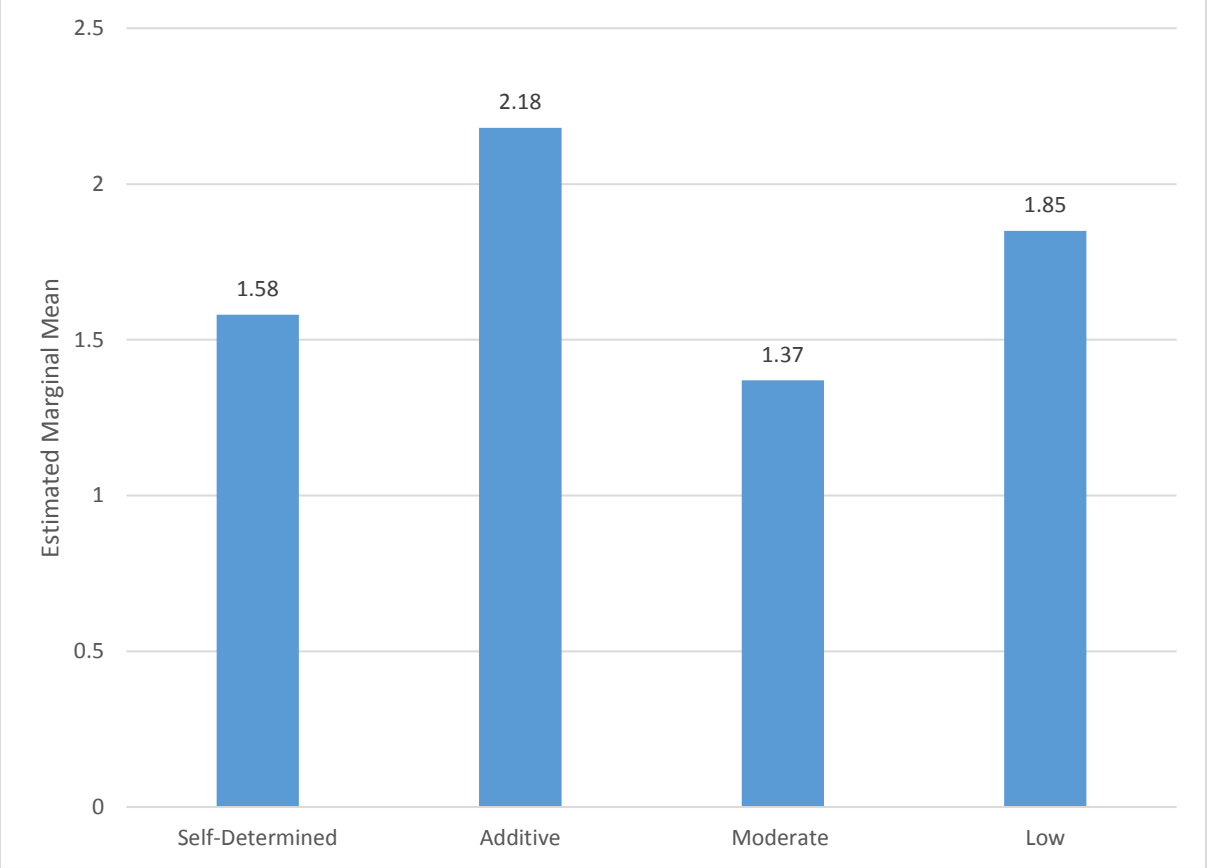


*Figure 9.* Estimated Marginal Mean of Professional Amotivation.

These findings suggest that students with higher motivation to learn in the continuing education program also reported higher motivation to do their job. However, somewhat

unexpected results were displayed for the Additive profile. Students from this cluster scored high on low quality professional motivation, as well as showed lack of motivation to do their job.

The statistical results presented in this chapter provided rich data for evaluation of the continuing education program for the CCE officials, as well as for providing recommendations to improve program instruction. Discussion, interpretation and in-depth analysis of the results is offered in the next chapter.

**Instructional Practices.**

To document the instructional practices instructors currently use in the program I conducted 2-hour observations of individual seminars taught by eight different instructors. Observations demonstrated that the prevailing method of teaching in the program was lecture with occasional use of techniques that promote students' cognitive engagement.

The participating instructors were purposefully selected: all had taught the classes in which surveys were administered. When observing seminars I was looking for "teachable moments" and for "instructional environments that promote high cognitive engagement" (see Appendix F). I defined "teachable moments" as the instances when direct strategy instruction takes place: instructor explains or models a specific learning strategy, instructor advises students to use a specific strategy, or scaffolds use of strategies for a demanding task, instructor provides feedback and reinforcement on a strategy use. While observing for "instructional environments that promote high cognitive engagement", I looked for teaching techniques that would stimulate students' mental process and facilitate learning: instructor relates information to what students already know or to current events; instructor provides clear directions, explain concepts, use advance organizers; instructor provides immediate and informative feedback, instructor uses questions that require students to use higher level thinking skills to answer; instructor creates

positive work atmosphere and demonstrates passion for the subject and encourages students to do the same.

Every observed seminar segment was a lecture accompanied by a Power Point presentation. The number of participants in each classroom ranged from fifteen to forty students. The seminars were conducted throughout the state of New Jersey in various training locations. The rooms were arranged in classroom style with all participants facing the instructor. All seminars were conducted from 8:30 am to 3:30 pm, and I chose two-hour observation segments to be in the middle of the seminar to avoid logistical moments of the beginning and the end of the seminar. All observed instructors were males; professionals in the code enforcement or related field with at least ten years of relevant experience. The amount of instructors' teaching experience in the program ranged from 3 to 20 years.

The most commonly observed technique that "promotes high cognitive engagement" was "relating information to what students already know", which was observed total ten times at six out of eight seminars. For example, before presenting new material, instructor P. offered a short pop quiz on pools regulations; instructor F. offered a question to the whole class that generated group discussion: *"Why do you need to put sprinklers at the base of staircase?"* and instructor S. asked several students *"Tell me what you did at your previous inspection?"* The purpose of these questions and the pop quiz was to discern what students already know, to bring relevant past knowledge to active memory, and connect new material to existing knowledge.

Another instructional technique that was observed five times total at three seminars was "using questioning patterns that require students to use higher level thinking skills to answer". In each of these instances, instructors asked a question that required analysis, use of evidence, and ability to critically apply code:

Instructor O.: *"Does a Nativity scene require a permit?"*

Instructor F.: *"How do you know there is a violation?"*

Instructor B.: *"What is wrong on this picture? Why do you think so?"*

Another rather frequent technique was "relating content to current events" (observed total five times at four seminars). For example, instructor F. brought up a recent news story about fire while presenting lecture on sprinklers; instructor R. referred to a recent court case while discussing landlord's responsibilities; instructor O. brought up a famous radon contamination case while explaining liability issues. Other features of instructional environments observed to a lesser extent were "encouraging students to generate questions", "demonstrating passion for the subject and encouraging students to do the same" and, "creating positive work atmosphere".

The only recorded instance of a "teachable moment" was when one of the eight instructors modeled "use of evidence" learning strategy. Instructor B. is a highly knowledgeable practitioner with more than 40 years of experience in the field and almost 20 years of teaching experience in the program. His classes are usually very popular and well attended, he always demonstrates lots of passion for the subject. While presenting a seminar on accessibility and barrier free code, instructor B. explained the changes recently introduced to the code on the system of signs for population with accessibility problems. He put a slide on the screen with images of signs in a newly constructed building:

*"…when inspecting a building I take pictures of all the signs, then go back to the office and open a chapter on signs in a code book… many new signs were added to the new code update… I look at the pictures again and try to find relevant paragraphs and make notes or write questions I need to clarify… then I go back to the building and look again using my notes…"*

In this example the instructor modeled the “use of evidence” strategy while explaining how to inspect accessibility signs in a new building. He articulated his thought process and allowed students to see what steps were happening in his head while he tackled the problem.

To sum up, observations demonstrated that the prevailing method of teaching in the program was lecture with occasional use of techniques that promote students’ cognitive engagement. With one exception, instructors did not spend time during the observed seminars teaching individual learning strategies.

## Discussion

In this chapter I discuss the study findings and relate them to a larger body of literature on motivation and learning strategies. First, I address the implications of dividing students into motivational clusters. Second, I offer possible interpretations of relationship between motivational profiles and learning strategies in assessing the program. Then, I discuss how personal characteristics of students affect their choice of learning strategies, as well as how professional motivation influences students' motivation to learn in the program. In addition, I suggest possible program changes at the organizational and instructional levels, as well as limitations and possible future directions for study. In conclusion, I address the importance of this study to the main stakeholders, such as the granting State agency, program instructors, students, and the larger community.

In today's rapidly changing world, continuing professional education plays an important role in keeping employees up to date with evolving industry and technology standards. However, the formalization of continuing professional education and its compulsory nature resulted in number undesired side effects. The research problem of this study addresses decrease in students' motivation, low cognitive engagement of the students, limited pedagogical experience of instructors, as well as lack of accountability and assessment mechanisms in the short-term mandated continuing education professional programs.

The purpose of this research is to document motivational profiles and their learning strategies-related correlates among the participants of the Construction Code Enforcement officials continuing education program, and to identify meaningful patterns of these variables in order to assess the program. Although, motivation and students' use of learning strategies do not directly measure program effectiveness, the results of motivation-learning strategies clustering

procedure can serve as a proxy measure for program evaluation. That is, if high motivation and high learning strategies are evident, it is more likely that the program is effective in producing deep and profound subject knowledge for students. An absolutely critical part of my argument is that low strategy use is associated with low outcomes (Simsek & Balaban, 2010; Weinstein & Mayer, 1989). Therefore, if study findings suggest that highly motivated students are mostly engaged in surface strategy use, the program requires change on an organizational and instructional level. In addition, I wanted to find out what learning strategies are preferred by the CCE officials with different licenses, ages, and years of experience, and how professional motivation influences the educational experience of the student. This information could help me design a teaching methods intervention to improve instruction. Ultimately, I hope to add to the literature on motivation and use of learning strategies by examining and assessing largely neglected short-term adult employer-mandated continuing professional programs.

This study employed an explanatory mixed-methods design, with quantitative data being collected first, followed by the qualitative data to support and elaborate on the quantitative results (Creswell, 2005). Three Likert-scale questionnaires, Academic Motivation Scale (AMS), Revised Approaches to Study Inventory (RASI), and Work Extrinsic and Intrinsic Motivation Scale (WEIMS), provided data necessary to address the first four research questions of the study. The final research questions was investigated through the series of observations of program seminars. The research questions of the study are as follows:

1. What are the implications of the student distribution in motivation clusters in the program?
2. What is the relationship between the students' motivational profiles and their use of learning strategies?

3. To what extent if any does students' use of learning strategies depend on students' personal characteristics?
4. What is the connection between the students' motivational profiles in the continuing education program and their professional motivation?
5. What instructional practices currently used in the program stimulate students' use and development of deep learning strategies?

The use of mixed-methods design allowed me to collect rich data and create a multifaceted picture of the studied phenomenon (Mertler & Charles, 2008).

An important element of the study design is use of a person-centered approach and clustering procedures. This approach allows for creating naturally occurring profiles instead of dividing students into artificial groups based on the combined scores (Wormington et al., 2012). Using a person-centered approach means individuals are studied on the basis of their patterns of individual characteristics rather than separate variables (Vansteenkiste et al., 2009). The results obtained using person-centered approach and clustering procedures provided thought-provoking data for further discussion and interpretation.

**Motivation Clusters**

This research uses self-determination theory of motivation (Deci & Ryan, 2000) and its further development, organismic integration theory, as the lens to study motivation in the CCE officials continuing education program. Motivation is viewed as dynamic and cognitive in nature, it changes as the learners faces various external and internal influence (Deci et al., 1991). Learners can have both, intrinsic and extrinsic motivational reasons for engaging in the same activity. Using person-centered approach and cluster analysis allowed me to focus on particular

combinations of motivational variables as they exist within individuals or group of students (Hayenga & Corpus, 2010).

Cluster analysis revealed a four-cluster solution as best fitting the data. The clusters differ meaningfully along the dimensions of motivation quantity and quality. These results are largely consistent with findings presented in literature on motivational cluster analysis (Boiche & Stephan, 2013; Hayenga & Corpus, 2010; Vansteenkiste et al., 2009; Wormington et al., 2012,). Important to note, that the Self-Determined and the Additive motivational profiles are the two largest groups representing more than half (71.5%) of the studied sample. These groups reported both high quality and high quantity motivation. The findings from this study corroborate previous research that concluded that even in high controlling environment of employer-mandated programs adult students are motivated learners (Mezirow, 1991; Peterson, 2009).

Both the Self-Determined and the Additive motivational profiles are characterized by the higher level of extrinsic integrated and identified motivation than intrinsic motivation. These findings are not surprising taking into consideration the compulsory nature of the program, and consistent with Deci et al.'s (1991) view on integrated and identified motivation as initially external, not aimed at pure enjoyment, but toward other self-endorsed values, personal choice, priority, importance of gaining knowledge, responsibility for learning. This observation was true within all four clusters. This is especially important since higher level of extrinsic identified and integrated regulation might result in higher level of cognitive engagement and use of deep learning strategies (Deci & Ryan, 2000).

A concerning observation was made in the Low cluster, which was responsible for 16% of the sample. A significantly high level of amotivation was recorded in this cluster. Amotivation is caused by a variety of reasons, such as not valuing an activity, not believing in the outcome or,

more disturbing, not feeling competent or the learner's inability to perform the task (Reeve, Deci, & Ryan, 2004; Vallerand et al., 1992). Since cluster analysis provides rich data on all motivational sub-types, the results show that the Low cluster students also demonstrated moderate level of intrinsic and extrinsic integrated and identified motivation. That might suggest that they value the activity but are unable to perform the task. Considering the nature of the CCE official's occupation, professional incompetency might result in serious safety issues for a general population. These findings should be communicated to the program instructors and sponsoring agency.

To sum up, assessing students' motivation and grouping them in motivation profiles revealed that CCE officials are mostly motivated by external reasons. At the same time, their motivation is the most autonomous and self-determined extrinsic motivation on the self-determination continuum. Such motivation can be considered high quality since it tends to result in high-quality learning, creativity, self-monitoring of understanding, and displaying intuitive understanding (Deci et al., 1991). However, the quantity of motivation varies among the motivational clusters, with at least one third of the study participants showing low results. Finally, the high level of amotivation demonstrated in one of the clusters coupled with low quantity of motivation suggest that students' motivation is an issue that should be addressed by both program organizers and program instructors.

**Program Assessment. Relationship between Motivational Profiles and Learning Strategies**

Once cluster solution was identified, I examined learning strategies correlates of each motivation profile and found that students from the Self-Determined and the Additive motivation clusters were equally likely to use deep learning strategies. Both clusters are characterized by the high level of extrinsic integrated/identified and intrinsic motivation. This aligns with studies of

motivation and learning strategies that conclude that intrinsic motivation and higher levels of extrinsic motivation positively predict a higher level of student cognitive engagement (De Naeghel et al., 2012; Skinner & Chi, 2012; Vansteenkiste et al., 2009).

The purpose of matching motivation profiles with learning strategies was to use the data as a proxy measure for assessing the program, quality of instruction and students' learning outcomes. Students who adopt deep learning strategies tend to have higher quality learning outcomes (Ibrahim et al., 2012; McInerney et al., 2012). Therefore it should be logical to conclude, that high use of deep learning strategies would suggest meaningful learning (Biggs, 1999) and, subsequently, an effective program.

However, comparing data on matching motivational profiles with different types of learning strategies, deep and surface, led to an interesting observation. Both the Self-Determined and the Additive motivation clusters (around 70% of the participants) reported higher use of not only deep strategies, but also surface learning strategies. Use of surface learning strategies is associated with desire to complete task with minimum effort without engaging in meaningful learning (Biggs, 1999). These findings can be interpreted in a variety of ways. It is possible that students who are familiar with deep learning strategies and capable of using them, choose not to apply them in a systematic manner and opt for minimum effort surface strategies while at the seminar. It is also possible that students alternate strategies between deep and surface in response to instructional methods (Biggs, 1999; Blumenfeld & Meece, 1988; Guthrie et al., 2000; Nystrand & Gamoran, 1991). It is also possible that surface strategies are applied when students do not find seminar material useful or relatable to their practice, teaching practices are ineffective, or students are taking seminars for the wrong reason. In any case, these results are

somewhat alarming, since students who report being highly motivated to learn also report not being fully engaged in meaningful learning while in the program.

Thus, utilizing findings on motivation and the use of learning strategies as proxy measures for assessing the program, two conclusions can be made. First, it is possible to conclude that the continuing education program for the CCE officials can benefit from the changes at the instructional and organizational level. The changes should aim at increasing students' motivation towards the program, as well as at increasing systematic use of deep learning strategies at the seminars. Second, in the absence of other measurements of students' learning outcomes and teaching effectiveness, correlating motivational clusters with students' use of learning strategies could be used as successful methodology to assess the effectiveness of similar continuing education programs.

**Learning Strategies and Personal Characteristics**

Choice of learning strategies is a function of both the individual and learning contexts, and their use is influenced by the interaction between students' personal characteristics, previous experience and the learning environment (Biggs, 1999). To explore the effect of factors other than motivation to study on students' use of learning strategies, I correlated gender, age, level of education, number of professional licenses, and years of experience in the field with students' use of learning strategies. To further fine-tune the results and to make them more valuable and practical for the program instructors, eleven individual learning strategies were used instead of composite scores for the deep and surface learning strategies. Critical thinking, interest in ideas, metacognitive self-regulation, monitoring effectiveness, relating ideas, seeking meaning, use of evidence, fear of failure, help seeking, peer learning, and unrelated memorizing are the learning strategies selected based on how well they fit the context of the short-term adult employer-

mandated continuing professional programs. However, with one exception (gender), correlating students' personal characteristics with individual learning strategies did not produce meaningful results.

The nature of the program is largely determined by the peculiarities of the field in which the students work. Some of the study outcomes can be explained and connected to the specifics of the CCE official job and the career path that leads to the job. For example, the results demonstrated that age and years of experience in the field have no effect on the students' use of learning strategies. At the same time, to be licensed as a Construction Code Enforcement official in New Jersey, officials must complete a training program, pass exam and have minimum of seven years in the related field. Some students join the profession relatively early in life, some might have their construction business for year before getting their license. In other words, students of the same age can have very different amount of years of experience in the field. Such career path diversity may explain the lack of meaningful results on age and years of experience variables in the study.

The difference in professional duties can also explain the results associated with gender. Male students of the program demonstrated higher results on the use of metacognitive self-regulation. In most cases, the females who participate in the program work as technical assistants, whose duties are mainly associated with dealing with paperwork in the office. The male students of the program usually occupy Construction Code Enforcement official positions. The nature of the CCE official job calls for deeper understanding of job related concepts and ability to explain those concepts to the general population, building professionals, architects, and engineers. Metacognitive self-regulation is a learning strategy characterized by the need to plan, monitor and evaluate cognition (Pintrich & DeGroot, 1990), as well as self-monitoring in

particular content area, self-questioning to check understanding (Simsek & Balaban, 2010; Weinstein & Mayer, 1989). Professional needs can drive the higher use of metacognitive self-regulation in male students in continuing education program. At the same time, the data might be somewhat compromised by the large difference in numbers of male and female participants (369 and 28 respectively).

Level of previous education and number of professional licenses convey the amount of time spent in formal educational environment and provide a way to examine the importance of past experiences as a learner. Students in the group "High School" either did not graduate high school or have only a high school diploma; "Associates" group consists of participants with some college experience or Associate degree. Obviously, students from group "Bachelors and above" spent more time in a classroom earning Bachelor's, Master's or Doctorate degree. Also, earning each new license as a CCE official involves attending pre-licensing training programs that vary in duration from 60 to 120 hours. In addition, supporting multiple licenses requires attending more seminars in a continuing program. However, the results of the study revealed that the choice of a particular learning strategy was not influenced by the amount of time students spent in educational settings. The lack of statistically significant findings may be explained by the diversity of previous educational experience of program students.

**Motivational Profiles of Continuing Education Program and Professional Motivation**

As mentioned earlier, the continuing education program in the center of this study is an essential and integral part of the CCE officials' professional experience. Comparing students' motivation for learning in the program with their motivation to do the job presents valuable perspective on students' motives to engage in professional learning. To examine this

relationship, I correlated each of the continuing education motivational profiles with professional motivation sub-types.

The concept of professional motivation is broadly defined as satisfaction of employees' need for competency, autonomy, and relatedness on the job (Baard et al., 2004; Gagne & Deci, 2005). High level of professional motivation tends to predict, among other things, creativity, confidence, self-esteem, attention, and conceptual learning (Deci et al., 1989; Moran et al., 2012; Van den Broeck et al., 2013). The results of this research confirmed previous findings: the more motivated clusters, The Self-Determined and the Additive, demonstrated significantly higher results on intrinsic and high quality extrinsic professional motivation. Professionals with high motivation for their job tend to demonstrate equally high motivation to learn how to do the job.

Current research on professional motivation presents polarized opinions about the predominant nature of professional motivation, intrinsic or extrinsic. The first view focuses on participation and empowerment of workers, while the second emphasizes using rewards and other extrinsic contingencies to maximize professional motivation (Gagne & Deci, 2005). Analyzing results of this study presents evidence in favor of intrinsic motivation. The scores for professional intrinsic motivation and high quality professional extrinsic motivation across all learning motivational profiles appeared to be higher than the scores for other extrinsic motivation sub-types. This positive trend demonstrates that CCE officials mostly have an innate desire to do their job well and their professional motivation should have a positive influence on motivation to engage in learning activities, including formal continuing education.

Somewhat interesting data appeared in the results for professional amotivation. Students from the Additive motivational cluster scored significantly higher on amotivation than any other cluster. In other words, students who are interested and motivated to develop their professional

skills in the learning program are not motivated to do their job. These results may be explained by problems in students' work environment, lack of appreciation at work, change in employment conditions, or approaching retirement. Collecting data on possible reasons that influence professional motivation was not a part of this study, however it can be an area for the future research.

It is important to note that the CCE official profession is rapidly growing older. Some data suggest that 85% of current officials are over the age of 45, only 3% are younger than 35, and 80% plan to retire within the next fifteen years (Blumgart, 2017). The findings of this study are in line with the national statistics: 94% of the participants are older than 41, and 56% are already or about to retire. The high scores on amotivation reported by the students of the Additive cluster may be explained by the fact that participants are no longer part of an active workforce. Attracting younger generations to join the profession is an ongoing challenge facing construction code enforcement field. These results will be communicated to the sponsoring agency, however further exploration of data is beyond the scope of this research.

**Implications: Program Improvements**

The conclusions drawn from the results of the study suggest that the CCE officials' continuing education program would benefit from instructional and organizational changes. Changes are warranted due to the high results on low level motivation and high reported scores of amotivation for one third of the sample, high use of surface learning strategies reported in high motivation clusters, and high results for professional amotivation for students from the Additive motivation cluster. The format of the program (5-hour individual seminars) and its compulsory nature will remain unchanged because it is specified by the NJ legislature and is a part of existing regulations. However, the sponsoring State agency can undertake certain steps to

improve the students' experience in the continuing education program. Here I describe one proposed instructional change and three possible organizational changes that could be undertaken to improve students' learning outcomes.

**Instructional Change.** First, in response to my analysis of the study data, I believe there is a warrant for instructional change to increase teaching effectiveness in the program. I recommend educating instructors about learning strategies and effective learning strategy instruction, since there is a link between teaching approaches, the use of deep learning strategies and learning outcomes (Biggs, 1999). Students' use of deep learning strategies can be facilitated by classroom contexts and instructional practices (Chinn, 2011; Fredericks et al., 2004). In other words, if program instructors add an additional dimension, teaching students to use learning strategies, to their practice, students will engage in deeper learning strategies more frequently and acquire better knowledge of the subject matter.

Effective strategy instruction in the program can help with stimulating students' learning mental process and regulating their own learning and thinking (Baeten et al., 2010; Butler et al., 2000; Chinn, 2011; Pressley & Harris, 2008; Pintrich, 2002; Weinstein et al., 1989). Observations demonstrated that lecture remains the predominant teaching technique in the program and the program instructors do not teach learning strategies directly. While lecture is the most efficient and lowest-cost method of transmitting information, for learning to happen, students' own mental processing should be facilitated (Silberman, 2006). It is not expected that teaching students how to use learning strategies will become a separate course, rather, it would be integrated into the usual content-driven lesson in their subject areas (Pintrich, 2002). Incorporating the teaching of learning strategies into the course design will compliment current instructional practices and will likely enhance students' learning outcomes.

I suggest a series of training activities for the program instructors to purposely target instructional practices that will yield deeper learning strategies, referred to here as "strategy instruction" (Chinn, 2011; Pintrich, 2002; Pressley & Harris, 2008). Currently, training events for the program instructors are not systematic, not required, and mostly focused on technical skills for teaching online seminars. As mentioned at the beginning of this study, lack of pedagogical knowledge among the continuing education instructors is one of the fundamental problems and likely contributes to the fact that instructors do not apply effective strategy instruction practices. In other words, instructors may not know about learning strategies and how to teach students to use them. The proposed training intervention will include several steps necessary to introduce the idea of strategy instructions to the instructors and program administrators, provide training on how to instruct strategies, and make instructional change sustainable.

To begin, I will assume the role of a change facilitator, since presence of an active facilitator increases the potential for success of change (Hall & Hord, 2006). My role as a program manager will allow me to implement change systematically and deliberately. The first step of the intervention process will be creating a shared vision between change facilitator, program sponsors (State agency), administrators (Rutgers) and instructors. Step two is planning, designing and implementing of a training module for program instructors on leaning strategies and strategy instruction. Next steps are checking on the progress and providing continuing assistance for instructors who execute strategy instruction at their seminars. And, finally, to support change, some organizational changes will have to take place (Hall & Hord, 2006).

To create a shared vision and receive approval for the proposed changes, I will prepare a presentation for the program sponsors and administrators, and invite several experienced

program instructors to attend. The study outcomes and program evaluations results will be used to provide rationale for the change initiative. A proposed training module outline will also be offered to the program sponsors for their review and consideration. Field experts and program instructors will be included in the planning and training design process. The future training module should convey the importance of connecting learning strategies to students' every day professional experience, and therefore it should be designed by the instructional designer in close cooperation with field expert(s).

Implementation of the proposed training module will be an iterative process. The first iteration will be presented to a small group of program instructors who express interest in becoming future strategy instruction trainers and coaches. This five-hour interactive face-to face seminar will provide some theoretical information on learning strategies followed by examples of effective strategy instruction, modeling and opportunity to practice. The training will be presented by a trained expert together with a field expert.

To be effective, the training module should promote active learning with clear and measurable goals, active training techniques, and practical exercises (Silberman, 2006). The core content will focus on an overview of learning strategies and differentiation between deep and surface learning strategies. Further, the proposed training will address eight features of effective strategy instruction (Chinn, 2011) and how to incorporate strategy instruction into the continuing education curriculum. Through modelling and active exercises, participants will find out when, how and why to use a specific strategy; how to introduce, model, and scaffold a strategy for students; how to create opportunities for student practice and; how to provide feedback on strategy use. Participants will test a variety of tools that can help students evaluate learning

strategies use (e.g. Strategy Evaluation Matrix and Regulatory Checklist (Schraw, 1998). Finally, participants will discuss how to integrate the techniques in their course design.

In addition to promoting learning strategies and learning strategy instruction, the training module could also address other possible instructional practices that increase students' learning. Tentative correlations between instructional methods observed in the program and students' motivation and use of deep learning strategies demonstrated that those instructors who use a variety of teaching strategies to supplement traditional lecture format have students reporting higher level of motivation and learning strategy use. Considering the short-term format of the seminars and the amount of information that needs to be covered at each seminar, the instructional techniques should be complementary to the lecture format. They should also address students' motivation, increase and measure student's learning, and connect seminar material with professional practice.

To better connect seminars to practice, instructors can employ problem-based learning, use case studies, real-life images and examples, or invite industry representatives for short press conferences (Silberman, 2006). As adults' readiness to learn is linked to the current demands of their everyday professional life (Elias & Merriam, 1995, Knowles, 1980), such methods will be beneficial for students' learning. Elements of collaborative learning can also be used to stimulate students' cognitive engagement. When students engage in productive talk during group activities, they tend to use effective cognitive strategies such as explanation, elaboration, and monitoring as they speak (Chinn, 2011). During small group work they have more chances to make their thinking explicit and available to the group to address conceptual discrepancies or to share their learning process with others (King, 1999). Finally, to better assess and facilitate learning, program instructors can use clicker technology. Classroom clickers or their equivalent

(cell phones with special app) will work in a short-term format of the program. Classroom clickers can help with assessing understanding, engaging students, and conducting quizzes and tests. Another advantage of using clickers is simultaneous engagement of all students and ability to provide an immediate feedback.

The participants of the pilot training program will have a semester to test newly acquired skills in their seminar courses. Since participation in the pilot is completely voluntarily, the instructors are likely to be motivated to incorporate strategy instruction into their course designs. At this stage, my role as a change facilitator will be to continuously assess and monitor implementation, as well as offer support and assistance when needed (Hall & Hord, 2006). The instructors will also be encouraged to communicate with each other and to share their experiences. Based on the results of the first iteration, necessary adjustments will be made to the training module design.

The second round of training will be offered to the rest of the instructors in the program and those who are interested in becoming instructors. It is expected that participants of the first training iteration will become trainers and coaches for the second round. This five-hour training seminar can be offered once or twice a year initially with a possible online reference module developed in the future. The responsibilities of a change facilitator at this point will include continuous monitoring and assessment, as well as facilitation of training, coaching, and mutual observations events (Hall & Hord, 2006).

Finally, to facilitate a supportive context for the change, relevant information should be regularly communicated to the program instructors and some formalization of the process should take place. Some language related to strategy instruction and available training can be added to the formal request for proposals, instructors' information letters and program evaluation

documents. It is possible that training attendance could become a requirement for the program instructors.

Facilitating changes in instructors' teaching practice is not easy and requires continuous support and attention. A high quality continuing professional development program is essential for CCE officials as the demands of enforcing the Uniform Construction Code have increased dramatically in the last decade. I believe that the series of proposed training activities can help the instructors of the continuing education program realize usefulness of the learning strategies for the CCE officials every day job experience. Being efficient at their job requires CCE officials to have a deep and flexible knowledge of the Uniform Construction Code, to be able to summarize, apply analogies, analyze evidence, regroup and connect concepts, question oneself for understanding, and monitor one's individual enforcement practices. Practicing deep learning strategies in the continuing education program will help Construction Code Enforcement officials advise, enforce, explain, and educate the general population on the laws and regulations, and ultimately make our State safer.

**Organizational Changes.** The second set of recommendations focuses on general organizational and marketing changes that can benefit the program. To address low quantity and quality of motivation reported in this study, the program administrators can take actions to ensure that students are taking seminars that are truly relevant for their professional development. The program offers a wide variety of topics to accommodate 9 licenses and a variety of specific construction code enforcement areas. Adults' readiness to learn depends on their ability to immediately apply knowledge in practice and relate it to their current needs (Knowles, 1980). Therefore, reports of low motivation may be attributed to the fact that students may attend seminars that are not necessarily related to their current professional activities.

To begin, the sponsoring agency can regularly communicate the importance of the program to the participants' employers, so employers would be more likely to allow students to attend the program on days when the most relevant seminars are offered. In many cases, employers grant release for training without considering the availability of the most appropriate training seminars. It is not uncommon for CCE officials to use their vacation days to participate in the program. Employers' cooperation in regard to training program can increase students' motivation to attend continuing education program and lead to increase in learning outcomes.

Another organizational change that can increase the relevance of the seminars and prevent students from taking less useful classes is providing more comprehensive and detailed information about each seminar prior to the registration. Currently, students receive a semester brochure with a short one-paragraph description of each seminar. To keep printing and mailing cost intact, the sponsoring agency could provide a link to a website with comprehensive seminar curriculum. More in-depth descriptions may prevent students from taking less useful classes. An additional benefit could be an increase in students' cognitive engagement. A preliminary introduction to seminar topics will start the cognitive process by bringing relevant examples from practice to students' active memory. Instructors might also choose to provide simple pre-seminar assignments or reflective questions to better prepare students for the upcoming learning experience. Receiving information about the seminar content may increase the likelihood that students will attend only those seminars that are truly relevant for their professional needs and stay motivated and engaged throughout the program.

Finally, offering more online seminars can help students enroll in the most relevant classes. It is not uncommon for students to select seminars based on their proximity to home. Taking an online seminar provides a convenient option to enroll in a wider range of possible

topics. However, currently online seminars constitute only 5% of the program offerings, and all of them are webinars taught in real time. Developing online seminars is fully supported by the sponsoring agency, but the instructors are expected to design them on their own. A professional development seminars on available webinar technology is offered once a year. Providing regular access to the services of an instructional designer may increase numbers of online offerings and make program more accessible and relevant.

In conclusion, findings from this study point to possible instructional and organizational changes can serve as a starting point for improving the program, particularly in the absence of student outcomes data. Assessing the continuing education program for the CCE officials using data on students' motivational profiles and students' use of learning strategies as proxy measures made it possible to advocate for the instructional and organizational changes in the program.

**Limitations and Future Directions/Recommendations**

In interpreting the findings of this study, some limitations must be considered. To begin, most constructs (students' motivation to learn and to work, use of learning strategies, and data on personal characteristics) were assessed using self-report scales. There are potentially number of weaknesses associated with self-report. First, though cognitive pre-testing was conducted to maximize similarities in interpretation of self-report surveys between participants and the researcher, it is possible that the structure of the questions affected if the reported information accurately measures the construct under consideration (Dodorico McDonald, 2008). Second, to minimize negative side effect and to increase connection with the present seminar, the participants were asked to fill in the survey in the middle of the training day. However, the survey might not be able to pinpoint a specific course. Participants' answers might take into

consideration past program experience that makes it difficult to evaluate the current state of the program.

Third, although participants were guaranteed full anonymity, they still may not have responded truthfully or accurately. The questionnaires addressed topics relevant to students' employment and students might perceive presenting negative information as threat to their employment or edit their responses due to influences of social desirability and situational adequacy (Schwarz, 2007). Fourth, while answering questions, participants tend to present themselves more positively, artificially boosting scores on items they consider more favorable (Dodorico McDonald, 2008). And, finally, since the participation in this research was fully voluntarily, students with higher motivation towards the learning program might have been more responsive than students with low motivation. Future research on motivational profiles should therefore consider the impact of these factors.

Another limitation of this research is the absence of longitudinal assessments of motivations. Longitudinal research would allow for showing patterns of variables over time and examine the temporal stability of motivational profiles within a sample (Hayenga & Corpus, 2010). It would also allow for program evaluation after implementation of instructional and organizational changes. Another suggestion for the future research would be to further identify contextual and social variables responsible for the development of students' motivational profiles and their motivation to work.

An additional limitation is that the design used in this research is correlational in nature and thus prevents me from drawing causal interpretations from the findings. As with all correlational data, no conclusions can be drawn about causality (Keller, 2016). Nevertheless, the present study raises several points that future research could fruitfully address. Most importantly,

the results suggest that a person-centered approach is a valuable tool for understanding motivation as it exists in professional programs, and correlating data on motivational profiles and use of learning strategies can be used as an assessment mechanism in the absence of student outcomes data.

The central purpose of the study is to test methodology of assessing a program using data on students' motivational profiles and students' use of learning strategies as proxy measures. To my knowledge, this is the first study of short-term mandatory continuing education professional program that classifies students according to their motivational profiles in order to assess the program. As some research suggests, motivational profiles are context sensitive (Ratelle, 2007) and similar motivation profiles would not be found in other educational environments. Therefore, another possible direction for the future research could be applying the same methodology in different types of professional programs and compare the results.

In conclusion, the present research underscores the importance of studying students' motivation using a person-oriented approach, as well as the significance of distinguishing between the different types of motivation identified by self-determination theory. The outcomes of the study highlight the importance of studying how types of motivational profiles interact with learning strategies and how the combination of these measures can be successfully used as proxy measures for assessing program effectiveness. Researching professional motivation and use of individual learning strategies, and to a lesser degree, students' personal characteristics, enabled me to more thoroughly delineate student populations found in continuing education program for CCE officials with regard to the different reasons underlying their academic behaviors. The data can be used to address the problem of practice and compliment current successful practices in the CCE officials continuing education program by designing and implementing a training module

for the program instructors on learning strategies. Additionally, the study findings raised a number of important issues that will be communicated to the program sponsors to be addressed on an organizational level. Finally and most importantly, the results of the study and change implementation will contribute to increasing students' cognitive engagement that will result in deeper knowledge and skills being transferred to the CCE officials' everyday work practice to improve safety protections and wellbeing of the people of New Jersey.

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# Appendix A

## Informed Consent Form

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UNIVERSITY

APPROVED

AUG 26 2014

Approved by the
Rutgers IRB

EXPIRES

AUG 25 2015

Approved by the
Rutgers IRB

**Attachment 4a**

**Principal Investigator: Olga Chaban**
**Project Title: Assessment of Motivation and Use of Learning Strategies (questionnaire).**

**INFORMED CONSENT FORM**

You are invited to participate in a research study that is being conducted by Olga Chaban, who is a Doctorate student at the Graduate School of Education at Rutgers University. The purpose of this research project is to examine whether continuing professional program for the Construction Code Enforcement (CCE) officials is effective in providing participants with knowledge necessary for performing their professional duties and to determine what steps are necessary to improve the program. The results of this study will be used to improve the program and to introduce new instructional methods to better meet the needs of the students.

Between 200 and 7000 students will participate in the study. It will take 15-30 minutes to fill in the questionnaire. A follow up interview with each participant will take up to 90 minutes if you chose to participate. The follow up interview will be conducted later in a year.

The study procedure includes a questionnaire that you will be asked to fill in to the best of your abilities. I will provide you with a handout of the questionnaire and ask you to read one question at a time and provide an honest answer. If you agree to participate in a follow up interview, your name and contact information will be collected from the questionnaire. Please state your name and contact information on the last page of the questionnaire. Follow up interviews will be conducted later in a year and will take up to 90 minutes of your time. Interviews will be audio recorded.

This research is confidential. Confidential means that the research records will include some information about you and this information will be stored in such a manner that some linkage between your identity and the response in the research exists. Some of the information collected about you includes your name, types of licenses, job title, and your previous education. Please note that I will keep this information confidential by limiting individual's access to the research data and keeping it in a secure location.

I and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the original data, except as may be required by law. To protect your privacy and confidentiality, pseudonyms will be used every time the data is presented to other people. All study data will be kept for 3 years.

There are no foreseeable risks to participation in this study.

You have been told that the benefits of taking part in this study may be: improvement in the instructional practices in the continuing education program for code officials.

Participation in this study is voluntary. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable. Your refusal to participate in the study or any of the answers to the questions you provide will not in any way impact your ability to receive continuing education credit, your employment, or your future license renewal.

I am asking for your permission to allow me to audiotape your interview as part of that research study. You do not have to agree to be recorded in order to participate in the main part of the study. The recording(s) will be used for the purposes of accurately transcribing the conversation. The recording(s) will include your name. The recording(s) will be stored in a locked file cabinet and linked with a code to your identity; and will be destroyed upon completion of the study.

Initial _____

RUTGERS
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If you have any questions about the study or study procedures, you may contact myself at oachaban@gmail.com or by calling 732-439-8215.

If you have any questions about your rights as a research subject, you may contact the IRB Administrator at Rutgers University at:
Rutgers University, the State University of New Jersey
Institutional Review Board for the Protection of Human Subjects
Office of Research and Sponsored Programs
3 Rutgers Plaza
New Brunswick, NJ 08901-8559
Tel: 848-932-0150
Email: humansubjects@orsp.rutgers.edu

You will be given a copy of this consent form for your records.

Sign below if you agree to participate in this research study:

Subject (Print) _____

Subject Signature _____ Date _____

Principal Investigator Signature _____ Date _____

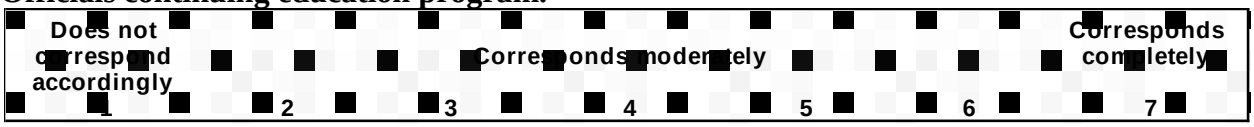
APPROVED
AUG 26 2014
Approved by the Rutgers IRB

EXPIRES
AUG 25 2015
Approved by the Rutgers IRB

## Appendix B

### Academic Motivation Scale (AMS) questionnaire (Vallerand et al., 1992)

**Using the scale below, please indicate to what extent each of the following items presently corresponds to one of the reasons why you attend the Construction Code Enforcement Officials continuing education program.**




1... because I like the feeling of communicating my job-related ideas to others.

1 2 3 4 5 6 7

2... in order to help myself become a better professional.

1 2 3 4 5 6 7

3... because I would regret for not attending a seminar on a particular topic.

1 2 3 4 5 6 7

4... only because a seminar is offered in a facility close to home even though I don't find the topic of the seminar useful.

1 2 3 4 5 6 7

5... in order to get better job later.

1 2 3 4 5 6 7

6... because I believe that these seminars will improve my competence as a worker.

1 2 3 4 5 6 7

7... because of the satisfaction I feel in trying to excel in what I do.

1 2 3 4 5 6 7

8... only because I need my license(s).

1 2 3 4 5 6 7

9... for the pleasure I experience when I discover new job-related things I never knew before.

1 2 3 4 5 6 7

10…because I would feel bad not attending seminars that deal with the latest Code updates.

1 2 3 4 5 6 7

11... although it does not make a difference in my professional activity whether I attend them or not.

1 2 3 4 5 6 7

12... for the enjoyable feelings I experience.

1 2 3 4 5 6 7

13... because I chose them as means to reach my career goals.

1 2 3 4 5 6 7

14... because I want to be viewed more positively by my employer.

1 2 3 4 5 6 7

15... because I have to, even though I really feel that I being at the seminar is not a good use of my time.

1 2 3 4 5 6 7

16... because of the pleasure I feel as I become more and more professionally skilled.

1 2 3 4 5 6 7

17... because otherwise I would feel guilty for not attending seminars on latest industry updates.

1 2 3 4 5 6 7

18... attending these seminars allow me to continue to learn new job-related topics that interest me.

1 2 3 4 5 6 7

19... because I do not want to disappoint my supervisor.

1 2 3 4 5 6 7

20... because I choose to invest my time in what is professionally important to me.

1 2 3 4 5 6 7

21... for the pleasure I feel mastering what I am doing.

1 2 3 4 5 6 7

22…because I believe my knowledge of Code can impact safety and well-being of people of New Jersey

1 2 3 4 5 6 7

23... in order to have better salary later on.

1 2 3 4 5 6 7

---

*Intrinsic Motivation: 1, 7, 9, 12, 16, 18, 21,*

*Extrinsic (Identified & Integrated) Motivation: 2, 6, 13, 20, 22*

*Extrinsic (Introjected & External) Motivation: 3, 5, 10, 14, 17, 19, 23,*

*Amotivation: 4, 8, 11, 15*

## Appendix C

### Revised Approaches to Study Inventory (RASI) (Richardson, 2005)

**This questionnaire has a number of questions about your attitudes towards your way of learning. Think about current seminar or seminars that you have recently attended at the CCE Officials continuing education program and based on this experience please choose the one most appropriate response to each question.**

1—this item is never or only rarely true of me
2—this item is sometimes true of me
3—this item is true of me about half the time
4—this item is frequently true of me
5—this item is always or almost always true of me

1. I try to relate ideas I come across during seminars to those in practice or those learned at other seminars whenever possible. 1 2 3 4 5

2. When I'm reading slides or handouts, I try to find out for myself exactly what the meaning of the reading is. 1 2 3 4 5

3. When I read slides or handouts, I examine the details carefully to see how they fit in with what I come across in my work practice. 1 2 3 4 5

4. I find that learning new topics at the program courses can be exciting at times. 1 2 3 4 5

5. When reading slides or handouts, I make up questions to help focus my reading. 1 2 3 4 5

6. I try to work with other students to complete the course assignments. 1 2 3 4 5

7. When I can't understand the material in this course, I ask another student in this class for help. 1 2 3 4 5

8. I'm not really sure what's important in seminar lectures, so I try to get down all I can. 1 2 3 4 5

9. I often seem to panic if I get behind with learning new material at the seminar.

   1 2 3 4 5

10. Whenever I read or hear an assertion or conclusion in this class, I think about possible alternatives.

    1 2 3 4 5

11. When I do an exercise or a quiz during seminar, I go over the work I've done carefully to check the reasoning and that it makes sense. 1 2 3 4 5

12. I usually try to understand for myself the meaning of what is being taught at the seminar.

    1 2 3 4 5

13. I like to play around with ideas of my own even if they don't get me very far.

    1 2 3 4 5

14. Before starting work on an exercise or a quiz, I think first how best to tackle it.

    1 2 3 4 5

15. When I become confused about something I'm hearing at the seminar, I go back and try to figure it out later. 1 2 3 4 5

16. Even if I have trouble understanding the material in this class, I try to figure it out on my own, without help from anyone. 1 2 3 4 5

17. Much of what I'm studying at the seminar makes little sense: it's like unrelated bits and pieces.

    1 2 3 4 5

18. When learning new things at this course, I often try to explain the material to a classmate or coworker during break or after seminar.

    1 2 3 4 5

19. I treat the course material as a starting point and try to develop my own ideas about it.

    1 2 3 4 5

20. When an interpretation or conclusion is presented in class or in the readings, I try to decide if there is good supporting evidence. 1 2 3 4 5

21. When I am reading slides or handouts I stop from time to time to reflect on what I am trying to learn from it. 1 2 3 4 5

22. I look at the examples presented at the seminar carefully and try to reach my own conclusion about what I'm studying. 1 2 3 4 5

23. Regularly I find myself thinking about ideas from program courses when I'm doing other things. 1 2 3 4 5

24. I find I have to concentrate on just memorizing a good deal of what I have to learn in class. 1 2 3 4 5

25. Even when course materials are dull and uninteresting, I manage to keep working until I finish. 1 2 3 4 5

26. When I'm learning a new topic at the seminar, I try to see in my own mind how all the ideas fit together. 1 2 3 4 5

27. Before tackling a problem or assignment, I first try to work out what lies behind it. 1 2 3 4 5

28. I think about what I want to get out of this course to keep my learning process well focused. 1 2 3 4 5

29. During class time I often miss important points because I'm thinking of other things. 1 2 3 4 5

30. I often worry about whether I'll ever be able to cope with the seminar work properly. 1 2 3 4 5

31. I ask the instructor to clarify concepts I don't understand well. 1 2 3 4 5

32. Often I feel it is difficult to keep up with the pace of the seminar. 1 2 3 4 5

33. I try to play around with ideas of my own related to what I am learning in this course. 1 2 3 4 5

34. It's important for me to be able to follow the argument during the seminar, or to see the reason behind things. 1 2 3 4 5

35. I sometimes get interested in some course topics and feel I would like to learn more about them. 1 2 3 4 5

36. I often have trouble in making sense of the things I have to remember from the seminar. 1 2 3 4 5

37. During the course, I often discuss course material with a group of students from the class during the breaks or after class. 1 2 3 4 5

38. Ideas I come across during the seminar often set me off on long chains of thought of my own. 1 2 3 4 5

39. Often I feel I'm overwhelmed by the amount of material presented at the seminar. 1 2 3 4 5

40. If readings are difficult to understand, I change the way I read the material. I ask myself questions to make sure I understand the material I have been learning at the seminar. 1 2 3 4 5

41. Some of the ideas I come across at the program courses I find really interesting. 1 2 3 4 5

42. I often find that I have been reading slides or handouts but don't know what it was all about. 1 2 3 4 5

43. When I have finished an exercise or a quiz, I check it through to see if it really meets the requirements. 1 2 3 4 5

44. Often I find myself questioning things I hear at the seminars. 1 2 3 4 5

45. I often find myself questioning things I hear or read in this course to decide if I find them convincing. 1 2 3 4 5

*Open-ended*

What helps you understand material better during seminar?

---

*Deep*

*Seeking Meaning: 2, 12, 21, 27*

*Relating Ideas: 1, 13, 26, 38*

*Use of Evidence: 3, 20, 22, 34, 44*

*Monitoring Effectiveness: 11, 14, 28, 43*

*Interest in Ideas: 4, 23, 35, 41*

*Critical thinking: 10, 19, 33, 45*

*Metacognitive Self-Regulation: 5, 15, 29, 40, 42*

*Surface*

*Unrelated memorizing: 8, 17, 24, 36*

*Fear of failure: 9, 32, 39, 30*

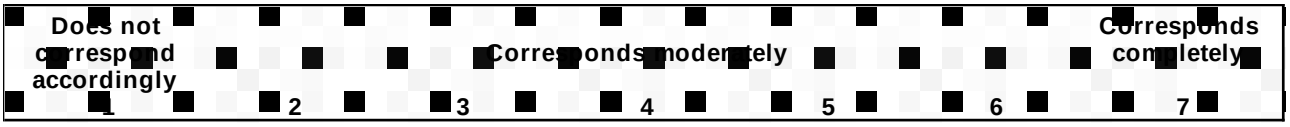
*Peer Learning: 6, 18, 37*

*Help Seeking: 7, 16, 25, 31*

## Appendix D

### Work Extrinsic and Intrinsic Motivation Scale (WEIMS) (Tremblay et al., 2009)

**Using the scale below, please indicate to what extent each of the following items presently corresponds to one of the reasons why you do your job.**




1…because it has become a fundamental part of who I am.

1 2 3 4 5 6 7

2…because I want to be a "winner" in life

1 2 3 4 5 6 7

3…because I derive much pleasure from learning new things.

1 2 3 4 5 6 7

4…because this is the type of work I chose to do to attain a certain lifestyle.

1 2 3 4 5 6 7

5…I don’t know, too much is expected of us.

1 2 3 4 5 6 7

6…because it allows me to earn money

1 2 3 4 5 6 7

7…because it is important for the safety and well-being of people of New Jersey

1 2 3 4 5 6 7

8…I ask myself this question. I don't seem to be able to manage the important tasks related to this work.

1 2 3 4 5 6 7

9…because I chose this type of work to attain my career goals.

1 2 3 4 5 6 7

10…because I want to succeed at this job. If not I would be ashamed of myself

1 2 3 4 5 6 7

11…for the satisfaction I experience from taking on interesting challenges

1 2 3 4 5 6 7

12…for the income it provides me.

1 2 3 4 5 6 7

13…I don't know why. We are provided with unrealistic working conditions.

1 2 3 4 5 6 7

14…for the satisfaction I experience when I am successful at doing difficult tasks.

1 2 3 4 5 6 7

15…because I want to be very good at this work, otherwise I would be disappointed

1 2 3 4 5 6 7

16…because this job is a part of my life.

1 2 3 4 5 6 7

17…because this type of work provides me with security.

1 2 3 4 5 6 7

18…because it is the type of work l have chosen to attain certain important objectives.

1 2 3 4 5 6 7

*Intrinsic: 3, 11, 14*

*Extrinsic (Identified & Integrated) Motivation: 1, 4, 7, 9, 16, 18*

*Extrinsic (Introjected & External) Motivation: 2, 6, 10, 12, 15*

*Amotivation: 5, 8, 13*

## Appendix E

## Personal and Professional Characteristics of Students

**Please identify what license(s) you are currently have:**

Building ___ Fire Protection ___ Electrical ___

Mechanical ___ Plumbing ___ Elevator___

Multiple Dwelling ___ TA ___ Other _____

**How many years of experience do you have as a Code Enforcement Official?**

Less than 5 years _____ 5 - 9 years _____ 10 - 14 years _____

15 - 19 years _____ 20 - 24 years _____ 25 - 30 years _____

More than 30 years _____

**Gender:**

M____ F ____

**Age**

18 - 25 _____ 26 - 40 _____ 41 - 55 ____

56 - 65 _____ 67 and older _____

**What is your highest level of education completed?**

Haven't graduated high school ___ High school/GED ___ Some college ___

Associate degree ___ Bachelor's degree ___ Master's degree ___

Doctorate degree ___

# Appendix F

## Observation Protocol

**Project Title:** Assessment of motivation and use of learning strategies of students in adult employer mandated continuing professional program for the Construction Code Enforcement (CCE) officials.

**Principal Investigator: Olga Chaban**

**Seminar Title: _____**

**Date and Location: _____**

**Instructor: _____**

**Number of students in the class:_____**

**RATING SCALES**

| | |
|---|---|
| 1 = Not observed at all / Not demonstrated at all | 4 = Observed often / Demonstrated well |
| 2 = Observed rarely / Demonstrated poorly | 5 = Observed to a great extent / Demonstrated to a great extent |
| 3 = Observed an adequate amount / Demonstrated adequately | |

### 1. TEACHABLE MOMENTS

| Rating | Indicator |
|---|---|
| | **1.1** Instructor explains and teaches a specific strategy |

Evidence

| Rating | Indicator |
|---|---|
| | **1.2** Instructor models a specific strategy. |

Evidence

| Rating | Indicator |
|---|---|
| | **1.3** Instructor hints students to use a specific strategy. |

Evidence

| Rating | Indicator |
|---|---|
| | **1.4** Instructor scaffolds use of strategies for demanding task. |

Evidence

| Rating | Indicator |
|---|---|
| | **1.5** Instructor provides feedback and reinforcement on a strategy use. |

Evidence

## 2. INSTRUCTIONAL ENVIRONMENTS THAT PROMOTE HIGH COGNITIVE ENGAGEMENT

| Rating | Indicator |
|---|---|
| | **2.1** Instructor teaches in such a way as to bring out the structure of the topic or subject explicitly |

Evidence

| Rating | Indicator |
|---|---|
| | **2.2** Instructor provides clear directions, explain concepts, use advance organizers |

Evidence

| Rating | Indicator |
|---|---|
| | **2.3** Instructor relates information to what students already know |

Evidence

| Rating | Indicator |
|---|---|
| | **2.4**Instructor suggests ways to organize and learn the material |

Evidence

| Rating | Indicator |
|---|---|
| | **2.5** Instructor provides feedback that is immediate, informative, and identifies and corrects errors and eradicating students' misconceptions. |

Evidence

| Rating | Indicator |
|---|---|
| | **2.6** Instructor uses questioning patterns that require students to use higher level thinking skills to answer |

Evidence

| Rating | Indicator |
|---|---|
| | **2.7** Instructor makes statements about task value |

Evidence

| Rating | Indicator |
|---|---|
| | **2.8** Instructor creates positive work atmosphere, so students can make mistakes and learn from them |

Evidence

| Rating | Indicator |
|---|---|
| | **2.9** Instructor demonstrates a passion for the subject and encouraging students to do the same |

Evidence

| Rating | Indicator |
|---|---|
| | **2.10** Instructor relates content to students' experiences or current events |

Evidence

| Rating | Indicator |
|---|---|
| | **2.11** Instructor teaches to elicit a positive response from students (by questioning or presenting problems, rather than teaching to expound information) |

Evidence

| Rating | Indicator |
|---|---|
| | **2.12** Instructor encourages students to generate questions, and/or arguments |

Evidence