THE SECOND APPRENTICESHIP:

AN EXPLORATORY MIXED METHODS STUDY

OF THE TRANSITION FROM TRADESPERSON TO TEACHER

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ABSTRACT

Within educational research, postsecondary vocational education receives relatively little attention and trades education is studied even less frequently. This research sought to address this gap through exploring the transition of master tradespeople who have completed a first apprenticeship in their trade and who then undertake a second apprenticeship as trades teachers. The research question explored: the motivation for career change; pre-existing competencies brought to the role of teaching; the methods used to learn to teach; negotiation of a new vocational identity; and sources of satisfaction in the teaching role.

Using a constructivist paradigm, this qualitative-dominant crossover sequential mixed methods study surveyed trades teachers via a newly created instrument, distributed to three Western Canadian polytechnic institutions. In addition to analysis of the full data set, the survey data were divided by respondents' years of teaching to look for possible changes with experience. A summary was shared with survey participants who were willing to participate in follow-up discussions. Interpretation panel meetings were held with these volunteers. The discussions were transcribed and analyzed for themes, comparing the results of this qualitative data set to that of the quantitative survey results.

As the qualitative and quantitative data from the sample were combined and interpreted by the researcher, the following key insights about the studied group emerged.

Tradespeople moving to trades teaching are motivated primarily by two factors. They take pride in their trade and want to see the craft continue through teaching and mentoring apprentices on a full-time basis. Secondly, they seek an improved work-life balance through teaching and will accept lower remuneration as a teacher in order to have more time for family and life outside of work.

Tradespeople bring a strong sense of having been a teacher, as an aspect of being a journeyperson, to the role of trades teacher. They are self-reflective and wish to improve as teachers. They rate themselves as stronger in the general abilities, attitudes and traits associated with teaching than in pedagogical knowledge and skills competencies, but learn in these areas to gain confidence in their overall teaching competency over time.

In learning to be a teacher, trades teachers prefer to replicate the non-formal learning methods of the apprenticeship model: mentorship, discussions, self-study, and trial and error. They reject overly-formal or academic training as impractical, not helpful toward improving

teaching, and an expression of the lower status accorded to trades teaching within higher education.

The transition in vocational identity from tradesperson to trades teacher is not a distinct change or linear process. It is an evolution, growing from the role of teacher embedded within journeyperson, subsuming the trades knowledge gained through apprenticeship and practice, to become a new identity that makes one more than a teacher, more than a tradesperson, but rather a teacher of the trade.

Trades teachers are satisfied with their work. They find satisfaction primarily through interactions with students and through relationships with colleagues. Dissatisfaction comes from time constraints and from a sense of not being valued within the institution.

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DEDICATION

This work is dedicated to the many masters of their crafts

who have guided me in my many apprenticeships

as a writer, journalist, manager, teacher, researcher, and scholar.

Above all, it is dedicated to my parents

Laurence Hazelwood, farmer and carpenter,

and Norma (Laing) Hazelwood, homemaker and teacher,

who instilled respect for both hard work and education.

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

Vocational education, delivered in Canada through postsecondary colleges, prepares students for a wide variety of career specialties including professions, technical occupations, and trades. Approximately 732,000 individuals were enrolled in Canadian colleges during 2011-2012 (Statistics Canada, 2013a). Additionally, a portion of the 426,000 apprentices registered in Canada during 2011 were taking college-based training as a part of their apprenticeship in a recognized trade (Statistics Canada, 2013b).

Canadians consider postsecondary education, and training for employment, to be important; this belief is reflected in the large investment made in postsecondary education by government; by agencies through student sponsorship; by parents through support to their children as students; and by students themselves through their money and time. Including both college and university enrolment, the total public investment in postsecondary education in Canada in 2005-06 was $30.6 billion, while personal investment in tuition represented about $5 billion (Council of Ministers of Education, Canada, 2008).

There are returns shown on these investments. In tangible form, the return on investment flows to graduates who typically see increased lifetime earnings (Conference Board of Canada, 2013), and to industry in a well-trained and innovative workforce (Canadian Council on Education, 2006). In less measurable forms, returns are shown through graduates' critical thinking skills, and enjoyment of life. Higher education's contribution to a full life is reflected in phrases such as the often-repeated statement that *education is the new buffalo* (Stonechild, 2006), which links postsecondary education today to the animal that provided the necessities of life for prairie Aboriginal people in the past.

Despite a trend of increasing enrolment in postsecondary studies in Canada (Lambert, Zeman, Allen, & Bussiere, 2001), the demand for yet more training is heard from industry, government, and individuals. This demand could be met by increasing capacity through capital investment and increased hiring of faculty; or, it could be met, to some extent, by improving the effectiveness of the current system. Given current governments' policy of fiscal restraint toward postsecondary education (Canadian Federation of Students, 2012) and the shortage of available faculty, particularly in some specialties (Association of Universities and Colleges of Canada,

2007), the option of building a bigger postsecondary system cannot reasonably be considered as the only path to be pursued.

Even when funding is made available, postsecondary institutions are more than capital investments in buildings and technology: teachers are a key component in any educational system. Increasing the effectiveness of teachers, or in postsecondary terms, professors or instructors, could be a means to increase the effectiveness of the overall educational system. Gains in teacher effectiveness could increase learning, and graduation rates for students, thus helping to meet the demand for training and expanding the benefit or return on investment for students and society.

Understanding effectiveness in teaching is not a simple matter, however: the underlying, and never fully answered, question is what constitutes effective teaching. Researchers have nibbled at the edges of this question in numerous writings, with more than 5000 articles devoted to the question in higher education alone (Vajoczki, 2008), but without a definitive answer. Perhaps no clear answer should be expected to the question of what is effective teaching, given the highly complex, "rich messiness" (Elbow, 1986, p. ix) of teaching and learning; nevertheless, the importance of the question, and the results that could be gained by improving the level of effectiveness, would seem to warrant continuing the search.

My interest in the topic of effective postsecondary teaching comes from my 10-year experience as a teacher within a postsecondary vocational institution, as well as an interest in education that spans more than 30 years. As an instructor, I certainly sought to be an effective teacher, and observed colleagues working toward the same goal. Despite our efforts, some students did not succeed, at least as measured by graduation. Without the credential that comes with completion of their studies, these students were limited in their ability to enjoy the full rewards of their studies by obtaining jobs in their field, higher wages as credentialed workers, or moving on to other studies.

Teachers recognize the complexity of any learning situation, and that the learner, particularly when an adult learner, plays a large part in successful completion of a program of study. Yet, there are nagging questions for the reflective teacher as to one's own role: How could I have done better? Could I have been more effective as a teacher? Could greater knowledge or skill on my part have changed the outcome?

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During my time as a postsecondary teacher, I also observed efforts by my institution toward this same goal, using methods found at many postsecondary institutions in Canada. Recruitment activities seek to hire effective teachers, but the skills or competencies for teaching in this setting are often only nebulously defined. New teachers take training in the basics of pedagogical practice, and professional development activities are offered, but any resulting change in effectiveness goes largely unmeasured. Those evaluation processes for teachers that do exist are often not directly aligned to training or other improvement efforts. There is little research into better understanding of the intricate web of effective teaching practice in vocational education in Canada. Overall, the efforts to improve teaching effectiveness could, themselves, be much more effective.

Adding to these observations within the college, my studies and work experience prior to being a postsecondary teacher lead to me to the more specific topic of human resource practices and their link to effective teaching. My educational background includes an undergraduate degree in Education and a graduate degree in Business, with a research interest in organizational behaviour. My work experience includes 12 years as a business manager, a role that included significant human resource management responsibilities. Recruitment of employees, retention of effective employees, performance evaluation, and professional development are practices which have been a part of both my studies and work experience.

The third factor, which narrows this topic still further, is my interest in training for the trades. While I am not a tradesperson, nor have I taught in this field, many of my family members are tradespeople. Still other family members have taken some training, but did not complete to journeyperson status. From this background, I have developed an appreciation for the worth of trades training, and trades practice, that leads me to wonder how more students could be helped to succeed within this specific segment of postsecondary vocational education.

I also wonder how the teachers within this segment of postsecondary education could be best helped to grow as teachers. All vocational teachers come to teaching with an established identity in industry; this identity, and the knowledge attached to it, is the key value they bring to the vocational teaching role. Few vocational teachers arrive at this new career with formal pedagogical knowledge, and all must negotiate the creation of a new identity as teacher in addition to or in replacement of the identity of industry expert. Research has established the importance of understanding pedagogy, and the role of identity, in helping teachers make the

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transition to this role, and to both grow in and stay in the role over the long term (Hong, 2010:
Korthagen, 2004; Trede, Macklin & Bridges, 2011). Yet, there is little research within vocational
education on these matters. As stated by Palmieri (2004):

> Notions of the *good teacher* are common in the field of education research but, by and
> large, they focus on teachers who work in school education. The idea of the good teacher
> in vocational education and training is less evident – both in everyday popular experience
> and in research. Yet the notion of the *good teacher* establishes a moral claim about the
> professional culture of the teacher and the occupational culture that they serve which
> apply within vocational education as much as in school education. (p. 1)

As a society, measured by the demands of industry, government, parents, and students, we accept
that vocational education is important; if this education is important, then understanding what
constitutes and builds the *good teacher* within this setting should be important, too.

Moving beyond the self-reflective questions of a teacher, and the questions of how
postsecondary institutions can be more effective in assisting teachers to teach, this research is
motivated by the people who live with the results of our efforts: the students. If we can be more
effective teachers, students are more likely to learn, succeed, and graduate. It is with the students
where the true importance of this study lies. While it is a truism, education changes lives. The
topic of effective teaching in vocational education reaches far beyond the classroom or the
college; an improved understanding of teaching in this setting could assist other institutions,
other teachers, and, ultimately, their students.

1.2 Background

1.2.1 Research for Effective Vocational Teaching

Improving many human resources processes—recruitment, retention of effective
employees, evaluation, and development—rests on defining effectiveness in the context of a
specific role or job family (Landy & Conte, 2007). Teaching as an occupational role has been
well studied at the elementary and secondary school level (Darling-Hammond, 2012), but is less
well defined at the postsecondary level. Within postsecondary education, universities often
subordinate teaching to research and, to some extent, the same prioritization occurs in the college
setting (Grubb, 1999a). This secondary status for teaching reduces attention to teaching skills in
favour of evidence of subject matter expertise. Narrowing the context further, within the college
system of postsecondary education, research interest on effective teaching has focused more on
academic disciplines rather than vocational training, leaving a particular gap in knowledge

regarding how those who teach the practical arts of trades and work-specific skills can best meet the needs of their students (Palmieri, 2004; Grollman & Rauner, 2007). Karmel (2010) claimed that the vocational training sector "is the least understood and most poorly defined education sector" (p. 229).

Dennison and Gallagher (1986) compared the role of vocational instructors to that of university faculty. In the university setting, faculty time allocation and review processes make teaching one part of the job along with research and service; in the vocational setting, without the expectation of research, teaching is the primary role of faculty. Dennison and Gallagher (1986) concluded that the vocational college appeals to those who want to teach rather than conduct research and that, further, those working within colleges have a desire to be good teachers. Yet, without studying the practice of teaching in the college or vocational training setting, little is known about what being a good teacher means in this particular context.

Palmieri (2004) argued that lack of attention to effective teaching practices in this sector shows that "the teacher as a vital element of the learning process has been disregarded or under-valued" (p. 2). Barabasch and Watt-Malcolm (2013) offered a similar view, saying there is a demand for knowledgeable and skilled vocational teachers in Canada, but that vocational training holds a "somewhat nebulous position" in Canadian society (p. 175). They argued there is a "dismal lack of recent quality, Canadian-based research specifically addressing [vocational] teacher education" (Barabasch & Watt-Malcolm, 2013, p. 177).

Vocational teachers are typically hired as subject matter experts who bring knowledge, experience, and job-specific credentials to the role of teaching, but without the lengthy academic preparation of other postsecondary teachers. Although practices vary worldwide (Grollman & Rauner, 2007), the common Canadian practice is to recruit vocational teachers by specifying a credential such as journeyperson in a trade, a number of years of experience, and giving a general nod to teaching by including terms such as "effective instructional ability" (Saskatchewan Institute of Applied Science and Technology [SIAST], 2013) or "excellent interpersonal skills" (Northern Alberta Institute of Technology [NAIT], 2013). This lack of definition regarding teaching is problematic, given the centrality of these skills to the primary duty of vocational education faculty: teaching.

The lack of specifics regarding teaching skills may be a reflection of how teaching is considered in the college context, as an ordinary activity, one that is understood intuitively, and

is thought to either defy or not require definition. Pratt and Nesbit (2000) said that teaching of adults is "enacted habitually" (p. 117). Merriam and Brockett (1997) identified a group within adult education as *invisible teachers*: those who are not engaged in discussions about education, do not participate in graduate education programs, and do not belong to professional associations, yet are fully involved in adult education. Given that the background of many vocational instructors favours the practical rather than the academic, this description may fit very well in the vocational training setting, suggesting these teachers are *invisible*, and their work is often ignored in the larger sphere of adult or postsecondary education practice and research, as suggested by Barabasch and Watt-Malcolm (2013) and Palmieri (2004).

Additionally, given that postsecondary teachers are hired for their subject matter expertise, without prerequisite teacher training, they may undergo an abrupt shift in vocational identity as they leave their field of expertise for teaching. This transition is most pronounced in vocational trades education (Chappell & Johnston, 2003), where strong identities are forged in the trades, and little transition time or training is provided for the new teaching role. The trades teacher, who has gone through a first apprenticeship of four years or more to earn the credential that grants subject matter expertise, is then entered into a second apprenticeship in the transition to the role of trades teacher.

1.2.2 Effective Vocational Teaching and Students

At the same time as effective teaching in the adult vocational sector is being largely left to intuition or habit (Pratt & Nesbit, 2000), it can be argued that this is the segment of postsecondary education that most needs effective teachers. The demographic profile of the student in trades training is different from that of the university undergraduate, or even the diploma-seeking student attending a college. A study of postsecondary students in Saskatchewan showed marked differences between student groups (Prairie Research Associates [PRA], 2012). Graduates of trades programs were overwhelmingly male, with an average age of 35 years. Approximately half of them were married or with a partner; and half had responsibility for a child or children. Approximately one third of graduates in this group represented the first generation in their family to undertake postsecondary studies. Only 16 % took a direct route from high school to their postsecondary training, and they were less likely than university students to have completed high school (PRA, 2012, p. 25).

This demographic profile suggests trades students may have a more difficult time in their studies due to balancing family responsibilities with school, and having a gap in education that allowed study skills to slip. Additionally, simply by being male, they may struggle in an educational setting, given research on how education often fails male students (Gibb, Fergusson & Horwood, 2008). Vorhaus (2010) and Grubb (1999b) claimed vocational students overall present a more diverse group to be taught as compared to university students due to the more open admission policies of colleges, and to students of vocational institutions having a predominant learning style that differs from students in university. This claim is supported by the demographic profiles for Saskatchewan graduates (PRA, 2012).

Additionally, there is a strong possibility that an entrant in trades training will not complete to a credential. Laporte and Mueller (2013) showed that while the number of apprentices registered had grown substantially across Canada from 1995 to 2005, the completion numbers were virtually unchanged, and dropped as a percentage from 10.4 % to less than 7 % (p. 3). These figures have been challenged by other agencies, such as Polytechnics Canada's (2012) statistics of 50 % completion using a longer timeframe to measure completion (p. 2); nevertheless, the completion rate for apprenticeship students lags behind that of other postsecondary students (Statistics Canada, 2013c, p. 1).

There are many factors affecting non-completion of apprenticeship (Canadian Apprenticeship Forum [CAF], 2011); however, teaching surely cannot be dismissed as a factor in student success in any educational setting. Karmel (2010) listed many reasons for apprentice non-completion, but put "quality of teaching" (p. 232) first among institutional factors.

Beyond those students who graduate, or those who enroll but do not complete, there are those individuals who never begin postsecondary studies. The Canadian Council on Learning (CCL) looked at *long-term nontrainees* or those who do not access postsecondary training at all. These individuals are likely to be male, 45 years and older, with a high school education or less, and with a previously negative experience with education (CCL, 2009), mirroring the profile of apprenticeship students in Saskatchewan. The report stated that "individuals who do not engage in learning are among Canada's most vulnerable" (CCL, 2009, p. 38). These are the individuals who are not receiving their share of the return on our collective investment in postsecondary education, and who may have the most to gain from entrance and success in that setting.

1.2.3 Effective Vocational Teaching and Society

Vocational training offers benefits to society as a whole, extending beyond the benefits to be gained by individual students in terms of graduating, gaining employment, and earning a higher income than they would without a credential. The practical skills imparted through trades training and apprenticeship allows businesses to operate, homes to be built, and services to be provided. Industry representatives have been the most vocal in calling for more graduates because the shortage of skilled employees is abundantly evident to them. A position paper from the Saskatchewan Provincial Building and Construction Trades Council (2012) stated: "Trades training must be given a new prominence in Saskatchewan's post-secondary system that reflects its vital importance to Saskatchewan's economic well-being" (p. 2). This call is supported by a search of a Saskatchewan job posting site that showed 3,567 available positions under the heading of trades, representing approximately one third of the total jobs available (Saskjobs, 2013).

Economic boom times create further difficulties for training institutes, however; apprenticeship training is pro-cyclical, with demand rising as industry opportunities rise (Laporte & Mueller, 2011). Since trades teachers are drawn from the existing pool of journeypersons, training institutes are competing with strong demand in industry for the same people. This reality exacerbates the situation of providing training spaces and teachers; it makes the task of finding the best teachers yet more difficult, as the pool of candidates willing to leave industry to teach dwindles, and industry opportunities allow an easy exit from teaching for those trades teachers who grow frustrated in the transition to the new role.

1.2.4 Societal Pressure for Effective Teaching

While industry demands graduates, societal forces are also placing education under pressure to prove its effectiveness. From initiatives such as the *No Child Left Behind Act* (2001) in the United States or the suggested imposition of standardized testing in Saskatchewan (Saskatchewan Teachers Federation, 2013), there are demands for results. This pressure is also being felt by postsecondary institutions as they face funding cuts and *lean* initiatives aimed at assuring best value from public dollars (Government of Saskatchewan, 2013). With faculty salaries as the major expense item for postsecondary institutions, the effectiveness of faculty – which in vocational training can be measured primarily in teaching, rather than research initiatives – is also under scrutiny. One sign of the push for effective teaching is the growing

pressure for those institutions not already conducting faculty evaluations to do so. As more vocational colleges seek to become degree-granting institutes, they face new requirements connected to this change in status, one of which is implementing a form of faculty evaluation. The Association of Universities and Colleges of Canada, representing most degree-granting institutions in Canada, sets out in its membership requirements that faculty evaluations must be conducted (AUCC, n.d.). In Saskatchewan, regulations surrounding the *Degree Authorization Act* include a requirement for evaluation of "faculty performance including the quality of teaching and supervision and demonstrable currency in the field of specialization" (Saskatchewan Ministry of Advanced Education, 2011, p. 7).

1.2.5 Why Further Study is Needed

For the reasons detailed above, further study of effective teaching in postsecondary trades training is needed. As noted by Palmieri (2004), the notion of *the good teacher* is little discussed as it applies to vocational education. In part, this may be a reflection of the societal status given to vocational education. As stated by Jackson (1993), "ideas about learning for work in North America have almost always been constructed by academics, as a form of education intended for 'other people's children'" (p. 169). Robertson (2008) said that while vocational education and its practitioners are often criticized, "there is an absence of critiques that are based on understandings of teachers' knowledge and expertise" (p. 2). Barabasch and Watt-Malcolm (2013) claimed a "dismal lack of recent quality, Canadian-based research" (p. 177), particularly regarding motivation for the career choice, competencies required, evaluation of these competencies, and professional development to promote effective vocational teaching.

The results of the current research help fill the gap (Barabasch & Watt-Malcolm, 2013; Robertson, 2008) and build understanding of the transition of the tradesperson to trades teacher, by considering career motivation, teacher competence, and identity formation. This study may assist institutions that provide this type of training to better recruit, retain, train, and evaluate faculty toward successful transitions into the teaching role, more effective teaching, and increased student completion rates.

The foundational belief for education is that human beings can learn and improve. This belief should not stop with students, but extend to teachers, as well. If the elements of effective teaching practice, and competencies of effective teachers, can be better understood, then human resource and professional development processes could be designed toward the goal of teaching

effectiveness. As educators who daily live our belief in learning and improvement, why would we not seek to improve our own practice, as well?

1.3 Purpose of the Study

Increased access to postsecondary trades training is needed in Canada, according to government, students, parents, and industry, but despite the calls for more training opportunities, and efforts to attract more students to the trades, the completion rate in major trades in Canada has been assessed as low as 7 % (Laporte & Mueller, 2011, p. 9). While many factors affect student non-completion (CAF, 2011), one factor that has received little attention in research is the effectiveness of teachers working with trades students.

Finding effective trades teachers is complicated by the pro-cyclical nature of enrolment in apprenticeship programs (Laporte & Mueller, 2011). Student numbers rise as industry demand rises, creating a need for more teachers. At the same time, trades teachers are part of the pool of existing journeypersons who are in high demand and competitively paid by industry. This simultaneously intensified need for experienced journeypersons, in education and industry, limits the ability of institutions to compete for those who may be the most effective teachers.

This study explored the movement of tradespeople from industry to teaching through the use of a sequential mixed methods approach. Using quantitative and qualitative input from trades teachers, the study sought to understand the motivation for choosing teaching, the process of development from novice to experienced teacher, sources of satisfaction in the new role, and the changing vocational identity of individuals moving from the *first apprenticeship* of tradesperson to the *second apprenticeship* of trades teacher.

1.4 Research Question

This study explored the transition from the *first apprenticeship* of trades practice, to the *second apprenticeship* of trades teacher. This overall research question is divided into the following questions:

1. What motivates experienced tradespeople to move into a second career of teaching?
2. What competencies do tradespeople transitioning to teaching bring to the classroom to support effective learning?
3. Once in the role of teacher, what formal and informal learning helps them to become effective teachers?
4. How does their vocational identity change with the change in career?

5. What factors lead them to a feeling of satisfaction or effectiveness with their work, and to continue as teachers?

1.5 Description of the Study

This exploratory sequential mixed method study examined these questions through a survey instrument, and interpretation panel discussions, with trades teachers at postsecondary vocational institutions in Western Canada (Creswell & Plano Clark, 2011). The newly created survey instrument was delivered electronically to voluntary participants at several postsecondary institutions, with the collected data analyzed statistically for frequency of responses to questions focused on motivation for a new career, the transfer of competencies from their previous career to teaching, learning processes about teaching, changes in vocational identity, and satisfaction in the role of teacher. Subsequent interpretation panels (Noonan, 2002), composed from a voluntary subgroup of the surveyed teachers, were conducted to further explore these topics, focusing on the questions of motivation, identity formation, and factors relating to satisfaction with the career of teaching. Interpretation panel discussions provided analysis of the survey data, as well as additional new data based on the experience of these group members. The new data were inductively analyzed, looking for commonality in descriptions regarding motivation, development as a teacher, identity formation, and career satisfaction.

1.5.1 Delimitations of the Study

This study and its results are delimited to the particular setting within which the surveyed faculty teach, trades training programs in postsecondary institutions in Western Canada. While the information may hold interest in a wider educational setting, it should not be extrapolated to other locations, types of institutions, or to other faculty groups. This study was delimited by the following parameters, in order to conclude the study in a timely manner, and to focus the outcomes to the postsecondary trades training sector and its particular issues.

1.5.2 Location

The locations of the study were institutions that are members of Polytechnics Canada, an alliance of Canadian colleges and institutes of technology, within Western Canada. They shared similarities in recruitment and training practices for teachers. The provinces in which they operated were experiencing similar economic conditions, and faced high demand for trained tradespeople in both industry and education.

1.5.3 Participants

Participants for this study were drawn from the faculty members of the stated institutions, on a voluntary basis.

1.5.4 Timeframe

Data for the study was collected from May 2014 through November 2014.

1.5.5 Limitations of the Study

Given that this study relied on voluntarily provided participant responses, and the responses include personal recollections and opinions, the accuracy of the responses could not be verified. The assumption was made that participants provided honest recollections and opinions.

The opportunity for participation was provided, within the limitations imposed by institutional policies on communication, to all faculty within the defined training sector and career; however, participation was voluntary and there was no assurance that the makeup of the respondent group represented the larger faculty group of this sector in demographic factors such as gender, age, or work history, or in the range of opinions provided in the research data. The characteristics of the sample group could not be predetermined or set, but varied depending on the willingness of faculty to co-operate with the researcher and to participate in the study. It was estimated that the population from which the sample would be drawn included approximately 650 individuals. The number of invitations sent was 608, with 192 responses in total and 165 completed responses used for analysis.

1.6 Definitions

The following terms were used throughout this study, based on the following definitions:

Apprenticeable trades include occupations identified by journeyperson status and governed by the body given authority by its provincial or national government to issue journeyperson credentials. Within Canada, the Ellis Chart provides a comprehensive list of trades (CAF, 2014). In this study, *apprenticeable trades* and *trades* are used interchangeably.

Apprenticeship is "an industry-based learning system that combines on-the-job experience with technical training, and leads to certification in a skilled trade as a journeyperson. Provincial and territorial governments are responsible for apprenticeship training, and legislation provides for the designation of an occupation as an apprenticed trade. Designated trades are governed by regulations under an apprenticeship act outlining the standards and conditions of

training for specific trades" (Organization for Economic Co-operation and Development [OECD], 2002, p. 5).

College refers to educational institutions in Canada which offer one- and two-year programs, and are comparable to community colleges in the United States, Technical and Further Education (TAFE) colleges in Australia, and further education colleges in Great Britain (OECD, 2002).

Competencies mean "sets of behaviors, usually learned by experience, that are instrumental in the accomplishment of desired organizational results or outcomes" (Landy & Conte, 2007, p. 109).

Journeyperson or *journeyman* is a recognized qualified and skilled person in a trade, who is allowed to train and act as a mentor to an apprentice (CAF, 2014). *Tradesperson* is used as the equivalent to *journeyperson* within this study.

Postsecondary education "includes formal educational activities for which high school completion is the normal entrance requirement. Postsecondary education providers develop and deliver formal educational activities and award academic credentials to people for whom the normal entrance requirement is high school completion" (Statistics Canada, 2008, n.p.). While *postsecondary* is a term commonly used in Canada, such training may also be known as higher education or tertiary education in other countries.

Teacher and *instructor* are used interchangeably in this study, to indicate a person hired and given the responsibility to "give systematic information about a subject or skill" (Concise Canadian Oxford Dictionary, 2005, p. 1400). *Instructor* is more commonly used by postsecondary vocational or technical teachers to describe themselves, while *teacher* is more commonly used in educational research; *teacher* is used within this study except when in quotations.

Transition is defined as "a passing or change from one place, state, condition, etc., to another" (Concise Canadian Oxford Dictionary, 2005, p. 1453).

Vocational training or *vocational education* is defined as postsecondary education directed at a particular, especially manual or technical, occupation and its skills (Concise Canadian Oxford Dictionary, 2005).

First apprenticeship is used within this study to mean the traditional apprenticeship training process leading to certification in a regulated trade.

Second apprenticeship is used within this study to mean the process of learning to teach a trade in a postsecondary setting.

1.7 The Researcher

This study was connected to the researcher, as it was conducted in the postsecondary vocational education sector, within which I was employed. At the time the research was undertaken, I had been an employee of SIAST, later known as Saskatchewan Polytechnic, for more than 10 years with the majority of that time spent teaching Business in Prince Albert. Although since in a non-instructional role, I was still considered faculty by the institution and continued to be a member of the faculty association throughout the time of this research. This employment means that I conducted my study among colleagues, although not specifically those with whom I taught. I hope that this working relationship helped participants to trust the researcher as someone who understands the job, the complexity of teaching, and the overall environment in which they work, and that it encouraged their participation in the study.

Given the close relationship between the researcher and the subject of the research, however, impartiality may have been affected. Despite efforts to remove one's own opinions from the analysis and discussion of the study, it is possible that interpretations were coloured by past knowledge, friendships, or a wish to portray the institution and its faculty in a positive light. Conversely, the research may have been enriched by this knowledge as recollections, opinions, and recommendations are interpreted.

1.8 Organization of the Thesis

In Chapter One, I have provided an introduction to the topic of this study, as well as background information pertaining to the research question and the researcher.

In Chapter Two, I survey the literature relating to the topic of the study, with sections based on the research question. The chapter begins with a discussion of the *first apprenticeship*, examining learning processes within trades training, competency definition and certification, and vocational identity formation in the trades. The *second apprenticeship*, or transition to teaching, is then examined through a discussion of effective teaching, focusing on the competencies associated with teaching in trades or apprenticeship training, and a comparison of training for this career to the apprenticeship experienced as a tradesperson. Motivation for career change and identity formation within the new career of teaching is examined, as well as the influence of identity to long-term job satisfaction and effective teaching.

In Chapter Three, I outline the research methodology, theoretical framework, ethical considerations, and methods to be used in collecting and analyzing data for this study.

In Chapters Four through Six, I discuss analysis of the data, including identification of themes and correlations from responses. Chapter Four provides a statistical analysis of the survey results in total, while Chapter Five explores the survey results as divided according to years of teaching experience of the participants. Chapter Six focuses on the qualitative data from the interpretation panels.

In Chapter Seven, I provide a discussion of the results emerging from this analysis, returning to the research question to consider added knowledge about effective teaching and teachers in a postsecondary vocational context, key insights, and further research suggested by this study's findings.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In Chapter One, the background to the study, purpose, and research question were presented. The purpose of the study is to explore the transition from the *first apprenticeship* of trades practice, to the *second apprenticeship* of trades teacher. This overall research question is divided into the following questions:

1. What motivates experienced tradespeople to move into a second career of teaching?
2. What competencies do tradespeople transitioning to teaching bring to the classroom to support effective learning?
3. Once in the role of teacher, what formal and informal learning helps them to become effective teachers?
4. How does their vocational identity change with the change in career?
5. What factors lead them to a feeling of satisfaction or effectiveness with their work, and to continue as teachers?

In this chapter, the literature relating to these questions is discussed. The following topics are included within the literature review. Membership in the *first apprenticeship* as a tradesperson is considered through a review of the apprenticeship model of training as compared to other teaching and learning perspectives; expected results of this training in terms of competencies; and results of this training toward formation of vocational identity and membership in a community of practice. The *second apprenticeship* as a trades teacher is considered through a review of research regarding effective teaching, both in education generally, and specifically within postsecondary and vocational or trades education. The effective teacher is discussed, both through a review of research to define competencies, and in a more holistic manner. The holistic side considers how a vocational identity as a teacher is formed, and the place of identity as a part of being an effective teacher. Research regarding motivation for teaching as a second career, and the process of transition from a first career in industry to a second career of teacher, is discussed. A comparison of the concepts within *the first apprenticeship* to the *second apprenticeship* is made, resulting in a framework to guide the research process, to be described in Chapter Three.

2.2 The First Apprenticeship: Tradesperson

In this section, the historic and modern models of learning through apprenticeship are reviewed. The pedagogical processes associated with this model are discussed. The expected results of this training as competencies or skills, as well as creation of an occupational identity within a community of practice in a trade, are also discussed.

2.2.1 The Apprenticeship Model

The word *apprentice* derives from the Latin word *apprehendere*, to grasp or lay hold of, and from the French *apprendre*, to learn. In modern usage, *apprehend* is to understand, perceive or to lay hold of with the mind; apprentice is one who is a learner of a craft. English usage of the word *apprentice* can be traced to the 1300s (Oxford English Dictionary, 2013). In contrast to the word *comprehend,* with its similar derivation, but a meaning of inclusive mental understanding, *apprehend* suggests a more tacit, hands-on understanding, in keeping with the connotation of apprentice as one who learns practical skills in a hands-on learning situation (Oxford English Dictionary, 2013).

The apprenticeship model of learning has been dated back to the Code of Hammurabi, as craftsmen were obligated to share their knowledge with a new generation, to ensure continuation of the craft (Mokyr, 2003). Ancient Greek myths reference craftspeople and their process of learning, handed down from generation to generation (Sennett, 2008). Aristotle spoke of the need for *techne* or craft knowledge which, although considered a lesser form of knowledge to the intellectual sphere of the philosophers, was nevertheless needed for everyday life and comfort, and could form the basis of higher knowledge or *episteme* (Wheelwright, 1951). In the Middle Ages, apprenticeship was at its height of influence as a form of education and economics. European craftsmen joined together in guilds for economic advantage as well as to teach apprentices, usually boys, the skills of the trade under legally binding contracts (Epstein, 1998).

Within Canada, the initial development of training programs drew from the backgrounds of the country's first immigrants, including apprenticeship practices from France and England. Along with practices came attitudes, such as the place of apprenticeship training or vocational education in the social strata. Lyons, Randhawa and Paulson (1991) stated it bluntly when they said "Canadians have historically considered vocational education to be preparation for second-class citizenship" (p. 137). Apprenticeship or vocational training was seen as a means to give minimal training to orphans, so-called slow learners, and Aboriginal people to allow them to

support themselves and contribute manual labour to society. The historical divide of university education as the purview of the gentlemen's son was maintained (Lyons et al., 1991).

This attitude continues to be seen today. In more recent years, as postsecondary education became more openly available to all, generations of immigrants to Canada who sought a better life for their offspring chose university education for them (Lyons et al., 1991). The results show in statistics such as those presented by Polytechnics Canada (2012) that compared 1.15 million graduates in social sciences and humanities from universities and colleges in 11 years to 26,000 plumbers and 15,000 welders certified through apprenticeship training in the same time period (p. 2).

Canada, as an emerging national entity, also took on features within education that differed from the European models, including differences within apprenticeship regulation. The constitutional responsibility for education lies with the Canadian provinces, resulting in a multiplicity of systems affecting modern apprenticeship; however, the federal government, with responsibility for national employment programs and in attempts to meet the needs of industry, has also weighed in with legislation, studies, and financial incentives over the years (Lyons et al., 1991). Lobbying from industry for federal government action to address labour shortages in the apprenticable trades has resulted in initiatives such as the Red Seal program, which allows for greater mobility between provinces for certified tradespeople, tax incentives for individuals to complete to journeyperson standing, and wage incentives to employers (CCL, 2006).

Apprenticeship within Canada today is summarized as "a well-established approach to learning" (CCL, 2006, p. 9) including periods of in-class education and on-the-job training. Total time in training lasts between two and five years, with each in-class portion, as delivered by an apprenticeship board-approved postsecondary institution, lasting four to 12 weeks in the year. The apprentice must be hired by an employer, and registered with the provincial apprenticeship body, to obtain his or her in-class training and to ensure recording of on-the-job experience under the supervision of a journeyperson. At the end of the required terms of classroom training and workplace experience, the apprentice writes a certification examination, and in some cases, completes a practical assessment as well; upon passing these examinations, the apprentice becomes a journeyperson in the chosen trade (Saskatchewan Apprenticeship and Trades Certification Commission [SATCC], 2014).

2.2.2 Teaching and Learning in the Apprenticeship Model

Throughout its history, apprenticeship has been defined by its hands-on methods of teaching and learning, a process so common in everyday practice outside of formal education that it is "nearly invisible as a way to explicitly teach and learn" (Johnson & Pratt, 1998, p. 83). Coy (1989) describes apprenticeship as "associated with specializations that contain some element that cannot be communicated, but can only be experienced" (p. 2). Guile and Young (1999) spoke of the institution of apprenticeship as an educational form, underpinned by two assumptions: learning by doing and a master as a role model. These descriptions echo Polanyi's (1958) concept of tacit knowledge, a form of knowing which is difficult or impossible to put into words. The descriptions by Johnson and Pratt (1998) and Coy (1989) also reflect the concepts of Schon (1983) regarding *knowing in action,* as well as Kolb's theory of experiential learning (Kolb, 1984; Kolb & Kolb, 2005) and the practical learning heritage of Dewey (1938; 1997).

Critics of classroom-based education have seen apprenticeship or on-the-job training as a cure for educational problems. Becker (1972) argued against a formal setting where the needed learning has been broken down into instructional units, suited to classroom timeframes and testing; he suggested an on-the-job setting where learning is based on what is happening in the here and now, and testing is via meeting the requirements of a supervisor. "The learner sees the kind of work he is to learn in all its tangled complexity from the first day, instead of being introduced to those complexities a step at a time in a carefully constructed curriculum" (Becker, 1972, p. 95). Becker (1972) argued that the student is given more power to select his or her own learning, both in content and pace, learning a bit about this today, a bit about that tomorrow. Halpern (2009) similarly posited that youth apprenticeship could engage young people and address issues of adolescence, providing a sense of meaning missing from the classroom.

The apprenticeship model has been incorporated into the practice of many professions, far beyond the craft trades. The articling lawyer, interning doctor or teacher, or engineer in training, are all part of the apprenticeship tradition as they combine the theory learned in the classroom or lab with the realities of practicing under the supervision of an experienced professional (Trede, Macklin, & Bridges, 2011). The apprenticeship model has also proven to be a rich source of material for educational theorists, who have built concepts that extend far beyond strict apprenticeship boundaries to inform education practice generally.

2.2.2.1 Situated learning. Lave and Wenger (1991) built their theory of situated learning by drawing on anthropological studies of apprenticeships in settings such as Mayan midwifery training and craft apprenticeship in West Africa. In a manner similar to Becker's (1972) argument, Lave (1991) spoke against the educational practice of commoditizing knowledge into learning outcomes or competencies, in favour of a holistic type of learning similar to that of children learning basic life skills at the side of a parent, or of an apprentice working alongside a journeyperson. This learning process is situated in a real setting, real in both activities and time. The instruction is organic, as the journeyperson/teacher continues to work while incorporating explanation and demonstration toward the learning of the apprentice/student. The student operates as a *legitimate peripheral participant*: allowed and encouraged to be present, but at the periphery, with participation dependent on skills previously learned and the situation at hand, gradually moving from the periphery to active participation as learning develops (Lave, 1991). Lave and Wenger (1991) provided examples of *legitimate peripheral participation*: a Mayan midwife who must, first and foremost, tend to the mother and child before her such that, in an emergency situation, participation by the student may be limited to observation from a distance; or, a modern business setting that could find the apprentice limited to observing, or practicing only routine tasks, in favour of the emergency of a customer's needs.

Legitimate peripheral participation is both a defining feature and strength, and a weakness, of apprenticeship training. Lave and Wenger (1991) termed this behaviour of the master/teacher focusing on the situation at hand rather than the apprentice/student as "benign neglect" (p. 93). Coy (1989) looked at apprenticeship practice in history and concluded that learning was typically a secondary function; the accomplishment of the task at hand came first and little direction, or specific teaching, was given to the apprentice. As Becker (1972) stated, the learner has power to learn today or learn tomorrow; however, the apprentice may not learn at all if he waits for the teacher to make the learning explicit. As a *legitimate peripheral participant*, the apprentice must actively watch, practice when given the opportunity, and take on a great deal of responsibility for what learning will occur.

2.2.2.2 Zone of proximal development. The process of learning through apprenticeship has also been explained using the theories of Vygotsky (1978), particularly through the concept of the *zone of proximal development*, "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as

determined through problem solving under … collaboration with more capable peers" (p. 86). While Vygotsky's theories sought to explain pedagogy and child development, the concepts have also been translated into adult vocational settings, as a novice or apprentice is moved from a beginning developmental level of skills toward a higher level through the guidance and collaboration of the teacher or journeyperson serving as the "more capable peer" (Vygotsky, 1978, p. 86). Vygotsky's theory was placed into the postsecondary vocational context by Bockarie (2002), who described the process as moving from passive to active learner, and that knowledge "may be seen as moving along a continuum from knowing how, to knowing what, to knowing when, and knowing why" (p. 52). Over time, practical skills of the trade, in addition to problem-solving skills, are learned through a gradual addition of information and practice in new areas. What an observer might label "benign neglect" (Lave & Wenger, 1991, p. 93) by the journeyperson toward the apprentice is, according to Vygotsky's (1978) theory, a function of the existing *zone of proximal development*, and peripheral participation level, allowing the novice to gain knowledge without the anxiety of prematurely taking on tasks.

      2.2.2.3 Apprenticeship as a teaching perspective. Pratt (1998b) theorized that individual teachers in adult and higher education operate under one, or perhaps two, dominant perspectives within a range that includes transmission, apprenticeship, developmental, nurturing, and/or social reform. For those who operate within the *apprenticeship perspective*, the teacher self identifies as a master teacher or journeyperson, in the role of holder of knowledge or expert, and the student in the role of learner or novice. Pratt (1998a) contrasted the apprenticeship perspective to other teaching perspectives by describing a teacher operating within the apprenticeship perspective as someone take pride in expertise, knowledge and skill, "much of which has become automatic" (p. 224), such that it is impossible to separate the content from the teacher. The apprenticeship perspective of teaching is illustrated as a relationship between the teacher, the content, and the learner: content can flow to the learner only through the teacher. The *transmission perspective* also holds that the teacher is a content expert, but for those who operate within this perspective, the teacher's job is to accurately convey a stable body of knowledge that is then to be reproduced by the learners (Boldt, 1998). In the *apprenticeship perspective*, the expert knowledge of the teacher is transmitted through application and practice, such that "to abstract the knowledge and wisdom from practice is to drain it of its most essential qualities" (Pratt, 1998a, p. 226).

According to Pratt (1998b), the *apprenticeship perspective* of teaching is used within adult education without being limited by the boundaries of traditional apprenticeship instruction; it is an approach that a teacher may bring to any subject matter if learning is approached through the use of application and practice. By contrast, the *transmission perspective* (an approach that may well be used by teachers within the boundaries of true apprenticeship training) is focused on content about the subject matter and the efficient, accurate presentation of that content by the teacher. In the *transmission perspective*, the teacher's role is dominant as content expert and skilled presenter who demonstrates enthusiasm and knowledge for the subject matter. The other three perspectives – nurturing, developmental, and social reform – focus more on the relationship of the student to the teacher, the student to learning, or the student to society, than on content (Pratt, 1998b).

Pratt's (1998b) theory has been tested through the Teacher Perspectives Inventory (TPI), an online tool used by more than 100,000 teachers throughout the world, and found to be reliable and valid (Collins & Pratt, 2011, p. 370). The results show the most common perspectives are nurturing (50%), apprenticeship (38%), developmental (18%), transmission (14%), and social reform (3%). A respondent may show more than one dominant perspective.

2.2.2.4 Processes within the apprenticeship perspective. Johnson and Pratt (1998), in explaining the apprenticeship perspective, drew on the work of others (Collins, Brown & Holum, 1991; Lave & Wenger, 1991; Schon, 1983; Vygotsky, 1978), to explain the process of learning and teaching. They suggested several key stages of learning within this perspective:

- *Observation* – the master or teacher demonstrates a task, with assistance from advanced apprentices. Novices can gain an advance organizer or schema for their future attempts at the task, sees expertise within the group, and view learning as an incremental process by comparing the skills of the master, the advanced apprentice, and themselves.
- *Modelling or Approximating* – after observation, the novice learner attempts to perform the same task by modelling the actions of the master, in a protected situation.
- *Scaffolding* – the master provides support through words or demonstration, based on the demonstrated proficiency of the novice attempting the task, reducing the intervention as skill is attained.
- *Fading* – the master slowly removes scaffolding support, encouraging the learner to take more responsibility for the task.

- *Coaching* – throughout the process, the master encourages, provides feedback, and helps diagnose problems.

- *Self-directed learning* – the novice undertakes work on his own, correcting as necessary to meet standards.

- *Generalizing* – the novice is able to see applicability of learning to higher-risk, less-defined, or more complex situations (Johnson & Pratt, 1998).

While these concepts are drawn from the apprenticeship tradition, they have been applied to teaching at all levels, and in many subject areas; they are not limited to formal apprenticeship training (Collins & Pratt, 2011).

2.2.2.5 Cognitive apprenticeship. The apprenticeship perspective, and apprenticeship-style learning, has also been explored through the theory of *cognitive apprenticeship* (Collins et al., 1991). Through this theory, the apprenticeship teaching perspective has been examined as a means to promote learning in areas that are more intellectual than practical. Collins et al. (1991) defined *cognitive apprenticeship* as "a model of instruction that works to make thinking visible" (p. 1). They called on teachers to identify processes within cognitive subject matter (reading, writing, mathematics) and make them visible to the student; to situate abstract tasks in authentic contexts; and to create a variety of situations to allow students to transfer learning into new situations. Collins et al. (1991) stated the advantages of using apprenticeship learning principles within more cognitive subjects as increased engagement through authentic tasks, increased understanding of thinking processes, and integration of the parts of learning into a whole or final outcome.

Unfortunately, there is a sense through their writing that while traditional apprenticeship practices may have value as a model, the learning within academic subjects is considered superior to that of the practical crafts. Collins et al. (1991) stated: "In traditional apprenticeship, it is unlikely that students encounter situations in which the transfer of skills is required. The tasks in schooling, however, demand that students be able to transfer what they learn" (p. 3). This division between practical and thoughtful learning is simplistic, unrealistic, and perpetuates the historic view of manual labour as being of lesser value. Expertise in any domain requires the ability to apply learning to unusual situations (Johnson & Pratt, 1998; Schon, 1983; Westera, 2001). Aristotle, who was among the first scholars to separate *episteme* from *techne*, nonetheless saw how craft, knowledge, and teaching were connected: the master-craftsman was one who had

knowledge or theory beyond his craft, and further, could teach others in that knowledge
(Wheelwright, 1951).

2.2.3 Becoming a Master

The discussions of learning in an apprenticeship setting cited here have tended to focus
on transfer of knowledge and skills from the experienced master to the novice or apprentice, in a
manner that at times is idealized or romanticized. As recognized by Lave and Wenger (1991) and
Bockarie (2002) in their analyses of apprenticeship learning processes, and through historical
review by Coy (1989) and Epstein (1998), learning was not always the main objective of a
master-apprentice relationship. Munck, Kaplan, and Soly (2007) showed that, historically,
apprentices were often used as a source of inexpensive labour for the lowest tasks and they
might, at best, learn to reproduce the work of their masters. This practice served immediate,
practical purposes; however, failing to clarify and explain processes through more structured
teaching hindered both the training process, and long-term creativity in the craft being learned.
Often, the apprentice learned in spite of, not because of, the situation (Munck et al., 2007).

Similarly, ideas of guided entrance into expert status as a journeyperson or master, and
into membership in a guild or trade, are often idealized. Historically, progression from apprentice
to journeyperson as decided by the supervising master was pro-cyclical, rising in times of
prosperity and lagging in economic depression (Munck et al., 2007). In modern settings,
industrial demand for trained craftspeople remains the driving force behind educational
initiatives toward training more apprentices, rather than informed discussion of best educational
methods (Moodie, 2002; Watt-Malcolm & Taylor, 2007; Winch, 2012). Today, entrance to a
trade is defined most often by demonstration of competency as set by a governmental body,
rather than through the nod of the supervising journeyperson and creation of a masterpiece, as in
the past (Munck et al., 2007).

Within modern-day Canada, it is an agency, empowered by the provincial government
that determines journeyperson status. In Saskatchewan, for example, SATCC under provincial
legislation sets the examinations, fees, and procedures for apprentices to gain journeyperson
certification (*Apprenticeship and Trades Certification Act*, 1999). While apprenticeship training
differs from province to province, given the power of the provinces over education, the pattern of
training can be generalized across the country, and even beyond Canada, as following the
previously discussed elements of the modern apprenticeship learning process. The bulk of the

apprentice's time is spent on the job, with mandated attendance at a post-secondary institution for classroom learning. Through a combination of these learning situations over a period of several years, the apprentice is expected to gain a defined set of competencies, which are then tested through written or practical examinations, leading to certification.

2.2.3.1 Competencies in a trade. As an example within Saskatchewan, the expected learning outcomes of carpentry training are outlined to students, employers and training institutions by SATCC. A straightforward statement of what the trade does is given: "carpenters construct, renovate and repair buildings and structures made of wood and other materials" (SATCC, 2013, p. 1). This simple statement is then further defined into many components to be learned. Four levels of training are delivered through classroom/shop instruction and practice in seven-week segments. Additionally, the apprentice must work and document hours spent in the workplace under the supervision of a journeyperson in the trade, for 1800 hours per year for four years, to total 7200 hours.

At the end of training, the apprentice must demonstrate the skills from a lengthy list of competencies as established by the SATCC. These skills are aligned with the Canadian National Occupational Analysis, used as the basis for Red Seal accreditation, that listed seven categories of competencies for carpenters divided in 21 tasks, with each of these further subdivided into more-specific skills or competencies (Government of Canada, 2013). Similarly, the American national standard for carpentry standards and competencies included 21 general areas, each divided into as many as 10 subcategories of specific skills (National Association of Home Builders, 2003). Other countries, such as Australia, have comparable sets of competencies (Commonwealth of Australia, 2013a).

To move the carpentry apprentice through the acquisition of these skills, learning is divided into general areas of required knowledge and skills such as Construction Safety, Building Materials, and Trade Math, further divided into the four levels for classroom instruction. Through this arrangement of the expected learning outcomes, the application of such theoretical concepts as *scaffolding, modelling, and fading* (Johnson & Pratt, 1998) and integration of theory into practical use (Lave & Wenger, 1991), can be observed. Within the topic of Trade Math, for example, Level One includes mathematical functions that build on previous elementary and secondary studies, such as the Pythagorean Theorem, now presented in the context of constructing buildings; in Level Two, geometric and trigonometric calculations are

included; by Levels Three and Four, mathematics is not a separate topic heading, but is presented within other learnings such as layout of stairs, or operating a survey transit (SATCC, 2013).

Throughout the four levels, the relatively short period of classroom instruction is supported by lengthy periods of on-the-job learning. It is within this context, on a job site under the supervision of a journeyperson, that the traditional aspects of apprenticeship are utilized. The apprentice will be able to observe and work as a *legitimate peripheral participant* (Lave, 1991) within the *zone of proximal development* (Vygotsky, 1978) in a *situated learning* environment (Lave & Wenger, 1991). Concepts such as *modelling, scaffolding, fading,* and *coaching* (Johnson & Pratt, 1998) should also be evident. Unfortunately, there is a possibility that the apprentice will experience the "benign neglect" (Lave & Wenger, 1991, p. 93) of being ignored or assigned to menial tasks, as well.

By completing the classroom training periods at a postsecondary institution, and the worksite experience under journeyperson supervision, the apprentice is expected to learn the required set of competencies. Upon passing the required government exams to demonstrate this learning, the apprentice moves to journeyperson status; this status warrants an increased rate of pay, working without supervision, and the implied ability to regenerate the practice through teaching and supervising new apprentices.

2.2.3.2 Trade competencies as KSAOs. As used by certification bodies, trade competencies are a collection of knowledge, skills and abilities determined, through consultation with industry practitioners, to be necessary to do the work of that trade. Using the perspective of industrial and organizational psychology, Landy and Conte (2007) defined competencies as "a set of behaviors, usually learned by experience, that are instrumental in the accomplishment of desired organizational results or outcomes" (p. 109). Competencies, unlike specific abilities or skills, are not defined in the abstract but only in the context of an organization or particular job. Defined competencies, and the knowledge, skills, abilities and other characteristics (KSAOs) within them, are built from an analysis that breaks down a job into key tasks and accompanying behaviours to create a small-scale "theory of human behavior about the job in question" (Landy & Conte, 2007, p. 183). When created, this job analysis allows training, recruiting, and job performance evaluation to be tailored to the job and the defined competencies. KSAOs were defined by Landy and Conte (2007) as:

- *Knowledge*: a collection of facts and information about a particular domain, acquired through formal education and/or practice.
- *Skill*: a practiced art.
- *Ability*: the stable capacity to engage in a specific behaviour.
- *Other characteristics*: personality traits and interests.

This focus on defined competencies is not limited to trades certification. Industrial and organizational psychology has had a long history of empiricism in the study of human behaviour. Taylor's (1911) *scientific management* aimed to separate the planning process of work from its execution, treating the worker much like an emotionless, thoughtless machine to be fine-tuned (Blyton & Jenkins, 2007). Management studies were further directed to a scientific approach during World War II, fueled by a general belief in the potential of science and technology to improve life. Processes were refined as masses of people were fitted to jobs in the military, leading to techniques such as Critical Incident Theory (Flanagan, 1954) that are still used today in job analysis. Warnings against the deconstruction of human work behaviour came from McGregor (1960), Maslow (1962), Herzberg (1966; 1987), Levinson (1970), as well as later theorists such as Deming (1986), who believed that quality required workers to be engaged in the process. It was not until the turn of the 21st Century, however, that *positive organizational behavior* with its emphasis on workers' strengths and psychological capacities became a field of study within industrial psychology (Luthans, 2002). Even with a new, more humanistic point of view, the emphasis today remains on measurement and management of workplace performance (Luthans, 2002).

The competencies detailed for trades are in keeping with this history of psychology and industrial psychology. Furthermore, the trades have often been the subject of competency-based education in Canada and in other countries (Watson, 1991). Competency-based education is a learning process that teaches and tests for highly specific skills related to a particular occupation.

2.2.3.3 Trade competencies and learning levels. The competencies for trades certification can also be examined in terms of levels of learning. When compared to Bloom's (1956) taxonomy of learning, these qualifications lie primarily within the cognitive and psychomotor domains. The cognitive domain was defined by Anderson and Krathwohl (2001) as involving the intellect, providing knowledge to the student, and built around the verb *think*. The six cognitive levels move from simple recall through creative use of knowledge. The

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psychomotor domain includes physical actions and skills and is built around the verb *do*. The levels, as described by Dave (1975), include imitation, manipulation, precision, articulation and naturalization, again moving from simple to complex. The third domain, affective, is concerned with emotions and attitudes or beliefs and the verb *feel*. Bloom, Krathwohl, and Masia (1973) set out increasingly involved levels within the affective domain from receiving, responding, valuing, organizing, or conceptualizing value, through to internalizing values.

These three domains are aligned with the KSAO model of job analysis to a large extent, with *knowledge* requirement descriptions coming from within the cognitive domain, *skills* and some *abilities* from the psychomotor domain, and some *abilities* and *other characteristics* from the affective domain. A comparison of a sample of competencies against KSAO definitions, and Bloom's taxonomy, is provided in Table 2.1 below.

Table 2.1. Carpentry Competencies vs KSAOs and Taxonomies.

Item from carpentry competency list	KSAO	Taxonomy domain and level
Solve problems using conventional construction symbols	Knowledge	Cognitive; application
Know how to treat effects of hazardous materials exposures on job site	Knowledge	Cognitive; understanding
Identify and describe the hand tools the carpenter commonly uses	Knowledge	Cognitive; remembering
Use a framing square to determine dimensions for roof framing	Skill	Psychomotor; manipulation
Perform required test of materials	Skill	Psychomotor; manipulation
Lay out and install floor joists	Skill	Psychomotor; precision

2.2.4 Missing Pieces

While the example presented here is only one trade among many, and only a few parts of the many competencies defined for that trade, a similar pattern can be found by examining the competencies for other trades. These competency frameworks focus on knowledge and skills for performance of the trade's tasks. This focus restricts expected learning outcomes to the cognitive and psychomotor domains, ignoring the affective domain (Bloom et al., 1973). It could also be

argued that the cognitive learning expected by these defined competencies is focused on the lower levels of the domain, as demonstrated through the examples in Table 2.1 above.

      2.2.4.1 Higher level cognition. The complete and accurate picture may be quite different. While not discussed in such terms within the competency frameworks cited here, it appears there is also a *cognitive apprenticeship* within the craft apprenticeship process. The metacognitive and transference aspects of learning, as referenced by Collins et al. (1991) in their description of apprenticeship concepts in abstract learning, surely also are occurring as trades novices move toward expert status and encounter unfamiliar situations without the full support of a journeyperson teacher nearby. These higher-level functions would fit within the metacognition knowledge level of cognitive learning (Anderson & Krathwohl, 2001).

      The tight focus on the knowledge and skills of competencies also removes the attitudinal and value learning of the affective domain from the picture, aspects of trades work that have been demonstrated in research. Lucas, Spencer, and Claxton (2012) detailed the pride in workmanship, sense of professionalism, and attitude of craftsmanship shown among tradespeople. Identity in the profession or craft has been shown as historically important (Coy, 1989; Epstein, 1998; Lave &Wenger, 1991; Snell, 1996) and is emphasized by researchers such as Chan (2011) and Mealyea (1989).

      Writers from disciplines other than industrial psychology and education have attempted to capture these higher level cognitive and affective domain aspects of trades work. Following a philosophical line of inquiry, Sennett (2008) delved into the thought and emotion behind craft occupations as he argued for the necessity of including all aspects of being human in the discussion:

> All craftsmanship is founded on skill developed to a high degree. By one commonly used measure, about ten thousand hours of experience are required to produce a master carpenter . . . [but] at its higher reaches, technique is no longer a mechanical activity; people can feel fully and think deeply what they are doing once they do it well. (p. 20)

Rose (2004), in his narrative description of American craft workers, provided many examples of the deeper thought and values that accompany outward actions. One example described a carpentry student learning to hang a door:

He is performing a number of mostly visual operations on this knowledge, operations documented in the research literature on mental imagery: he is examining and combining elements of the assembly, moving them, comparing, substituting, or transforming them … he is assembling the structure in his mind's eye and is also reflecting on it. Thus, in fact, the task before this carpenter and what he does with it is more complex than the tasks involved in typical studies of mental imagery. The acquisition of such knowledge and the ability to use it this way is another sign of expertise. (p. 94)

Crawford (2009) was another philosopher of craft work as he wrote:

Through pragmatic engagement, the carpenter learns the different species of wood, their fitness for such needs as load bearing and water holding, their dimensional stability with changes in the weather, and their varying resistance to rot and insects. The carpenter also gains a knowledge of universals, such as the right angle, the plumb, and the level, which are indispensable for sound construction. It is in the crafts that nature first becomes a thematic object of study and that study is grounded by a regard for human utility. (pp. 21-22)

Sadler (2013) saw reducing trade competence to a high level of specificity as a problem, and cited the example of British research in vocational training that focused on passing exams regarding specific skills, but failed to create competent practitioners. He argued that "decomposition of a complex entity may be carried out in order to achieve some gain, [but] this gain is accompanied by loss of a different kind . . . it becomes more difficult to see the whole as a unified competence" (Sadler, 2013, p. 17). Jackson (1993) similarly reflected that when learning is abstracted from the learner into performance tasks that can be evaluated by an outside standard, the picture does not show the truly competent worker who integrates these skills. Jackson's view is supported by research including Suchman's (1983) where defined competencies and procedures were found to be less important in creating a smooth work flow than the use of judgment by workers, and the work of Harteis and Gruber (2008) that found higher performance in stock trading to be linked to intuition more than to specific job competencies.

Governmental agencies may define journeyperson status through demonstration of competencies restricted to cognitive and psychomotor learning, but clearly there is additional learning that occurs, and is expected, in order to fulfill the role of journeyperson. There are two key aspects of this additional learning. One is membership within a *community of practice*; the second is creation of a *vocational identity* in the chosen trade.

2.2.4.2 Community of practice. Apprenticeship learning takes the student beyond skills acquisition through indoctrination into the craft. Johnson and Pratt (1998), Bockarie (2002), and Carlson, May, Loertscher, and Cobia (2003) all showed that while teaching basic skills, the master or teacher is also guiding the apprentice within a community of practice. The teacher is the gatekeeper to knowledge, and if the student learns all aspects of what it means to be part of the trade, the gate may open to allow full entry for the student, as well.

Community of practice was defined by Lave and Wenger (1991) through their study of apprenticeship as when "the community acts as a living curriculum for the apprentice" (Wenger, 2006, p. 4). Wenger, McDermott and Snyder (2002) traced community of practice to Ancient Rome when craftsmen not only worked at a common craft, and trained apprentices into the craft, but worshipped a common deity and celebrated holidays together. The concept continued through the Middle Ages and the guilds of Europe, to modern organizations where expertise remains clustered among a group or in a geographic area, such as flute making in Boston. Wenger et al. (2002) showed the value of being a part of a *community of practice* throughout history, measured by accumulation of knowledge and practices in a living repository, building of personal relationships with others who share an interest, and creation of a common sense of identity.

From a historic viewpoint, community and community of practice were significant aspects of the apprenticeship system. Epstein (1998) showed the European guilds of the Middle Ages worked not only to train apprentices, but also to enforce quality standards, protect knowledge, and provide bargaining power in the marketplace by limiting access to the skills and products of the craftspeople. Upon full acceptance into a guild, the journeyperson was part of a social welfare network, an information and marketing resource, a source of credit, and a body which allowed apprentices to be secured for one's own workshop. Epstein (1998) summed up the craft guild as a formal association which provided benefits to its members, set rules, and enforced compliance. Snell (1996) also detailed the regulatory aspects and benefits of the guilds in England from 1563 to the 1800s as going far beyond training and supply of labour, to include schooling in literacy, numeracy and religion, and access to suitable spouses, similarly educated. "Apprenticeship was used to enforce an extensive concept of social order, control and loyalty" (Snell, 1996, p. 305). Wenger et al. (2002) detailed the value of communities of practice in organizations of many types for these purposes, as well as the capture of highly valuable tacit

knowledge through "storytelling, conversation, coaching, and apprenticeship of the kind that communities of practice provide" (p. 9).

In the modern Canadian conception of apprenticeship, rule-making powers lie with the provincial government via the apprenticeship commission, rather than a guild, and the benefits of completion of apprenticeship are based more on general economic factors such as higher wages and job security than on membership in a community (CAF, 2011). Fuller and Unwin (2010) studied the addition of government as a third party to the modern apprenticeship in the United Kingdom, and saw changes to the operation of a community of practice. In some cases, this addition restricted the community, limiting training to a focus on competence-based qualifications without developing a sense of identity in the trade or of being part of a community; in other cases, government involvement results in a broader community of trainers through enforced time away from the workplace for college study, and a reification of apprenticeship into certificates and symbols that make the identity more tangible. Fuller and Unwin (2010) argued for the expansive model, as a means not only to build identity and community, but to encourage reflective and transformational learning through the college experience.

Laporte and Mueller (2013), in their review of Canadian apprenticeship completion rates, linked union membership, and early exposure to apprentice trades through family or high school settings, to higher rates of completion. These are two factors that can be connected to the concepts of community of practice and identity formation. Laporte and Mueller's (2013) findings are mirrored in an Australian study of completion behaviour among pre-apprentices and apprentices: Cully and Curtain (2001) found the employer's support for training, creating a positive workplace, and showing respect for the individual's contributions were key factors in the choice of the apprentice to continue in or leave the placement, again speaking to the interpersonal dimension of the workplace and apprenticeship.

These studies suggested that belonging to a community of practice serves not only the student or apprentice, but the larger body – guild, employer, or government – as well. Community of practice is not only a part of the learning process, as advanced by Lave and Wenger (1991), but a part of recruitment for new members and retention of existing members within that community.

2.2.4.3 Vocational identity. As a part of membership in a community of practice, individuals gain a sense of personal identification with the community or vocation. Vocational

identity has been defined by Marcia (1980) as a clear identification with a particular occupation or vocation, based on commitment following active exploration of possible identities (as cited in Hirschi, 2011). Creating a vocational identity is a part of overall identity formation throughout life stages, that includes competence in childhood and generativity in adulthood (Erikson, 1980). The idea is also linked to the Aristotelian idea of *eudemonia* (Wheelwright, 1951) or happiness through use of one's gifts, and to Maslow's (1962) concept of *self-actualization*. A strong sense of vocational identity has been correlated with happiness or life satisfaction (Hirschi, 2011; Peterson, Park, & Seligman, 2005).

Reviewing the historic practice in apprenticeship, Coy (1989) spoke of a "code of normative behaviour" (p. 2), an often-unwritten expectation that the apprentice must internalize in order to be part of the craft community and to practice it safely, profitably and without disputes from others in his craft. Coy (1989) defined the education of apprentices as containing three important aspects: specialized skills; managing social relationships; and managing the economics of the craft. The social and economic aspects of learning speak to interpersonal aspects of the trade, of operating within the community, and of forming a professional or vocational identity. These are aspects that Coy (1989) suggested may have been even more important than the skills learned through the years of apprenticeship.

Vocational identity within modern apprenticeship has been identified as an important component of the overall learning that takes place within this training. Chan (2011) studied baking apprentices in New Zealand, and found the apprenticeship not only prepared them for work through teaching of skills, but provided them with "a particular identity" (p. 2). She argued that this occupational identity is developed through *belonging* to a workplace or induction to the trade, *becoming* where knowledge, skills, and competencies are gained, and *being* where vocational identity is solidified and continued (Chan, 2011). Lehmann (2005) interviewed high-school students in Canada and Germany as they entered trades training and found that the choice of career path was not only influenced by family, income potential, and job prospects, but was also "congruent with the formation of positive vocational identities" (p. 346). Mealyea (1988) found a strong sense of vocational identity among journeymen, so much so that this identity created difficulties when they chose to move to a new vocation as teachers.

2.3 Theories of Vocational Identity Formation

Simpson (1967) argued that socialization into an occupational role, or creation of a vocational identity to use other words, is a sequential process. The first phase involved a change in focus from the broad goals that drew the person to the vocation to a goal of proficiency in specific work tasks. The second phase involved identification with significant others in the workplace as a reference group. The third phase included internalization of the values and behaviours of the occupational group. Simpson's (1967) study involved student nurses; however, the three stages she hypothesized can be translated easily to students of other vocations, including the trades. The initial interest is met with school and legal requirements, as "mastery of a special body of knowledge, and a certain amount of technical proficiency is defined as necessary before the novice can enter into working relationships" (Simpson, 1967, p. 54). This process is similar to meeting the requirements of training for a trade level. Once a reasonable level of knowledge and skill is attained, the student can enter the workplace, and establish relationships with others, an "acceptance of the novice" (Simpson, 1967, p. 54) to move through the second phase. Finally, "full internalization of professional values occurs to the extent that the profession accepts the individual into its inner circle so that he is freed from pressures by outsiders" (Simpson, 1967, p. 54), equivalent to certification as a journeyperson. Unless all three phases are accomplished, Simpson posited, the trainee is less than fully socialized into the vocational role, and lacks the balance necessary for full performance of the role.

Graves (1989) suggested a similar process of three stages in the socialization of apprentices, in both legally indentured and informal settings. The first stage begins with a deliberate choice to join the trade or occupation, resulting in anticipatory socialization of seeing oneself in a specific vocational identity. The second stage involves learning the technical requirements for practice, including the language of the trade, its hierarchy, and norms. The third stage is one of gaining full acceptance into the vocation, shown through full responsibilities, a distinction between "them and us" (Graves, 1989, p. 63), and the ability to carry gained knowledge, skills and abilities forward into a new setting with new people. Schulman (2005b) similarly suggested three apprenticeships to membership in a profession: a cognitive apprenticeship, where one learns to think like a member of the profession; a skills apprenticeship, where one learns the practices of the profession; and a moral apprenticeship, where one learns the ethics of the profession.

Rikowski (1999) saw the move from apprentice to master as a continuum rather than set stages. Mastery is the termination of apprenticeship in an ontological sense, but it does not mean the end of learning. As a part of progressing toward mastery, the apprentice learns to self-generate skill, or "learning how to undertake continuous learning" (Rikowski, 1999, p. 62), a concept that is comparably to Schon's (1983) idea of *reflection in practice* and can then lead to teaching of others in the craft, or transmission of learning.

2.4 Model of Occupational Learning

Simpson (1967), Graves (1989), and Schulman (2005b) envisioned vocational identity as made of three parts: technical knowledge; acceptance into the occupational role through learning and demonstrating skills; and, establishment of an internalized sense of belonging with the vocation that sets the newcomer apart from others, as a member of the group or *community of practice* (Lave & Wenger, 1991). By building on the KSAOs and the competencies as previously outlined, and adding further abilities, skills and affective domain elements as identified by research, the comparison begun in Table 2.1, of aligning sample competencies to KSAOs and to the domains and levels of the learning taxonomy, can be continued in an expanded form and compared to the stages of identity development, as in Table 2.2 below.

Table 2.2. Expanded Carpentry Competencies vs KSAOs and Taxonomy.

Competency item	KSAO	Taxonomy domain, level	Stages of identity development
Solve problems using conventional construction symbols	Knowledge	Cognitive; application	Technical knowledge
Know how to treat effects of hazardous materials exposures on job site	Knowledge	Cognitive; understanding	Technical knowledge
Identify and describe the hand tools the carpenter commonly uses	Knowledge	Cognitive; remembering	Technical knowledge
Use a framing square to determine dimensions for roof framing	Skill	Psychomotor; manipulation	Demonstrating skill
Perform required test of materials	Skill	Psychomotor; manipulation	Demonstrating skill
Lay out and install floor joists	Skill	Psychomotor; precision	Demonstrating skill
Reflect on work and continuously learns from experience	Ability	Cognitive; evaluation	Demonstrating skill
Visualize finished product and plan for economical use of materials	Ability	Cognitive; analysis	Demonstrating skill
Identify oneself as a member of the trade	Other characteristics	Affective; characterization	Internalization; identity
Exhibit a sense of professionalism	Other characteristics	Affective; valuing	Internalization; identity

These stages or levels, moving from knowledge to skills to acceptance and identification with the vocation, and through the higher levels within the three taxonomies, suggest a deepening development that leads toward full vocational identity, as well as mastery of the craft (Graves, 1989; Rikowski, 1999; Simpson, 1967; Schulman, 2005b). Lave and Wenger (1991) theorized a centripetal process toward vocational identity within a community. Korthagen (2004), in research on professional identity, used the circular model of an onion's layers to explain identity development. All of these models suggest an inward movement within a circle, where the circumference or outer edge is the boundary of the vocation, separating this community from others. Movement inward forms a deepening identification with the vocation or community. Put into a graphic format, this process is represented in Figure 2.1 below.
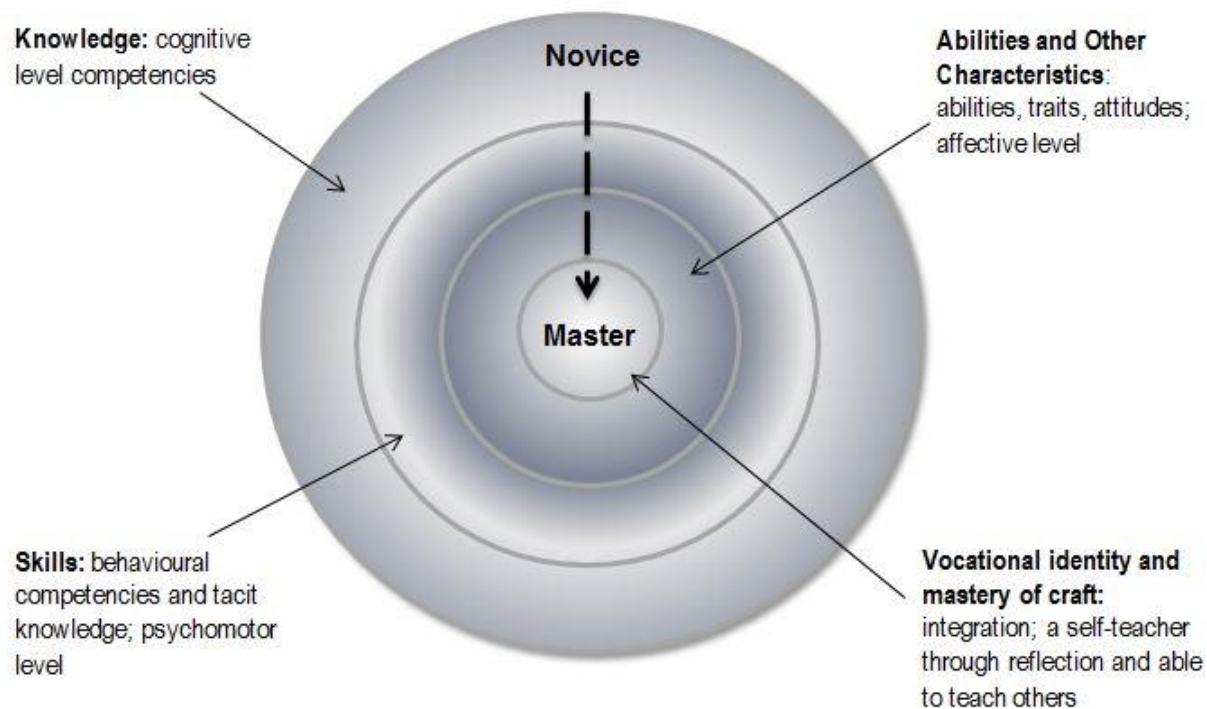
Figure 2.1 Model of vocational identity development in the first apprenticeship.

This model presents vocational identity as a process of deepening integration, created over time through learning, practicing, and living a role. Identity is first built upon knowledge; then skills developed based on knowledge; then attitudes and other traits expressed through, and built upon, this knowledge and skills; and finally, it results in the creation of the full vocation identity, as expressed through reflection, self-teaching, and regeneration of the vocation through teaching others. The vocational identity becomes an integral part of the overall identity of the person, such that one will see oneself, and name oneself, by that vocation. While such a deep-seated identity may be positive in many aspects, it may pose a problem when a transition is made away from it, as in the choice to move from a first vocation to a second as teacher.

2.5 Summary of the First Apprenticeship

This section of Chapter Two has reviewed the *first apprenticeship* of trades training from a historic and modern perspective. As well as presenting general practices, this review has focused on educational theory related to the apprenticeship model. Through use of the example of one trade, the defined competencies for that trade have been compared to the KSAO model of

industrial psychology, and to learning taxonomies, to consider the both the defined and undefined aspects of learning in the trades. Membership in a community of practice, and vocational identity with a trade, were considered as extensions of these competencies, to create a model of occupational learning.

2.6 The Second Apprenticeship: Teacher

The achievement of journeyperson status not only provides a credential and greater earning power to the individual, but also carries the expectation to share one's knowledge with others. Under apprenticeship regulations, workplace learning for apprentices must occur under the supervision of a journeyperson in the trade, with the number of apprentices per journeyperson established for each trade, an acknowledgement of the teaching role (SATCC, 2013). Teaching an apprentice, as previously noted, is not the primary focus of a working journeyperson (Lave & Wenger, 1991); however, it is a historical tradition (Rikowski, 1999) and a current expectation (SATCC, 2013). Teaching is a part of the apprenticeship model.

Beyond the workplace learning component for apprentices, modern apprenticeship rules require classroom training at postsecondary institutions for a portion of each year. Within these classrooms, the teachers are typically journeypersons: people selected from industry, with credentials and years of experience in their trade, now moved to a more formal learning environment. Unlike the workplace setting, where customer demands may force the apprentice into the role of peripheral participant or observer, and cause the journeyperson to take over the work rather than be a guide for the apprentice, the classroom is intended to be all about learning, with a focus similar to any other classroom studying any other subject matter.

Yet, the teachers here are not the same as those in other classrooms for other subjects. Elementary and secondary teachers are trained to be teachers primarily, with subject matter expertise as a secondary aspect. Postsecondary teachers are subject matter experts first, and teachers as a secondary function (Grubb, 1999b). For those who teach in more academically oriented strands of the postsecondary education sector, the path to the classroom includes many years of classroom education resulting in graduate degrees. Even without training specific to pedagogy, this path creates a long "apprenticeship of observation" (Lortie, 1975, p. 61) regarding teaching that may serve to ready the scholar to be a teacher.

Within the trades training subset of postsecondary education, the path to the front of the class requires relatively little time in a classroom; as previously detailed, the learning process

toward journeyperson status is built around workplace, experiential learning rather than the traditional *transmission perspective* (Boldt, 1998) of a typical classroom. As tradespeople leave industry to take up places in the classrooms of postsecondary institutions, some assistance may be given by the institution toward pedagogical training; however, in the absence of formal training it would appear a great deal of learning to be a trades teacher is self-taught.

For one who has succeeded in the first apprenticeship to become a tradesperson, and who has then chosen to become a trades teacher, there is a *second apprenticeship*: the first provides the key credential of acknowledged expertise and membership in their trade; the second provides knowledge and skills in teaching. Having examined the learning processes of the *first apprenticeship* in the previous section, the *second apprenticeship* of learning and achieving membership within teaching will be examined in this section, and the two compared. This section reviews research regarding effective teaching, generally and more specifically in postsecondary and vocational education, leading to a consolidation of defined competencies or (KSAOs) for this work. The *second apprenticeship* is also examined for the motivations behind this change in career from tradesperson to trades teacher. Research regarding vocational identity of trades teachers, and the process of transition or negotiation to a new or combined identity, is also reviewed.

2.6.1 Apprenticeship Model in Teacher Preparation

The apprenticeship model of learning has been recognized as a method of teacher and scholar education, although it is not commonly used to describe modern preparation for teaching. Early universities, as they moved from general education toward specific training in medicine, law, and theology, followed the apprenticeship model, as described in Ong (1958): "Such universities were, in brief, medieval guilds … the degree of master or doctor was the formal admission to the guild, just as the bachelorship which preceded it was admission to the body of apprentice teachers" (p. 153). The scholar learned at the side of the master within the academic setting, similar to the carpenter learning in the master's shop. The expectation to take the learned knowledge and carry it forward as a teacher of others, embedded in the craft apprenticeship model, can also be seen in the academic apprenticeship.

In modern universities, the apprenticeship model has been recognized as the *signature pedagogy* (Shulman, 2005a) of doctoral studies (Flores, 2011; Walker, Golde, Jones, Conklin Bueschel, & Hutchings, 2008). A graduate student completes courses taught by various

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professors, in a manner similar to the trade apprentice's classroom hours, but is apprenticed or assigned to one journeyperson or graduate supervisor for a majority of the required work. This supervisor, or journeyperson of academia, carries the responsibility for providing the experiences and knowledge necessary to bring the student to the level of doctor: the student becomes a journeyperson or master/doctor of academia through the production of the doctoral dissertation as the masterpiece.

The practice of internship as an element of preparation for elementary and secondary teachers also relates to the work-based practice of apprenticeship training (Collins, Jarvis-Selinger & Pratt, 2010). Various models of teacher training emphasize or de-emphasize the workplace learning component as compared to classroom preparation; however, the on-campus classroom component of teacher preparation can be said to dominate the mix. Lortie (1975) stated: "Compared with the crafts, professions, and highly skilled trades, arrangements for mediated entry are primitive in teaching" (p. 59). Apprenticeship-style situated learning has been promoted to teachers for use in their classrooms (Guile & Young, 1999; Prawat, 1999), but rarely tried as the central learning philosophy of teacher training (Glazer & Hannafin, 2006).

2.6.2 Competencies of the Effective Teacher

One aspect of the craft apprenticeship model that has been transferred to the general practice and study of teaching is a focus on defining competencies. As previously discussed, regulation of the trades has included the creation of highly specific sets of competencies that need to be proven before certification is conferred. Within education, defining the necessary competencies, or KSAOs, of teachers has been explored, but not defined to the same extent.

Effective teaching is both a common topic on which everyone has an opinion, and one for which there is no clear definition. Beyond the studies within educational research (Darling-Hammond, 2012), there are governmental reviews (*No Child Left Behind Act*, 2001), think tank analyses (Clifton, 2013) and philanthropic efforts such as those through the Bill and Melinda Gates Foundation (Kane, McCaffrey, Miller, & Staiger, 2013), to name only a few. A search limited to "effective teaching" on Sept. 9, 2013 resulted in 1.8 million hits on Google, 25,500 results through the University of Saskatchewan library, and 3500 results in ERIC. A Nov. 22, 2013 search for "teacher competencies" on Google resulted in 9 million hits. While these results can be interpreted as evidence of a desire for improvement and effectiveness, they can also be

seen as evidence of a difficult question: what are the keys competencies of a teacher and how can teachers be more effective?

Some educational authors attempt to show the complexity of the task of teaching, if not fully define it. Bransford, Darling-Hammond, and Lepage (2005) compared teaching to conducting an orchestra, appearing effortless to the observer when done well, but involving hundreds of complex decisions made in the moment. Within higher education, Elbow (1986) spoke of teaching as a "rich messiness" (p. iv) and Brookfield (2006) calls teaching "a gloriously messy pursuit" (p. 1). Abrami, Appollonia, and Rosenfeld (1997) compare the dimensions of teacher effectiveness in higher education to the story of the elephant being defined by blind men, where each person believes they have the true definition but cannot see the whole.

The evolution of research on effective teaching is found in the movement from art to science. Robinson (2004) looked at definitions of teaching and found through the 1800s, the common term was *the art of teaching*. By 1907, writers more commonly compared teaching to a craft. By the second decade of the 1900s, *science* was the term in use, influenced by a growing desire for professional status among teachers, and interest in educational research (Robinson, 2004). This trend mirrored that of industrial psychology, and research in general, toward a focus on empiricism. Seidel and Shavelson (2007), in a review of educational research in North American claimed the process-product model, where variables such as teacher behaviours, student factors, or contextual factors were studied for their effect on the product or learning, dominated North American educational research through to the mid-20th Century. In the second half of the 1900s, research turned to more global contexts, looking at multiple dimensions of teaching and learning, and taking a more constructivist approach to learning (Seidel & Shavelson, 2007).

McKeachie (1990) showed that research on college teaching had followed the same path toward being a scientific field of research, according to Conant's (1947) definition, showing "progress in theory, methods, and established knowledge" (McKeachie, 1990, p. 189), as well as contributing to educational practice. Nesbit (1998) similarly traced the history of research on effective teaching practices within adult education as moving from a behaviorist viewpoint, through to sociological approaches to understanding achievement in terms of students' gender, class or ethnicity, and constructivist studies of individual teachers and classroom settings. Nesbit (1998) suggested the study of teaching adults has lagged behind that of teaching children

throughout this history of educational research. Brookfield (2000) took a post-positivism view of the pursuit of effective teaching in adult education, saying "the promise of professionalization that so informed adult education as a field of practice and study in the 1960s and 1970s has gradually been replaced by a spirit of circumspection" (p. 33).

Moving into the 21st Century, research on effective teaching has returned to positivist approaches to some extent. Government, research agencies, and lobby groups have sought a cure for the perceived lack of skills among graduating students (Darling-Hammond, 2006; Sadler, 2013), and to find a means to select, train, and develop teachers to fix this problem. Defining competencies of effective teachers has been one part of this pursuit; yet, the complexity of the task is continually evident. Allen's (2003) analysis of teacher preparation in the United States reviewed 93 research studies, but established differences more than similarities; while there was strong support for adequate subject matter knowledge, there was only limited support for the importance of pedagogical knowledge, and inconclusive evidence for the role of field experience in training for effective teaching in the elementary and secondary system.

Focusing exclusively on competencies for teachers may bring other effects. Sadler (2013) viewed the itemization of skills or competencies as attractive to industry and government, although not necessarily helpful to education. He saw the movement as a political tool meant to incentivize higher education institutions to improve teaching quality through more rigid definition. Darling-Hammond (2006) suggested simplification of the teaching role to prescribed tasks essentially deskilled teachers, placing them under the control of governmental curricula.

2.6.2.1 Defining competence and competencies. In addition to the industrial psychology definitions (Landy & Conte, 2007) previously discussed, the terms *competence* and *competencies* have been debated within education. Sadler (2013) sought to define the two terms within teaching, particularly in the postsecondary vocational sector. Noting that dictionaries list multiple meanings for the two words, Sadler (2013) focused on distinguishing them from each other: Competence is "an integrated and large-scale characteristic, capability or attribute" made up of many competencies, which are "smaller-scale identifiable elements that contribute to such an attribute, in particular demonstrable skills" (p. 13). Westera (2001) attempted to define the concepts of *competency* and *competence* in education, allowing that competencies can be defined as sets of knowledge, skills and abilities which can be taught and tested; however, he argued that competence is a tautology: "Competence, defined as the ability to produce successful behaviours

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in non-standard situations, seems to vitiate the possibility of using competences as an educational frame of reference" (pp. 81-82). Westera (2001) further argued that, "it is likely that only incompetence can be determined, *not* competence" (p. 82).

2.6.2.2 General teaching competencies. Despite her reservations about defining teacher competencies too tightly, Darling-Hammond (2012) made a contribution to the discussion under the term *teacher quality*: "teacher quality might be thought of as the bundle of personal traits, skills, and understandings an individual brings to teaching, including dispositions to behave in certain ways" (p. 2). Darling-Hammond's (2012) review of research showed the following teacher qualities, or competencies, to be important for student achievement: strong content knowledge; knowledge of how to teach others; skill in implementing instructional and assessment practice; understanding of learners and their development; general abilities to organize and explain ideas, ability to observe and think diagnostically; adaptive expertise to make judgments in response to students' needs. Other traits, such as showing support for all students, teaching in a fair and unbiased manner, adapting instruction to help students succeed, continuing to learn and improve as a teacher, and collaborating with other professionals and parents were also listed (Darling-Hammond, 2012).

Schulman (1986) looked at teacher preparation as a combination of three types of knowledge: content, pedagogical, and pedagogical content. Pedagogical content knowledge combines the previous two in a way that the teacher can effectively teach the subject; the teacher not only knows his content, but understands how it is best understood by students. The concept is further explained by Grossman (1990) as the difference between understanding a Shakespearean play, and understanding how to engage students in the play. She argued for subject-specific training for teachers to enhance this third form of knowledge.

Rockoff and Speroni (2011) looked at early-career evaluations of elementary teachers in New York City, and found a predictive relationship between evaluations of six teaching competencies, and student achievement on tests. Mentors rated the beginning teachers on engaging and supporting students in learning, creating and maintaining an effective environment for learning, understanding and organizing subject matter for learning, planning instruction and designing learning experiences, assessing learning, and developing as a professional educator (Rockoff & Speroni, 2011).

Goldhaber (2002) looked at the movement within the American elementary and secondary school system toward defining teacher competencies, given that teacher quality is one factor that has been shown over decades of research to affect student test scores; however, his review of research from 1966 through 2000 found strong evidence for only three teacher competency factors. These factors were subject matter knowledge, which is particularly pertinent at higher education levels, pedagogical knowledge, and verbal ability. Goldhaber (2002) concluded that of teacher characteristics correlated to higher student test scores, only 3% of the effect could be attributed to easily determined characteristics such as level of training and experience, while 97% of the effect related to "intangible aspects of teacher characteristics such as enthusiasm and skill in conveying knowledge" (p. 53).

Hanushek (1989) reviewed two decades of research on teacher effectiveness using the process-product approach and stated, "perhaps the closest thing to a consistent conclusion across the studies is the finding that teachers who perform well on verbal ability tests do better in the classroom, but even there the evidence is not very strong" (p. 48). Schacter and Thum (2004) took a similar approach to reviewing research on effective teaching, making the economic argument for both the societal benefit of better teaching, and pay incentives to cause such behaviour to occur. Their extensive review of research on the qualifications that best fit with effective teaching and learning, however, yielded the same three points as so many other analyses: content knowledge, pedagogical knowledge, and verbal ability. These studies are summarized in Table 2.3 on Page 51.

2.6.2.3 Postsecondary teaching competencies. Effective teaching in higher education, as in elementary and secondary education, is an acknowledged goal, if not fully understood or methodically pursued. Although often seen as a secondary function to research in defining success as an academic, authors such as Boyer (1990), Appollonia and Abrami (1997), Rahilly and Saroyan (1997), and Sorcinelli (2007) have reflected an increasing attention to the teaching role within higher education over recent decades.

Viewed from the perspective of the individual postsecondary teacher, Centra (1993) reported a survey of more than 35,000 faculty members at American universities and colleges that found being an effective teacher was a goal for 98 % of those surveyed (p. 3). Vajoczki (2008) in a study of Canadian university geography departments' faculty evaluation processes,

found an underlying goal of effective teaching, but also found a gap between that goal and the end purpose of the evaluation process, such as tenure, promotion, and administrative needs.

Teaching in postsecondary settings may be given less importance than in elementary and secondary schools, but the process of teaching in this setting is no less difficult. Marsh and Roche (1997) called teaching in higher education "a complex activity consisting of multiple dimensions," (p. 1187), with clarity, teachers' interactions with students, organization, and enthusiasm among those dimensions. Campbell (2009) added her voice from the American community college system, noting the complexity of teaching, and of understanding how to be effective at its practice, in higher education.

Henard (2010), in a review of quality teaching practices in higher education conducted for the OECD, also suggested understanding effective teaching in postsecondary studies is difficult due to the complexity of the learning process for students at this level of education:

> Unlike what happens in primary or secondary education, the learning gained in higher education results from a wider array of factors that are external to the education provided by the institution. Learning in higher education is the result of a combination of teaching, practice and behavioural skills, and of other components that are external to the institution's capacity. (p. 84)

A definition of effective teaching was crafted at Syracuse University and used by Centra (1993): "effective teaching produces beneficial and purposeful student learning through the use of appropriate procedures" (p. 42). This definition leaves the reader with further questions, however, as to what are "appropriate procedures" and how do we know if students have learned in a beneficial or purposeful way? In addition, this definition removes the teacher, other than as a transmitter of the procedures, from the equation.

Abrami, Appollonia, and Rosenfeld (1997) defined effective teaching from a strictly product-process perspective, saying "it is unclear whether generally static personal characteristics or traits (e.g. gender, race, age, personality, etc.) form part of the process definition" (p. 325). Layne (2012) validated this definition through a study of student versus teacher definition of effectiveness, showing that students tended to evaluate based on the product or result of the course, including entertainment value, while teachers tended to evaluate based on process factors such as whether the required curriculum was covered.

Other authors, however, have attempted to define competencies for postsecondary teaching by going beyond the product or process. Ralph (2003) claimed effective college

teaching is "an art, *and* a science, *and* a craft, in which skilled professionals continuously make instructional decisions about both content and pedagogy for the purpose of optimizing student learning. . . . Proficient teaching is more than correctly performing a set of generic instructional skills—although these skills are necessary to its success" (p. 100). Ralph (2004) offered 12 practices of instruction that are positively correlated with high levels of student achievement and motivation, and also with teacher satisfaction, that include a mix of teacher traits (enthusiasm, organization) and practices (active learning processes, relating course content to students). These practices are summarized in Table 2.4 on Page 52.

Arreola (2007), in discussing faculty evaluation methods said, "the vast, underlying problem in the evaluation of teaching has been the fact that the professoriate has not come forward with a universally accepted definition of what constitutes an excellent teacher" (p. 25). While lacking such a definition, he offered a list of traits and knowledge, or competencies, garnered from research and associated with excellent teaching. Arreola's (2007) list included:

- Content expertise. "Content expertise, although necessary is an *insufficient* quality for teaching excellence."
- Affective trait and skills. "[The teacher] enjoys teaching as much or more than they enjoy working in their field; models the best characteristics of an accomplished *practitioner* in the field they are teaching."
- Performance skills. The teacher speaks clearly, is organized, uses personal examples, uses humour effectively, and "creates an appropriate psychological environment for learning."
- Cognitive skills. These include instructional design, instructional delivery, and instructional assessment (p. 25).

Arreola's teacher competencies are summarized within Table 2.4 on Page 52.

Cabrera, Colbeck, and Terezini (2001) in a study of undergraduate engineering students at seven American universities, found that "faculty efforts in the classroom indeed have important influences on student learning" (p. 343). Among the teaching competencies they identified as positively affecting student learning were: interaction with students; guiding rather than lecturing; providing detail and specific feedback; providing encouragement; clearly explaining assignments; clearly stating course requirements; and relating assignments to the content of the class. Campbell (2009) listed dimensions of effective college teaching as including teacher enthusiasm, organization, group interaction, individual rapport, breadth of coverage, and

quality of work. Delaney, Johnson, Johnson, and Treslan (2008), in their survey of undergraduate students at a Canadian university, found effective teachers were most commonly described as: respectful, knowledgeable, approachable, engaging, communicative, organized, responsive, professional, and humorous.

Vajoczki (2008) created a conceptual framework of effective teaching based on previous research that was then tested within the Canadian university context. This initial framework suggested that effective teaching is affected by eight parameters; however, in testing this framework against the practices of Canadian universities, Vajoczki (2008) found "the original conceptual framework of effective teaching evaluation was too simplistic" (p. iv), resulting in additions to create a 15-point description of effective teaching. The resulting description is summarized in Table 2.4 on Page 52. Catano and Harvey (2011), in a study conducted at a Canadian university, used student-generated critical incidents to derive nine teaching competencies, which are included in Table 2.4 below. These competencies were then compared to other studies (Cohen, 1981; Keeley, Smith, & Buskist, 2006; Marsh & Roche, 1997) with strong similarities found.

2.6.2.4 Postsecondary vocational teaching competencies. Grubb (1999a) argued that postsecondary vocational teaching is yet more complex that postsecondary academic teaching, as open-admission policies create a diverse student population with a variety of learning styles, the wide variety of programs create multiple learning settings, and specialized reading and mathematical skills must be taught so students can use the tools of the occupation. Vorhaus (2010) reviewed research on vocational learners and learning styles, and found that vocational learners tend toward a learning style distinct from students in more academic postsecondary settings that is more visual than verbal and requires more teacher guidance, giving support to Grubb's (1999a) contention. Yet, Shepherd (2009), in her study of effective teaching in the American community college setting, while repeating the often-stated ideal of the community college as a teaching institution where faculty are freed from the burden of research expectations, also challenged that view by asking if faculty do attend to effective teaching and work toward its practice. Shepherd (2009) found a disconnect between the aspects of effective postsecondary teaching as established in literature and the reality reflected by faculty, stating "ultimately, this study revealed that although instructors understood the components of effective teaching, they did not indicate using them on a consistent basis in their classrooms" (p. v).

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2.6.2.4.1 American vocational teaching competencies. Defining the competencies of teachers in adult education is an ongoing effort. A U.S. government project during 2012-2014, sought to define the competencies of the adult education teacher. The draft competencies, released by the American Institutes for Research (n.d.) as the Department of Education's research partner, look for input from practicing adult education teachers. The competencies include managing student learning and performance, planning and delivering high-quality instruction, communicating effectively, and ongoing professional development. Each of these broader categories is then divided into numerous subcategories of more specific skills (American Institutes for Research, n.d.). The framework is summarized as a part of Table 2.5 on Page 53.

2.6.2.4.2 Australian vocational teaching competencies. The Australian vocational education sector has been strongly influenced by the competency model, with a focus on defining competencies for all occupations through a national labour force development framework, and a formalization of vocational training in the country. Each occupational category has a list of competencies, and vocational instructor is no different. The list of competencies or skills for vocational instructor included broad skills areas such as communication, teamwork, problem-solving, planning, learning and technology, which are then refined into more specific competencies such as designing programs, reflecting on one's practice, and effective use of web-based resources (Commonwealth of Australia, 2013b). The framework is summarized in Table 2.5 on Page 53.

The Australian competency model included related development and training towards being a certified vocational instructor, assuming some of these competencies are essential (assessment practice, design and develop assessment tools, facilitation practice, design and develop learning strategies, adult language, literacy and numeracy skills, and maintain and enhance professional practice) but that training toward other competencies will be elective, and should represent a mix of the remaining ones (Commonwealth of Australia, 2013b).

2.6.2.4.3 European vocational teaching competencies. European countries have also worked to define the competencies of vocational teachers, through transnational organizations such as the European Centre for the Development of Vocational Training. A handbook, *Competence framework for VET professions* (Volmari, Helakorpi, & Frimodt, 2009), created out of consultations in the member countries through the European Centre, details teacher competencies in administration, training, curriculum development and quality assurance, and

networking. Focusing in on the training or teaching aspects of the role, the required competencies are organized under the headings of planning, facilitation of learning, and assessment and evaluation. The related lists of specific competencies are more detailed than the American or Australian models, and include maintaining current knowledge of national and international educational policy and the labour market (Volmari et al., 2009, p. 24.) This framework is included in Table 2.5 on Page 53.

2.6.2.4.4 Canadian vocational teaching competencies. Within Canada, there is no national standard or set of competencies for vocational teachers beyond the brief description in the National Occupational Classification (Human Resources and Skills Development Canada, 2011); however, some provinces have mandated training and certification, and some institutions have required faculty to take specific training. The following competency frameworks are offered as a sampling, rather than a comprehensive review, of Canadian standards. They are summarized in Table 2.6 on Page 54.

In British Columbia, vocational teachers are expected to complete a provincial instructor diploma program within five years of beginning teaching in a postsecondary vocational training setting (British Columbia Ministry of Advanced Education [BCMAE], 2013). The learning outcomes for this program included designing and delivering adult learning "on a continuum of instructional approaches" (BCMAE, 2013, p. 4), creating engaging learning environments, communicating effectively, and acting in an ethical and professional manner. Professional educational development and currency in industry practice are also stated as expectations (BCMAE, 2013).

In Alberta, NAIT required its teachers to progress through the Becoming a Master Instructor (BMI) program. The program-defined learning objectives, reflective of competencies, including:

- Ability to design student-centered learning.
- Ability to use assessment tools.
- Facilitating a safe learning environment.
- Meeting legislated responsibilities for teaching and the trades.
- Fostering an inclusive learning environment.
- Ability to evaluate curriculum using evidence-based practices.

- Ability to self-direct continuing development of professional teaching competencies (NAIT, n.d.).

In Saskatchewan, Saskatchewan Polytechnic has developed a set of teaching competencies, to be used for professional development and evaluation (Saskatchewan Polytechnic, 2014). The categories of competencies include industry and professional knowledge, student learning and performance measurement, diversity, quality instruction, technology, communication, professional behavior and development, and teamwork, with specific competencies detailed under each heading (Saskatchewan Polytechnic, 2014).

Manitoba's Red River College (RRC) offered a certificate in adult education for vocational teachers in that province, built around a Developing a Curriculum (DACUM) model of defining competencies (Norton, 1997). The general headings included: facilitate learning, advise students, design and develop curriculum, develop programs, evaluate, conduct research, and develop personal attributes, with detailed listed of specific competencies under each heading. The chart also included competencies under the related adult education occupational skills of manage programs, participate in marketing activities, perform administrative duties, and communicate (RRC, 1999).

In Ontario, Algonquin College (2011) created a set of competencies for its teachers with competencies including: modelling professional practice within the discipline of teaching; creating engaging learning environments; using a variety of teaching/learning strategies; evaluating learning using a variety of valid and reliable tools and techniques; working independently and with others to develop and/or adapt learning materials; using technology to enhance productivity and help students learn; and designing and developing effective curriculum to support student success (Algonquin College, 2011).

2.7 Common Teacher Competencies

The previous discussion of teacher competencies offers only a sampling of the research in this regard, and aims to focus the discussion on competencies in the postsecondary, vocational, and Canadian contexts. Throughout the research presented on effective teaching and teacher qualities, in elementary, secondary, postsecondary academic, and postsecondary vocation settings, common threads can be seen. The following tables offer a comparison of the previously discussed research, categorizing the recommended teacher attributes as KSAOs (Landy & Conte, 2007).

Table 2.3. KSAOs for Teachers – General.

Study:	Darling-Hammond (2012)	Schulman (1986)	Rockoff & Speroni (2011)	Goldhaber (2002)	Schacter & Thum (2004)
Knowledge					
	Content	Content	Subject matter	Subject matter	Content
	Pedagogical	Pedagogical		Pedagogical	Pedagogical
	Learner development	Pedagogical content			
Skills					
	Instructional		Designing learning experiences	Conveying knowledge	
	Assessment		Planning instruction		
			Assessing student learnings		
Abilities and Other Characteristics					
	Organizational		Engaging and supporting students	Verbal	Verbal
	Explanatory		Creating and maintaining effective learning environment		
	Observational		Organizational		
	Diagnostic thinking		Developing as a professional educator		
	Adaptive expertise				
	Fair and unbiased				
	Aims for continual improvement				
	Collaborative				

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Table 2.4. KSAOs for Teachers – Postsecondary.

Study:	Ralph (2003; 2004)	Arreola (2007)	Vajoczki (2008)	Cabrera et al. (2001)	Campbell (2009)
Knowledge					
	Demonstrate interest in subject matter	Content expertise	Discipline knowledge		Breadth of coverage
	Use a variety of instructional activities	Instructional design	Delivery of instruction	Guiding rather than lecturing	Quality of work
	Use questioning, group discussion	Instructional delivery	Classroom experience		Learning design
	Show how subject matter is relevant	Instructional assessment	Currency of material	Relates assignments to course contents	Evaluate learning
			Assessment tasks		
			Audience awareness	Interaction with students	
Skills					
	Give clear instructions, expectations	Speaks clearly	Delivery of instruction	Clearly explains course requirements	Organization
	Provide for active student learning	Organized	Administration		Group interaction
		Uses humour			Determine objectives
Abilities and Other Characteristics					
	Be task oriented, businesslike	Enjoys teaching	Professional development		Enthusiasm
	Create a positive psychosocial climate	Models being accomplished practitioner in field	Course organization	Provide encouragement	Individual rapport
	Balance success and challenge	Lifelong learner	Enthusiasm		
	Refer to student contributions	Demanding but fair	Challenging		
	Show respect	Ethical and honest	Course organization		
	Show honesty, fairness and concern	Comfortable admitting ignorance	Student-instructor interaction		
	Give constructive feedback		Communications/ feedback	Provide detailed feedback	
			Skill development		

Table 2.4. KSAOs–Postsecondary. Table 2.5. KSAOs for Teachers – Postsecondary Vocational.

Study:	Delaney et al. (2008)	Catano & Harvey (2011)	Commonwealth of Australia (2013)	American Institutes for Research (n.d.)	Volmari et al. (2009)
Knowledge			Knowledge		
	Subject matter		Determining training needs	Develops content area knowledge	Know the curricula
			Resolve issues of quality and consistency	Develops pedagogical knowledge	Know tools for learning needs analysis
			Design programs based on learners		Know learning and teaching theories
			Research and analyze information		Know learning and teaching strategies
Skills			Skills		
	Communication	Communication	Language and communication; feedback	Assess students' prior learning, needs and goals	Possess language skills
	Organization	Gives feedback	Facilitation techniques	Use summative and formative assessment	Be able to adapt content to students
		Problem solving	Consulting	Communicates verbally, in writing	Present information clearly, effectively
			Computer/ technology skills	Is an active listener	Detect and identify learning difficulties
Abilities and Other Characteristics			Abilities and Other Characteristics		
	Respectful	Availability	Improve professional practice	Conveys high expectations	
	Approachable	Conscientious	Develop innovative skills	Provides advice and referral	
	Engaging	Creativity	Explore options for improvement	Participates in professional networks	
	Responsive	Individual consideration	Model high standards of teaching performance	Contributes to program improvement efforts	
	Professional	Professionalism	Providing leadership	Integrates higher order thinking	
	Humorous	Social awareness	Reflect on own learning; extend own expertise	Integrates technology into instruction	

Table 2.6. KSAOs for Teachers - Postsecondary Vocational, Canada.

Study:	British Columbia (2013)	Alberta, NAIT (n.d.)	Saskatchewan Polytechnic (2014)	Manitoba, RRC (1999)	Ontario, Algonquin College (2011)
Knowledge					
	Instructional approaches	Meet legislated requirements for trade	Industry and professional knowledge		Know own learning style and effect on teaching
	Evaluation methods	Self-direct continuing knowledge of teaching	Research and select materials based on student needs		Acquire and maintain repertoire of teaching strategies
	Educational technology		Educational technology		Educational technology
	Develop professionally, gain new knowledge		Knowledge of instructional design		Engage in development in subject area and teaching
			Seek new professional knowledge		Repertoire of evaluation techniques
Skills					
	Communicate effectively	Design student-centred learning	Develop and renew curricula	Facilitate learning	Create engaging learning environments
	Design adult learning	Use assessment tools	Deliver curriculum	Advise students	Identify learners for assistance
			Assess student learning		
	Evaluate learning	Evaluate curriculum	Facilitate student learning	Design curricula and programs	Evaluate effectiveness of learning activities
			Engage in research	Evaluate learners	Evaluate learning
			Communicate effectively	Conduct research	Use educational technology
			Use technology		Design effective curricula
Abilities and Other Characteristics					
	Work collaboratively	Facilitate safe learning environment	Work collaboratively	Present professional image	Contribute to a culture of continuous learning
	Promote respect	Foster an inclusive environment	Support students	Show compassion	Work within ethical guidelines
	Act in an ethical and professional manner		Encourage excellence	Be enthusiastic	Motivate learners
	Be a reflective practitioner		Motivate students	Demonstrate cultural sensitivity	
			Values diversity	Use humour	
			Exhibit professionalism		

The research summarized in these tables used many different words and phrases to describe effective teaching; however, these words can be clustered by similarities and those clusters examined to find similarities between the various frameworks of competencies. A word count conducted using NVivo qualitative data analysis software, along with manual coding, resulted in the following generalizations. These are presented under the KSAO headings, as described previously, in Table 2.7 below.

Table 2.7. Common KSAOs for Teachers.

Category	Item
Knowledge	
	Content or subject matter
	Pedagogical or teaching practice
	Understanding students
	Knowledge of technology
	Ongoing development of knowledge base in all of these areas
Skills	
	Instructional, including delivery of lessons and assessment
	Curriculum development
	Use of technology
	Communications, including verbal, demonstration, listening, and feedback
Abilities	
	Organizational
	Supportive, including mentoring, motivating, and adapting processes to student needs
Other characteristics	
	Professionalism
	Enthusiasm for subject and teaching
	Sense of humour
	Diversity awareness
	Self-reflection, and desire for continual self-improvement as a teacher

While some of the frameworks and studies reviewed focus more on one aspect of the KSAO concept than others, there is a degree of consistency in what the basics of effective teaching includes. A job candidate who could meet the 16 KSAOs listed above would likely be hired to teach, and would be evaluated by peers or students as an effective teacher. Yet, even

within these competency frameworks, there are hints of something more: the added characteristics that separate the great teacher from the good teacher (Darling-Hammond, 2012; Highet, 1963; Parker, 1998).

2.8 Beyond Competencies

Just as for trades training and certification, a focus on defining competencies for teaching provides a measure of simplicity. As in other workplaces, having defined competencies for education narrows the pool for recruitment to those individuals who can demonstrate certain skills. Practicing teachers can be evaluated against these competencies, and the defined KSAOs can help guide professional development processes (Landy & Conte, 2007).

This simplicity is not universally accepted, however, either within education or in employee management generally. The narrowness, and incompleteness, of a strictly competency-defined view of professionalism was found wanting by Schon (1983): "We are bound to an epistemology of practice which leaves us at a loss to explain, or even to describe, the competences to which we now give overriding importance" (p. 20). To be a teacher, or to be a professional practitioner in the broader perspective, is to be more than a list of competencies. Schon (1983) described the prevalence of technical rationality in research of professional behaviour, calling it "the high, hard ground" (p. 42) where the researcher may feel safe within the rigour of discipline, but misses what is of greater social importance. By descending into the "swampy lowland where situations are confusing 'messes' incapable of technical solution" (Schon, 1983, p. 42), the researcher may begin to understand the challenging and complicated nature of any profession. As stated by Parker (1998): "Good teaching cannot be reduced to technique; good teaching comes from the identity and integrity of the teacher" (p. 10).

Within vocational education, competencies are a regular part of defining graduate certification, and are a popular means of defining effective teaching (Commonwealth of Australia, 2013b; Volmari et al., 2009). Even in this setting, competencies are not always seen as sufficient. Sadler (2013) argued for a broader view of vocational teaching, saying "in the context of higher education competencies, the 'whole' is the graduate who can operate competently, intelligently and flexibly, in contexts that are known now and in those that have not yet been faced or even envisaged" (p. 17). Describing vocational teaching, Scott (1992) echoed Schon's (1983) metaphor of a swamp to be negotiated. To travel through the swamp of the classroom, a teacher needs not only competencies in content knowledge and pedagogical skills, but *stance* or

appropriate affective skills, and higher-order thinking skills. He stated: "Possession of performance skills and professional knowledge without the ability to work out when and when not to use them constitutes technical proficiency, not professional competence" (Scott, 1992, p. 64). Scott (1992) advocated *reflection-in-action*, or *reflection-on-action* after the event (Schon, 1983), to help vocational teachers not only to gain understanding, but confidence, in a way that prescribed competencies do not.

The listing of *competencies* does not necessarily equate to *competence*. Teaching is a complex task, as acknowledged by many writers (Bransford, Darling-Hammond, & Lepage, 2005; Brookfield, 2006; Elbow, 1986). Westera (2001) regarded *competence* as the not understood, undefinable ability to perform well in non-standard situations; *incompetence*, by comparison, can be easily understood.

Teaching, as well as the vocational skills being taught, can be decomposed into discrete skills or competencies to some extent; however, the competent or effective teacher is more than just the sum of those defined parts, and knows more than can be set into words. Scott (1992) acknowledged the tacit knowledge of vocational teachers when he suggested, "labelling what they may already unconsciously know helps them to handle their work with greater confidence" (p. 46). Schon (1983) said: "I begin with the assumption that competent practitioners usually know more than they can say. They exhibit a kind of knowing-in-practice, most of which is tacit" (p. viii).

2.8.1 Effective Teaching and Vocational Identity

In a manner similar to that identified in the apprenticeship model and for professionals, vocational identity plays a part in becoming a teacher (Graves, 1989; Simpson, 1967). Korthagen (2004) explained the effective teacher as an integration of competencies with identity in a layered or *onion* model, where each layer is most affected by the layers next to it. He theorized that the outer layers of behaviours and competencies interact with the environment, and both a novice teacher, and the teacher of the novice, will focus on these aspects of teaching in the beginning; however, these defined competencies are only the beginning of what it is to be an effective teacher. In Korthagen's (2004) model, identity is located far deeper within the person than competencies. He argued that attention to identity helps teachers to develop a sense of purpose and stability. Identity "will lead to a deeper involvement in the learning process among

teachers as well as students. It is precisely this involvement that is in danger of being lost when a technical, instrumental approach to competence is employed" (Korthagen, 2004, p. 93).

Hong (2010) linked teachers' professional identity to attrition rates, saying the decision to leave teaching "tends to be closely associated with the teacher's own sense of self and identity as a teacher, which have been constructed, challenged and modified" (p. 1531) through training and then classroom experience. Hong (2010) recommended attention to supports for beginning teachers as they navigate between pre-employment ideals and the reality of the classroom, including opportunities for reflection and participation in a community of practice, in order to reduce attrition levels.

Ingersoll and Strong (2011) reviewed 15 studies from the past 30 years regarding induction programs for new teachers. They found evidence that support and mentoring of new teachers helped build commitment to the profession, as well as stronger student performance. Warshauer, Freedman, and Appleman (2008) followed teacher candidates from a second-degree program that included an emphasis on identity formation and mentoring as they worked in inner-city schools, and found a higher retention level than usual for beginning teachers. Chong and Low (2009) found altruistic motivations for becoming a teacher were related to identity formation, and identity was related to commitment to the profession.

These studies suggest that beyond demonstrable competencies, identification with the role of teaching is linked to effective practice. In a manner similar to that shown within the tradition of trades training, identification with the vocation of teaching extends beyond behaviours or competencies, or KSAOs. A model similar to that of Figure 2.1, as shown on Page 37, for trades identity development in the *first apprenticeship* can also be created for teacher identity development, and is presented in Figure 2.2 below.

Knowledge: cognitive level competencies: subject matter, pedagogy, technology

Abilities and Other Characteristics: abilities, traits, attitudes; affective level: professionalism, sense of humour

Novice

Master

Skills: behavioural competencies and tacit knowledge; psychomotor level: instructional, communications

Vocational identity and mastery of craft: integration and competence; self-identification as a teacher

Figure 2.2 Model of vocational identity development in teaching.

2.9 Transition from Trades to Teaching

The following section moves from the discussion of teaching competencies and identity, to the transition from tradesperson to teacher. Factors within this transition related to effective teaching are discussed. The apprenticeship model of teaching and learning, as previously outlined for trades training, is overlaid on teacher training practices to create a comparison of the *first apprenticeship* to the *second apprenticeship*. Motivation for becoming a teacher, and teacher identity formation in the context of a second career, are also reviewed.

2.9.1 Motivation to Teach

What leads people to become teachers? Lortie (1975) argued that teaching is an occupation where entry is made easy to compensate for the relative low wages paid. He compared teaching to professions, and trades, where entry is more time consuming and expensive. Mediated entry to an occupation, whether through lengthy residency in medicine or apprenticeship in the trades, not only provides progressive learning but also builds an occupational identity; by comparison, mediated entry is "primitive in teaching" (Lortie, 1975, p.

59). Typically, classroom training in pedagogical theory, then a brief stint of practice teaching, is followed by full responsibility for a classroom. In postsecondary education, where teacher training is often not a prerequisite for hiring, the transition is even more abrupt.

Lortie (1975) suggested that people are led to teaching by an "apprenticeship of observation" (p. 67) conducted throughout their schooling by which they decide, in a non-analytical way, whether teaching is a suitable occupation. This observational apprenticeship also leads to a continuation of past practices, rather than consideration of new teaching methods (Lortie, 1975). Kouri (2009) confirmed this pattern of continuation of past, observed, practices among vocational teachers in Ontario. Knowles (1992) built on the idea of an observational apprenticeship, tracing development of a teacher role identity to the teacher's biography, saying identity is built on past educational experiences, positive or negative.

2.9.1.1 Motivation for second-career teachers. Eifler and Potthoff (1998), in their synthesis of research on second-career teachers in the United States, found that older education students typically have well-articulated reasons for choosing teaching, with five reasons most often given: a view of teaching as the chance to use one's mind; an opportunity for a lifetime of self-growth; a belief that all children can learn; a chance to return time and talent to one's community; and a way to demonstrate the high value of education. Tigchelaar, Brouwer and Korthagen (2008), in their research in the Netherlands with second-career elementary and secondary teachers, showed that while career-changers had "followed winding roads" (p. 1546) in their previous careers, they had made a conscious choice to teach.

Backes and Burns (2008) surveyed 125 new trades and health-science teachers in an American high-school system regarding their motivation to choose teaching as a second career. The most commonly stated reasons were:

1. Felt called to the profession, or a sense of vocation (31%).
2. Hours that allowed more family time (30%).
3. Pay and benefits, particularly benefits such as health care and pension (28%).
4. Love of subject matter and wish to share it (10%) (pp. 103-105).

Love of teaching was the most common write-in answer, with many of these responses also indicating previous teaching experience of some type. Backes and Burns (2008) stated: "Many new, second-career teachers are motivated because they perceive that they love teaching. It doesn't matter where or how they discovered this motivation; they know that it is real and

teaching fulfills a personal need" (p. 111). Mealyea (1989) also reported a sense of altruism as motivation among tradesperson training to enter vocational teaching, as they sought to pass on the industry knowledge they had gained through their previous occupations.

Harms and Knobloch (2005), in their study of students choosing a career in agriculture education versus a career in agribusiness, showed that career choice for teachers was guided by intrinsic motives for entry and by extrinsic motive for exit. They suggested recruitment for agriculture teachers should focus on intrinsic motivation. These results link to Herzberg's (1987) theory of motivation, in which hygiene or extrinsic factors must be satisfied to eliminate demotivation which will then allow motivational, intrinsic, factors to affect job satisfaction.

Gowdy (1987) studied tradesmen enrolled in a program to train teachers for high school industrial education. She found the motivation to move from trade to teacher was created through previous teaching experience of some kinds, indicated by 91.9% of participants, and the positive feelings related to that teaching experience (p. 110). Positive teaching role models, from past school experiences and through having family and friends in the teaching profession, also created an image of teaching as a rewarding career for the majority of participants. A lesser motivating factor was a wish to move up in socio-economic status by becoming a teacher.

2.9.2 Beginning the Second Apprenticeship

Once the choice is made to change from tradesperson to trades teacher, the beginning stage can be difficult. Karmel (2010) said the processes used to train vocational teachers are typically very different from those used in elementary/secondary education or the academic side of higher education, and reflect historical influences that saw vocational education as a simple training for work, rather than education for learning and culture. As education for work, the emphasis has been on occupational experience rather than pedagogical knowledge. Karmel (2010) noted that "a teacher who has never been an electrician would have no credibility in teaching students to become electricians" (p. 234); however, he added the corollary that "proficiency in an occupation may be a necessary condition to being a good teacher but it is not sufficient" (p. 234). Karmel (2010) argued for professional development within the vocational teaching sector, as support for new teachers, to develop communities of continuing practice, and to raise the status of vocational teachers in recognition of the complexity of both who and what they teach.

Kouri (2009) detailed the personal narratives of three individuals who moved from being electricians to community college vocational teachers in Ontario. Kouri (2009) found that "second career teachers begin teaching practice with preconceived beliefs about students, the prescribed curriculum, and teaching practice. They construct curriculum based on these beliefs" (p. 226). The new teachers relied on these beliefs, and previous examples of observed teaching, in the absence of training or an assigned mentor being provided for them within the college. Early frustrations as teachers included a heavy teaching load, and a sense of feeling alone in their struggles with developing lessons, managing the physical space and equipment in workshops, and maintaining control with students; however, when asked, colleagues would provide advice and support (Kouri, 2009).

Sauder (2001) studied new trades teachers within SIAST, interviewing them at the end of their first year of teaching. They reported stress during the early days of teaching due to lack of balance between work and personal life, as they put in many extra hours to prepare for the new role in the classroom. They expressed feelings of loneliness and isolation, in part because they hesitated to ask for assistance for fear of revealing a lack of expertise. "This situation creates a period of struggle as the newcomer attempts to perform the teaching role while not knowing exactly how the role should be performed" (Sauder, 2001, p. 89).

At the same time, Sauder (2001) discovered that new teachers found sources of satisfaction, with student success the most often-cited positive experience. The second satisfier was the opportunity to develop content expertise, including learning about technology developments in the field. By the end of the first year of teaching, the majority of survey participants said they felt more confident in the role of teacher and better able to balance the workload (Sauder, 2001). These findings are in keeping with those of Sorcinelli (1992, 1994) regarding new faculty in American colleges.

Campbell (2009), in a study of American community college teachers, found that despite comments about the amount of time spent on the job, exhausting teaching schedules, and the increased need for more remedial teaching, "97% indicated that if they had it all to do over again, they would choose a teaching career" (p.106). Motivators identified by Campbell (2009) were that the work was enjoyable and rewarding, it offered an opportunity to make a difference in students' lives, and it allowed for expression of their passion for the subject area.

Mealyea (1988) followed a cohort of new vocational teachers as they completed the Australian Diploma in Technical Teaching and began teaching. Unlike other postsecondary vocational settings, as described by Karmel (2010), these teachers received some training for their new roles. Nevertheless, Mealyea (1988) found they did not have the usual "anticipatory socialization" (p. 312) of many occupational roles. Mealyea (1988) said the participants, as they began their new roles as teachers, experienced "considerable dissonance and role strain" (p. 313), leading to anger and anxiety as they struggled to find a new occupational identity.

2.10 First and Second Apprenticeship Compared

It is somewhat ironic, given the status of teaching versus trades in society (Lyons et al., 1991) that the training for a trade is arguably far more systematic and demanding than the training for teaching, and particularly in comparison to preparation for teaching trades within postsecondary education in Canada. As compared by Lortie (1975), the craft apprenticeship system of training is superior to that of typical teacher training in that it builds knowledge and skills from simple to complex, provides a mentor relationship, and alleviates learner anxiety. The beginning teacher, meanwhile, commonly is immersed in the tasks of the classroom from the first day of work, with little mentoring or support, and significant anxiety.

Within Canadian vocational education, minimal preparation is given for teaching; neither the term *apprenticeship*, nor practices utilizing the apprenticeship model, is common. Vocational teachers are hired for content expertise, and often put into the role of teacher without any further preparation (Sauder, 2001). The description by Lortie (1975) of sudden responsibility for teachers is magnified in this setting.

Some countries do provide pre-employment training to postsecondary vocation teachers; Canada does not have such a system, but rather allows each institution or each province to set its own training requirements (Grollman & Rauner, 2007). Most often, as in the various Canadian institutional models previously discussed, this training is delivered in short time spans, after employment and teaching has begun, and with a focus on developing specific competencies.

The differences between trades apprenticeship training, general teacher training, and trades teacher training, are significant. Table 2.8, below, compares these preparatory systems as commonly practiced within Canada.

From this comparison, distinct differences can be seen. In the first apprenticeship, learning outcomes are highly specific and the path to be travelled is also very specifically

mapped out. In formal teacher training for elementary or secondary schools, the learning outcomes or competencies to be achieved are more variable, but the path is clearly defined. In the case of the tradesperson moving to teaching, learning outcomes range from nonexistent in many settings to a varied set of competencies, and the path to learning these skills is more akin to wandering through the woods, making personal choices to undertake studies or seek help, rather than a clearly marked road.

Table 2.8. Comparison of Training Factors.

Factor	Trades	Teacher	Trades Teacher
Time to certification/full responsibility	4 or more years	4 years	Few months or immediately upon hiring
Use of classroom instruction	15% of training in classroom	85% (often 7 of 8 semesters/terms)	All formal training in classroom
Use of situated learning	85% of training in workplace	15 % or one term internship	Little or no planned component
Dominant teaching perspective	Apprenticeship	Transmission	Transmission
Supervision while learning	Workplace training supervised by journeyperson	Internship supervised by experienced, credentialed teacher	Little to no supervision; black box of the classroom
Standards used for competency	Nationally set, highly specific competencies	Variety of frameworks; professional code of conduct and ethics	Variety of competency frameworks; no national standard
Test of competencies	Written and performance tests to certify to standards	Successful completion of course work and internship	No test of competencies; some performance evaluations
Symbol of competence or mastery	Journeyperson status; Red Seal	Bachelor of Education degree; teacher's certificate	Varies from none to certificate to diploma

2.10.1 Trades Teacher Training

When teacher training is provided to trades teachers, it is most often post-employment and isolated, rather than being delivered in the staged format of an apprenticeship. The example of carpentry training, as previously cited, showed four levels of training aligned with the four times of classroom attendance. Concepts such as *scaffolding, modelling and fading* (Johnson & Pratt, 1998) can be demonstrated within the learning outcomes for the four levels. Interspersed with these training terms are periods of workplace learning, where integration of theory into practical use (Lave & Wenger, 1991), can be seen. Such concepts may be a part of trades-teacher training, depending on the institution; however, the format of courses as lasting a few weeks in summer or as single-day workshops is unlikely to provide for the same laddering and integration of learning as is built into apprenticeship training. This schedule for training new teachers fits with organizational needs such as having teachers in classrooms as much as possible within the academic year; however, such short-term, abstracted learning formats have been shown by Brown, Collins, and Duguid (1989), and Glazer and Hannafin (2005), to be less effective as compared to an approach to teacher training that is based on situated learning, much like trades apprenticeship.

At the end of training, the trades apprentice is tested and certified as to competency in the specified skills; the teacher is not. While there are arguments for seeing teaching as a highly complex activity that cannot be easily tested in this manner (Brookfield, 2006; Knowles, 1992), the lack of any evaluation, in some cases, is concerning. To turn the situation around, one could ask if it would be reasonable or prudent to send an untrained entrant to the electrical trade out to the job site with full responsibility for completing work. Clearly, the apprenticeship certification system says no. Yet, we place trades teachers with little training in the skills of teaching into classrooms with full responsibility for completing the job of teaching students.

Critics of education argue that teachers generally are underprepared (Lortie, 1975). Trades teachers are particularly underprepared for a role that may, in reality, require even more training than that of the history or math teacher, for example. Barabasch and Watt-Malcolm (2013) suggested added training for vocational teachers in Canada since industry standards and technology are constantly changing so as to require continuous learning, and the teacher-student interaction is often one-on-one project-based learning, quite different from the standard classroom. Billett (2012) argued that the range of student ability, and curriculum content, within

vocational education would suggest its teachers need "to be carefully selected, prepared, rewarded and permitted to practice" (p. 187) so as to meet the needs of the occupations, students, and industry. In contrast to this belief, however, Billett (2012) demonstrated a reality that includes a paternalistic pattern of demeaning the role of vocational education and its educators, while imposing outside standards that negate the need for discretionary decisions or professional training.

When pedagogical training for trades teaching is provided, as in Australia, the student for this training is sometimes forgotten. Haycock and Kelly (2009) argued that training in pedagogy for tradespeople can negatively affect the acceptance of the new identity as teacher, if there is an over-reliance on academic terminology. "To us this does not call for a patronising dumbing-down of curriculum but rather perhaps, a disarming of the academic language. We would like to argue that it is not adult learning and pedagogical theory that is rejected but rather the language of the academy" (Haycock & Kelly, 2009, p. 10).

2.10.1.1 Learning without formal training. With limited or no formal preparation for teaching as the common practice, how then, do trades teachers learn to teach? The setting of competencies and standards by an outside body does not automatically cause them to be present in a classroom or shop; the teacher must learn, somewhere, somehow, to teach. There is little in research to answer the question of how, when formal teacher training is not expected or provided, teachers learn the needed competencies.

The observational apprenticeship suggested by Lortie (1975) and confirmed by Kouri (2009) is likely a large part of the process. For the tradesperson, however, observing teacher behaviour as a student may have been interrupted by a long period in industry, observing other behaviours. This time in industry as a tradesperson may become a second observational apprenticeship for trades teachers. Kemmis and Green (2013) found Australian vocational teachers used "a workplace leaning approach" (p. 114) to teaching, based on vocational skills from their previous occupations and geared to preparing students for the workplace. Kemmis and Green (2013) found a "striking commonality" (p. 115) among study participants in "the creation of an atmosphere reminiscent of the practice architectures of a workplace, or even more specifically a workshop or work team, with the teacher identified as the team leader or leading hand" (p. 115). Similarly, Swain, Schmertzing and Schmertzing (2011), in a study of second-career elementary and secondary teachers, found the attitudes and knowledge teachers had

developed in their previous careers were the main influence on their approach and philosophy as teachers. Knowles (1992) linked the new teacher's biography of experiences as a student to identity and behaviours as a teacher. Past positive teaching role models and school experiences led to appropriate behaviours as a teacher; negative role models and school experiences led to inappropriate or less effective behaviours.

Narrative, or storytelling, was found to be used frequently by vocational teachers to convey industry knowledge (Kemmis & Green, 2013; Wenger et al., 2002). This practice was also noted by Sharman (2011) among Canadian vocational teachers. Storytelling is a time-honoured teaching tool, common among traditional cultures and used without specific training, suggesting a tacit knowledge of teaching practices being used by vocational teachers. Sharman (2011) also suggested that storytelling can be used as a way to learn about teaching, through reflection and critical analysis, as meaning is found in experience.

Jurasaite-Harbison and Rex (2010) explored informal or workplace learning by elementary schoolteachers, defining informal learning as occurring through interactions among teachers and reflections on practice, "sometimes planned and often happenstance" (p. 267). In examining a school setting for teacher learning, they anchored their study in concepts of general workplace learning, linking pedagogical learning to apprenticeship learning practices such as *situated learning* (Lave & Wenger, 1991) and Vygotsky's (1978) *zone of proximal development* and found evidence of these concepts in use. Billett (2002) summarizes workplace learning as concerned with practice rather than individual learning, but nonetheless, often pedagogic, as well. Haycock and Kelly's (2009) narrative depiction of practicing trades teachers also included descriptions of workplace learning as experienced teachers guided newcomers. Andersson, Köpsén, Larson, and Milana (2013) found two paths of learning for vocational educators: an informal, apprenticeship path embedded in the practice of teaching, and a formal curriculum-based process, that places the new teacher in the role of student first, learning in a context separated from practice.

Given the past learning experience of trades teachers as apprentices, who gained much of their expertise through workplace learning, it is highly likely that these learning skills would again be used in the *second apprenticeship* of learning to teach. The practice of not requiring or providing formal training in pedagogy, in favour of meeting the demands of the classroom, may be a form of "benign neglect" (Lave & Wenger, 1991, p. 93), in a manner similar to the

apprentice being ignored by the journeyperson in the face of workplace demands. This lack of formal teacher training is hardly an ideal way to prepare tradespeople for the complex task of teaching, however, and this form of neglect is not mediated by the many other forms of assistance built into the apprenticeship model of learning. Nevertheless, trades teachers clearly have found ways to learn to teach, and some have learned to teach very well, without the benefit of extensive formal education.

2.10.2 Vocational Teachers' Identity Formation

As previously discussed, the tradesperson and the teacher are each more than a set of competencies; affective attributes such as personality traits, sense of professionalism, and identification with the profession are the deeper aspects of being in a vocation. Within teaching, the extent to which one sees oneself as a teacher, or *teacher identity*, has been linked to job fulfillment, motivation, commitment, and sense of effectiveness (Farnworth & Higham, 2012). These factors, in turn, have been linked to effective teaching (Ingersoll & Strong, 2011).

The *teacher identity* of postsecondary teachers can be said to be formed in a different manner than for the majority of elementary and secondary teachers, who choose teaching as a first career, train through university study for that career, and may undergo a planned induction process into the profession (Ingersoll & Strong, 2011). Elementary and secondary teachers have subject-matter specialization, but the primary focus in their training is on the practice of teaching. A psychological contract (Schein, 1988) is created through lengthy training, workplace learning in practicum, induction, and membership in the community of practice.

By contrast, the majority of postsecondary teachers are, first and foremost, subject matter experts, and secondly, teachers. For those who teach the trades, the differentiation may be even more distinct. Farnworth and Higham (2012), in their study of Canadian teachers, found some evidence of identity based on a community of practice within subject specialization for teachers overall, but for vocational teachers "prior trade specialism . . . emerged as a key influence on their identities as teachers and the curriculum that they enacted" (p. 479). Hrabok (2003) found the psychological contract of Saskatchewan vocational teachers linking them to their employer was relatively weak, although a strong connection was felt with students, and with colleagues within their departments, some of which would be trades related.

Haycock and Kelly (2009) took the view that a dual identity is required for trades teachers:

Practitioners are intended by policy initiatives . . . to have the dual occupational identities which include those associated with their previous industry fields of practice, experience and expertise in trade areas, and that of teacher. These dual identities are then supposed to converge in what we perceive to be a somewhat Janus-faced occupational identity. (p. 4)

They suggested that the first identity, such as carpenter, electrician, or cook, may disturb the trades teacher's present and future occupational identity. Haycock and Kelly (2009) recorded one research participant as saying "We've got teachers there that if you call them a teacher, they won't speak to you. They're tradesmen. Been teaching for 10 years, but they're tradesmen" (p. 6).

Chappell and Johnston (2003) suggested this second identity is an important part of the overall identity for trades teachers, and what distinguishes these educators from school teachers or university lecturers whose initial careers are often in education. "Indeed, [vocational] practitioners often use this as a distinguishing marker that constructs them as different from other educational practitioners" (Chappell & Johnston, 2003, p. 14). Chappell (1999) explained this characteristic of vocational teachers in more detail:

[Vocational] teachers believe that their legitimacy as teachers, particularly in the eyes of students, is dependent on their industrial expertise. . . . [Vocational] teachers use their industrial experience to construct a sense of who they are in the educational project. . . . Moreover, they see this industrial knowledge and experience as conferring legitimacy on their professional identity as teachers. (p. 218)

Given that industry knowledge is ever-changing, however, this legitimacy is constantly in need of renewal by the teacher, and under scrutiny both by supervisors, and by students who may be industry workers as well as learners. The need to maintain currency and identity in industry, while being a teacher, leads to uncertainty in the trades teacher's identity (Chappell, 1999).

Nze and Ginestie (2012) suggested that time and the status of vocational education in society play a part in the formation of a teacher's occupational identity. In their study of Gabonese vocational teachers, Nze and Ginestie (2012) defined teacher identity as including three aspects which develop over time: subject-matter knowledge, pedagogical knowledge, and a knowledge of how one fits into the educational system. "Thus, this identity is not created spontaneously at the end of initial training when the student starts work in the classroom, but it instead results from a long training process, completed over many years, little by little" (p. 402). Nze and Ginestie (2012) found that identity was affected by the view of vocational education

within society: although newly-trained teachers expressed belief in the importance of their role in helping students achieve, and in helping the country by providing vocational training, they were also affected by the stereotype of vocational students, and downplayed their ability or responsibility as teachers: "Hence, if they think that teachers play an important part in academic failure, they dismiss their own responsibility, as proved by comments such as: 'you have to do a good job with pupils who ended up here because they didn't make the grade elsewhere'" (p. 414).

2.10.3 Signature Pedagogy

Signature pedagogy (Schulman, 2005a) has been suggested as a means to both teach the ways of the profession and induct new participants into the profession, or create vocational identity. Schulman (2005b) looked at professions which combine theory-based and applied education, such as law, medicine, and engineering for a signature pedagogy. While he did not consider trades training, all vocational education, and especially the segment dealing with trades, is clearly a mix of theory and applied training and fits within this model (Lucas, Spencer, & Claxton, 2012).

Further research has explored the idea of signature pedagogies in other fields including teaching itself (Gurung, Chick, & Haynie, 2009; Schulman, 2005b). This research suggested forms of teaching become engrained within a particular profession in order to develop the crucial habits of that profession, and also serve to simplify the job of teaching new entrants to the profession. Schulman (2005a) said: "To put it simply, signature pedagogies simplify the dauntingly complex challenges of professional education because once they are learned and internalized, we don't have to think about them; we can think with them" (p. 56).

Maurice-Takerei and Jesson (2010) applied the concept of signature pedagogies to the teaching of trades, as a part of a qualitative study regarding formation of identity among carpentry teachers in New Zealand. The authors compared Schulman's (2005a) concept of three apprenticeships (cognitive, skills and moral) to full entry to a profession, and compared this concept to the apprenticeship model historically associated with trades training. Maurice-Takerei and Jesson (2010) argued that, as in professional training where the realities of the profession form the basis of the signature pedagogy used to pass on key teachings, a signature pedagogy is used in the trades, as well, recognized or not.

Maurice-Takerei and Jesson (2010) claimed that using Schulman's signature pedagogy concept "suggests that trades educators are best placed to define the skills, concepts and ethical responsibilities that represent both the trade in which they are located and pedagogical practices associated with their trade" (p. 157). This practiced pedagogy and the integrated competence of practitioners represents a *silent space* within vocational education where the expertise of practitioners in the trades and as trades teachers is ignored in favour of defined competencies both in trades and in teaching of trades (Maurice-Takerei & Jesson, 2010).

Maurice-Takerei and Jesson's (2010) limited study did not define a signature pedagogy for trades teachers, but found that the carpentry teachers interviewed did demonstrate the "habits of the mind, habits of the heart, and habits of the hand" (Schulman, 2005a, p. 59) considered to be a part of a signature pedagogy, suggesting there is a signature pedagogy for trades, and that a deeper understanding of it might assist both in the practice of teaching, and in teacher identity formation.

2.10.4 Negotiating Identities

Negotiating the melding of two identities, or as Haycock and Kelly (2009) suggested, maintaining a Janus-faced identity, appears to be part of the process in becoming a trades teacher. The new teacher has already held a position of expertise within a trade, with an established occupational identity. This identity is far more deeply embedded than just competencies and behaviours (Graves, 1989; Simpson, 1967). Becoming a trades teacher leads this person through a transitional phase, which again requires more than just learning competencies or behaviours, toward an embedded sense of occupational identity, beliefs, and a sense of mission about teaching (Korthagen, 2003).

Mealyea (1988) termed this transition from tradesperson to teacher a "resocialization" (p. 12), affected by societal expectations on an individual's career path, vocational identity formation in adolescence, and entry to a new career as a mature student. In his narrative study of a cohort of Australian tradesmen taking the mandated training to become trades teachers, Mealyea (1988) described a group that maintained its connection to industry, as demonstrated through speech patterns and exclusive association within their small peer group, rather than mixing into the larger teacher trainee group: "They entered teaching with, and managed to sustain, a commonly-held industrial orientation toward their new occupation" (p. 441). Mealyea (1988) termed the experience of teacher training for this cohort "largely dysfunctional" (p. 443)

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due to the reinforcement of the original vocational identity by the group members, and by some college lecturers with similar orientations. Mealyea (1988) suggested an enforced mixing of occupational groups within the college's classes, and more contact with other subject-matter teachers as they moved to duties in schools, could have challenged their view of themselves, and of the role of trades teacher. Such a challenge to vocational identity, while unsettling, may have sparked reflection of teaching and strengthened the teacher identity (Mealyea, 1988).

Maurice-Takerei and Jesson (2010) found the Australian trades teachers of their study identified occupationally as both carpenters and teachers; they suggested clarifying a *signature pedagogy* (Schulman, 2005a) of trades teaching, and recognition of this distinctive form of teaching within educational research, could strengthen the identity of vocational teachers. Andersson et al. (2013) found differences in identity among adult educators, with those whose subject matter expertise came from a vocation or profession with a strong identity tending to remain on the periphery of the adult education community of practice.

According to transition theory, a transition refers to "any event, or non-event, that results in changed relationships, routines, assumptions, and roles" (Schlossberg, Waters, & Goodman, 1995, p. 27). Castro and Bauml (2009) used this definition in studying second career teachers, arguing that career changes create a time of vulnerability for individuals and that understanding the factors that affect the transition into teaching as a second career "may inform both recruitment and retention of second-career teachers" (p. 114). Changing from practicing in one's trade to teaching that trade would appear to fit that definition; however, the scant research on vocational identity among trades teachers gives little insight into how that identity might best be negotiated, for either the teacher or students. Should the trades teacher maintain a dual identity, as Haycock and Kelly (2009) suggested is the intent of policy in Australia, or should the trades identity be subsumed in order to bring the new teacher into a new community of practice (Andersson et al., 2013) and to stimulate reflection (Mealyea, 1988)? No clear answer emerges from the literature.

2.10.5 Model of Second Apprenticeship Identity

As conceptualized earlier, based on the theories of Simpson (1967), Graves (1989) and Rikowski (1999), the first apprenticeship can be visualized as moving a novice through stages of vocational development, from gaining knowledge, skills, deeper abilities and internalized traits, to identification with the trade such that the fully-trained person will perpetuate not only its roles

and habits, but also teach others in the ways of the trade. Learning to be a teacher can be visualized in a similar manner (Korthagen, 2004) as moving from knowledge, learned behaviours or skills, to a deeper sense of mission and identity in the role.

For those who enter a *second apprenticeship*, moving from trades to trades teacher, the two vocational identities must be negotiated within the individual's overall sense of vocation identity (Haycock & Kelly, 2009; Mealyea, 1988). The path to this negotiated identity is not as simple or linear as the path to a singular vocational identity, as conceptualized in Figure 2.1 or Figure 2.2. This combined, negotiated identity might be represented as the interaction between two geometric planes.

The point of current vocational identity for one individual may exist in both planes at the same time, without being symmetrically aligned between them. For example, a strong sense of mastery within the plane of tradesperson may exist, placing the individual as centered and comfortable in this identity. At the same time, identity as a teacher may be at the periphery of that circle and plane, leading to a sense of imbalance in this role. A graphic representing these paths is presented in Figure 2.3 below.

The exact point of negotiation between the two roles, and related behaviours, knowledge, skills, and abilities, is not clear. Research suggests a strong identity in the first career may interfere with the second, and that the transition is a matter of negotiation throughout a career (Chappell, 1999; Maurice-Takerei & Jesson, 2010; Mealyea, 1988). It is as if the two vocations and two identities are subject to realignment over time and through learning experiences. The unanswered questions of identity within the second apprenticeship include:

1. Do these identities integrate, or collapse into one vocational identity over time?
2. Do they remain separate but connected?
3. Is there greater value to the practice of teaching in separate strong identities or in the integration of the two?
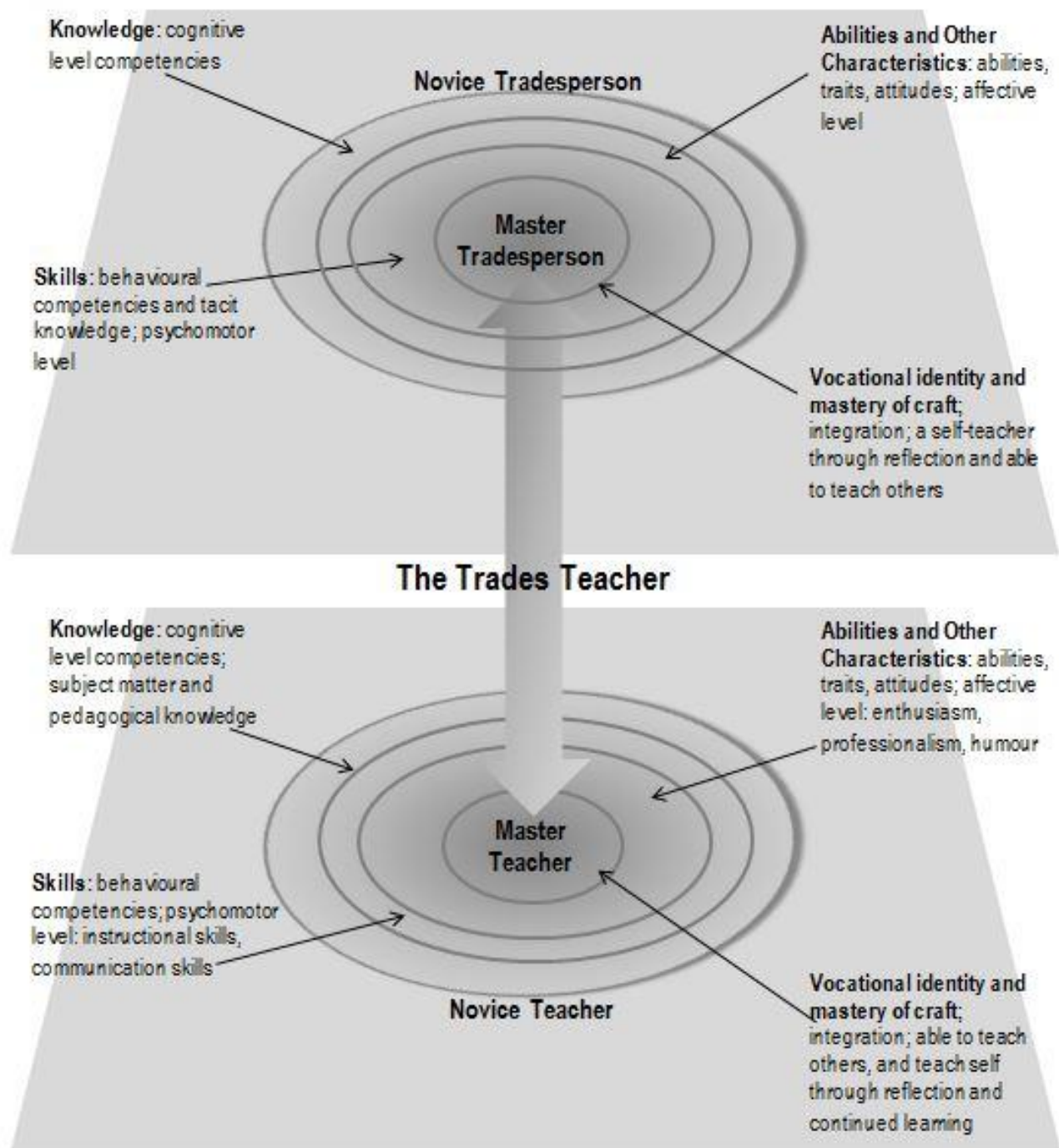
Figure 2.3 Integrated model of vocational identity, tradesperson to trades teacher.

2.11 Summary of Chapter Two

In Chapter Two, I have discussed and compared aspects of the *first apprenticeship* in trades and the *second apprenticeship* of the tradesperson becoming a teacher. I have compared training processes, expectations for competence, and the negotiation of vocational identity in each role. From this, I have created a conceptual framework relating the two apprenticeships, and highlighted aspects of this transitional process that remain unanswered by the literature explored for this study.

In Chapter Three, I will discuss the methodology and methods to be used for my study, in the pursuit of further understanding the interrelationship of the first and second apprenticeship toward effective teaching practice, and creation of a negotiated vocational identity that leads to effective teachers remaining in the field of trades training.

CHAPTER THREE: METHODOLOGY AND METHODS

3.1 Introduction

In Chapter One, the research project was introduced, the need for further research in the field of vocational trades training presented, and the research question for this study discussed. In Chapter Two, I presented a literature review of previous research surrounding the current question under study, including learning processes and expected competency outcomes within trades training, learning processes and expected competencies in teacher training, and a comparison and integration of the two within a *second apprenticeship* model including negotiation of a new vocational identity. In this chapter, I present the methodology and the method to be used in my research to explore this second apprenticeship in greater detail.

The research question for this study involves an exploration of the transition from the *first apprenticeship* of trades practice to the *second apprenticeship* of trades teacher. This overall research question is divided into the following questions:

1. What motivates experienced tradespeople to move into a second career of teaching?
2. What competencies do tradespeople transitioning to teaching bring to the classroom to support effective learning?
3. Once in the role of teacher, what formal and informal learning helps them to become effective teachers?
4. How does their vocational identity change with the change in career?
5. What factors lead them to a feeling of satisfaction or effectiveness with their work, and to continue as teachers?

3.2 Research Methodology

3.2.1 Worldview

This research was built around the self-reported experiences and knowledge of the participants; therefore, this research must be based on a constructivist worldview (Creswell & Plano Clark, 2011). Within this study, the participants were considered to be subject matter experts, not only in relation to the subject matter that they teach, but also as experts in the experiences they have lived in teaching, and through their transitions to the role of teacher. Multiple realities and stories should be revealed, as each participant's lived experience will be somewhat different. As described by Creswell (2003), the goal of research based on

constructivism is to "rely as much as possible on the participants' views of the situation being studied" (p. 8).

The theoretical lens was the social science lens of observation, but with a philosophy of Appreciative Inquiry (AI) informing it (Cooperrider & Whitney, 1999). Appreciative Inquiry, simply stated, looks for the best of what is, and attempts to build on strengths for further improvement in organizations rather than presenting a problem to be solved. Constructivism and AI can easily work together, given that AI's first principle is the *constructivist principle*. This principle was explained by Coghlan, Preskill, and Tzavaras Catsambas (2003) as "related to the notion that multiple realities exist based on perceptions and shared understandings" (p. 9). Coghlan et al. (2003) described AI as a highly participatory form of inquiry, emphasizing social constructivism. While this study did not follow the full process of AI as envisioned by Cooperrider and Whitney (1999), the research was guided by the spirit of AI in looking for positive experiences rather than problems to be solved, and in respecting the viewpoint of the participants.

Denzin and Lincoln (2005) defined constructivism's underlying foundations as: "a relativist ontology (there are multiple realities), a subjectivist epistemology (knower and respondent co-create understandings), and a naturalistic (in the natural world) set of methodological procedures" (p. 24). Creswell and Plano Clark (2011) similarly set out aspects of constructivism, but format them as guidance for researcher practice:

- *Ontology* – the researcher will provide quotes to illustrate the different perspectives of the participants.
- *Epistemology* – the researcher will work closely with the participants, and visit them on site.
- *Axiology* – biased, but with the expectation that the researcher will actively present and acknowledge biases and interpretations.
- *Methodology* – an inductive approach, as the research will begin with the participants' views and build patterns or generalizations from these views. Creswell (2003) termed this process "theory generation" (p. 6).
- *Rhetoric* – an informal, literary style should be used.

This guidance was followed within this study.

3.2.2 Mixed Methodologies and Methods

While constructivism was the appropriate choice for the model intended in this research, it is most often associated with qualitative research rather than mixed methods, which was the path chosen for this study. Choosing the mixed methods approach to research in this instance represented an attempt to create a balance between the perceived greater certainty offered by quantitative approaches, and the benefits of qualitative methods to provide a richer text describing participants' experiences. Schwandt (1996) argued that positivism's promise of firm foundations for knowledge through strictly quantitative research methods has proven unattainable, particularly in the social sciences and humanities. "The decision to engage in the act of deliberation through conversation is a moral and political commitment to a community of interpreters" (Schwandt, 1996, p. 66). This statement fit well with the present research project, which aimed to give voice to practitioners of postsecondary vocational education in an egalitarian manner.

Other authors, reflecting an acceptance of qualitative research methods, nevertheless have questioned aspects of the approach. Cheu-Jey (2012) raised the question of constructivist research's internal consistency, asking whether authors intended that one reality should be constructed by the researcher out of many individual ones presented through research, or whether reality as a concept is left to the individual participants to define. Within the present research project, the perspective taken is that a reality can be constructed based on the commonalities found within the individual experiences of the participants, and generalizations made (Creswell, 2003; Creswell & Plano Clark, 2011). Through interpretation of the multiple perspectives of participants, conclusions with predictive value in similar situations can be created, and to a limited extent, theory generated from these common representations for reality.

Onwuegbuzie (2012) redefined the mixed approach by changing the name from *mixed methods research* to *mixed research*, emphasizing that not only the methods, or specific strategies, are drawn from both quantitative and qualitative traditions, but the methodology or broad approach to research is also drawn from both traditions. Drawing on Tashakkori and Teddlie (2010), Onwuegbuzie (2012) called for a "humanistic methodology" (p. 206) similar to the learning style of infants, where information of all kinds, both quantitative and qualitative, is used as available to learn about the world around oneself. Onwuegbuzie's (2012) encouragement to use all forms of information available to the research is linked to the concept of pragmatism.

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While constructivism was the foundation of this research project, the approach also mixed in a measure of pragmatism, or "what works" (Creswell & Plano Clark, 2011, p. 43). Creswell (2003) advised the researcher to base the research approach on the research problem: quantitative if seeking to identify influencing factors or best predictors of an outcome; qualitative if "a concept or phenomenon needs to be understood because little research has been done on it" (p. 22).

The approach of freely mixing qualitative and quantitative methodologies and methods was also supported by Johnson and Onwuegbuzie (2004), who suggested "epistemological and methodological pluralism" (p. 15) in educational studies in the pursuit of more effective research. The current research aimed to identify influences and make limited predictions regarding effective teaching practice through the use of quantitative tools; and, to create further understanding of an under-researched phenomenon, that of trades teaching, by using qualitative methods. Throughout both methods, the research was imbued with a constructivist, appreciative view.

3.2.3 Constructivism in Mixed Methods Research

Frels and Onwuegbuzie (2013) posited that constructivism, while most often associated with qualitative research, can be a basis for mixed research, as well. They argued that analysis of data from research based on a constructivist paradigm can be used in all forms of qualitative analysis, and can be used in quantitative analysis for descriptive statistics, and some inferential statistics for internal statistical generalization, but not to the extent of external statistical generalization. Frels and Onwuegbuzie (2013) defined *internal statistical generalizations* as making generalizations, judgments, inferences, or predictions on data obtained from one or more representative or elite participants, such as key informants, subsample members, or politically important cases, of the sample from which the participant(s) was selected. In the current study, the sample did not meet the threshold of being randomized or representative, as needed to support external statistical generalization; however, it was designed to meet the requirements, as defined by Frels and Onwuegbuzie (2013), to support internal statistical generalizations for the population from which the sample was drawn, that of trades teachers in Western Canadian postsecondary institutions.

Use of a constructivist paradigm for research that includes both quantitative and qualitative forms of analysis would, in the words of Frels and Onwuegbuzie (2013), constitute a *qualitative dominant crossover mixed analysis*. In this model, the researcher assumed a

qualitative, constructivist, stance "and also believes that the addition of quantitative data and analysis would address in more detail the research question(s)" (Frels & Onwuegbuzie, 2013, p. 187). This is the model I chose to use in the current study: a constructivist worldview to inform all aspects of the research, creating a qualitative dominance, but using both qualitative and quantitative methods of data collection and analysis to provide depth of understanding and support for a limited level of inference and predictive value.

3.2.4 Mixed Methods in Education and Business Studies

The present research project was situated within educational studies, but was also connected to management studies as it looked to inform human resources functions of recruitment and retention. Qualitative and mixed methods research are well established within education (Collins, Onwuegbuzie, & Sutton, 2006), but less established in business and management studies. Lopez-Fernandez and Molina-Azorin (2011) looked at the prevalence of mixed methods research, and found approximately 30% of educational research was of this type, but in interdisciplinary (education, psychology, and management) journals only 9.2 % of research articles had a mixed method research approach (p. 278). Quantitative research dominated in educational management journals, versus qualitative in education-focused journals (Lopez-Fernandez & Molina-Azorin, 2011).

Cameron and Molina-Azorin (2011) reviewed business research, and commented that the term *mixed methods* was not used as a keyword in main methodological journals in the field, but suggested that mixed methods may be more common than scanning for the words would suggest. Molina-Azorin (2011) provided an analysis of research methods in business and management studies, based on a review of more than 1,300 articles, that showed quantitative as the dominant method used, while mixed methods was the least used of the four types identified. The value of mixed methods research in business studies was supported, however, as Cameron and Molina-Azorin (2011) argued that this research approach held value, particularly in human resource management studies, "when investigating sensitive issues in organizational research" (p. 286). Currall and Towler (2003) also suggested a move toward mixed methods research in management studies, away from strictly quantitative research.

These findings are in keeping with the historic view of research in both psychology and organizational psychology in North America. An emphasis on positivist, empirical research stems from the early 1900s when business research was dominated by Taylor's (1911) *scientific*

management and Gilbreth's (1914) time-motion studies of work processes. A change in direction in psychological research has been traced to 1998 when a more positive view of human behaviour developed in Positive Organizational Behaviour (POB) theory (Peterson & Seligman, 2003). Certainly, theories of positive human behaviour in business studies predate this time; however, organizational psychology and management studies have clearly lagged behind education in the path toward qualitative and mixed method studies, rather than strictly quantitative research.

As the present study sought to provide suggestions regarding human resource management functions, as well as explore the lived experiences of an understudied group, a mixed methods approach appeared most appropriate. The quantitative portion of the study was designed to provide the type of evidence most often accepted within management studies and organizational psychology (Cameron & Molina-Azorin, 2011), while also utilizing the strengths of qualitative research methods to enhance understanding of the lived experience of the group and mirroring the acceptance of this type of research within educational studies (Denzin & Lincoln, 2005).

3.3 Method

3.3.1 Research Design

This research employed a qualitative dominant crossover mixed approach toward exploring the *second apprenticeship* of tradespersons who move into the role of trades teachers (Frels & Onwuegbuzie, 2013). A convergent sequential design (QUAN+Qual→QUAL) was used: quantitative and qualitative data was collected and analyzed in two phases, and then was merged in the third phase or final analysis (Creswell & Plano Clark, 2011). This design fit with the stated reasons of Frels and Onwuegbuzie (2013) for the use of crossover mixed analyses, including the need to *reduce*, or condense qualitative data findings using quantitative analysis; to *transform* or *quantitize* data for numerical analysis; and, to *integrate*, or incorporate, quantitative and qualitative data into a coherent whole.

This choice of method was also in keeping with Greene, Caracelli, and Graham's (1989) purposes for mixing quantitative and qualitative data, specifically the purposes of *complementarity*, described as the intent to measure overlapping by different facets of a phenomenon; and *development*, the intent to help develop or inform the other method. Greene et al. (1989) recommended that in a *complementarity* focused mixed methods study, the purpose

would be best served if the researcher planned for: the methods to be different; the phenomena similar; the paradigms the same; the status equal; and in implementation, the two parts of the study to be interactive and simultaneous. For a *development* focused study, all aspects would be the same as for a complementarity focused study, except that in implementation, the timing is sequential. This recommended research plan of Greene et al. (1989) fit with the current study: the phenomena were the same within the phases; the paradigm was constructive in both segments of data gathering; the status was intended to be equal; and the two parts of data gathering were interactive, and sequential.

In Phase One of this study, quantitative and qualitative data were gathered from participants via a survey instrument. These data were *reduced* and *quantitized* (Frels & Onwuegbuzie, 2013) for numerical analysis. The analysis from this stage of the research was used as a developmental piece that was then presented in Phase Two to the second group of participants. This second group, made up of a self-selected volunteer subset (12) of the 165 survey participants, operated primarily as an interpretation panel (Noonan, 2002). Phase Two was intended to provide further insight, and serve a complementarity function, delving into the quantitative and qualitative results of the survey, as well as providing some additional qualitative information from the second group's own experiences.

In Phase Three, the analysis provided by the interpretation panels was used by the researcher, in addition to new data provided through the interpretation panels, to co-create a final analysis of the research. The qualitative dominant aspect of the method was maintained through the constructivist paradigm underlying the study. In both the survey and the interpretation panel portions of the methods, the voice of the participants was intended to be foremost. The research process is presented in Figure 3.1 below.

3.3.2 Participants

Participants for this study were chosen through purposeful sampling. Purposeful sampling was described by Creswell and Plano Clark (2011) as when "researchers intentionally select (or recruit) participants who have experienced the central phenomenon or the key concept being explored in the study" (p. 173). The participants were teachers of apprenticable trades working at Western Canadian institutions. The participants were invited in two stages.

Phase One
Survey
(data
collection)

| QUAN data collection survey | **Procedures:** Invite participants Conduct survey | **Products:** Numerical scores Qual data | Qual data collection survey |

Procedures:

Analyze descriptive statistics

Category comparisons

Coding of Qual data

QUAN/Qual data analysis

Products:

Frequency tables

Analysis of correlations

Trend analysis of Qual data

Procedure:

Researcher reviews and summarizes data

Create results report for QUAL interpretation

Product:

Easily understood written report of results

Phase Two
Interpretation
Panel
(analysis and
data collection)

Researcher

QUAL Interpretation Panel

Products:

Interpretation of survey results

Additional Qual data

Phase Three
Integration
(analysis)

Final QUAL results

Figure 3.1 Study diagram.

In Phase One, invitations were sent to trades teachers at these institutions, asking them to complete the quantitative and qualitative questions of a cross-sectional exploratory questionnaire survey (Appendix A). In Phase Two, those survey respondents who indicated, through responses to a question in the survey, a willingness to participate in further discussions were invited to interpret and expand on the survey results through qualitative interpretation panels (Appendix B). The size of these two participant populations was not expected to be equal, due to the time demands of completing a survey compared to a face-to-face discussion group; however, fewer participants were needed for the qualitative interpretation panels than for the quantitative-dominant survey (Tashakorri & Teddlie, 2003). It was also expected that both groups would be male dominated, due to a history of trades and trades training being so (Meredith, 2011).

Response rates of 50% to 75% have been reported for electronic surveys (Creswell, 2012; Fricker & Schonlau, 2002; Kelly, Lark, Brown & Sitzia, 2003). Based on the process outlined by Bartlett, Kotrlik, and Higgins (2001) for quantitative research within small populations, however, where analysis is limited to categorical data collection and a margin of error of .05 is acceptable, a response rate of 25 to 30% would be sufficient to support the level of inferential statistical analysis desired for this study (Tashakorri & Teddlie, 2003; Frels & Onwuegbuzie, 2013).

Participants for the interpretation panels were drawn from responses provided by participants to the Phase One survey, indicating a willingness to participate in further discussion. The expectation was to draw together approximately six participants from these respondent lists at each institution, based on individuals' availability and willingness to participate, creating three interpretation panels. Relatively little research was available on the use of interpretation panels (Hardie, 2011; Noonan, 2002; Wilson, 2007); thus, this number was based on research and recommendations regarding focus group size (Finch & Lewis, 2003; Macnaghten & Myers, 2004; Teddlie & Tashakkori, 2009). Finch and Lewis (2003) advised that while focus groups typically include six to eight participants, this number should be reduced slightly in cases where: participants are highly engaged in the discussion, as when practitioners discuss their practice; the issue is complex; and the researcher requires depth of data. The current study was expected to include all of these factors, leading to a goal of six participants in each panel.

3.3.2.1 Consent and anonymity. Survey participants were asked to provide consent through questions included at the beginning of the survey instrument and were made aware of the purpose of the study and research ethics board approval obtained for the research. Each

participating institution was provided with proof of research ethics board approval from the University of Saskatchewan, and provided their own research ethics board approval before faculty were invited to participate. For participants completing the survey portion, responses were collected and reported anonymously. In the second stage, interpretation panels were conducted in person, recorded, and transcribed. Participants were asked to provide written consent for participation at the beginning of the in-person sessions. Since the participants were known to the researcher through this direct contact, they could be contacted again and were provided the opportunity to review the transcript for accuracy. In the transcripts, codes rather than names were used to maintain confidentiality; in reporting, details were masked as further protection of identity and location.

No form of direct compensation to participants was planned or provided. Results were made available in an executive summary form to participants, and to the participating institutions, upon request.

3.3.3 Data Collection

Data were collected through two methods. A primarily quantitative exploratory questionnaire survey was used to gather information. Following the gathering of these data and preliminary analysis, an interpretation panel process involving a subgroup of the survey participants provided qualitative data and further analysis of the survey results.

3.3.3.1 Phase One data collection: survey. The survey portion of the study addressed all of the research questions to some extent; however, it focused on Questions 1, 2, and 3, with some attention to Questions 4 and 5:

1. What motivates experienced tradespeople to move into a second career of teaching?
2. What competencies do tradespeople transitioning to teaching bring to the classroom to support effective learning?
3. Once in the role of teacher, what formal and informal learning helps them to become effective teachers?
4. How does their vocational identity change with the change in career?
5. What factors lead them to a feeling of satisfaction or effectiveness with their work, and to continue as teachers?

The survey was delivered electronically, using the Fluid Survey software as provided by the University of Saskatchewan. The choice to use electronic delivery was made in consideration

of ease of use for participants, cost, and data entry facilitation for the researcher. While somewhat lower response rates have been linked to web or electronic surveys as compared to paper-based surveys (Couper, 2000; Crawford, Couper, & Lamias, 2001; Dommeyer & Moriarty, 2000), other factors offset this effect including the source of the survey as academic versus commercial (Manfreda, Bosnjak, Berzelak, Haas, & Vehovar, 2008; Walston, Lissitz, & Rudner, 2006), and topics with high interest to solicited participants (Dillman & Smyth, 2007). The length of a survey, in print or electronic form, has "a negative linear relation with response rates" (Fan & Yan, 2010, p. 133). This survey was academically oriented, not commercial, and was expected to be of high interest to potential participants. The survey was designed for easy and time-efficient (15 minutes or less) completion, to encourage a higher response rate.

A search of the literature found previously tested survey instruments used to investigate perceived competencies in teaching, and reasons for attrition among vocational teachers (Dainty, 2012; Ruhland, 2001). No survey specific to postsecondary trades teachers was found by the researcher. Instruments to measure aspects of motivation to become a vocational teacher were available (Berger & D'Ascoli, 2012; Watt & Richardson, 2007). As well, the concept of vocational identity in teachers has been investigated via survey (Hong, 3010; Simmons, 2009). The concept of vocational identity specific to trades teachers, however, has been primarily researched through strictly qualitative methods (Chappell, 1999; Mealyea, 1988; Maurice-Takerei & Jesson, 2010). No example of a survey instrument used with postsecondary trades teachers regarding vocational identity was found in my search. Therefore, a new survey instrument combining questions on motivation, competencies, and vocational identity, specific to the population for this study, was created for this study, and used as an exploratory assessment tool in these areas. Previously tested survey instruments, and the findings of the literature review as detailed in Chapter Two, guided formation of portions of this new instrument, as detailed below. The survey was divided into the following sections:

3.3.3.1.1 Permission and statement of confidentiality. The survey included a request for participant permission to the researcher to use the data collected, and an explanation of the processes to be used to ensure ethical practice and confidentiality.

3.3.3.1.2 Competencies. The survey asked participants to review a listing of KSAOs or competencies commonly related to effective teaching, based on the literature review as detailed in Chapter Two, and utilizing the format of previously tested survey instruments (Dainty, 2012;

Ruhland, 2001). Using a Likert scale format, participants were asked to rate themselves on various teaching competencies, and to self-identify whether they consider these competencies to have been pre-existing upon entry to teaching, or to have been attained during their teaching career, by rating themselves retrospectively as recalled from beginning of teaching and as currently perceived.

3.3.3.1.3 Attainment of competencies. A related section asked participants to identify the means by which any competencies newly added after entering teaching were attained, by offering multiple-selection options for training methods used and their perceived effectiveness, as well as opportunity to add other responses (Andersson et al., 2013).

3.3.3.1.4 Motivation for new career. A third section of the survey asked participants to consider the motivating factors for their career change from tradesperson to trades teacher, by offering a list of factors based on research as detailed in Chapter Two and previous survey instruments (Backes & Burns, 2008; Berger & D'Ascoli, 2012; Gowdy, 1987; Watt & Richardson, 2007). This section allowed for multiple selections among the proffered options and an open-ended option.

3.3.3.1.5 Satisfaction with new role. The fourth section asked participants to consider the factors that provide a feeling of satisfaction in the new role as teacher. A list, based on previous research and survey instruments (Dainty, 2012; Ruhland, 2001), was offered with multiple selections allowed and an open-ended option.

3.3.3.1.6 Vocational identity. The fifth section asked participants about their self-defined vocational identity: do they see themselves as a tradesperson or teacher? The design of this section was informed by previous research (Haycock & Kelly, 2009; Mealyea, 1988).

3.3.3.1.7 Demographic information.The survey included questions requesting personal information, such as number of years in industry as a tradesperson, number of years teaching, past education and other work experience, gender, and age range (Dainty, 2012).

3.3.3.2 Survey development and pilot. Prior to delivery, the survey was developed by the researcher as a pilot and tested with five postsecondary vocational teachers who were excluded from the study by their specialization (not in trades), to ensure pilot survey group participants did not also receive the final survey. This group was asked to consider the survey for ease of understanding, usability, and consistency of wording within the instrument. Feedback from this pilot group was used to refine the survey instrument through minor wording changes.

Their responses were excluded from the data analysis. A copy of the survey questions, and the introductory letter to potential participants, is included in Appendix A.

3.3.3.3 Data storage. Survey data will be stored electronically for 5 years at the University of Saskatchewan on a secure database.

3.3.4 Phase One Data Analysis

The quantitative survey data were analyzed using Statistical Package for the Social Sciences (SPSS) for descriptive statistics regarding the categorical and Likert scale questions. Data were also analyzed for correlation of responses to participant demographic factors (Field, 2009). Qualitative data gathered through the open response question options were manually coded, analyzed, and compared to the other responses for the same question (Merriam, 2009). A preliminary report of the survey data analysis was prepared, to be presented to members of the interpretation panels for further analysis and expansion.

3.3.5 Phase Two Analysis and Data Collection: Interpretation Panels

The second, sequential phase of the research was strictly qualitative. Interpretation panels were used to provide analysis and insight into the survey results, as well as to add depth to the understanding of the research questions. Participants were selected from those volunteering via response to a survey question, with final selection based on their willingness and availability to participate in the panel activity. Three panel sessions were planned, one at each participating institution, with 5-6 participants in each session. This process was chosen to provide analysis on all the research questions as answered by the survey participants, but with the discussion focused on the following research questions:

1. What motivates experienced tradespeople to move into a second career of teaching?
4. How does their vocational identity change with the change in career?
5. What factors lead them to a feeling of satisfaction or effectiveness with their work, and to continue as teachers?

The use of interpretation panels was guided primarily by the advice provided by Noonan (2002), who said "interpretation panels are organized in the same way as a focus group, the difference is that they are used after data are collected and subjected to the preliminary analysis" (p. 92). The panel discussions provided new data, as well as analysis of that previously gathered, as panel members related their own experiences. New data arising from the panel discussions were collected and considered in the final analysis.

Noonan (2002) also advised that interpretation panels differ from focus groups in their purpose (analysis versus data collection), makeup (purposely selected versus random), and resulting data (consensus versus sometimes conflicting). Again, while this research is modeled on this outline of the process, the expectation was that some additional data would be collected in the interpretation panels, and that consensus might not be achieved.

3.3.5.1 Interpretation panel process. The following section outlines the components of the interpretation panel process.

3.3.5.1.1 Questions. Given that this portion of the data collection and analysis was sequential to the gathering of data and analysis through the survey, the exact content of questions to be used for discussion with the interpretation panels could not be determined before the first phase was conducted. Questions were designed to provoke reflection while allowing a wide range of potential responses from participants, and focused on the topics of motivation, transition, and formation of a new vocational identity. The topic of competencies of effective teaching was not addressed directly via this instrument.

3.3.5.1.2 Participants. Participants for this portion of the research project were solicited through a question included in the survey, asking for permission to contact via email regarding participation in a panel discussion. Those survey participants who volunteered were contacted via the email addresses provided in the response to this question, and were provided with information on the purpose of the study, research ethics board approval(s), and a consent form to complete. A copy of the invitation letter and consent form is provided in Appendix B. No direct compensation to participants was planned or given.

The panel participants became known to the researcher through the process; however, pseudonyms and masking details were used in reporting any personal data collected in order to provide a level of anonymity in the final analysis. A version of the transcript, condensed for the convenience of the participants, was made available to the participants for review and member checking; small revisions arose based on this review. Participant comments were reported anonymously. Since participants in this portion of the research could be identified by the researcher, they had the opportunity to choose to withdraw specific contributions from the overall results up to the point of publication of this document. Participants were known to each other, or became known through the panel process; no advice was given by the researcher

regarding maintaining confidentiality of the discussion among participants after the session ended.

   3.3.5.1.3 Panel sessions. Three panel sessions were planned, one at each institution participating in the study. Based on the number of volunteers, four sessions were arranged. The sessions were conducted on the campus where the panel participants taught, for the ease and comfort of participants. Each panel session was expected to take approximately one to two hours to complete, and did fit within this timeframe when conducted. While questions were prepared to guide the discussion, based on the preliminary data analysis of the survey, considerable latitude was given in the discussion to allow the experiences of these participants to be recorded and to enrich the understanding of the research questions. The sessions were recorded and transcribed.

   The conduct of these sessions was guided by advice provided for focus group facilitation (Finch & Lewis, 2003; Macnaughten & Myers, 2004) and interpretation panel facilitation practice (Hardie, 2011; Noonan, 2002). Finch and Lewis (2003), in discussing focus group data collection, emphasized the synergistic nature of the process leading to further reflection by participants and additional discussion. They also described focus groups as spontaneous conversations in a naturalistic setting, allowing for the opportunity to see how ideas develop sharing of ideas; however, Finch and Lewis (2003) caution that the naturalistic setting must be managed by the researcher. Their advice for management includes the following stages.

   Scene setting and ground rules: The researcher provides an introduction to the research, with assurances regarding the bona fide nature of the study, emphasizing points that may encourage participation, such as the participants' connection to the research topic. Expected roles and ground rules should be explained.

   Individual introductions: Although the participants in the panel sessions may well already know each other, introductions with brief backgrounds should be made.

   Opening discussion: The researcher should be active in this stage, starting the conversation with an opening topic that solicit easy responses and engages participants.

   Discussion: The researcher may become a juggler or manager at this stage, directing the flow of discussion to ensure key points are included, refocusing discussion, and balancing the contributions of participants.

   Ending the discussion: The final topic should be decided in advance with the aim to end the session on a positive note. The timing should allow for a sense of completion, but without an

abrupt ending. The researcher should provide reassurance of anonymity, and appreciation for participation, and be willing to stay for conversations after the session (Finch & Lewis, 2003, pp. 178-180).

In conducting the interpretation panels, this advice was followed. Ground rules and reassurance of anonymity were provided at the beginning of the session and introductions were made as necessary, given the group members' existing connections. Once the discussion began, the researcher's role became one of refocusing and adding new topics to cover the research question. In each session, I brought the question of satisfaction, as a positive topic for discussion, in near the end of the allotted time. Ending the discussion often proved difficult, however, as the participants had a great deal to share. Each session concluded with a description of next steps: that the discussion would be transcribed and shared with them for member checking, that any identifying details would be masked, and that anonymity would be protected throughout the process.

3.3.6 Phase Three: Data Analysis

The discussion captured from the interpretation panels was utilized in two ways: to inform the final analysis of the exploratory survey results and to enrich the results from the survey in answering the questions. Data from the interpretation panels were transcribed, with participants given opportunity for correction or clarification of their expressed ideas and experiences; each participant was provided with the transcript from the group to be member-checked and at least one participant of each group provided such a check.

Manual coding of the data was used. Themes were developed inductively from the data (Merriam, 2009). New data from participants of the interpretation panels were compared to that of the survey participants, to validate the findings through triangulation. Interpretation of the survey results from the discussions of the interpretation panels was used, in addition to the researcher's interpretations, to co-create a final analysis of the study.

3.3.6.1 Data storage. Interpretation panel transcripts and data will be stored for 5 years in electronic form at the University of Saskatchewan.

3.4 Ethical Considerations

Application to the University of Saskatchewan Behavioural Research Ethics Board was made for this study and the established guidelines for ethical research were followed. This study did not involve a vulnerable population and constituted minimal risk. The applied research

offices of the co-operating Western Canadian trades training institutions, from which participants were drawn, were provided with copies of the University of Saskatchewan ethics approval and details of the research process. Each institution's own research ethics board reviewed the study and gave approval, as well.

Participants were informed of the purpose and nature of the study, how it would be used and documented, and that their participation was voluntary. Confidentiality and anonymity were maintained for Phase One survey participants in the reporting of the data, through aggregated reporting of quantitative results, and editing of comments to remove institutional or personal identification; however, since the members of the interpretation panels were known to the researcher, anonymity cannot be guaranteed beyond masking measures being used in the final report.

3.5 Summary of Chapter Three

In Chapter Three, I have described the methodology, and outlined the methods used for this study. A qualitative dominant sequential mixed approach, including a survey of trades teachers at three Western Canadian postsecondary institutions, and then interpretation panels with a subgroup of the survey participants, was designed to explore the transition from the *first apprenticeship* of tradesperson to the *second apprenticeship* of trades teacher, seeking to understand the motivation, pre-existing and learned competencies, learning processes, and negotiation of identity, in this change. In Chapters Four through Six, the results of the study will be presented, and in Chapter Seven, I will discuss the results and key insights arising from the research, along with recommendations for further research.

CHAPTER FOUR: SURVEY DATA COLLECTION AND ANALYSIS

4.1 Introduction

In the previous chapter, the methodology and method of the research was explained. In this chapter, I will describe the process of gathering the research data, via an electronic survey. I will also provide an overview of the data collected through that survey. The overview will begin with the responses to demographic questions. The remainder of the overview will be organized according to the general research question of exploring the transition from the *first apprenticeship* of trades practice, to the *second apprenticeship* of trades teacher, divided into the following sections: the motivation for career change; pre-existing competencies brought to the role of teaching; the methods used to learn to teach; negotiation of a new vocational identity; and sources of satisfaction in the teaching role.

Chapter Five will look at the responses to the survey questions as divided by years of teaching experience, so as to follow the progression of the transition process from tradesperson to teacher through the teaching years.

4.2 Data Collection

Ethics approval for the study was obtained from the University of Saskatchewan Research Ethics Board (REB) in May 2014. Based on the feedback from the proposal defence committee, minor changes to the method were made and related changes were made to the ethics application. The revisions were approved by the REB. Ethics approval was also obtained in May 2014 at each of the three Western Canadian institutions selected for participation in the study.

I created the survey instrument in FluidSurveys, as hosted by the University of Saskatchewan. It was piloted among friends and colleagues for feedback on ease of use and understanding. Minor changes were made to the wording based on this feedback. For example, in the section regarding satisfaction factors, the original option of *I feel my work is valued by management* was changed to *I feel my work is valued by my institution* so as to be more easily understood within differing institutional structures. A Cronbach's Alpha test for internal consistency was conducted on the pilot results from the survey, showing a range of .474 to .927 indicating medium to high reliability (Salkind, 2011). As well, the letter to participants, as presented within the ethics application, was finalized and formatted on College of Education letterhead for distribution with the invitation email.

The electronic survey was used to gather input from teachers in trades training at three Western Canadian postsecondary institutions. The survey invitations were sent out in two ways: by direct email from the researcher to teachers through their institutional email addresses; and, by forwarding of an email invitation from the researcher via the office of the Dean of Trades to the teachers' institutional email addresses. The distribution methods varied based on policies at the three institutions regarding public access to faculty email addresses.

The first set of direct email invitations were sent on June 2, 2014 to 176 teachers at Polytechnic One. That same day, the invitation was sent for forwarding to the office of the dean at Polytechnic Two. It is estimated that 250 instructors could have received this invitation. On June 3, direct email invitations were sent to 135 faculty members at Polytechnic Three. On June 11, an additional 47 invitations were emailed to teachers within a second division at Polytechnic One, for a total of 223 invitations at this institution. A total of 608 invitations were sent, directly or indirectly.

One week after the initial direct invitations, a reminder was sent through use of FluidSurveys software to non-respondents at Polytechnic One and Polytechnic Three. No reminder was sent to non-respondents at Polytechnic Two, where invitations had been forwarded via the dean's office, as it was not possible to track responses through the software. The steps and related responses are summarized in Table 4.1 below.

Table 4.1. Survey Process Steps.

Date	Step	Responses Received (Cumulative)
June 2	Invitations sent:176 direct at Polytechnic One; estimated 250 indirect at Polytechnic Two	59
June 3	Invitations sent: 135 direct at Polytechnic Three	87
June 10	Reminder sent to direct invitation non-respondents	114
June 11	Invitations sent: 47 additional direct at Polytechnic One	152
June 18	Reminder sent to additional direct invitation non-respondents, Polytechnic One	176
June 30	Last new responses received	192
July 2	Survey responses reviewed	192

On July 2, the 192 responses received were reviewed for substantial completion of the questions; 27 responses were removed as incomplete (fewer than half the questions completed), resulting in 165 completed surveys for a 27.1% overall response rate. During July, reminders were sent to previously invited participants enrolled in summer teacher education programs, hoping to bolster the number of responses in the less-experienced demographic group. No further responses were received.

4.2.1 Missing Data

Within the completed surveys, a small number of data entries to some questions were missed or omitted by respondents. For many of the questions, where the option of *Neutral, Undecided* or *Does not apply* was offered, missing responses were assumed to fit this option so as to not unduly affect the overall data set. Data to complete other entries were added via SPSS's missing data values function, by calculating a mean based on the existing input responses and generalizing to complete the dataset (International Business Machines, 2014). This process was used in order to create a consistent N value, allow for easier comparison, and to avoid bias (Agresti, 1996). Calculated values added to the data set represent less than 1% of total responses in the majority of questions, with the exception noted below. Missing data were more prevalent in questions near the end of the survey, likely due to respondent fatigue.

For the question regarding vocational identity, the number of missing responses was higher at approximately 12% of the total; in this case, missing responses were not completed using SPSS or any other method. This question differed from the rest of the survey. The question asked for responses to three similar statements about the respondent's personal vocational identity, and allowed for multiple responses; therefore, the omission of a response to a portion of the question was more likely to be deliberate than an oversight. Due to the high percentage of missing responses to this question, reporting of the responses used frequency counts and percentages, indicating completed as well as missing responses.

4.3 Survey Demographics

4.3.1 Location

Respondents were not asked to name their institutional affiliation in the survey as a measure of ensuring confidentiality; however, the number of responses from each institution was available through FluidSurveys tracking of location, and by reviewing the direct and non-direct routes of invitation. This process was used to consider the distribution of responses by institution

only; no other analysis was conducted according to location, in keeping with the confidentiality measures promised to respondents. The 165 completed surveys were distributed among the three institutions as presented in Table 4.2 below.

Table 4.2. Home Institution of Respondents.

Institution	Invitations Sent	Responses Received	Response Rate	% of Total Responses
Polytechnic One	223 direct	87	39.0%	52.7
Polytechnic Two	250 indirect	49	19.6%	29.7
Polytechnic Three	135 direct	29	21.5%	17.6
Total	608	165	27.1%	100

The majority of responses came from one institution. This result was likely due to several factors: a direct method of invitation rather than indirect; the geographic closeness of the research university to this polytechnic; and the relationship between the researcher and this polytechnic. Given that 52.7% of responses were from this one institution, chi-square tests were run on a sample set of questions to check for significant differences between responses from the three polytechnics. No significant differences were found, based on location, within this sample.

4.3.2 Trade Credentials

All of the respondents listed a trade in which they were certified. In the survey, 23 choices were offered, as well as an *Other, please specify* option. In reviewing the *Other* responses, some instances were noted where the submitted trade fit one of the listed options and these responses were changed to listed trades. In instances where multiple trades were listed under *Other*, the first one provided was used, assuming this trade to be first in importance to the respondent, and changed to a listed option where applicable. Electrician, welder, automotive service technician, and carpenter were the most frequent choices.

Among the *Other* responses, clusters of responses were noted and four new categories were added: crane operator; power engineer; steamfitter/pipefitter/sprinkler system installer; and instrumentation technician. Remaining within the *Other* category are single responses of other trades. The distribution by trade certification is presented below in Table 4.3.

Given the widely dispersed responses, with no group exceeding 23 respondents, trade certification was not used for analysis purposes.

Table 4.3. Trade Certification of Respondents.

Trade	Frequency	% of Total
Agricultural Equipment Technician	3	1.8%
Appliance Service Technician	1	0.6
Auto Body Technician	5	3.3
Automotive Service Technician	18	**10.9**
Baker	2	1.2
Boilermaker	3	1.8
Cabinetmaker	3	1.8
Carpenter	13	**7.9**
Cook	7	4.2
Electrician	23	**13.9**
Gasfitter	2	1.2
Heavy Equipment Technician	9	5.5
Ironworker	3	1.8
Machinist	4	2.4
Millwright	9	5.5
Parts Technician	5	3.0
Plumber	6	3.6
Refrigeration/Air Conditioning Mechanic	2	1.2
Roofer	3	1.8
Sheet Metal Worker	3	1.8
Welder	20	**12.1**
Other, please specify...	7	3.6
Crane Operator	5	3.0
Power Engineer	1	0.6
Steamfitter/Pipefitter/Sprinkler system	5	3.0
Instrumentation Technician	4	2.4
Total	165	100

4.3.2.1 Length of trades experience prior to teaching. Respondents were asked to indicate the year they achieved journeyperson status; they were also asked the year they began teaching. From these responses, the length of time working as a journeyperson prior to changing to a teaching career was calculated. The mean was 12.6 years, with a standard deviation of 8.1.

4.3.3 Age of Respondents

Respondents were asked to choose from a series of age ranges, beginning with 25 years or younger through to 56 years or older. No respondent indicated being 25 years or younger and the majority selected 46 years or older. Given that teaching trades is a second career, requiring previously acquired credentials that take up to seven years to achieve, plus years of experience in the trade prior to teaching, these responses appear reasonable. The distribution by age ranges is presented in Table 4.4 below.

Table 4.4. Age of Respondents.

Age Range	Frequency	% of Total
26-35	11	6.7%
36-45	25	15.2
46-55	76	46.1
56 or older	53	32.1
Total	165	100

For analysis purposes, the ages were grouped into: 45 years and younger ($n = 36$); 46-55 years ($n = 76$); and 56 years and older ($n = 53$).

4.3.4 Gender of Respondents

The survey was dominated by male respondents (97.6% vs. 2.4%). This distribution is in keeping with the ratio of male to female participation in the trades generally (LeFebvre, Simonova, & Wang, 2012; Meredith, 2011), but does not allow for analysis based on gender, due to the very low number ($n = 4$) of female respondents.

4.3.5 Teaching Background

The next section of questions asked respondents to identify their background related to teaching. These questions included training in teaching practice prior to being hired as a teacher; supervision and teaching of apprentices in industry; and whether any immediate family members were teachers.

4.3.5.1 Previous teacher training. Respondents were asked to indicate any teacher training prior to beginning teaching in postsecondary trades. The majority (85.5%) of respondents indicated no formal training in teaching prior to being hired to teach. Responses within the *Other* category that identified training that fit within one of the specified categories were added to the appropriate category. Responses within the *Other* category included degrees in biochemistry and philosophy, workplace training, Australian trades teaching certification, as well as partial completion of an education degree. The responses regarding previous teacher training are provided in Table 4.5 below. For analysis of data, responses were grouped into *No formal teacher training* (*n* = 141) and *Some formal teacher training* (*n* = 24).

Table 4.5. Previous Teacher Training of Respondents.

Level of Training	Frequency	% of Total
No formal teacher training	141	85.5%
Bachelor of Education	9	5.4
Certificate in Adult Education	13	7.9
Masters of Education or other graduate level	2	1.2
Total	165	100

4.3.5.2 Apprentices supervised. Within the trades, journeypersons are expected take on a teaching role as supervisors and mentors to apprentices (Rikowski, 1999). Respondents were asked to indicate the number of apprentices, if any, they had supervised while practicing their trade. Choices included ranges beginning with five or fewer and ending with 26 or more, as well as an option to indicate no supervision of apprentices. The results showed 29.1% had supervised 26 or more apprentices while in trades practice; 18.8% had supervised five or fewer. There were 17 respondents, or 10.3%, who indicated no supervision of apprentices. For analysis, the respondents were grouped into: No apprentices supervised (*n* = 17); 5 or fewer (*n* = 31); 6 to 15 (*n* = 43); 16 to 25 (*n* = 26); and 26 or more (*n* = 48).

4.3.5.3 Family members who teach. Respondents were also asked to indicate if anyone in their immediate family is a teacher in either elementary/secondary or postsecondary education. One third of respondents said *Yes* and two-thirds said *No*. For analysis, groupings were based on *Yes* (*n* = 55) and *No* (*n* = 110) answers.

4.3.6 Years of Teaching Experience

   Respondents were asked to indicate the year they began teaching at their current institution. Their years of teaching experience were calculated by subtracting that year from the current one. Respondents were categorized according to years of teaching experience, into five groups representing approximately equal percentages of the total and similar numbers to allow for analysis and comparison. These experience levels were also based on research showing teachers most often exit from the career within the first three to five years, suggesting this period is one of adjustment to the new role, while by the 10-year experience point, the teacher is well established in the new career (Chang, 2009; Falk, 2012; Grissmer & Kirby, 1987; Skaalvik & Skaalvik, 2010). The categories are shown below in Table 4.6.

   While this study is not longitudinal, grouping respondents by years of teaching experience allows the researcher to see responses in a progression, through the eyes of progressively more experienced teachers. This is a process that fits well with the overall research question of exploring the transition from trades to teaching; therefore, the analysis by this demographic factor will be presented in greater detail in Chapter Five.

Table 4.6. Teaching Experience of Respondents.

Years of teaching experience	Frequency	% of Total
3 years or less	35	21.2
4-7 years	32	19.4
8-11 years	31	18.4
12-17 years	31	19.2
18 years or more	36	21.8
Total	165	100

4.4 Research Question

   The remainder of the survey related to the research question of exploring the transition from trades practice to trades teaching, as divided into the following questions:

1. What motivates experienced tradespeople to move into a second career of teaching?
2. What competencies do tradespeople transitioning to teaching bring to the classroom to support effective learning?

100

3. Once in the role of teacher, what formal and informal learning helps them to become effective teachers?

4. How does their vocational identity change with the change in career?

5. What factors lead them to a feeling of satisfaction or effectiveness with their work, and to continue as teachers?

     The responses to the survey around these questions, and analysis based on age categories, previous teacher training, number of apprentices supervised while in industry, and the presence of another teacher in the immediate family, are presented in the following sections.

4.4.1 Motivation for Second Career

     Question 1 within the overall research question asked what motivates the change from trades practice to trades teaching. Within the survey, respondents were asked to consider the motivating factors behind their decisions to enter teaching. Eight factors were presented, with the options to select *Strongly Disagree, Disagree, Undecided, Agree*, or *Strongly Agree. Other, please specify* was also offered. *An opportunity to share my knowledge of the trade* drew the strongest agreement, followed by *Better hours and more time for family*. Teaching as an opportunity for higher pay drew the strongest level of disagreement. The responses, as a percentage of the completed responses for the eight factors, are presented in Table 4.7 below.

Table 4.7. Career Change Motivation Factors by Percentage of Total Response.

	Factor: Teaching offered/was:	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	An opportunity for higher pay	3.0%	10.9%	8.5%	31.5%	46.1%
2	Better benefits and pension	11.5	32.7	12.1	21.2	22.4
3	Better hours and more time for family	41.3	43.0	9.7	4.8	1.2
4	An opportunity to share my knowledge of the trade	60.6	35.2	3.0	.6	.6
5	Higher-status, professional employment	9.7	30.3	32.1	18.2	9.7
6	A career path that others in my family had followed	7.9	12.1	9.7	34.5	35.8
7	Something I had tried as a volunteer and enjoyed	13.3	22.4	18.8	30.3	15.2
8	Always something I wanted to do, that I felt called to do	20.0	29.1	29.7	12.1	9.1

When the categories of *Strongly Disagree* and *Disagree,* and *Agree* and *Strongly Agree* are aggregated, the following results are seen, as presented in Table 4.8 below. These results are presented in percentages for ease of reading. Chi-square tests of independence (Elliot & Woodward, 2007), based on H_0: *There is no association between the variable*s, and H_a: *There is an association between the variables,* were run on the frequency counts of motivation factor responses in the aggregated form, and results showed $p < .01$ in all cases except for Factor 5. In the case of *Teaching offered higher status, professional employment*, there was no significant difference between agreement and disagreement, and this factor showed the highest level of undecided responses (32.1%) among the eight factors. *Teaching was always something I wanted to do, that I felt called to do* also generated a 29.7% undecided response.

Table 4.8. Career Change Motivation Factors in Aggregated Form by Percentage of Total Responses.

	Factor: Teaching offered/was:	Agree/ Strongly Agree	Undecided	Strongly Disagree/ Disagree
1	an opportunity for higher pay	13.9%	8.5%	77.6%
2	better benefits and pension	44.2	12.1	43.6
3	Better hours and more time for family	84.3	9.7	6.0
4	An opportunity to share my knowledge of the trade	95.8	3.0	1.2
5	Higher-status, professional employment	40.0	32.1	27.9
6	A career path that others in my family had followed	20.0	9.7	70.3
7	Something I had tried as a volunteer and enjoyed	35.7	18.8	45.5
8	Always something I wanted to do, that I felt called to do	49.1	29.7	21.2

Respondents gave additional explanations in the *Other* category. Within the 25 responses under *Other*, themes included:

- Desire to teach, discovered through working with apprentices or in volunteer activities (12).
- General quality of life and work life (7).
- Injury or aging, requiring a less-physical type of work (6).

- Reduced hours of work expected in teaching as compared to trades (5).

Comments within this section included:

- "Initially, teaching was a way to be physically closer to my grown children and their families; [teaching] has since become my passion."

- "I instruct because I truly enjoy it. I get a true sense of job satisfaction from preparing students as millwrights for industry. As I get older I also appreciate the time off for doing other projects and spending time with the family."

- "Teaching offers a daily change whereas work in the field grows mundane."

- "In the field I began to find the work load too much, the opportunity to work less in the field was just not possible. I took the opportunity to teach as a way to help myself and others at the same time."

- "I wanted to spend my days in a more respectful environment."

- "Teaching offered me the ability to help others not [just] in my specific skill set but in general. The fact that it is in a field I have knowledge in is just a requirement of the field not the specific thing I wanted to share. Also I was never big on being in front of a group of people: education gave me the opportunity to challenge my character and increase my abilities and skill sets."

4.4.1.1 Motivation by demographic segmentation. Chi-square tests were used to examine differences among the factors associated with motivation to change career, according to the various demographic segments of the respondents. Using the age ranges (45 years and younger; 46-55 years; 56 years and older), previous teacher training (some or none), and the presence of another teacher in the immediate family (yes or no), no significant difference was found. The number of apprentices supervised while in industry was the only demographic factor resulting in a significant difference.

4.4.1.1.1 Motivation by number of apprentices supervised. Chi-square testing according to the number of apprentices supervised while in industry (none, 5 or fewer, 5-15, 16-25, 26 or more) resulted in a significant difference among the factors related to motivation to change career. For *Teaching offered an opportunity for higher pay*, the difference was statistically significant, $\chi2$ (8, N = 165) = 36.743, p = .000. Those respondents who indicated they did not supervise apprentices were more likely to agree with this statement (58.8%), while those who had supervised 26 or more apprentices were significantly less likely to agree (6.3%).

4.4.1.2 Correlations in motivation. Spearman's correlation was used to examine the association between agreement levels with the motivation statements; this method was chosen due to non-normal distribution of the responses and ordinal nature of the variables (Elliott & Woodward, 2007; Pallant, 2013). Two groups of motivating factors can be seen: teaching as an opportunity for higher pay, better benefits, better hours and higher status professional employment are interrelated; teaching as higher status professional employment, a career path of other family members, something enjoyed as a volunteer, and a calling were interrelated. The results are presented in Table 4.9, below. The strength of these relationships is moderately large, according to the scale of:

- Small r = .10 to .29.
- Medium r = .30 to .49.
- Large r = .50 to 1.0 (Cohen, 1988; Pallant, 2013).

Table 4.9. Motivation Factors Correlation.

Teaching was an opportunity for:		Higher pay	Better benefits	Better hours	Share knowledge of trade	Higher status	Follow career path	Volunteer	Call to teach
Higher pay	Correlation Coefficient	1.000							
	Sig. (2-tailed)	.							
Better benefits	Correlation Coefficient	.380**	1.000						
	Sig. (2-tailed)	.000	.						
Better hours	Correlation Coefficient	.025	.214**	1.000					
	Sig. (2-tailed)	.746	.006	.					
Share knowledge of trade	Correlation Coefficient	-.025	-.030	.002	1.000				
	Sig. (2-tailed)	.748	.700	.977					
Higher status	Correlation Coefficient	.308**	.293**	.093	.033	1.000			
	Sig. (2-tailed)	.000	.000	.243	.674	.			
Follow career path of family members	Correlation Coefficient	.049	.083	-.063	.034	.312**	1.000		
	Sig. (2-tailed)	.536	.297	.430	.666	.000	.		
Volunteer	Correlation Coefficient	.046	.044	.050	.073	.187*	.115	1.000	
	Sig. (2-tailed)	.566	.584	.531	.356	.018	.149	.	
Call to teach	Correlation Coefficient	.066	.111	-.018	.084	.288**	.212**	.189*	1.000
	Sig. (2-tailed)	.410	.164	.824	.295	.000	.007	.017	.

4.4.1.3 Trigger to change. To further understand the motivation to change careers, respondents were asked about the specific event that led them to take action and seek out a teaching position, posed in the survey as a *Trigger to change*. Five options were provided, as well as the opportunity to choose *Other* and provide further information. Among respondents, 45% chose *Other*; however, upon inspection of these responses, some were found to fit within the listed options and were added to these categories, resulting in the following, presented in Table 4.10:

Table 4.10. Specific Events Leading to Career Change.

Event	Frequency	% Total Responses
I couldn't find other work	5	3.0%
A friend suggested it	35	**21.2**
Personal or family health issues	25	15.2
Recruitment (ads, job fair)	25	15.2
Dissatisfaction with trade work conditions	34	20.6
Other, please specify...	41	24.8
Total	165	100

4.4.1.3.1 Trigger to change by demographic segmentation. Chi-square tests were used to examine associations in the specific events leading to change, according to age ranges, number of apprentices supervised while in industry, and the presence of another teacher in the immediate family; no significant differences were found. A significant difference was shown according to previous teacher training.

4.4.1.3.2 Trigger to change by previous teacher training. A significant difference was found, using chi-square testing, in the specific event leading to change according to the presence of previous teacher training ($\chi2$ (5, N = 165) = 11.342, p = .045). Those respondents with some formal teacher training were more likely to indicate that the event was a personal or family health issue (28.0%) than those respondents without formal teacher training (9.1%). Those with previous training were also more likely to say dissatisfaction with trade work conditions was a cause for change (20.0%) compared to those without previous training (14.4%). Respondents

without formal teacher training were more likely to say the event was *A friend suggested it* (25.0%) compared to those respondents with previous training (4.0%).

      4.4.1.4 Career change qualitative responses. Among the remaining *Other* responses, the most common theme was the desire to teach their trade, mentioned in two-thirds of these responses. Respondents commented on the ability to build the knowledge base of the trade through teaching and to demonstrate a commitment to the trade. Others saw teaching as a good fit for personal life goals, allowing them to stay connected to their trade but without the heavy physical demands of industry practice, or allowing for a better work-life balance. Respondents also reflected on teaching as a fulfilling role in itself. Comments included:

- "I wanted to share my knowledge with apprentices as I feel in the real job there is not enough time to show the apprentices."
- "This was a way to grow professionally using my existing knowledge base."
- "I wanted to help people learn and thought I could do it better than some of my instructors."
- 'I was a teacher before I became a millwright. I thought teaching adults would be more rewarding than teaching at the high school level; and it is!"
- "[I] take a lot of pride in my trade and was sick of seeing the lack of qualified tradesman that are out there doing horrible work. Felt I could have a greater influence on the trade from a teaching position."
- "I felt that this would be a good progression in my career. It gave me the ability to stay connected to the trade, yet not be on the tools."
- "Teaching was a thought. Family and friends enhanced the thought."
- "I wanted to help the up and coming young people who were entering the trades. I wanted to pass on my experience and skills to the next generation of skilled tradesmen."
- "Both parents were teachers and as a child the great summers we had. Wanted it for my family."
- "Injuries over the years pushed me to look at other options and becoming an instructor has always interested me because I enjoy working with apprentices."
- "When I started in the trade I knew I did not want to be on the tools when I was 50 so set my goals to be teaching by then."
- "My son needs a father figure, not just a provider."

- "[I was] tired of [being] on the road for many years, wanted better family life. Had to make financial adjustments [as] instructing is much lower pay."
- "Dissatisfaction with trade working conditions but on all levels not just the physical environment. This includes the lack of professionalism in trades compared to what teaching offered, [and] the opportunities it offered me to share and help other trades people that working in the trade actually actively deterred. The need to do something else with my life and the opportunity to spend more time where I wanted instead of where the job demanded I be."

4.4.1.5 Summary of motivation for second career results. Responses to survey questions regarding the motivating factors for the career change from trades practice to trades teaching showed that:

- Teaching as an opportunity to share knowledge of the trade was most strongly agreed with by respondents, followed by better hours and more time for family.
- Teaching as an opportunity for higher pay was most strongly disagreed with by respondents.
- Respondents with some formal teacher training were more likely to indicate that the specific event leading to a career change was a personal or family health issue, or dissatisfaction with trade work conditions. Respondents without formal teacher training were more likely to say the triggering event was the suggestion of a friend.
- Based on grouping by number of apprentices supervised while in industry, those respondents who did not supervise apprentices were more likely to agree that teaching offered an opportunity for higher pay.
- Correlations between motivating factors showed two groups: higher pay, better hours, better benefits, and higher status; and higher status, following a family member's career path, continuing an enjoyed volunteer activity, and teaching as a calling.

4.4.2 Teaching Competencies

The second question within the research question asked: *What competencies do tradespeople transitioning to teaching bring to the classroom to support effective learning?* The survey asked respondents to self-evaluate their teaching against 17 competencies as derived from the literature reviewed in Chapter Two. Within the survey, these competencies were first presented in a past-tense form that asked respondents to rate themselves as they recalled their

competence upon initially entering teaching; they were then presented in the present tense, asking for a self-rating of current competence.

Table 4.11. Teaching Competencies Categorized as KSAOs and as Presented in Survey.

KSAO Category	Number Within Survey	Summarized Description from Literature Review
Knowledge		
	Competency 1	Content or subject matter
	Competency 2	Pedagogical or teaching practice
	Competency 3	Understanding students
	Competency 4	Knowledge of technology
		Ongoing development of knowledge base in all of these areas
Skills		
	Competencies 5 and 6	Instructional, including delivery of lessons and assessment
	Competency 7	Curriculum development
	Competency 8	Use of technology
	Competency 9	Communications, including verbal, demonstration, listening, and feedback
Abilities/Attitudes		
	Competency 10	Organizational
	Competency 11	Supportive, including mentoring, motivating, and adapting processes to student needs
Other characteristics		
	Competency 12	Professionalism
	Competency 13	Enthusiasm for subject and teaching
	Competency 14	Sense of humour
	Competency 15	Diversity awareness
	Competencies 16 and 17	Self-reflection, and desire for continual self-improvement as a teacher

When viewed through the KSAO model, the 17 competencies can be grouped as knowledge, skills, abilities/attitudes, and other characteristics. Table 2.7 from Chapter Two, which outlined the items, is reproduced as Table 4.11 above with the competencies as numbered in the survey added. The 17 competencies were posed as positive statements, such as *I was professional in appearance and behaviour*, and participants were asked to choose a response to the statement from among *Strongly Disagree, Disagree, Undecided, Agree* or *Strongly Agree*. To simplify reporting the results, the categories of *Strongly Disagree* and *Disagree*, and *Agree* and

Strongly Agree, are consolidated in the analyses and in the following tables showing percentage agreement among the total responses.

4.4.2.1 Retrospective competencies. Respondents were asked to recall their level of competence upon first entering teaching, and to self-rate themselves based on their memory of that time. Table 4.12 shows the percentage level of agreement by competency. The strongest agreement was with the statement *I wanted to improve as a teacher*. The lowest level of agreement was to *I had a good understanding of my students and their learning styles*, and the highest disagreement was with the statement *I understood curriculum development*. Overall, the agreement levels were much lower in response to the pedagogical knowledge and skills competencies, shown as a category in Table 4.12 below, as compared to all others competencies.

Table 4.12. Retrospective Teaching Competencies, Percentage Agreement by All Respondents.

	Listed KSAO	Agree/ Strongly Agree	Undecided	Disagree/ Strongly Disagree
1 K: Subject	I had a good understanding of course content or subject matter	76.4%	11.5%	12.1%
2 K: Pedagogy	I had a good understanding of how to teach	41.8	28.5	29.7
3 K: Pedagogy	I had a good understanding of my students and their learning styles	26.7	31.5	41.8
4 K: Pedagogy	I had a good understanding of how to use technology in the classroom	38.8	23.6	37.6
5 S: Pedagogy	I knew how to deliver a lesson in the classroom	38.8	27.3	33.9
6 S: Pedagogy	I knew how to assess student learning achievement	37.6	29.1	33.5
7 S: Pedagogy	I understood curriculum development	30.3	21.2	48.5
8 S: Pedagogy	I was able to use the technology available in the classroom	69.1	12.7	18.2
9 S: Pedagogy	I had good communications skills, including verbal, demonstration, listening, and feedback	82.4	12.7	4.8
10 Ability or Attitude	I was organized	78.2	11.5	10.3
11 Ability or Attitude	I adapted learning processes to student needs	66.7	20.0	13.3
12 Other	I was professional in appearance and behaviour	92.1	4.3	3.6
13 Other	I was enthusiastic about my subject and teaching	96.4	2.4	1.2
14 Other	I showed a sense of humour	95.2	4.2	.6
15 Other	I was sensitive to diversity in the classroom	86.1	11.5	2.4
16 Other	I was self-reflective, thinking about how to improve my teaching	93.3	4.8	1.8
17 Other	I wanted to improve as a teacher	98.8	.6	.6

4.4.2.1.1 Retrospective competencies by demographic segmentation. Significant differences appeared when chi-square tests were used to examine differences in retrospective competency self-ratings, according to the various demographic factors. These differences, according to age, previous teacher training, and number of apprentices supervised while in industry, are described in the following sections. No significant difference was found in retrospective competency self-ratings according to the presence of another teacher in the immediate family.

4.4.2.1.2 Retrospective competencies compared by age. When compared by age ranges, chi-square tests showed a difference in retrospective competency self-ratings for one competency. For Competency 8: *I was able to use the technology available in the classroom*, the difference among groups was statistically significant, $\chi2$ (4, N = 165) = 10.118, *p* = .038. Respondents in the 56 and older age group were more likely (77.4%) to agree, as compared to those in the 46-55 age group (60.5%) or the under 45 age group (75%).

4.4.2.1.3 Retrospective competencies compared by previous teacher training. Several significant differences were found, within the pedagogical knowledge and skill competencies, when chi-square tests were used to examine differences in retrospective competency self-ratings, according to the respondents' indicated level of teacher training prior to becoming a teacher. The chi-square results as calculated on frequency counts of aggregated agreement or disagreement, and this agreement reported as percentages, are presented in Table 4.13 below.

Table 4.13. Retrospective Teaching Competencies Compared by Previous Teacher Training.

	Listed KSAO	% in Agreement		Significant Difference
		No training ($n = 141$)	Some training ($n = 24$)	
1 K: Subject	I had a good understanding of course content or subject matter	74.5%	87.5%	$p > .05$
2 K: Pedagogy	I had a good understanding of how to teach	36.2	75.0	$\chi2 = 12.711, p = .002$
3 K: Pedagogy	I had a good understanding of my students and their learning styles	22.7	50.0	$\chi2 = 8.182, p = .017$
4 K: Pedagogy	I had a good understanding of how to use technology in the classroom	34.8	62.5	$\chi2 = 6.743, p = .034$
5 S: Pedagogy	I knew how to deliver a lesson in the classroom	33.3	70.8	$\chi2 = 12.152, p = .002$
6 S: Pedagogy	I knew how to assess student learning achievement	33.3	62.5	$\chi2 = 7.450, p = .024$
7 S: Pedagogy	I understood curriculum development	24.8	62.5	$\chi2 = 13.965, p = .001$
8 S: Pedagogy	I was able to use the technology available in the classroom	66.0	87.5	$\chi2 = 6.485, p = .039$
9 S: Pedagogy	I had good communications skills, including verbal, demonstration, listening, and feedback	80.1	95.8	$p > .05$
10 Ability or Attitude	I was organized	78.0	79.2	$p > .05$
11 Ability or Attitude	I adapted learning processes to student needs	63.8	83.3	$p > .05$
12 Other	I was professional in appearance and behaviour	91.5	95.8	$p > .05$
13 Other	I was enthusiastic about my subject and teaching	96.5	95.8	$p > .05$
14 Other	I showed a sense of humour	95.0	95.8	$p > .05$
15 Other	I was sensitive to diversity in the classroom	85.1	91.7	$p > .05$
16 Other	I was self-reflective, thinking about how to improve my teaching	92.9	95.8	$p > .05$
17 Other	I wanted to improve as a teacher	95.7	100.0	$p > .05$

$df = 2$; N = 165

4.4.2.1.4 Retrospective competences compared by number of apprentices supervised.
Chi-square tests were used to examine associations in retrospective competency self-ratings according to the number of apprentices supervised while in industry. Within the significance level of p < .05, no differences were found; however at the p < .10 level, one difference was evident ($\chi2$ (8, N = 165) = 13.789, p = .087). Teachers who had supervised five or fewer apprentices in industry were most likely to agree with the statement *I knew how to deliver a lesson in the classroom* (51.6%), compared to an overall agreement level of 38.8%.

4.4.2.2 Current competencies. The next section focused on respondents self-ratings of their competence on the same KSAOs, but as teachers today. There was strong agreement with all 17 competencies, and 100 % agreement to the statement *I want to improve as a teacher*. The results were as follows in Table 4.14.

4.4.2.2.1 Current competencies compared by demographic segmentation. Chi-square tests were used to examine differences in current competency self-ratings according to the various demographic factors. No significant differences were found when compared number of apprentices supervised while in industry, or according to the presence of another teacher in the immediate family. Significant differences were found when compared by age and by previous teacher training.

Table 4.14. Current Teaching Competencies Agreement by All Respondents.

	Listed KSAO	Agree/Strongly Agree	Undecided	Disagree/Strongly Disagree
1 K: Subject	I have a good understanding of course content or subject matter	99.4%	.6%	0%
2 K: Pedagogy	I have a good understanding of how to teach	98.8	1.2	0
3 K: Pedagogy	I have a good understanding of my students and their learning styles	92.7	7.3	0
4 K: Pedagogy	I have a good understanding of how to use technology in the classroom	96.4	3.6	0
5 S: Pedagogy	I know how to deliver a lesson in the classroom	97.6	2.4	0
6 S: Pedagogy	I know how to assess student learning achievement	93.9	6.1	0
7 S: Pedagogy	I understand curriculum development	90.3	7.3	2.4
8 S: Pedagogy	I am able to use the technology available in the classroom	98.1	1.2	.6
9 S: Pedagogy	I have good communications skills, including verbal, demonstration, listening, and feedback	99.4	.6	0
10 Ability or Attitude	I am organized	95.1	4.8	0
11 Ability or Attitude	I adapt learning processes to student needs	98.8	1.2	0
12 Other	I am professional in appearance and behaviour	98.2	1.8	0
13 Other	I am enthusiastic about my subject and teaching	96.3	3.1	.6
14 Other	I show a sense of humour	96.4	3.0	.6
15 Other	I am sensitive to diversity in the classroom	99.4	.6	0
16 Other	I am self-reflective, thinking about how to improve my teaching	99.4	.6	0
17 Other	I want to improve as a teacher	100	0	0

4.4.2.2.2 *Current competencies compared by age*. Chi-square tests were used to examine differences in current competency self-ratings, according to age ranges. The following significant differences were found.

Competency 2: *I have a good understanding of how to teach*, $\chi2$ (4, N = 165) = 14.689, *p* = .005. Respondents in the 45 years and under age group were more likely to be undecided (5.6%) and less likely to agree (94.4%), as compared to the other age groups that indicated 100% agreement.

Competency 11: *I adapt learning processes to student needs*, $\chi2$ (4, N = 165) = 11.317, *p* = .023. Respondents in the 45 years and under age group were more likely to be undecided (5.6%) and less likely to agree (94.4%), as compared to the other age groups that indicated 100% agreement.

4.4.2.2.3 *Current competencies compared by previous teacher training*. Chi-square tests were used to examine associations in current competency self-ratings, according to the respondents' indicated level of formal teacher training prior to becoming a teacher. One significant difference was found for the following:

For competency 14: *I show a sense of humour*, $\chi2$ (4, N = 165) = 17.804, *p* = .000. Respondents with no previous teacher training were more likely (98.6%) to agree, as compared to those with previous teacher training (83.3%).

4.4.2.3 Further development comments. The survey also asked respondents: Choosing from the list above, or from other aspects of teaching not listed here, in what area(s) do you believe you need to develop further, in order to become a highly effective teacher? Of the respondents, 94 provided comments in this section. The two most common themes were technology and adaptive learning. There were 30 comments around the theme of technology, divided between: learning to use technology in the classroom; using technology for online and blended learning; and maintaining currency in technology used in the teacher's trade area. Among the 30 comments relating to adaptive learning, respondents spoke to: being able to adapt instruction for students with learning disabilities; assisting students whose cultural background differs from their own; and helping students within differing learning styles. The next most common theme was an interest in learning more about curriculum development, and keeping lesson plans up to date and fresh. The fourth theme, with far fewer responses, was the

development of personal skills such as time management, organization, and improving sensitivity in working with minority groups (e.g. women in trades).

Comments within this section included:

- "Every class contains a spectrum of students with varying aptitudes and abilities. . . We have students for a very short time period (seven weeks per year) where we have a lot of material to cover and understand. It would be useful to be able to diagnose students early who are struggling – sometimes you can tell right away, but often it takes at least two weeks. It would be nice if our system would track these students through the program to better assist them."
- "The ability to help students quickly identify problem areas in their learning process and help them to understand what they need to do to be successful."
- "I need more training in teaching methods, relating to apprenticeship."
- "Finding my own style of teaching."

4.4.2.4 Changes from retrospective to current competencies. A Wilcoxon signed-rank test (Elliott & Woodward, 2007) was used to compare respondents' ratings of retrospective competencies to current competencies. This test was chosen due to the nonparametric nature of the ratings and because normality of differences could not be assumed. All competency pairs, except for 13 *Enthusiasm for subject and teaching*, and 14 *Sense of humour*, showed statistically significant differences between retrospective and current ratings. The change, in percentage and by Wilcoxon Z scores, is shown in Table 4.15 below. The pedagogical knowledge and skill competencies, 2 through 7, showed the largest magnitude of change.

4.4.2.5 Summary of teaching competencies results. The responses to questions regarding teaching competencies show the following:

- On retrospective self-ratings of competencies as a beginning teacher, respondents agreed most strongly with the statement *I wanted to improve as a teacher*, with ratings on enthusiasm for the subject and teaching, and sense of humour, also largely agreed. Respondents agreed least with the statement *I had a good understanding of my students and their learning styles,* and *I understood curriculum development*.
- Significant differences emerged in the self-ratings of retrospective competency when compared by previous teacher training, by number of apprentices supervised in industry, and by age.

- Self-ratings of current teaching competencies were more homogeneous, with all 17 competencies agreed to by 90% of respondents or more. A comparison by previous teacher training and age were associated with some significant differences.

- A comparison of retrospective rating to current rating found significant changes, particularly in the pedagogical knowledge and skills competencies.

- When asked what further development they saw as necessary, respondents' comments were most commonly connected to learning about technology and adaptive learning.

Table 4.15. Teaching Competencies Retrospective Compared to Current.

	Listed KSAO	Retro %	Current %	Δ %	Z	p
1 K: Subject	I had/have a good understanding of course content or subject matter	76.4%	99.4%	23.0	5.663	.000
2 K: Pedagogy	I had/have a good understanding of how to teach	41.8	98.8	57.0	8.711	.000
3 K: Pedagogy	I had/have a good understanding of my students and their learning styles	26.7	92.7	66.0	9.606	.000
4 K: Pedagogy	I had/have a good understanding of how to use technology in the classroom	38.8	96.4	57.6	8.945	.000
5 S: Pedagogy	I knew/know how to deliver a lesson in the classroom	38.8	97.6	58.8	9.898	.000
6 S: Pedagogy	I knew/know how to assess student learning achievement	37.6	93.9	56.3	8.841	.000
7 S: Pedagogy	I understood/understand curriculum development	30.3	90.3	60.0	9.305	.000
8 S: Pedagogy	I was/am able to use the technology available in the classroom	69.1	98.1	29.0	6.347	.000
9 S: Pedagogy	I had/have good communications skills, including verbal, demonstration, listening, and feedback	82.4	99.4	17.0	4.828	.000
10 Ability or Attitude	I was/am organized	78.2	95.1	16.9	4.919	.000
11 Ability or Attitude	I adapted/adapt learning processes to student needs	66.7	98.8	32.1	6.578	.000
12 Other	I was/am professional in appearance and behaviour	92.1	98.2	6.1	2.883	.004
13 Other	I was/am enthusiastic about my subject and teaching	96.4	96.3	-0.1	.00	1.00
14 Other	I showed/show a sense of humour	95.2	96.4	1.2	.116	.908
15 Other	I was/am sensitive to diversity in the classroom	86.1	99.4	13.3	4.485	.000
16 Other	I was/am self-reflective, thinking about how to improve my teaching	93.3	99.4	6.1	2.715	.007
17 Other	I wanted/want to improve as a teacher	98.8	100	1.2	2.264	.024

4.4.3 Methods of Learning to Teach

Question 3 asked: *Once in the role of teacher, what formal and informal learning helps them to become effective teachers?* This section asked respondents to indicate the training they had participated in once hired as a teacher, and then to rate the effectiveness of various methods of training.

4.4.3.1 Training methods. Respondents were asked to indicate what means they had used to learn more about teaching after being hired to teach, with *Used* or *Not Used* options. An *Other* category was also provided. Respondents could select as many methods as applicable. The results, as frequency counts and as a percentage within the responses for that option, were as follows in Table 4.16:

Table 4.16. Training Methods Used to Learn to Teach.

Training Methods	Used		Not Used	
	Freq.	%	Freq.	%
Formal training for teachers (classes at a university or college)	64	38.8	**101**	**61.2**
Formal training through your own institution (15 hours/2 days or more)	113	68.5	52	31.5
Workshops (less than 2 days in length)	114	69.1	51	30.9
Formal mentoring by an experienced instructor or supervisor	97	58.8	68	41.2
Informal mentoring by an experienced instructor or supervisor	145	87.9	20	12.1
Discussions with other instructors	**159**	**96.4**	6	3.6
Self study (searching for information about teaching in books, articles, or online)	145	87.9	20	12.1
Trial and error in the classroom	150	90.9	15	9.1

Under the *Other* option, 29 respondents chose to add further information. The most commonly mentioned methods of training were: various forms of formal education, such as industry seminars, university courses or degrees, and institutional training, such as the Becoming a Master Instructor program at NAIT; seeking feedback from current and former students and industry practitioners, and revising teaching practice based on this feedback; reading; and self-reflection.

4.4.3.1.1 Training methods by demographic segmentation. A significant difference was found, using chi-square testing, when comparing previous teacher training. Chi-square tests were used to examine associations in training methods, according to age ranges, the number of apprentices supervised while in industry, and the presence of another teacher in the immediate family. No significant differences were found for these demographic factors.

4.4.3.1.2 Training methods compared by previous teacher training. Chi-square tests were used to examine associations in training methods, according to the respondents' indicated level of formal teacher training prior to becoming a teacher. For *Use of formal training for teachers (classes at a university or college)*, $\chi2$ (1, N = 165) = 33.075, *p* = .000. Those respondents with previous teacher training (*n* = 24) were more likely to report having used this form of learning to teach after being hired as a teacher (91.7%), as compared to those (*n* = 141) without previous teacher training (29.8%). Given the respondents' use of formal training methods before being hired as a teacher and, presumably, some measure of success in that training, it is likely that these respondents were favourably influenced by past experience, leading to this much higher level of agreement.

4.4.3.2 Effectiveness of training. The following section asked respondents to rate the effectiveness of the types of training they had used during their teaching career to improve their teaching. Mentoring was rated as very effective most often, followed by discussions with other instructors, as shown in Table 4.17 below.

Table 4.17. Ratings of Training Effectiveness.

Training Method	Not Effective	Somewhat Ineffective	Neutral/Does not Apply	Somewhat Effective	Very Effective
Formal training	3.6%	6.1%	26.1%	42.4%	21.8%
Workshops	1.8	7.9	21.2	52.7	16.4
Mentoring	1.2	1.2	10.9	27.9	**58.8**
Discussions with other instructors	0	1.8	3.0	39.4	55.8
Self study	0	1.8	8.5	47.9	41.8
Trial and error	1.8	3.0	6.1	50.3	38.8

Looking at effectiveness more inclusively, the categories of *Somewhat Effective* and *Very Effective* were grouped, created a slightly different ranking that placed *Discussions with other instructors* at the top, and *Mentoring* in a lower rank. These results are presented in Table 4.18 below:

Table 4.18. Training Effectiveness – Aggregated Ratings.

Method	Ranked as Very Effective	Ranked as Very Effective or Somewhat Effective
Mentoring	1	4
Discussions with other instructors	2	1
Self study	3	2
Trial and error	4	3
Formal Training	5	6
Workshops	6	5

4.4.3.2.1 Effectiveness of training by demographic segmentation. Chi-square tests were used to examine associations in effectiveness of training, according to age ranges, the number of apprentices supervised while in industry, and the presence of another teacher in the family. No significant differences were found. A significant difference was found when compared by previous teacher training.

4.4.3.2.2 Effectiveness of training compared by previous teacher training. Chi-square tests were used to examine associations in effectiveness of training, according to the respondents' indicated level of formal teacher training prior to becoming a teacher. For *formal training*, $\chi2$ (4, N = 165) = 14.390, p = .006. Those respondents with some formal training were more likely to rate formal training as very effective (45.8% as compared to those with no formal training (17.7%). For *self-study*, $\chi2$ (4, N = 165) = 9.439, p = .024. Respondents with some formal training were more likely to rate self-study as somewhat ineffective (8.3%) as compared to those with no formal training (0.7%).

4.4.3.3 Correlation of training usage and rating. Paired sample T-tests were calculated for usage of training by type and rating of training type, resulting in a significant ($p < .05$)

correlation in all cases; overall, respondents who had used a method of training were more likely to rate it as effective.

4.4.3.4 Correlations within types of training. Spearman's correlation was used to examine the association between types of training, due to non-normal distribution of the responses and ordinal nature of the variables (Elliott & Woodward, 2007; Pallant, 2013). Two groupings of association were found. Use of formal training at the home institution, workshops, and formal mentoring were related at the .01 level, to a medium strength (Cohen, 1988; Pallant, 2013). Use of informal mentoring, self-study, and trial and error in the classroom were related at the .01 level, also to a medium strength. Discussions with other instructors also correlated to self-study and trial and error at a similar level of strength. These results are presented in Table 4.19 below.

Table 4.19. Training Methods Usage Correlated.

		Formal training for teachers	Formal training own institution	Work-shops	Formal mentoring	Informal mentoring	Discussions	Self study	Trial and error
Formal training for teachers	Correlation Coefficient	1.000							
	Sig. (2-tailed)	.							
Formal training own institution	Correlation Coefficient	.138	1.000						
	Sig. (2-tailed)	.076	.						
Workshops	Correlation Coefficient	.102	.337**	1.000					
	Sig. (2-tailed)	.193	.000	.					
Formal mentoring	Correlation Coefficient	-.016	.227**	.239**	1.000				
	Sig. (2-tailed)	.841	.003	.002	.				
Informal mentoring	Correlation Coefficient	-.047	.188*	.113	.368**	1.000			
	Sig. (2-tailed)	.546	.016	.148	.000	.			
Discussions	Correlation Coefficient	-.005	-.116	.055	.151	.145	1.000		
	Sig. (2-tailed)	.949	.137	.481	.053	.064	.		
Self study	Correlation Coefficient	.105	.148	.113	.066	.260**	.224**	1.000	
	Sig. (2-tailed)	.179	.058	.148	.397	.001	.004	.	
Trial and error	Correlation Coefficient	.122	.058	.153*	-.008	.206**	.282**	.270**	1.000
	Sig. (2-tailed)	.119	.461	.049	.921	.008	.000	.000	.

N = 165

4.4.3.5 Correlation within effectiveness of training. Spearman's correlation was used to examine the association between ratings of effectiveness by types of training. Ratings of discussions and mentoring were significantly related ($p > .000$) to a large strength size (Cohen, 1988; Pallant, 2013). Ratings of formal training and workshops as effective were related at the same level of significance and medium strength. Ratings of workshops and mentoring were related at the $p > .01$ level and medium strength, and workshops and discussions at the $p > .05$ level and low strength. Ratings of discussions and self-study were related at the $p < .01$ level; trial and error was related to discussions and self-study at the .05 level. The results are presented below in Table 4.20.

Table 4.20. Ratings of Training Methods Correlated.

		Formal training	Workshops	Mentoring	Discussions	Self-study	Trial and error
Formal training	Correlation Coefficient	1.000					
	Sig. (2-tailed)	.					
Workshops	Correlation Coefficient	.322**	1.000				
	Sig. (2-tailed)	.000	.				
Mentoring	Correlation Coefficient	.139	.265**	1.000			
	Sig. (2-tailed)	.075	.001	.			
Discussions	Correlation Coefficient	.161*	.180*	.493**	1.000		
	Sig. (2-tailed)	.039	.021	.000	.		
Self-study	Correlation Coefficient	.033	.124	.142	.265**	1.000	
	Sig. (2-tailed)	.672	.114	.068	.001	.	
Trial and error	Correlation Coefficient	.067	.085	.058	.182*	.161*	1.000
	Sig. (2-tailed)	.396	.279	.460	.019	.038	.

N = 165

4.4.3.6 Summary of methods of learning to teach. Responses to the questions regarding the methods used to learn more about teaching, once in the role, show the following:

- Respondents chose discussions with other instructors as the most often used method. Formal training through a university or college was the response least often chosen.

- Respondents with formal teacher training prior to being hired as a teacher were more likely to indicate use of formal training methods to continue learning about teaching.

- Mentoring was rated as the most effective method of learning to teach; workshops were rated as least effective. Self-study was rated as effective significantly more often by teachers without previous teacher training.

- Training usage formed two groups in correlation tests: formal training at the employing institution, workshops and formal mentoring; and informal mentoring, self study and trial and error.

- Effectiveness ratings were also grouped in correlation testing: formal training, workshops, and mentoring; and mentoring, discussions, and self-study.

4.4.4 Vocational Identity

Question 4 asked about the vocational identity of trades practitioners moving to teaching of the trade: *How does their vocational identity change with the change in career?* A single question within the survey dealt with this segment of the research question by asking: *Are you a tradesperson, a teacher, or both? If you met someone for the first time today, how would you describe yourself to this person?* Respondents could choose one or more of three options: *I'm a tradesperson (welder, electrician, etc.); I'm a teacher/instructor; I'm a teacher/instructor in (welding, electrical, etc.).* An option was also given for comments or other responses. Since multiple answers to this question were expected, data are presented as frequency counts, in Table 4.21 below, including a count of missing or null data points.

Of those responding to the statement *I'm a tradesperson*, 30.1 % disagreed, and 69.9% agreed. To the statement *I'm a teacher/instructor*, 26.4% disagreed and 73.6% agreed. In response to the statement *I'm a teacher/instructor in (my trade)*, 96.6% agreed and 3.4% disagreed.

Comments spoke most commonly to having pride in both identities:

- "I am both, I am a tradesperson who can teach."
- "I am very proud of my career, first as a tradesperson, then an instructor."
- "I am more proud of being an instructor than being a tradesperson, however, I am very proud of the combination."
- "I have both a degree and a Red Seal."

Table 4.21. Vocational Identity Frequency Counts and Missing Data for All Respondents.

Statement	Agree	Disagree	Null	Total
I'm a tradesperson	86	37	42	165
I'm a teacher/instructor	92	33	40	165
I'm a teacher/instructor in my trade	140	5	20	165

4.4.4.1 Vocational identity compared by demographic segmentation. Significant differences in vocational identity were found through chi-square testing according to previous teacher training and the presence of another teacher in the family. Chi-square tests were also used to examine associations in vocational identity according to age ranges, level of formal teacher training prior to becoming a teacher, and number of apprentices supervised while in industry. No significant differences were found within these demographic factors.

4.4.4.1.1 Vocational identity compared by previous teacher training. When vocational identity responses were compared according to respondents' indicated level of formal teacher training prior to becoming a teacher, one instance of significant difference was found. For *I'm a teacher/instructor*, $\chi^2 (1, N = 125) = 5.926$, $p = .015$. Respondents with some formal teacher training were more likely to agree (95.0%) as compared to those with no formal teacher training (68.6%).

4.4.4.1.2 Vocational identity compared by presence of another teacher within the family. Chi-square tests were used to examine associations in vocational identity, according to the presence of another teacher in the immediate family. One instance of significant difference was found. For *I'm a tradesperson (welder, electrician, etc.)*, $\chi^2 (1, N = 123) = 3.997$, $p = .046$. Respondents who indicated having a teacher within their immediate family were more likely to agree with this statement (82.1%) than those who indicated no teacher within the family (64.3%).

4.4.4.2 Summary of vocational identity results. When asked to agree or disagree with the three statements on vocational identity, respondents most often agreed with *I'm a teacher/instructor in my trade*; however, the other two statements were also agreed to in the majority of instances. Having another teacher within the immediate family was linked to increased agreement with the statement *I'm a tradesperson*. Previous formal teacher training was linked to increased agreement with the statement *I'm a teacher/instructor*.

4.4.5 Satisfaction with Teaching

The final section within the research question asked respondents about the sense of satisfaction derived from the work of teaching, and what factors provide encouragement to continue as a teacher. This segment of the survey included several questions. Respondents were asked to rate their current level of satisfaction with teaching, and to compare this level to their satisfaction upon first entering the field. They were also asked to respond to statements regarding satisfying and dissatisfying factors.

4.4.5.1 Level of satisfaction. Respondents almost unanimously rated themselves as satisfied with teaching today. *Highly satisfied* was the choice of 60%, and 34.5% said they were somewhat satisfied. *Neutral* and *Somewhat Dissatisfied* garnered 5.4% of the responses; no respondent chose *Highly Dissatisfied.* When asked to compare this level of satisfaction to how they felt upon first entering the career of teaching, 38.2% said their satisfaction today is higher. Satisfaction levels were rated as the same by 45.5% and 16.4% said they were less satisfied today.

4.4.5.1.1 Satisfaction level compared by demographic segmentation. A significant difference was found through chi-square testing when change in satisfaction level was compared according to age. Chi-square tests were used to examine associations according to level of formal teacher training prior to becoming a teacher, number of apprentices supervised, and presence of another teacher in the immediate family. No significant difference was found.

4.4.5.1.2 Satisfaction level compared by age. Chi-square tests were used to examine associations in current satisfaction and change in satisfaction, according to respondents' ages. No significant difference was found in current satisfaction level; however, there were differences by age in compared satisfaction: χ^2 (4, N = 165) = 9.175, p = .05. Respondents under 45 years old were more likely to indicate their satisfaction level as the same (58.3%) or lower (22.2%), compared to the older age groups. Those respondents in the 56 years or older group were the most likely to indicate their present satisfaction level as higher than in the past (49.1%), while the 46-55 age group showed 39.5% higher satisfaction, and the Under 45 age group showed 19.4% higher satisfaction. These results are summarized in Table 4.22 below.

Table 4.22. Satisfaction Change by Age Groups.

Age Range	More Satisfied	Same	Less Satisfied
Under 45 years	19.4%	58.3%	22.2%
46-55 years	39.5	42.1	18.4
56 years or older	49.1	41.5	9.4

4.4.5.2 Factors leading to satisfaction. The next section of the survey asked respondents to review a list of factors posed as positive statements about teaching, and choose between *Strongly Disagree*, *Disagree, Undecided, Agree* or *Strongly Agree* in response to these statements. A comments section was also provided. The results were as follows in Table 4.23. When the categories of *Agree* and *Strongly Agree* are combined, the factors rank as shown in Table 4.24.

Table 4.23. Satisfaction Factors.

Factor	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
I feel rewarded when students succeed	69.1%	30.3%	0%	0%	.6%
I feel I make a difference in students' lives	52.1	45.5	1.8	0	.6
I am able to stay in contact with industry, and stay up to date on developments in my trade	21.2	57.0	10.3	7.3	4.2
I enjoy working with other instructors	34.5	54.5	4.8	4.2	1.8
I feel my work is valued by my supervisor	24.8	48.5	13.3	8.5	4.8
I feel my work is valued by my institution	13.3	34.5	26.7	15.2	10.3
I feel my work is valued by the public	21.2	44.8	23.6	6.1	4.2

Table 4.24. Satisfaction Factors – Aggregated.

Factor	Agree or Strongly Agree	Ranking
I feel rewarded when students succeed	99.4%	1
I feel I make a difference in students' lives	97.6	2
I enjoy working with the other instructors in my department/program and in my institution	89.0	3
I am able to stay in contact with industry, and stay up to date on developments in my trade	78.2	4
I feel my work is valued by my supervisor	73.3	5
I feel my work is valued by the public	66.0	6
I feel my work is valued by my institution	47.8	7

Themes in the comments section included further explanation on the listed factors: feelings of the work of teaching not being valued by the institution (31%); dissatisfaction with management priorities (23%); low pay as compared to industry (15%); and a desire to see course materials updated (8%).

4.4.5.2.1 Satisfaction factors by demographic segmentation. A significant difference was found according to the presence of another teacher within the family when chi-square tests were used to examine associations in satisfaction factors. When compared according to age ranges, level of formal teacher training prior to becoming a teacher, and the number of apprentices supervised while in industry, no significant difference was found.

4.4.5.2.2 Satisfaction factors compared by presence of another teacher within the family. Two instances of significant difference were found when chi-square tests were used to examine associations in satisfaction factors, according to the presence of another teacher in the immediate family. For *I feel my work is valued by my institution,* χ^2 (4, N = 165) = 11.567, p = .021. Respondents with another teacher in the family were less likely to agree (21.8%) than those without another teacher in the family (40.9%). For *I feel my work is valued by the public,* χ^2 (4, N = 165) = 8.777, p = .05. Respondents who indicated having a teacher within their immediate family were more likely to disagree or strongly disagree with this statement (18.2%) than those without a teacher in the family (6.3%).

4.4.5.3 Correlations within satisfaction factors. Spearman's correlation was used to examine the associations between the satisfaction factors, as shown in Table 4.25 below. Medium to large correlations (Cohen, 1988; Pallant, 2013) were shown between:

- *I feel rewarded when students succeed* and *I feel I make a difference in students' lives* (r = .497, p = .000).

- *I feel my work is valued by my institution* and *I feel my work is valued by my supervisor* (r = .553, p =.000).

- *I feel my work is valued by my institution* and *I feel my work is valued by the public* (r = .516, p = .000).

- *I feel my work is valued by my supervisor* was the one factor with significant correlations to all other satisfaction factors.

Table 4.25. Satisfaction Factors Correlated.

		I feel rewarded when students succeed	I feel I make a difference in students' lives	I am able to stay in contact with industry	I enjoy working with other instructors	I feel my work is valued by my supervisor	I feel my work is valued by my institution	I feel my work is valued by the public
I feel rewarded when students succeed	Correlation Coefficient	1.000						
	Sig. (2-tailed)	.						
I feel I make a difference in students' lives	Correlation Coefficient	.497**	1.000					
	Sig. (2-tailed)	.000	.					
I am able to stay in contact with industry	Correlation Coefficient	.146	.145	1.000				
	Sig. (2-tailed)	.061	.063	.				
I enjoy working with other instructors	Correlation Coefficient	.148	.241**	.211**	1.000			
	Sig. (2-tailed)	.058	.002	.007	.			
I feel my work is valued by my supervisor	Correlation Coefficient	.220**	.243**	.290**	.347**	1.000		
	Sig. (2-tailed)	.004	.002	.000	.000	.		
I feel my work is valued by my institution	Correlation Coefficient	.121	.093	.154*	.110	.553**	1.000	
	Sig. (2-tailed)	.122	.234	.048	.161	.000	.	
I feel my work is valued by the public	Correlation Coefficient	.227**	.270**	.214**	.165*	.312**	.516**	1.000
	Sig. (2-tailed)	.003	.000	.006	.034	.000	.000	.

N = 165

4.4.5.3.1 Correlations between satisfaction factors and stated satisfaction level. Some
satisfaction factors were shown to be significantly linked to a higher level of satisfaction. A
Kruskal-Wallis test was used to test for differences in the stated agreement to the satisfaction
factors, when compared by level of satisfaction with teaching. This test was chosen due to stated
satisfaction levels being heavily weighted toward *Highly Satisfied/Somewhat Satisfied*, creating a
distribution that is not normal and a small sample size in the *Neutral/Somewhat Dissatisfied*
categories (Elliott & Woodward, 2007; Pallant, 2013). The Kruskal-Wallis test indicated
statistically significant differences in aggregated statement agreement between the *Satisfied* and
Dissatisfied respondents for five of the seven factors, as listed below:

- For *I feel I make a difference in students' lives*, χ^2 (3) = 12.049, p = .007.
- For *I am able to stay in contact with industry, and stay up to date on developments in my
  trade*, χ^2 (3)= 5.573, p =.039.
- For *I feel my work is valued by my supervisor*, χ^2 (3) = 20.607, p = .000.
- For *I feel my work is valued by my institution*, χ^2 (3) = 21.192, p = .000.
- For *I feel my work is valued by the public*, χ^2 (3) = 9.606, p = .022.

The mean level of agreement with these factors was calculated based on the following
values:

1 = strongly disagree.

2 = disagree.

3 = undecided.

4 = agree.

5 = strongly agree.

The results were then divided into *Satisfied* and *Dissatisfied* respondent categories. The result is
illustrated in Figure 4.1 below.
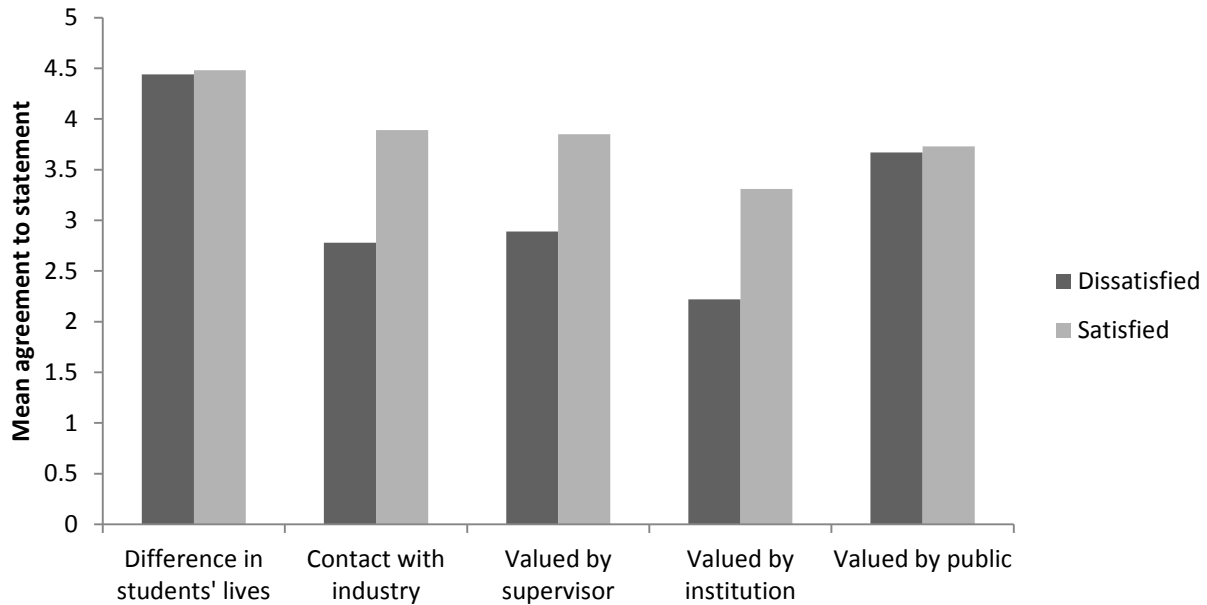
Figure 4.1 Selected satisfaction factors compared by stated level of satisfaction with teaching. For the five factors shown to be significantly linked to higher satisfaction levels, the figure shows the mean of agreement (1 = strongly disagree; 5 = strongly agree) to the statements for dissatisfied and satisfied respondents.

4.4.5.4 Dissatisfaction factors. A similar set of statements was offered to respondents, to choose their level of agreement regarding factors that might cause dissatisfaction with teaching as a career. Table 4.26, below, shows the percentage of respondents at the various agreement levels, and Table 4.27, shows the categories of *Agree* and *Strongly Agree* combined and the factors ranked by agreement level. *Not enough time to do the work* was most often agreed to, followed by *Unclear expectations*. Qualitative comments in this section of the survey clustered around the themes of: low pay as compared to industry and other polytechnics (25%); dissatisfaction with the institutional or management direction (20%); outdated course materials and equipment (17%); lack of time for professional development (9%); and negativity among peer instructors (9%).

Table 4.26. Dissatisfaction Factors.

Factor	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Not enough time to do the work	10.9%	43.6%	18.8%	21.8%	4.8%
Unclear expectations	4.2	36.4	26.7	25.5	7.3
Students are uncooperative	6.1	23.6	18.8	41.2	10.3
Lack of resources (textbooks, tools, space)	10.3	27.3	18.2	34.5	9.7
Lack of support from other instructors	4.2	10.3	14.5	47.3	23.6
Lack of support from my supervisor	8.5	11.5	11.5	47.9	20.6
Lack of support from my institution	14.5	24.2	23.6	26.7	10.9

Table 4.27. Dissatisfaction Factors Aggregated and Ranked.

Factor	Agree or Strongly Agree	Ranking
Not enough time to do the work	54.5%	1
Unclear expectations	40.6	2
Lack of support from my institution	38.7	3
Lack of resources (textbooks, tools, space)	37.6	4
Students are uncooperative	29.7	5
Lack of support from my supervisor	20.0	6
Lack of support from other instructors	14.5	7

4.4.5.4.1 Dissatisfaction factors demographic segmentation. Chi-square tests were used to examine associations in dissatisfaction factors, according to respondents' ages, level of formal teacher training prior to becoming a teacher, number of apprentices supervised while in industry, and the presence of another teacher within the family. No significant differences were found.

4.4.5.5 Correlations within dissatisfaction factors. Spearman's correlation was used to examine the associations between the dissatisfaction factors. Medium-strength correlations (Cohen, 1988; Pallant, 2013) were shown between:

- *Unclear expectations* and *Lack of support from my supervisor* ($r = .477$, p = .000).

- *Lack of support from other instructors* and *Lack of support from my supervisor* ($r = .490$, p = .000).

- *Lack of support from my supervisor* and *Lack of support from my institution* ($r = .452$, p =.000).

Results are shown in Table 4.28, below.

Table 4.28. Dissatisfaction Factors Correlated.

		Not enough time to do the work	Unclear expectations	Students are uncooperative	Lack of resources	Lack of support from other instructors	Lack of support from my supervisor	Lack of support from my institution
Not enough time to do the work	Correlation Coefficient	1.000						
	Sig. (2-tailed)	.						
Unclear expectations	Correlation Coefficient	.186*	1.000					
	Sig. (2-tailed)	.017	.					
Students are uncooperative	Correlation Coefficient	.163*	.120	1.000				
	Sig. (2-tailed)	.037	.124	.				
Lack of resources	Correlation Coefficient	.332**	.320**	.236**	1.000			
	Sig. (2-tailed)	.000	.000	.002	.			
Lack of support from other instructors	Correlation Coefficient	.199*	.343**	.205**	.270**	1.000		
	Sig. (2-tailed)	.010	.000	.008	.000	.		
Lack of support from my supervisor	Correlation Coefficient	.125	.477**	.057	.315**	.490**	1.000	
	Sig. (2-tailed)	.011	.000	.468	.000	.000	.	
Lack of support from my institution	Correlation Coefficient	.264**	.315**	-.015	.328**	.185*	.452**	1.000
	Sig. (2-tailed)	.001	.000	.848	.000	.017	.000	.

N = 165

4.4.5.5.1 Correlations between dissatisfaction factors and stated satisfaction level. A Kruskal-Wallis test was used to test for differences in the aggregated stated agreement to the satisfaction factors, when compared by level of satisfaction with teaching. The test indicated statistically significant differences for three of the seven factors, as listed below:

- *Unclear expectations*, $\chi 2$ (3) = 9.692, p = .021.
- *Lack of support from my supervisor*, $\chi 2$ (3) = 12.429, p = .006.
- *Lack of support from my institution*, $\chi 2$ (3) = 10.161, p =.017.

The mean level of agreement to these factors was calculated based on the following values:

1 = strongly disagree.

2 = disagree.

3 = undecided.

4 = agree.

5 = strongly agree.

These results were then divided into *Satisfied* and *Dissatisfied* respondent categories. The result is illustrated in Figure 4.2 below.
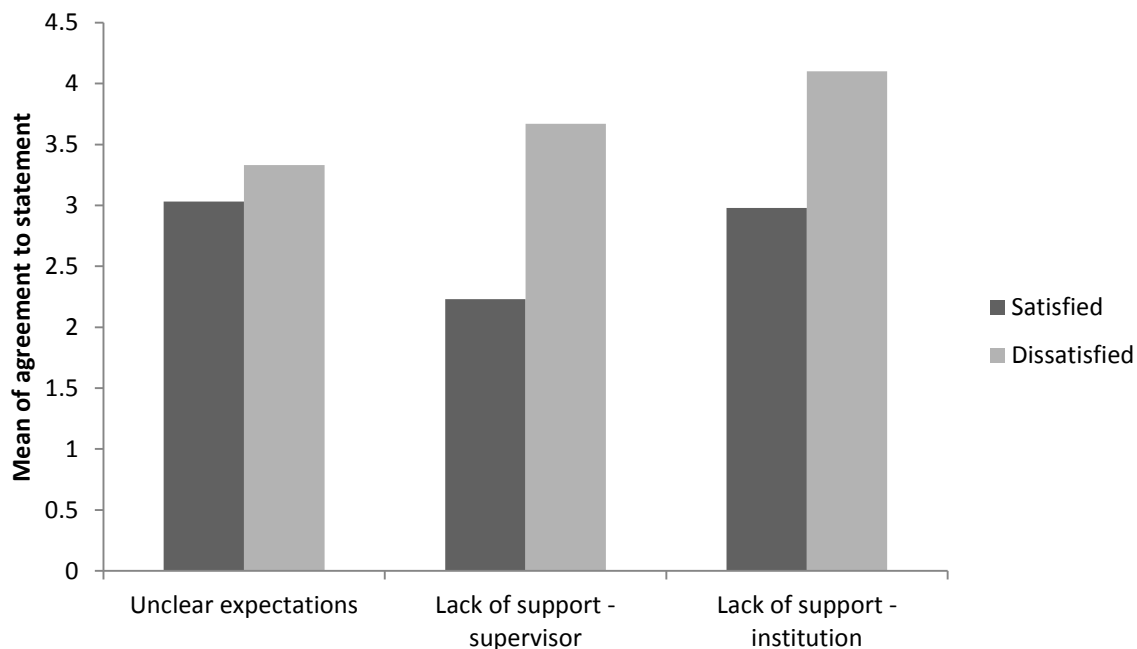
Figure 4.2 Selected dissatisfaction factors compared by stated level of satisfaction with teaching. For the three factors shown to be significantly linked to higher dissatisfaction levels, the figure shows the mean of agreement (1 = strongly disagree; 5 = strongly agree) to the statements for dissatisfied and satisfied respondents.

4.4.5.6 Changes to increase satisfaction. In the next survey question, respondents were asked: *What changes to your working environment do you believe would increase your satisfaction with teaching? Choose as many as apply.* Options provided were *Yes* or *No* choices. An *Other, Please describe* option was also given. More support for developing teaching skills and knowledge was the most often selected factor, by 84.1% of respondents. The results were as follows in Table 4.29.

Comments in this section were similar to the previous sections, themed around: more time for professional development and time for training to maintain currency in the trade (26%); better pay (21%); a desire for students to be better prepared for postsecondary training (16%); a desire for less negativity among peers and supervisors (16%); and the need for updated course materials and equipment (10%).

Table 4.29. Changes for Increased Satisfaction.

Factor	Yes	No
More support for developing teaching skills and knowledge	**84.8%**	15.2%
More feedback from your supervisor	47.3	52.7
More control over your own classroom schedule	33.3	**66.7**
More time to discuss teaching concerns with other instructors	53.3	46.7
More control over curriculum (timing, lesson plans)	50.3	49.7
Fewer hours in the classroom; more time to prepare	46.1	53.9
More time to meet with students	53.9	46.1
More help for students through counseling, learning support services	57.6	42.4

4.4.5.6.1 Changes to increase satisfaction by demographic segmentation. The presence of another teacher within the family was found, through chi-square testing, to be linked to one suggestion for changes to increase satisfaction. For *More help for students through counselling, learning support services,* the results were statistically significant, χ^2 (1, N = 165) = 4.479, $p <$ .034. Respondents who indicated having a teacher within their immediate family were more likely to agree with this statement (69.1%) than those without a teacher in the family (51.8%). No significant differences were found when chi-square tests were used to examine associations

according to respondents' age, level of formal teacher training prior to becoming a teacher, and number of apprentices supervised while in industry.

       4.4.5.6.2 Correlations within changes to increase satisfaction. Spearman's correlation was used to examine the associations between the suggestions for changes to increase satisfaction. As shown in Table 4.30 below, medium-strength correlations (Cohen, 1988; Pallant, 2013) emerged between:

- *Fewer hours in the classroom* and *More control over your own classroom schedule* ($r = .352$, $p < .000$).

- *Fewer hours in the classroom* and *More time to meet with students* ($r = .403$, $p < .000$).

- *More control over your own classroom schedule* and *More time to discuss teaching concerns with other instructors* ($r = .343$, $p < .000$).

Table 4.30. Suggestions for Increased Satisfaction Correlated.

		More support for developing teaching skills	More feedback from your supervisor	More control over classroom schedule	Fewer hours in classroom; time to prepare	More time to discuss teaching concerns	More control over curriculum	More time to meet with students	More help for students through counselling
More support for developing teaching skills	Correlation Coefficient	1.000							
	Sig. (2-tailed)	.							
More feedback from your supervisor	Correlation Coefficient	.241**	1.000						
	Sig. (2-tailed)	.002	.						
More control over classroom schedule	Correlation Coefficient	.084	.090	1.000					
	Sig. (2-tailed)	.285	.248	.					
Fewer hours in classroom; time to prepare	Correlation Coefficient	.181*	.236**	.352**	1.000				
	Sig. (2-tailed)	.020	.002	.000	.				
More time to discuss teaching concerns	Correlation Coefficient	.155*	.123	.343**	.309**	1.000			
	Sig. (2-tailed)	.047	.116	.000	.000	.			
More control over curriculum	Correlation Coefficient	.051	-.051	.172*	.158*	.140	1.000		
	Sig. (2-tailed)	.512	.513	.027	.043	.072	.		
More time to meet with students	Correlation Coefficient	.152	.114	.215**	.403**	.273**	.244**	1.000	
	Sig. (2-tailed)	.051	.145	.006	.000	.000	.002	.	
More help for students through counselling	Correlation Coefficient	.082	.154*	.087	.254**	.152	-.019	.240**	1.000
	Sig. (2-tailed)	.296	.048	.268	.001	.051	.812	.002	.

N = 165

4.4.5.6.3 Correlations between changes to increase satisfaction and stated satisfaction level. A Kruskal-Wallis test was used to test for differences in the stated agreement to satisfaction factors, when compared by level of satisfaction with teaching. The test indicated statistically significant differences for two of the eight factors:

- For *More support for developing teaching skills and knowledge*, χ^2 (3) = 9.405, p = .024.
- For *More control over curriculum*, χ^2 (3) = 11.150, p = .011.

4.4.5.7 Summary of satisfaction results. The responses to questions regarding satisfaction with the role of teaching showed the following:

- Respondents rated themselves as satisfied or highly satisfied with teaching in the vast majority of cases. Most respondents said they are as satisfied with the role of teacher today as when they began, or are more satisfied today.

- When presented with a list of factors that could lead to satisfaction with the role, respondents most often agreed with the statement *I feel I make a difference in students' lives*. The statement *I feel my work is valued by my institution* received the least agreement.

- Level of satisfaction was significantly related to the level of agreement to statements regarding contact with industry, feeling valued by supervisor, and feeling valued by the institution.

- The presence of another teacher in the family was linked to a lower level of agreement to the satisfaction factor statement *I feel my work is valued by the public*.

- Among factors that could lead to dissatisfaction with teaching, the strongest agreement was in reaction to *Not enough time to do the work*. Correlations within the factors were clustered into unclear expectations and lack of support from supervisor; and lack of support from other instructors, supervisor, and institution. Higher levels of satisfaction were correlated with lower agreement to statements regarding unclear expectations, lack of support from supervisor, and lack of support from institution.

- Suggested changes to increase satisfaction were provided, and respondents choose *More support for developing teaching skills and knowledge* most often. Respondents with another teacher in the family were more likely to choose *More help for student through counselling, learning support services* than were respondents without another teacher in the family.

4.5 General Comments by Respondents

The final section of the survey gave respondents an opportunity to comment on any aspect of the questions, or to offer general comments on teaching in the trades. Thirty-nine respondents provided comments, in some cases of considerable length. Many were very positive about teaching with several saying, in various ways, *I love my job*. Another theme among the comments was the desire for greater respect for the work of teaching trades, from their employing institution and from the public. Several comments used the phrase *cash cow* to describe the institutional view of trades programs, suggesting trades programs fit the business concept of *cash cow* as a segment of an operation with high demand and lower costs, with the resulting cash flow thus available to support other organizational segments with lower demand but perceived higher prestige or expected future growth to the organization (Henderson, 1970).

A sample of the comments from this section is provided below.

"Coming from industry and being able to share my knowledge with up and coming technicians is very rewarding when you see them some time later and they are thanking you as they are now journeyman technicians. [It is a] very positive feeling to know that you made a difference in their lives."

"Every day I grow as an instructor and learn more on how to develop a better relationship towards my students in order to have them learn quicker and smarter."

"Trades instructors in my opinion rely on their vast experience in the trade to teach and identify with students. This experience is a must – without that experience there is [no] respect from the apprentice and your ability to teach is limited."

"I would like to see what (I) we do as skilled trades instructors-teachers to be better recognized. What I am referring to is the mistaken belief that in order to be a good teacher, you have to have had formal university training and have achieved a degree such as the Bachelor of Education. While this is somewhat valid and also meaningful, it does not mean that a person with that degree will be a good or effective teacher."

"Moving from trades to teaching trades was a great decision for me. It's something I've always wanted to do."

"I would be curious to know how many trades instructors feel their institution supports them as far as keeping up with their trades skills. My employer does not seem to support us in regards to keeping up with our industry."

"It is the greatest job in the world .You get to interact with young people that will be the foundation of our country. [However] given the chance to do it all over again I would have chosen a career that pays better."

"I believe that almost anyone can be taught to teach just as I have seen almost anyone can be trained/ taught to be an electrician but good teachers and good electricians are born with a gift(s). I think we can all remember our favourite teacher when we were growing up – the one that obviously didn't just pass you on but challenged you, made you work hard and had that something special that made you feel, even though there were many in the class, that you were special and they cared about how you fared in your studies and in most instances even your life."

"We are second-tier instructors. Our trades programs bring in tonnes of revenue, but the revenue gets funneled to prop-up other, listing programs - usually not even located on the same campus - while our own program materials, equipment and facilities are dilapidated and insufficient."

"Trades people are used to sitting on a crate or a roll of wire for coffee break on a job-site; thusly when we get to an instructor position, we don't complain because we don't even realize the inequities our programs are subjugated to when contrasted against other programs until years later because we're still comparing our instructor working conditions to field practice working conditions. Everything is relative; relative to field practice, instructing is great; relative to other academic program offerings, trades programs are considered second-class and are operated by the employer as such - a necessary evil because it is a cash-cow. We'd rather tout the prestigious programs more commonly associated with being a polytechnic and ignore the roots from whence we came."

4.6 Summary of Chapter Four

Within this chapter, I have reviewed the process used to collect data via an electronic survey of teachers of trades at three Western Canadian polytechnic institutions. The data from that survey were reviewed according to the sections within the research question and by demographic groupings. Significant differences by demographic segmentation were considered, with the exception of differences relating to length of teaching experience. An analysis of responses according to length of teaching experience will be provided in Chapter Five.

CHAPTER FIVE: TRANSITION VIEWED BY YEARS OF EXPERIENCE

5.1 Introduction

In the previous chapter, the process of gathering survey data was discussed, as well as the results of the data, with the exception of analysis regarding teaching experience. This chapter looks at the survey responses as differentiated by levels of teaching experience. The overall research question is concerned with the transition from tradesperson to teacher, and how the *second apprenticeship* of learning to become a teacher occurs, divided into the following questions: the motivation for career change; pre-existing competencies brought to the role of teaching; the methods used to learn to teach; negotiation of a new vocational identity; and sources of satisfaction in the teaching role.

Looking at responses to the survey related to these questions, according to years of teaching experience, is one means of seeing this transition. This study is categorical, not longitudinal; therefore, it is not the transition of the same teachers through their years of experience that is seen, but rather snapshots of different teachers at various times in a common career path that is captured with the survey responses. Nevertheless, when the responses are divided by years of teaching experience into experience categories, some differences between the categories emerge.

As previously outlined, the respondents were grouped into five approximately equal-sized groups by experience level. Names have been assigned to the groups for convenience in reporting:

- Novice, 3 years or less experience: 21.2% ($n = 35$).
- Junior, 4-7 years of experience: 19.4% ($n = 32$).
- Intermediate, 8-11 years of experience: 18.4% ($n = 31$).
- Senior, 12-17 years of experience: 19.2% ($n = 31$).
- Veteran, 18 years or more experience: 21.8% ($n = 36$).

5.1.1 Demographic Comparison

Using the experience categories to look at the other demographic questions of the survey, the main differences between the experience categories related to length of trade practice, previous training, and age, which are discussed in more detail below. Chi-square testing found no significant differences between the experience categories regarding questions on having a teacher in the family, the number apprentices supervised while in industry, or gender. Among the

very small number of female respondents to the survey ($n = 4$), the majority was found in the Senior group, with three women within this category.

5.1.1.1 Trade practice. Length of trade practice was calculated based on the respondents' indicated year of trade certification and year in which teaching began. Using chi-square testing, a significant difference was found between the teaching experience groups in this regard: χ^2 (12, N = 165) = 32.754, p = .001. Respondents in the Junior group were more likely (56.3%) to have 11-15 years of trades practice before becoming teachers as compared to 36.4% overall. Respondents in the Veteran group were more likely (44.4%) to have 6-10 years of trades practice before teaching, as compared to 20.6% overall. The frequency counts and percentages for each group are presented below, in Table 5.1.

Table 5.1. Trade Practice Prior to Teaching Grouped by Experience Level.

Years of trades experience	Overall		Novice		Junior		Intermediate		Senior		Veteran	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
< 5 years	39	23.6	11	31.4	4	12.5	5	16.1	9	29.0	10	27.8
6-10 years	34	20.6	5	14.3	6	18.8	5	16.1	2	6.5	**16**	**44.4**
11-15 years	60	36.4	11	31.4	**18**	**56.3**	13	41.9	15	48.4	3	8.3
>15 years	32	19.4	8	22.9	4	12.5	8	25.8	5	16.1	7	19.4

5.1.1.2 Previous training. A significant difference was found in previous training levels between the experience categories, χ^2 (4, N = 165) = 18.802, p = .001. Respondents in the Junior experience group were least likely to indicate any formal teacher training (3.2%), while those in the Veteran group were most likely (36.1%) to have some formal teacher training prior to being hired as a teacher. Minor differences can be seen, as shown in Table 5.2, by comparing the frequency counts and percentages for each category.

Table 5.2. Previous Teacher Training by Experience Level.

Level of Training	Overall Freq.	%	Novice Freq.	%	Junior Freq.	%	Intermediate Freq.	%	Senior Freq.	%	Veteran Freq.	%
No formal teacher training	141	85.4	31	88.6	31	96.8	27	87.2	29	93.5	23	63.9
Bachelor of Education	9	5.4	1	2.8	0	0.0	2	6.4	0	0.0	6	16.7
Certificate in Adult Education	13	7.9	2	5.8	1	3.2	2	6.4	2	6.5	6	16.7
Masters of Education or other graduate level	2	1.3	1	2.8	0	0.0	0	0.0	0	0.0	1	2.7

5.1.1.3 Age of respondents. The survey response options allowed for choice among age ranges, beginning at under 25 through to 56 years and older. No respondent chose *under 25 years*. Age was significantly associated with experience (χ^2 (8, N = 165) = 69.409, *p* = .000). Novice respondents were significantly younger than the overall group, representing the entire 26-35 age range, and the largest portion of the 36-45 age range. Junior and Intermediate instructors were predominantly in the 46-55 age range. Senior teachers were in the 46-55 age group (41.9%) and in the 56 and older group (45.2%). Veteran teachers represented 66.7% of the 56 or older group. The results are shown in Table 5.3, below.

Table 5.3. Age of Respondents Grouped by Experience Level.

Age Range	Overall Freq.	%	Novice Freq.	%	Junior Freq.	%	Intermediate Freq.	%	Senior Freq.	%	Veteran Freq.	%
26-45	36	21.8	**21**	**60.0**	7	21.9	3	9.7%	4	12.9	1	2.8
46-55	76	46.1	9	25.7	**19**	**59.4**	**24**	**77.4**	13	41.9	11	30.6
56 or older	53	32.1	5	14.3	6	18.8	4	12.9	**14**	**45.2**	**24**	**66.7**
Total	165	100	35	100	32	100	31	100	31	100	36	100

5.1.2 Motivation to Enter Teaching as a Career

The first question within the research question asked: *What motivates experienced tradespeople to move into a second career of teaching?* Looking at the overall response, *Teaching offered an opportunity to share my knowledge of the trade* was the most commonly

agreed-to factor across all experience levels; *teaching as an opportunity for higher pay* was most often disagreed with by respondents within all experience levels. The patterns of response for the overall group also held true for the smaller groups. Chi-square tests were run for the groups of experience, and the only significant difference found was for Factor 8: *Teaching was always something I wanted to do, that I felt called to do*, χ^2 (8, N =165) = 18.518, p = .018. The respondents most likely to agree with this statement were in the Novice (67.8%) and Veteran (61.1%) groups. The level of disagreement was highest in the Senior group (33.3%). Full results are shown in Table 5.4, below.

Table 5.4. Career Change Motivation Factors Agreement by Experience Level.

	Factor: Teaching offered/was	Overall	Novice	Junior	Intermediate	Senior	Veteran
1	An opportunity for higher pay	13.9%	17.1%	6.3%	9.7%	16.1%	19.4%
2	Better benefits and pension	44.8	44.1	41.9	38.7	35.5	61.1
3	Better hours and more time for family	84.2	88.6	75.0	80.6	96.8	80.6
4	An opportunity to share my knowledge of the trade	95.8	100	93.8	96.8	93.5	94.4
5	Higher-status, professional employment	41.0	39.4	26.7	38.7	41.9	55.6
6	A career path that others in my family had followed	20.5	23.5	23.3	16.1	20.0	19.4
7	Something I had tried as a volunteer and enjoyed	36.9	42.4	40.0	35.5	26.7	38.9
8	Always something I wanted to do, that I felt called to do	50.9	67.6	51.7	46.7	23.3	61.1

On the question of a specific event that caused the career change, no significant differences were found through chi-square testing, based on experience levels.

5.1.3 Teaching Competencies

The second question asked: *What competencies do tradespeople transitioning to teaching bring to the classroom to support effective learning?* Within the survey, 17 teaching competencies derived from the literature review were posed, asking for a level of agreement from the respondent. As previously noted, the competencies are grouped according to the KSAO (Knowledge, Skills, Abilities, Other characteristics) model. To simplify reporting of results, the

agreement level of *Strongly Agree* and *Agree*, and *Strongly Disagree* and *Disagree*, are combined in the following discussion.

        5.1.3.1 Retrospective competencies by experience level. Respondents were asked to self-rate their agreement to past-tense statements of the 17 competencies. A comparison of the percentage of respondents agreeing retrospectively to these competency statements, divided according to experience categories and compared to the overall respondent agreement, is provided below in Table 5.5.

        The self-ratings on these 17 competencies were compared using chi-square tests at the .05 significance level. In most cases, no significant difference was found between the experience categories; however, there were three competencies where significant differences occurred. These were:

- Competency 3: *I had a good understanding of my students and their learning styles*, χ^2 (8, N = 165) = 18.414, *p* = .018. Teachers in the Junior category had a significantly lower level of agreement (9.4%), as compared to the overall level of 26.7%. Respondents in the Senior group were 48.4% undecided, as compared to the overall undecided rate of 31.5%.

- Competency 8: *I was able to use the technology available in the classroom*, χ^2 (8, N = 165) = 18.203, *p* = .020. Intermediate respondents agreed in only 45.2% of cases, as compared to an overall agreement level of 69.1%.

- Competency 11: *I adapted learning processes to student needs*, χ^2 (8, N = 165) = 17.600, *p* = .024. Novice teachers agreed with this statement in 80% of responses, and Junior respondents agreed in 46.9% of cases, compared to an overall agreement level of 66.7%.

Table 5.5. Retrospective Teaching Competencies Agreement by Experience Level.

	Listed KSAO	Overall	Novice	Junior	Inter-mediate	Senior	Veteran
1	I had a good understanding of course content or subject matter	76.4%	77.1%	81.3%	83.9%	67.7%	72.2%
2	I had a good understanding of how to teach	41.8	42.9	37.5	38.7	32.3	55.6
3	I had a good understanding of my students and their learning styles	26.7	31.4	9.4	29.0	25.8	36.1
4	I had a good understanding of how to use technology in the classroom	38.8	34.3	34.4	32.3	29.0	61.1
5	I knew how to deliver a lesson in the classroom	38.8	42.9	31.3	29.0	32.3	55.6
6	I knew how to assess student learning achievement	37.6	31.4	25.0	35.5	41.9	52.8
7	I understood curriculum development	30.3	22.9	25.0	22.6	35.5	44.4
8	I was able to use the technology available in the classroom	69.1	80.0	75.0	45.2	64.5	77.8
9	I had good communications skills, including verbal, demonstration, listening, and feedback	82.4	94.3	71.9	71.0	93.5	80.6
10	I was organized	78.2	80.0	78.1	80.6	83.9	69.4
11	I adapted learning processes to student needs	66.7	80.0	46.9	61.3	67.7	75.0
12	I was professional in appearance and behaviour	92.1	88.6	90.6	90.3	100	91.7
13	I was enthusiastic about my subject and teaching	96.4	94.3	93.8	100	100	94.4
14	I showed a sense of humour	95.2	100	96.9	96.8	90.3	91.7
15	I was sensitive to diversity in the classroom	86.1	91.4	81.3	90.3	77.8	86.1
16	I was self-reflective, thinking about how to improve my teaching	93.3	97.1	84.4	100	100	86.1
17	I wanted to improve as a teacher	96.4	97.1	93.8	96.8	96.8	97.2

5.1.3.2 Current competencies compared by experience level. Respondents were then asked to self-rate their agreement to present-tense statements of the 17 competencies. A comparison of the percentage of respondents agreeing to these current competency statements, divided according to experience categories and compared to the overall respondent agreement, is provided below in Table 5.6.

The self-ratings on the 17 current competencies were compared using chi-square tests at the $p < .05$ significance level. In most cases, no significant difference was found between the teaching experience groups; however, there were three competencies where significant differences occurred. These were:

- Competency 3: *I have a good understanding of my students and their learning styles*, χ^2 (8, N = 165) = 31.151, p = .000. Novice teachers showed a lower level of agreement (73.3%) compared to the overall agreement level of 91.5%.

- Competency 5: *I know how to deliver a lesson in the classroom*, χ^2 (8, N = 165) = 15.915, p = .044. Novices had a lower level of agreement (91.4%) compared to 95.4% overall.

- Competency 7: *I understand curriculum development*, χ^2 (8, N = 165) = 15.699, p = .047. Novice teachers showed a lower level of agreement (74.3%) versus 90.3% overall.

Table 5.6. Current Teaching Competencies Agreement by Experience Level.

	Listed KSAO	Overall	Novice	Junior	Inter-mediate	Senior	Veteran
1	I have a good understanding of course content or subject matter	98.2%	100%	100%	100%	100%	97.2%
2	I have a good understanding of how to teach	97.6	94.3	100	100	100	100
3	I have a good understanding of my students and their learning styles	91.5	73.3	96.9	96.8	96.8	100
4	I have a good understanding of how to use technology in the classroom	95.2	91.4	96.9	96.8	96.8	100
5	I know how to deliver a lesson in the classroom	96.4	91.4	100	96.8	100	100
6	I know how to assess student learning achievement	93.9	85.7	96.9	90.3	100	97.2
7	I understand curriculum development	90.3	74.3	93.8	93.5	93.5	97.2
8	I am able to use the technology available in the classroom	98.2	97.2	100	100	96.8	97.4
9	I have good communications skills, including verbal, demonstration, listening, and feedback	99.4	97.1	100	100	100	100
10	I am organized	95.1	88.6	93.8	96.8	100	97.2
11	I adapt learning processes to student needs	98.8	94.3	100	100	100	100
12	I am professional in appearance and behaviour	98.2	97.1	100	93.5	100	100
13	I am enthusiastic about my subject and teaching	96.3	100	96.9	96.7	100	88.9
14	I show a sense of humour	96.3	97.1	100	93.5	96.7	94.5
15	I am sensitive to diversity in the classroom	99.4	97.1	100	100	100	100
16	I am self-reflective, thinking about how to improve my teaching	99.4	100	96.9	100	100	100
17	I want to improve as a teacher	100	100	100	100	100	100

5.1.3.3 Changes from initial to current competencies. As well as comparing the self-ratings of teaching competencies between experience groups, the self-ratings of each respondent on the retrospective and current competencies can be compared. A Wilcoxon signed-rank test was performed to ascertain whether a significant difference in self-rating was reported. Table 5.7, below, provides the following:

- The result when the percentage of agreement with a current competency is subtracted from the percentage agreement to the related retrospective competency.
- The result of the Wilcoxon Z score calculation for related competencies, for each experience level.
- The effect size calculated as $r = z \div \sqrt{N}$ (Pallant, 2013).

Significant differences with medium to large effect size (Cohen, 1988; Pallant, 2013) are seen in pedagogical knowledge and skills (Competencies 2-7). Significant differences with small to medium effect size are seen in subject matter knowledge (Competency 1), the pedagogical skills of use of technology and communication (Competencies 8-9), and in abilities or attitudes (Competencies 10-11). The Other (12-17) competencies showed the least difference between retrospective and current ratings.

Table 5.7. Teaching Competencies: Retrospective Compared to Current by Experience Level.

Listed KSAO		Novice			Junior			Intermediate			Senior			Veteran		
		Δ%	z	r	Δ%	z	r	Δ%	z	r	Δ%	z	r	Δ%	z	r
1 K: Subject	Good understanding of course content or subject matter	22.9	2.595	.31	18.7	2.251	.28	16.1	2.070	.26	32.3	2.879	.36	25.0	2.877	.34
2 K: Pedagogy	Good understanding of how to teach	51.4	3.933	.40	62.5	4.038	.50	61.3	3.946	.50	67.7	4.158	.52	44.4	3.624	.43
3 K: Pedagogy	Good understanding of my students and their learning styles	41.9	3.958	.47	87.5	4.910	.61	67.8	4.137	.53	71.0	4.355	.55	63.9	4.420	.52
4 K: Pedagogy	Good understanding of how to use technology in the classroom	57.1	4.258	.50	62.5	4.122	.51	64.5	4.196	.53	67.8	4.234	.53	38.9	3.391	.40
5 S: Pedagogy	How to deliver a lesson in the classroom	48.5	3.941	.47	68.7	4.231	.52	67.8	4.122	.52	67.7	4.144	.53	44.4	3.624	.43
6 S: Pedagogy	How to assess student learning achievement	54.3	4.193	.50	71.9	4.326	.54	54.8	3.830	.48	58.1	3.954	.50	44.4	3.750	.44
7 S: Pedagogy	Understood/understand curriculum development	51.4	4.240	.50	68.8	4.457	.56	70.9	4.284	.54	58.0	2.972	.38	52.8	4.042	.48
8 S: Pedagogy	Use the technology available in the classroom	17.2	2.322	.27	25.0	2.640	.33	54.8	3.729	.47	32.3	2.972	.38	19.6	2.373	.28

Listed KSAO		Novice			Junior			Intermediate			Senior			Veteran		
		Δ%	z	r	Δ%	z	r	Δ%	z	r	Δ%	z	r	Δ%	z	r
9 S: Pedagogy	Good communications skills	2.8	.890		28.1	2.810	.35	29.0	2.762	.35	6.5	p =.157		19.4	2.530	.30
10 Ability or Attitude	Organized	8.6	p =.072		15.7	1.994	.25	25.8	2.081	.26	16.1	2.070	.26	27.8	2.879	.33
11 Ability or Attitude	Adapt learning processes to student needs	14.3	p =.085		53.1	3.797	.47	38.7	3.142	.40	32.3	2.972	.38	25.0	2.810	.33
12 Other	Professional in appearance and behaviour	8.5	p =.262		9.4	p =.102		3.2	p =.285		0.0	p =1.00		8.3	p =.083	
13 Other	Enthusiastic about my subject and teaching	5.7	p =.461		3.1	p=.564		-3.3	p =.180		0.0	p =1.00		5.6	p =.589	
14 Other	Show a sense of humour	-2.9	p =.102		3.1	p =.655		-3.3	p =.317		6.4	p =.276		2.8	p =.832	
15 Other	Sensitive to diversity in the classroom	5.7	p =.221		18.7	2.333	.29	9.7	p =.102		22.2	p =.083		13.9	2.632	.31
16 Other	Self-reflective, thinking about how to improve my teaching	2.9	p =1.00		12.5	p =.059		0.0	p =.157		0.0	p =1.00		13.9	2.070	.24
17 Other	I wanted/want to improve as a teacher	2.9	p =.317		6.2	p =.0180		3.2	p =.317		3.2	p =.317		2..8	p =.317	

Novice N = 70 (2 x 35 responses); Junior N = 64; Intermediate N = 62; Senior N = 62; Veteran N = 72.

5.1.4 Self-Confidence in Teaching Competence

The literature reviewed in Chapter Two supported the idea that the 17-competency list used in this survey provides a description of a competent teacher. Respondents were asked to self-rate their knowledge, skills, abilities and other characteristics against these competencies. Such a rating does not ensure the respondent has the necessary KSAOs to be a competent teacher; however, it does provide a measure of the individual's self-confidence or self-efficacy as a competent teacher (Bandura, 1977; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998).

A measure of this self-confidence can be created by adding the self-rating scores of these 17 competencies (strongly disagree = 1; disagree = 2; undecided = 3; agree = 4; strongly agree= 5), since the higher the level of agreement, the more confidence is shown in the respondent's own knowledge, skills and abilities. Table 5.8, below, shows this summation as calculated for the retrospective and current competencies of all respondents, divided by experience levels.

Table 5.8. Confidence by Experience Level.

Teaching experience	Retrospective Confidence Level		Current Confidence Level	
	M	*SD*	*M*	*SD*
Novice	57.29	7.19	66.61	1.63
Juniors	54.91	8.97	67.71	.812
Intermediate	55.61	8.10	67.55	1.12
Senior	57.19	6.45	67.68	1.30
Veteran	57.81	11.68	67.58	1.10

The difference in confidence level, retrospective compared to current, was significant in all cases. A Wilcoxon signed-rank test was performed for each group, resulting in statistically significant increases in confidence for each group. Calculating effect size showed all results are within the large effect range (Pallant, 2013):

- Novice: $z = 4.863$, $p = .00$; $r = .58$.
- Junior: $z = 4.862$, $p = .00$; $r = .60$.
- Intermediate: $z = 4.625$, $p = .00$; $r = .59$.
- Senior: $z = 4.707$, $p = .00$; $r = .60$.
- Veteran: $z = 4.790$, $p = .00$; $r = .56$.

The highest retrospective confidence level was for Veteran teachers; the lowest retrospective confidence was among Junior teachers. The highest current confidence level was for Junior teachers; the lowest current confidence level was for Novices. The greatest change from retrospective to current confidence level, as measured by *Z* value, was in the Novice and Junior groups. These changes are shown graphically in Figure 5.1 below.
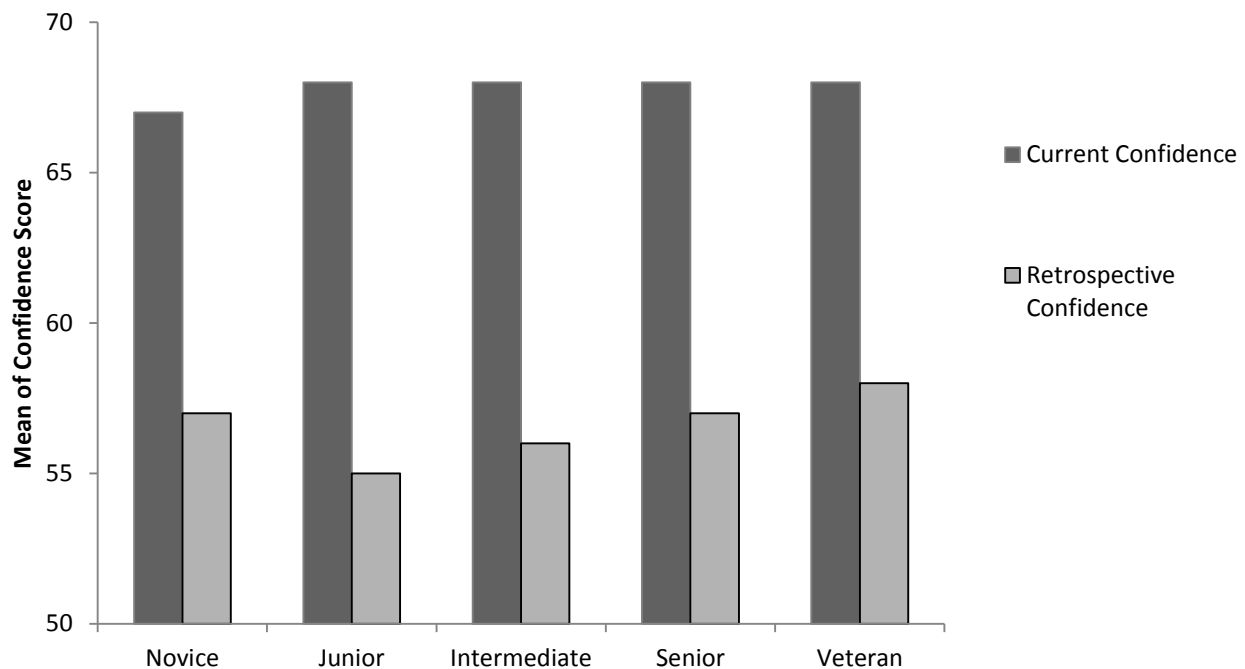
Figure 5.1 Teacher confidence level by years of experience, showing retrospective and current confidence levels by mean within the experience group.

5.1.5 Learning to Teach

Question 3 within the research question asked: *Once in the role of teacher, what formal and informal learning helps them to become effective teachers?* This section asked respondents to indicate the training they had participated in as a teacher, and then to rate the effectiveness of the training in which they had participated. The percentages for each experience category, of methods used and rating of the methods as effective, is detailed in Table 5.9 below.

Chi-square tests were used to examine differences in use of training methods by the categories of teaching experience, with only one instance of significance found. For *formal training*, $\chi2\,(4, \mathrm{N} = 165) = 18.936$, $p = .001$. Veteran (63.9%) and Junior teachers (50%) reported

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having used this form of learning to teach more frequently while Novice (20.0%) were least likely to have used formal training.

Chi-square tests were performed to examine differences in the effectiveness rating of training methods by categories of teaching experience; no significant differences were found. Across all experiences categories, *mentoring*, *discussions with other instructors*, *self-study*, and *trial and error in the classroom* received strong support as effective training methods.

Table 5.9. Methods of Learning to Teach and Rating of Effectiveness by Experience Level.

Training Methods	Novice		Junior		Intermediate		Senior		Veteran	
	Used %	Effective %	Used %	Effective %	Used %	Effective %	Used %	Effective %	Used %	Effective %
Formal training – external	20.0		50.0		29.0		29.0		63.9	
		57.1		68.8		64.5		61.3		64.2
Formal training – internal	60.0		78.1		80.6		67.7		58.3	
Workshops	54.3	62.9	71.9	59.4	77.4	67.7	71.0	74.2	72.2	80.6
Mentoring - Formal	51.4		62.5		67.7		54.8		58.3	
		97.1		84.4		83.9		87.1		80.6
Mentoring - Informal	97.1		93.8		90.3		80.6		77.8	
Discussions with other instructors	100	100	100	93.8	96.8	93.5	90.3	91.7	91.7	91.7
Self study	88.6	88.6	87.5	84.4	87.1	93.5	88.9	90.3	87.9	91.7
Trial and error in the classroom	97.1	82.9	90.6	84.4	90.3	93.5	93.5	96.8	83.3	88.9

5.1.6 Change in Vocational Identity by Experience

Question 4 asked about the vocational identity of trades practitioners moving to teaching, asking: *Are you a tradesperson, a teacher, or both? If you met someone for the first time today, how would you describe yourself to this person?* Respondents could choose one or more of three options: *I'm a tradesperson (welder, electrician, etc.); I'm a teacher/instructor; I'm a teacher/instructor in (welding, electrical, etc.)*

No significant difference was found through chi-square tests in responses to the vocational identity question. As many as 25% of the responses were left blank; therefore, the responses are presented as frequency counts of *Agree*, *Disagree* and Null (blank) rather than as percentages in Table 5.10 below. The percentage level of agreement, among those responding, for each experience level is used to illustrate trends in Figure 5.2 below:

Table 5.10. Vocational Identity Agreement by Experience Level.

Years	I'm a tradesperson			I'm a teacher			I'm a teacher in my trade		
	Agree	Disagree	Null	Agree	Disagree	Null	Agree	Disagree	Null
Novice	17	7	11	20	3	12	31	2	2
Junior	17	11	4	16	12	4	30	1	1
Inter-mediate	16	7	8	16	8	7	27	0	4
Senior	17	5	9	18	4	9	25	0	6
Veteran	19	7	10	22	6	8	27	2	7
Overall	86	37	42	92	33	40	140	5	20
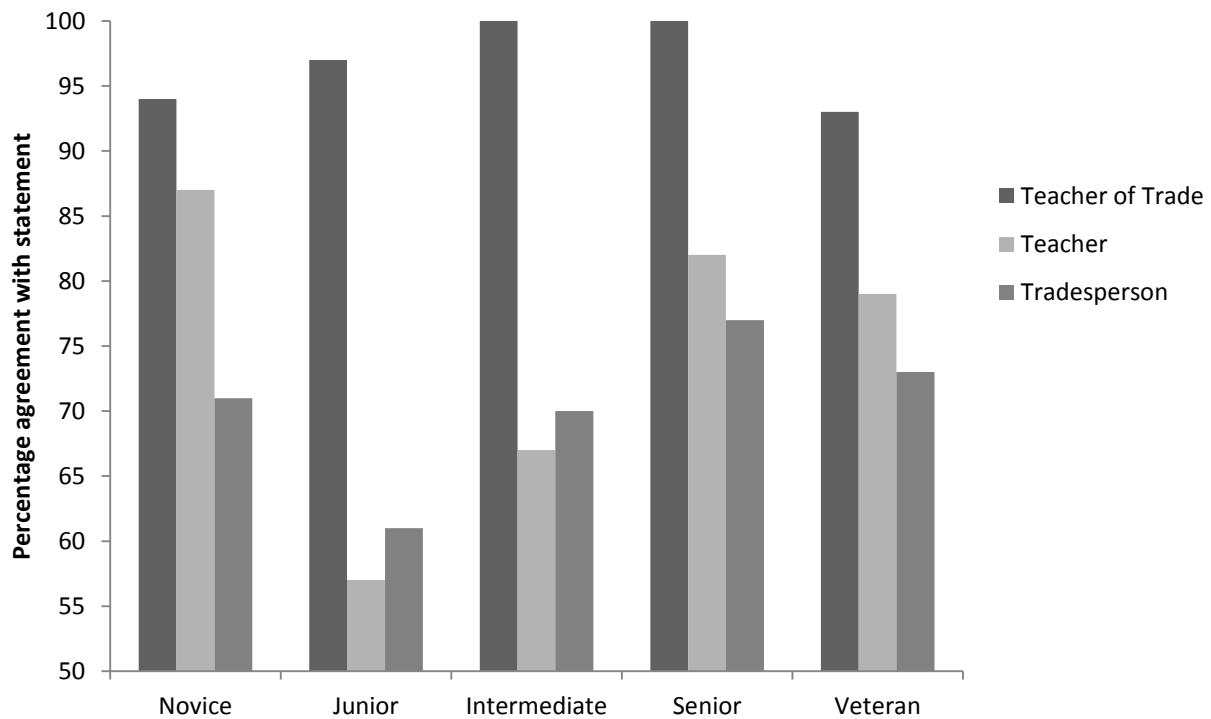
Figure 5.2 Vocational identity by years of teaching experience. Percentage of respondents in agreement with each of the three statements shown, by experience levels.

5.1.7 Satisfaction with Teaching

The final section within the research question asked about the sense of satisfaction derived from the work of teaching, and what factors provide encouragement to continue as teachers. Respondents were asked to rate their current level of satisfaction with teaching, and to compare this to their level of satisfaction upon first entering the field. They were also asked to respond to statements regarding satisfying and dissatisfying factors.

5.1.7.1 Current satisfaction. Given the overall high level of satisfaction reported by respondents, no significant differences were found when chi-square testing was used to examine differences in current satisfaction and change in satisfaction, by the five categories of teaching experience. The percentage of respondents in each experience group choosing the various levels of satisfaction is provided in Table 5.11 below, and illustrated in Figure 5.3.

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Table 5.11. Satisfaction Percentage by Experience Level.

Years of teaching experience	Highly Satisfied	Somewhat Satisfied	Neutral or Somewhat Dissatisfied
Novice	48.6	48.6	2.9
Junior	56.3	37.5	6.2
Intermediate	74.2	25.8	0.0
Senior	51.6	38.7	9.7
Veteran	69.4	22.2	8.4
Overall	60.0	34.5	5.4
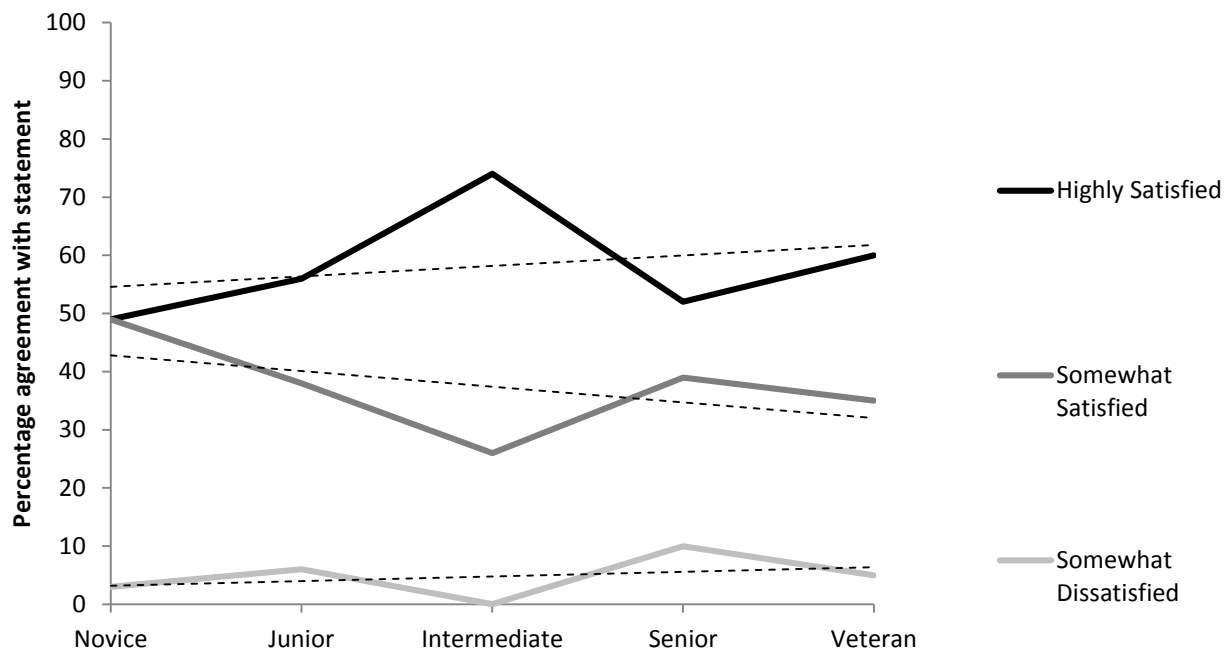
Figure 5.3 Satisfaction with teaching by years of teaching experience. Lower shows percentage agreement among respondents within experience group to Somewhat Dissatisfied and trend line; middle shows Somewhat Satisfied and trend line; and upper shows Highly Satisfied and trend line.

5.1.7.2 Compared satisfaction. Respondents were asked to compare their current satisfaction with teaching to their satisfaction level as a beginning teacher. The responses to this question are shown as percentages in Table 5.12, and as trends in Figure 5.4, both below. Junior, Senior and Veteran respondents indicated the largest fluctuations in satisfaction from early days to current teaching.

Table 5.12. Current Satisfaction Compared to Initial, Percentage by Experience Level.

Years of teaching experience	Higher	Same	Lower
Novice	40.0	51.4	8.6
Junior	46.9	34.4	18.8
Intermediate	35.5	54.8	9.7
Senior	45.2	29.0	25.8
Veteran	25.0	55.6	19.4
Overall	38.2	45.5	16.4
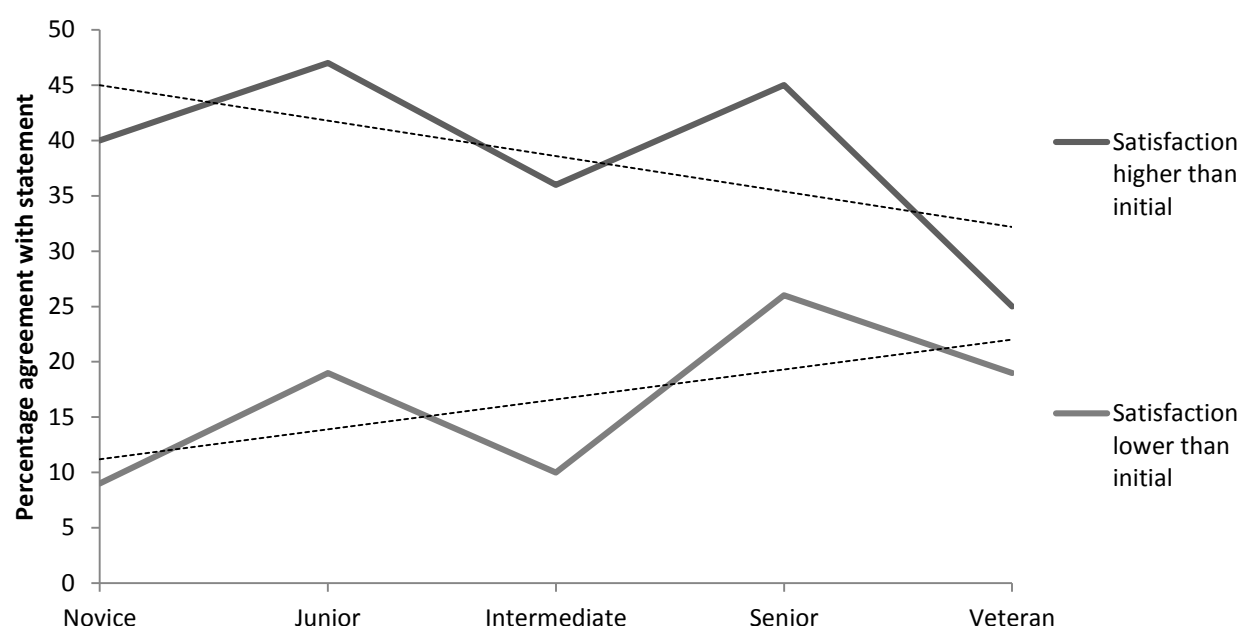
Figure 5.4 Compared satisfaction with teaching by years of teaching experience. Lower set shows percentage of respondents indicating lower current satisfaction and trend line, and upper set shows higher current satisfaction and trend line.

5.1.7.3 Satisfaction factors. The next section of the survey asked respondents to choose a level of agreement in response to a list of positive statements about teaching. Chi-square tests were used to examine differences in factors associated with satisfaction, according to the categories of teaching experience. No significant differences were found. The agreement levels as percentages are shown in Figure 5.5. Percentages and ranking of satisfaction factors by experience groups are detailed in Table 5.13 below.

Percentage agreement with statement
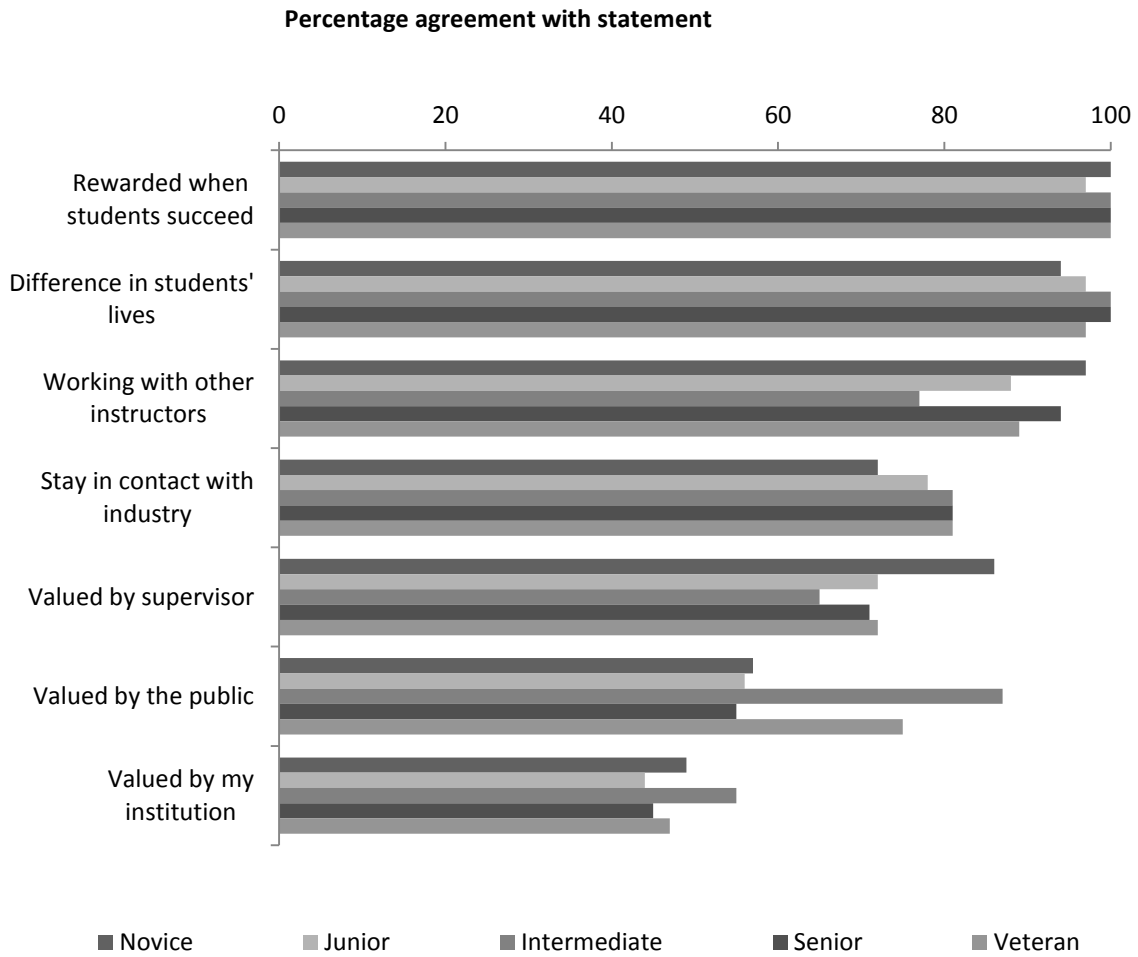
Figure 5.5 Satisfaction factors by years of teaching experience. Percentage agreement to statement by respondents within each experience group.

Table 5.13. Satisfaction Factors by Experience Level.

Factor	Novice Agreement %	Rank	Junior Agreement %	Rank	Intermediate Agreement %	Rank	Senior Agreement %	Rank	Veteran Agreement %	Rank
I feel rewarded when students succeed	100	1	96.9	1	100	1	100	1	100	1
I feel I make a difference in students' lives	94.3	3	96.9	2	100	2	100	2	97.2	2
I enjoy working with the other instructors in my department/ program and in my institution	97.1	2	87.6	3	77.4	5	93.6	3	88.9	3
I am able to stay in contact with industry, and stay up to date on developments in my trade	71.5	5	78.1	4	80.7	4	80.7	4	80.6	4
I feel my work is valued by my supervisor	85.7	4	71.9	5	64.5	6	71.0	5	72.2	6
I feel my work is valued by the public	57.2	6	56.3	6	87.1	3	54.8	6	75	5
I feel my work is valued by my institution	48.6	7	43.8	7	54.8	7	45.2	7	47.2	7

5.1.7.4 Dissatisfaction factors. A similar set of statements was offered to respondents, to choose their level of agreement regarding factors that might cause dissatisfaction with teaching as a career. Chi-square tests were used to examine differences in factors associated with dissatisfaction, according to the categories of teaching experience. No significant differences were found. Figure 5.6, below, shows the percentage agreeing with each statement, but experience level. The percentage level of agreement and ranking of the statements by each experience group is provided in Table 5.14 below.
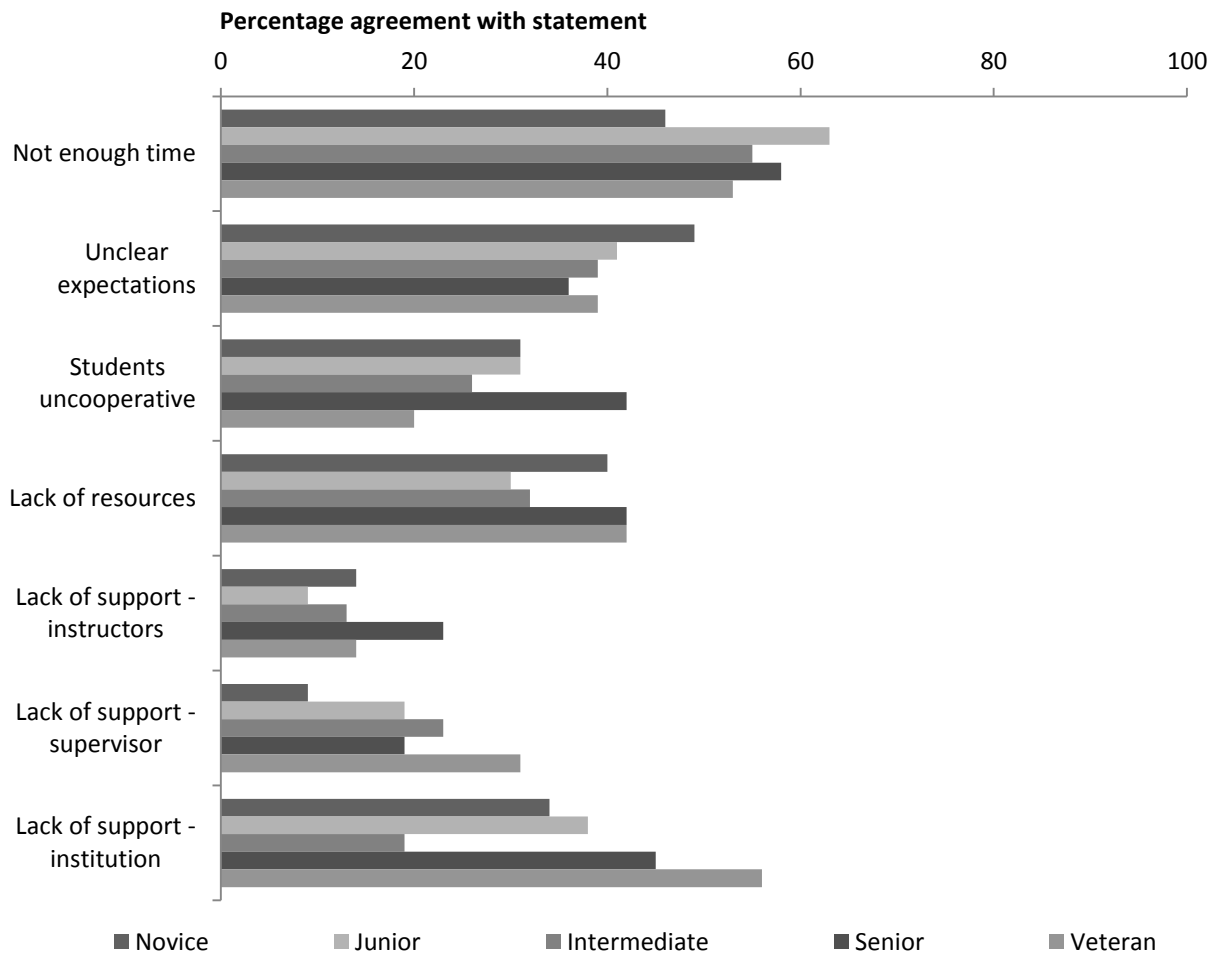
Figure 5.6 Dissatisfaction factors by years of teaching experience. Percentage agreement to statement by respondents within each experience group.

Table 5.14. Dissatisfaction Factors by Experience Level.

Factor	Novice Agreement %	Rank	Junior Agreement %	Rank	Intermediate Agreement %	Rank	Senior Agreement %	Rank	Veteran Agreement %	Rank
Not enough time to do the work	45.7	2	62.6	1	54.9	1	58.1	1	52.8	2
Unclear expectations	48.6	1	40.6	2	38.7	2	35.5	5	38.9	4
Students are unco-operative	31.4	5	31.3	4	25.9	4	42.0	3	19.5	6
Lack of resources (textbooks, tools, space)	40.0	3	30.3	5	32.3	3	41.9	4	41.7	3
Lack of support from other instructors	14.3	6	9.4	7	12.9	7	22.6	6	13.9	7
Lack of support from my supervisor	8.6	7	18.8	6	22.6	5	19.4	7	30.6	5
Lack of support from my institution	34.3	4	37.6	3	19.4	6	45.2	2	55.5	1

5.1.7.5 Changes for increased satisfaction. No significant difference was found between the experience categories regarding the statements on changes that might increase satisfaction by chi-square testing at the $p <.05$ level; however, Novice instructors indicated almost complete agreement (97.1%) with the statement that *More support for developing teaching skills and knowledge* would increase satisfaction, as compared to 84.8% agreement overall.

5.1.8 Summary of Comparison by Years of Experience

Looking at responses to the survey questions representing segments of the research question, and comparing them according to years of teaching experience, provides a view of the transition from tradesperson to trades teacher. While this is not a longitudinal study, and the responses were provided by different teachers at different stages of their career, the pattern of responses according to years of experience does create pictures of the average or typical trades teacher within the population surveyed at these stages. These pictures include the following generalizations for these groups.

5.1.8.1 Novice. The Novice, with less than three years teaching experience, is younger on average than the respondents in the other experience categories, and is more likely than other teachers to have less than five years of trades experience as a journeyperson before entering teaching. The majority in this group have no prior training for teaching before entering this second career. The motivation for a career changes is similar across the years: teaching offers an opportunity to share trades knowledge and to balance work and family life. Pedagogical knowledge competencies, particularly understanding students and their learning styles and how to assess student learning, were seen by Novices as lacking at the beginning. This group was confident, however, of its skills in the use of technology. Current teaching skills and knowledge are rated more highly than in initial ratings and confidence has risen, although understanding learning styles, assessment, and curriculum development still lag behind the self-ratings of more experienced teachers.

Discussions with other instructors and formal or informal mentoring were the most common, and most highly rated, methods of learning more about teaching. Formal training is not being used, and is seen as the least effective way to learn. The Novice teacher self-identifies as a trades teacher, but also is strongly attached to the identity of being a tradesperson. Nearly half the Novices say they are highly satisfied with teaching, with helping students and working with

colleagues being the top contributors to that level of satisfaction. There is a strong sense of being valued by their supervisors. The factor of *Unclear expectations* was the top contributor to dissatisfaction, followed by lack of resources. As in all the experience groups, having more support for developing teaching skills is the top suggestion to improve satisfaction.

5.1.8.2 Junior. The Junior teacher, with four to seven years of teaching experience, is the most likely to have no formal training in education prior to employment as a teacher. The Junior is likely 46 years or older, with 11-15 years of trades experience. In considering motivating factors for changing to teaching, this group is most likely to reject the idea of teaching as a means to higher pay.

In retrospective self-ratings of competencies, this group has the lowest agreement level regarding understanding students and their learning styles, and how to adapt learning processes to student needs, but felt confident regarding use of technology. In self-ratings of current competencies, they were slightly lower than average on self-reflection. This group had the lowest confidence level overall on retrospective ratings, but the highest current level.

In learning how to teach, discussions with other teachers were the highest-rated choice; workshops were rated lowest. Juniors showed the strongest agreement with the identity of being a teacher of trades, with the lowest rating among the experience groups for identifying with *teacher* or *tradesperson*.

Satisfaction levels had the greatest change in this group, dividing into higher or lower. Satisfaction with teaching is lower in this group as compared to the Novice or the Intermediate group. Working with students is seen as slightly less satisfying by this group than for the Novice teachers; working with other instructors and feeling valued by supervisors are rated lower by this group than others as contributing to satisfaction. Dissatisfaction for Junior teachers comes primarily from lack of time to do the work required. There is a rising sense of lack of support from supervisors and from the institution.

5.1.8.3 Intermediate. The Intermediate teacher, with 8-11 years of teaching experience, is likely to be 46 years or older. The motivation to enter teaching is substantially the same as the other experience groups' members, but teachers within this group are unlikely to see teaching as the path to higher pay, second only to the Junior group. Recalling their level of competence as a beginning teacher, respondents in this group rated themselves significantly lower on ability to use technology and slightly lower on their skills in communicating and knowledge of curriculum

development. The lowest-rated competencies for this group were understanding students and their learning styles, and delivering a lesson. In rating their current competencies, however, curriculum development showed the largest change from retrospective ratings. All current competencies were agreed to by 93% or more of respondents in this group. The current confidence level of the Intermediate group was higher than the Novice group, but slightly lower than the Juniors. The most common method of learning to teach used by this group was self-study, followed by discussions with colleagues, and trial and error. Self-study was rated most effective.

The vocational identity of this group is firmly tied to being a trades teacher, rather than a tradesperson or a teacher. Their overall level of satisfaction with teaching is the highest of all groups. Satisfaction is tied to helping students and staying in touch with industry. The sense of being valued by a supervisor and enjoying working with other teachers, is lower for this group than for the other groups, although the sense that the institution and the public value the work is higher.

5.1.8.4 Senior. The Senior group has 12-17 years of teaching experience, following 11-15 years of trades experience. The members of this group are more than 46 years old, with half of them 56 years or older. Their motivation to move to teaching is most often better hours and more time for family; their agreement with the idea of teaching as something they always wanted to do was the lowest of any group.

In the process of learning to teach, Seniors showed the lowest retrospective rating on subject matter knowledge and on how to teach. They had the lowest retrospective confidence level of all groups, but showed the greatest change to current levels. They were least likely to have used formal mentoring as a method to learn to teach.

This group had the greatest identification with being a tradesperson, although balanced with the other options. They also indicated the greatest dissatisfaction, with the level of satisfaction tending to either rise or fall within this group. Lack of time, unco-operative students, and lack of support from colleagues rated stronger agreement in this group as dissatisfaction factors. Unclear expectations, however, was at the lowest level for Senior teachers.

5.1.8.5 Veteran. The Veteran teacher, with 18 years or more of experience, is the most likely to have some prior training in teaching, and less time in trades practice (6-10 years) than those in other experience groups. The most common age range for this group is 56 years or older.

While this group's motivation to change careers is very similar to the other groups, they were more likely to say teaching was something they felt called to do. Their retrospective rating of competencies was the highest among the groups, particularly on knowing how to teach and how to use technology; the current confidence level was also the highest among this group, and showed the least change from initial confidence levels. Enthusiasm for the subject and teaching, and sense of humour was lower among this group as compared to others. In gaining the knowledge to support this confidence, the Veterans were significantly more likely to have used formal training.

The vocational identity of the respondents in this group shows a balance between tradesperson and teacher; trades teacher is the top choice although with slightly less agreement than for other experience groups. The level of satisfaction with teaching as a career is slightly lower than among other groups, but higher than in the Senior group. The factors supporting satisfaction include helping students succeed and making a difference in students' lives, both of which received 100 % agreement. The sense of being valued by the institution is slightly higher than in the Senior group. Among factors leading to dissatisfaction, not enough time was agreed to most often, followed by lack of support from the institution, and lack of resources.

5.2 Summary of Chapter Five

In this chapter, I have focused on the sections within the research question, according to levels of teaching experience. By dividing respondents into five groups based on experience, differences and similarities across the spectrum of a teaching career can be seen to some extent, being mindful of the categorical nature of this study. Demographic differences between the experience groups were considered, as well as differences in motivating factors for entering teaching, confidence in teaching competencies, and methods used to learn more about teaching were considered. Some trends in satisfaction levels, as in the factors affecting satisfaction at points in a teaching career, were also suggested by a review of the survey data. Together, these analyses allow a portrait of the Novice, Junior, Intermediate, Senior and Veteran teacher to be created.

CHAPTER SIX: INTERPRETATION PANEL RESULTS

6.1 Introduction

As described in Chapter Three, interpretation panels were planned as a method of gathering qualitative data for this study, as well as providing interpretation of the quantitative data from the Phase One survey, toward the research question of exploring the transition from the *first apprenticeship* of trades practice, to the *second apprenticeship* of trades teacher. This overall research question is divided into the following sections: the motivation for career change; pre-existing competencies brought to the role of teaching; the methods used to learn to teach; negotiation of a new vocational identity; and sources of satisfaction in the teaching role.

6.2 Interpretation Panel Process

From September through November 2014, panels were arranged at each of the institutions from which survey participants were drawn. In completing the survey, participants were asked if they would be willing to extend their involvement through discussing the survey results in an interpretation panel, and if so, to provide an email address for contact. Sixty-four participants, representing 39% of the 165 completed surveys, said yes and provided contact information.

Using these email addresses, I contacted the respondents to confirm their willingness to participate in interpretation panel discussions, and to determine their community of residence and/or employment, in order to organize the locations of the panels. Based on the 45 responses to this inquiry, interpretation panels were arranged at two Saskatchewan locations, one in Manitoba, and one in Alberta. Two interpretation panel sessions were held with faculty from one polytechnic due to the larger number of respondents from this institution who were willing to participate.

In preparation for the interpretation panel meetings, a summary of the survey results was shared with those respondents who had indicated a willingness to join the discussions, as well as those survey respondents who had requested a summary as a part of their original survey input. This summary was shared electronically with 95 survey respondents in total; it is included in Appendix C. Within the summary document, suggested questions for discussion at the interpretation panel meetings were included.

At each panel meeting, attending participants were asked to sign consent forms at the beginning of the session, and all agreed to do so. The purpose of the research and the session was

briefly explained. I identified the research as being conducted through the University of Saskatchewan, not on behalf of their institution, although given research approval by the institution. I discussed how the anonymity of participants would be protected, through use of a code rather than names in the transcripts and by masking any details specific to their location or institution in quotations used in the final reporting. Each session ran approximately 90 minutes. The sessions were audiotaped and transcribed by the researcher. The session transcript was provided electronically to members of the group and was member checked for accuracy.

The session arranged in Alberta did not draw any attendees, likely due to timing of campus events unknown to the researcher during planning; however, several invitees sent regrets by email. I contacted them and was able to conduct telephone interviews during the following week. A procedure similar to that of the panels was used, in which the purpose of the study and the methods used to protect participant anonymity and confidentiality were described at the beginning of each interview. In addition to the consent provided through the survey, the interviewees provided verbal permission for audiotaping and the use of their remarks in this study. While conducting individual telephone interviews did not allow for the group interaction of a panel discussion, the length of the discussion, topics discussed, and process were similar. This method was chosen in order to ensure voices from all three polytechnics were included in this phase of data collection, and to gather input from this institution in a manner as close as possible, given time and resource limitations, to the process used with participants from the other two institutions.

6.3 Analysis of the Sessions

The intention behind meeting with small groups of survey participants to discuss the results was for the researcher to benefit from interpretation by the group members themselves. In reality, the discussions in the interpretation panel sessions were wide ranging. Many topics related to the research question, but not directly focused on the questions, were discussed.

I manually reviewed the transcripts of the sessions for themes. Frequency counts were used to find common words and phrases that further suggested themes in the discussion. Saldana's (2013) definition of a theme was used as much as possible: "an extended phrase or sentence that identifies what a unit of data is about and/or what it means" (p. 175). Based on this definition, the words of the participants are used extensively in this analysis, referenced by page and line from the compiled transcript, (e.g. p. 11, 7-8) in the following sections.

6.4 Themes Arising from the Panel Discussions

Themes expressed by the interpretation panel participants are presented below. First, general comments about the survey are reported. Then, the responses are organized around themes arising from the discussions, according to the five sections of the research question.

6.4.1 "We're All on the Same Page."

At each interpretation panel discussion, the formal portion opened with the question: Was there anything in the survey results that surprised you? The common response was that it was the similarity of responses that prompted surprise. "You always think, [you're] in your little niche, but the consistency and repetitiveness [of the survey results], that everyone was on the same page was really surprising to me" (p. 11, 7-8). Participants repeated the idea that trades teachers often work in isolation from other programs within the same institution, and even from colleagues in the same program; this survey allowed them insight into the views of colleagues in other programs and at other polytechnics. One participant said:

> It surprised me that other people had the same feeling I did because you feel kind of out on your own. We talk to each other at coffee, but we don't circulate that information, even within our own institution. But I found it was interesting that lots of other people thought the same, and it wasn't just me in isolation. And yet we don't have a sounding board; we don't have any way to deal with that kind of stuff. (p. 12, 14-18)

Another participant commented, "One thing about this survey – we're all on the same page. [The results] are right in line with what I said" (p. 9, 7). Related to this similarity of responses, participants remarked on the strength of agreement to some questions, such as satisfaction and dissatisfaction factors, and preferred methods of learning, as providing validation of their own responses.

6.4.2 Motivation to Teach

Discussing the question of what motivates tradespeople to move into teaching, participants shared personal stories that reinforced the survey results: teaching as *an opportunity to share knowledge of the trade* ranked first, *better hours* second, and *increased pay* as last among the suggested motivators.

6.4.2.1 "Reliving our experiences as we're teaching." Participants expanded on the idea of teaching as a means to share knowledge of the trade, reinforcing the idea that teaching is embedded within the role of master craftsperson. Many expressed a belief that teaching is not a second career, but a continuation of this aspect of being a journeyperson. As explained by one

participant: "A lot of people don't realize, but in the trades, we're teaching. We're teaching all the time. If you've got apprentices under your wing, you're teaching. You may not be teaching the theory, but you're sure teaching the practical" (p. 2, 14-16). Another participant said, "We're reliving our experiences in the trade as we're teaching. It's still very much a part of us" (p. 6, 5). Both teaching and continuous self-learning are seen as part of the everyday work of trades.

Some participants said teaching was a part of personal lifetime career plan: "[Teaching] was always a career goal. All the apprentices I brought through, in my contracting years, [I] loved teaching those guys. It was very rewarding. I knew this would be just another step, that it would be rewarding to pass on my trade knowledge" (p. 2, 10-13).

6.4.2.2 "I missed them growing up." While the wages of trades practice were frequented commented on as a positive, and the comparative wages paid to trades teachers as a negative, the price paid for higher income in loss of family time, or work-life balance, was also clearly seen. Comments included:

I know [during my] contracting years, I missed my girls growing up. And I regret that. I missed them growing up. So I get to spend way more time with my grandchildren to make up for that. (p. 2, 20-22)

[Teachers] are here for those two things: they feel valued by their students, and they like teaching to pass that information along, and for the hours, so they can have time with their family. For me, my family had already gone by the time I was here. I was divorced. I wasn't able to get that. But I still enjoy going home early afternoon and having a life. I certainly didn't do that in the first 20 years. (p. 34, 31-34)

I was on call, so I wanted that lifestyle change of not getting up in the middle of the night. My phone doesn't ring any more at 2 a.m. (p. 11, 22-23)

6.4.2.3 "The old guy." Pride in their craft was shown by participants who saw the move from competent trades practice to full-time teaching as a natural process to build knowledge in the trade. They also expressed displeasure about tradespeople who choose teaching as a convenience: a part-time job or end-of-work plan prior to full retirement. Discussions centred on lack of currency and proficiency in practice, and lack of ambition to learn and stay up to date, observed among these teachers of convenience. Having older instructors hired allowed negative traditions of the shop to reoccur in the college setting: in industry, a senior tradesperson might be valued for long-term knowledge, but was not expected to share the workload equally. Comments included:

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We're seeing that it's easier to hire these older people that are winding down their careers. But are those the people who are right up on stuff? Generally, the older guy in the welding shop isn't learning the new stuff. He's got his ways and he's grouchy, and he's not the guy you want [as your journeyperson]. You put up with him to learn what he knows, and then you toss him out. You don't want to talk to him anymore. (p. 20, 6-9)

In the trades, there's a hierarchy in the shop. I don't care where you come from. And the old guy, he gets to pick his jobs. And he isn't willing to do all this extra stuff. Because he can pick his job. (p. 20, 21-23)

Participants also commented on how hiring older teachers blocks the path for younger teachers to gain full-time employment, and suggested institutions may be using these hires as a more-easily satisfied, less-demanding employee option, but to the possible detriment of students.

6.4.3 Competencies Brought to Teaching

The second question segment asked participants to rate themselves on 17 teaching competences, as recalled from initial teaching experience and as teachers today. Within the survey results, the largest difference between the two sets of ratings was within the pedagogical knowledge and skills competencies. Within the interpretation panels, discussion of teaching competency was not clearly separated, but was mixed within discussion of other sections of the research question.

6.4.3.1 "In the trades, we're teaching." Participants expressed a strong feeling that the teaching skills gained through working with apprentices are not recognized by employing institutions. As stated by one participant, "In the trades, we're teaching. We're teaching all the time" (p. 2, 14). Another participant said: "I was all the time on the tools, but all the time I was teaching and sharing with someone else . . . It's always been part and parcel [of the trades]" (p. 4. 15-18). In addition to the teaching experience gained while in the trade, the idea of being "naturally born to teach" (p. 4, 23) was also expressed, supporting the high self-ratings within the survey on competencies such as communications, enthusiasm for teaching, and sense of humour.

6.4.3.2 "Nobody seems to give us credit." In contrast to the engrained concept of journeyperson as teacher and the idea of being a natural teacher, participants expressed a very strong sense that their employing institutions equated teaching to specific credentials, rather than seeing teaching in trades terms. As stated by one participant:

Nobody seems to give us credit. And you can put this on the record, the higher admin people at [institution] – nobody gives credit to life skills. And that is terrible. I do not have a Bachelor of Education. Does that make me a bad teacher, a poor teacher, a

horrible teacher? Absolutely not. I brought to [institution] 35 years of life skills, plus a Red Seal. What do I get for those life skills? Nothing. (p. 5, 7-10)

The importance of competence in one's trade, or subject matter expertise, was expressed: "We take pride in our work in the trades and hopefully we are good at the trade. If we weren't good at the trade, it's pretty hard to teach something you weren't good at in the first place" (p. 6, 28-29). Another participant commented, "I don't think you can have one without the other. I don't think you can be a good trades instructor without being a good tradesman" (p.4, 11-13).

Participants in some groups saw an over-emphasis on academic credentialing within the teacher training provided by their institution. Describing the mandatory new teacher training program, one participant said:

> [The program] is definitely challenging for trades teachers. You show up for [the program] and they're talking kind of fancy – a lot of academic talk. And they give this impression that teaching is this huge thing, and then you realize that you don't know any of it, so then it's like the marines, where they demoralize you and then bring you back up. It's unintentional, I think, but that's what's going on. You show up there and you could be a great teacher, without any training, but then you realize that you don't know anything of what education is all about. It's demoralizing. (p. 16, 23-30)

6.4.3.3 "Almost a third apprenticeship." In the survey, the greatest change in self-rating from initial to current was in the pedagogical skills and knowledge competencies. One participant, who had completed a Bachelor of Education degree before teaching trades at a college, described this gain in understanding as not a *second apprenticeship* but a third:

> I would say it's almost a third apprenticeship, to get to be a teacher, because a teacher can teach anything – they already know the pedagogy and how to implement a program. Whereas an instructor only has to teach in their area and mainly rely on their expertise, not have to rely on the pedagogy or how to get it into the students, or how to develop a plan. Some of them develop that, and many do here, but still, I think many of them become an instructor, but don't move on to become a teacher where you can teach anything. (p. 29, 24-29)

> The difference between a tradesperson and an instructor and a teacher – the teacher is quite a bit different. I got my teaching skills at the [university] and I can adapt that to diving instruction, or anything. If I wanted to teach a course on law, I'd get the book, I'd break it down, I'd make my objectives, get my outcomes, and I would go through that to make my program. How to do that is quite a bit different from being an instructor. It's all laid out for you. The [approved curriculum] books are the bible. Whatever's in the book, even if I say something contradictory, what's in the book is right. (p. 29, 31-36)

Participants also noted differences in the practice of teaching from the worksite setting to the classroom, suggesting teaching in the role of journeyperson was "teaching, in a subtle way" (p. 4, 16). The rules and protocols of an institution, versus the rough-and-tumble of a worksite, were described:

Here, you're not just teaching one or two [apprentices], you're teaching 30. So that's a big shift. Instead of focusing on individuals, you're focusing on students with a broad range of abilities . . . also, they have policies and procedures dealing with students here. Out there, it wouldn't be unheard of to give someone a smack on the back of the head. In the old days, it was worse. But to get the lesson through – things are different in a school, and we have to adapt. Your communication skills have to develop quite a bit more to be an instructor/teacher than to just be a journeyman. And you have to compromise. You have to actually think up reasons why things are better, or to do it this way is better, whereas as a journeyperson you could say to an apprentice, "look, do it this way or there's the highway." (p. 20, 7-15)

Another participant commented on the culture shift from the worksite to a college, in relationships and in language:

Students challenge you all the time. They want to know that you know what you're talking about. They generally have pretty limited experience. They might have been doing one or two tasks. But they know there's more out there, and they want to know that you know more than they do. And you'll be challenged often with "my journeyman says" and you have to be very delicate there, that's their mentor. If you show them or describe a different method of completing a task or solving a problem, and they've been shown one way by their journeyman, then we have to be able explain our position without diminishing the one they already have. It would be fatal for a program if we sent apprentices out saying "well, by the way, your journeyman is an idiot." (p. 41, 9-17)

[New instructors] come here and say, "What do you mean I can't do that?" There's subtle pressure on them to act professional. . . . It's a tough transition for people who've been in the trades. . . . We guys in trades think we have the most foul language, but I have friends and I've seen them at work, and you think, wow, you can say that? Some of the way they talk – it's the locker room writ large. It's misogynistic. It's things we wouldn't tolerate here. (p. 48, 14-26)

6.4.4 Learning Methods

Intertwined with comments on teaching competencies, participants discussed the learning methods used to gain them, and the perceived effectiveness of these learning methods. The survey showed a strong preference for non-formal learning methods, such as discussions with other instructors, mentoring, and self-study. Formal training, including courses and workshops,

were reported as less used and less effective. The interpretation panel results supported the survey results.

      6.4.4.1 "This is not the best way." In discussing the mandatory teacher training program of one institution, participants acknowledged some gain in knowledge and teaching skills, but expressed strongly that "this is not the best way" (p. 6, 1) and that "the degree programs that we are taking for training are not well suited to the trades" (p. 1, 28-29). Participants voiced their frustration with the lack of understanding demonstrated by the facilitators in these programs regarding the reality of teaching trades: the short time with students, the amount of content to be covered in this time, and the type of students being taught.

      Participants said they saw inconsistencies between the principles espoused and the manner of teaching demonstrated in the program, expressed in comments such as "What they're teaching us, they way they're teaching . . . doesn't jibe with what they're teaching" (p. 15, 1.2), and "They taught us in there that we're not supposed to be evaluated in a way that we don't understand. Well, tell me, who as a welder writes an essay? But that's how they evaluated me" (p. 14, 31-33).

      They were also frustrated by a focus on academically oriented minutiae, such as American Psychological Association (APA) formatting. "The system doesn't work with tradespeople. We didn't go to trades because we're English majors. We went there because we probably had some issues with English" (p. 15, 3-4). One participant, questioning the relevance of being graded on APA formatting, prompted another participant to say, "If you're an academic, it is relevant. But if you're a tradesperson, you got it out, and you got your point across, then you succeeded" (p 15, 12-13). Another commented: "To take a tradesperson who came off the tools for 40 years and expect him to do APA research papers, how does that help us?" (p. 6, 19-20). As previously quoted, one participant saw the focus on academic credentials as the sole proof of teaching ability to be demoralizing. Another participant echoed this sentiment, saying "If it helped us, we'd be all over it. We would. Trades guys are proud guys. If we can learn more, we will. But when you throw us in an environment like that, we rebel" (p. 6, 21-23).

      Participants who had gone through the mandatory teacher training at another institution tended to see more value in their training. Comments included:

> I did have a number of instructors say, "oh yeah, it's not relevant." I think it's because they don't understand how the pedagogy theory is linked to the actual teaching practice . . . it's okay to bring in that academic thing, but there's always this applied versus

theoretical and the trades guys are all applied. If you go to their medium, you'd probably have less resentment and more understanding. (p. 30, 27-37; p. 31, 1-2)

It's really focused on the applied. There's no reason to write papers. I mean, why? It would be nice to have them write reflections, just reflections. But why would you want them to write a university paper? They're not going to do that on their job. (p. 31, 28-31)

6.4.4.2 "Keep an open mind. Listen and learn." Panel participants were asked what advice they would give to a new teacher in their area. They spoke of using non-formal learning methods, such as drawing on the experience of fellow teachers, with comments including "Any information other instructors are willing to give you, take it" (p. 6, 7) and "Keep an open mind. Listen and learn" (p. 6, 8). Having teachers of a particular trade located together within the institution was seen as important to allow mentoring and discussions to occur. "We find teamwork really helps us, but the more they spread us out, the more disconnected we become" (p. 8, 20-21).

Teachers from one particular program spoke of a mentoring process they use, including auditing each other's classes:

We've got a real good team of guys. You go in there, and you audit a class, and then, bang, a couple of weeks later, you're teaching the same thing. And you develop something, but it's based on what you learned from the others. Over the sum of your teaching time, you audit another guy, and then another fellow . . . the whole time you're garnering information. (p. 4, 30-34)

This process of observing, discussing, and mentoring was seen as a natural continuation of the learning processes of trades practice, summed up by the comment "we live in a sharing environment" (p. 4, 25). In contrast, teachers from other programs where this process was not made available described the experience for new teachers as "sink or swim" (p. 4, 26) or "trial by fire" (p. 15, 25).

Another participant commented on the lack of mentoring for new teachers in his program:

We don't give that, we don't help our people, we don't mentor our people. But in the trade, that's exactly what we do. You're my apprentice, you stick with me all day long, I watch what you're doing, I help you along. As tradespeople, that's what we're used to. (p.15, 17-19)

6.4.5 Vocational Identity

In the survey, participants were asked how they would identify themselves to a stranger: as a tradesperson, a teacher, or a teacher of their trade. There was no conclusive result, but rather a mix of the three roles. This sense of finding an identity in both roles was repeated in the interpretation panel discussions. Participants were asked, as a question to provoke discussion, which is the better job, being a tradesperson or being a teacher? They expressed enjoyment of both jobs and that the first forms a natural link to the second.

6.4.5.1 "Nailing it across the board." One participant phrased it this way:

> I think it's a twofold thing. If you ask me, if I meet someone out on the street and I tell them what do I do, do I tell them I'm a teacher? No. Do I tell them I'm an electrician? No. I tell them I'm an electrician instructor. That is nailing it across the board. To say which job did I like better, you can't define that. This is another step in our career. (p. 4, 1-4)

A teacher from another trades program stated:

> That's such a dynamic question. I tell my guys I worked for one guy for 10 years, which was 9 years and 364 days too long. But I enjoyed carpentry; I didn't enjoy working for that gentleman. But I enjoy teaching students and I think I'm good at it. (p. 3, 33-35)

Another teacher commented that the transition to teaching may be easier for tradespeople than for other vocational teachers:

> You have to be a certain person. As tradespeople, we probably mentored somebody, so it's another step. And some of us slide into the step a little easier. But for the electronics and technology [teachers], they don't use that [teaching process]. (p. 21, 5-8)

A teacher from another institution said, "I guess if someone was asking me, I'd say I'm a teacher, and then I'd say I teach trades. Because I really enjoy it. . . If you're enthusiastic for the subject, the other part is just a name" (p. 38, 26-28).

6.4.5.2 "Moving from blue to white." One participant saw a more defined change in roles occurring over a teaching career, linked to the transition from workplace culture to college culture, saying "as an instructor, you are moving from blue [collar] to white. You are becoming part of the white" (p. 31, 3-4). He suggested institutions need to force the issue to some extent, using professional development sessions to "push forward this idea that you're not a tradesman any more, you're a teacher, and this is what we want from you. We want you to develop skills as a teacher, and your trade is secondary" (p. 31, 12-14).

His view was reinforced by a participant at another institution who commented on the role change from industry to teaching:

> Coming here, we've almost come full circle, from being a tradesman to being an instructor. On the job site, you need to develop a thick skin.. . . One of the things instructors learn too late is to distance themselves from that kind of environment. You have to walk in and on day one be the professional. . . . You can be friendly, but the hardest part is adopting that professional persona. We have conversations with instructors, [saying] you can't use the language of the worksite here. And they'll say, "Oh, we're all just guys here." And you say, "No, you're not. You're a college instructor. This is a college. These are college students." (p. 46, 28-37; p. 47, 1-6)

6.4.6 Satisfaction and Dissatisfaction Factors

The final question of the overall research question focused on factors leading to a sense of satisfaction or dissatisfaction with the role of teaching. Survey results showed a strong level of satisfaction with teaching, with the relationship to students as a key factor, followed by the relationship with other teachers and supervisor. A sense of being valued by the institution was the factor seen as contributing least to satisfaction. These results were supported by the interpretation panel discussions.

Time constraints and unclear expectations were the top factors contributing to dissatisfaction. The question of salary was deliberately omitted from the survey's list of suggested satisfaction/dissatisfaction factors; however, wages were clearly stated by interpretation panel participants as a primary consideration in deciding whether to continue to teach or return to trade practice, and as a perceived measure of respect from the institution.

6.4.6.1 "I like the *attaboys*." Appreciation from students as a motivator to continue teaching was reported by most interpretation panel participants, confirming the survey results. As stated by one participant:

> I'm not here just for the money. I like the *attaboys* from the students. I like to see the students after. Like I said, a weld has never said thanks. Students come up and say "thanks, you did a great job." Personal contact with the students is my highest reward. (p. 23, 11-13)

Other comments included:

> When those students are happy, and I have lots of them come up and say "good job, I really appreciate what you did," I could care less what I'm getting for pay. . . [Teachers] are here for those two things: they feel valued by their students and they like teaching to pass that information along, and for the hours, so they can have time with their family. (p. 34, 26-35)

I enjoy the fact that I can give something back to the students before I'm done and have the students stop me in the street and say, "hey, thank you, you did something really good." That means more to me than any weld I'll ever put down. (p. 27, 15-17)

6.4.6.2 "In the trenches." Participant comments showed that program units form strong teams, who support each other in learning to teach through mentoring processes and discussions, and in their daily challenges as teachers. References such as being "in the trenches" (p. 7, 27) show camaraderie among the teaching group, but also signified a division from others in the institution, particularly management, who are perceived to not understand the realities of trades training. This division may strengthen the smaller team, but may also isolate it.

Interaction between programs, when it does occur, helps build understanding. One participant commented: "I share an office with people in other programs and you get an idea that you share the same problems. Some things are different, but you find out they share the same issues. This is what your survey showed" (p. 36, 27-28). Another participant said that bringing programs together for professional development sessions can increase respect of the trades: "We're pushed into the same room and even the other instructors can see the depth of knowledge. Even from a bunch of dumb welders" (p. 33, 19-20).

6.4.6.3 "We're going to the ball, Cinderella." Participants expressed very strong feelings of being marginalized within their institution. They remarked on a lack of understanding of the realities of trades training, saying management personnel and the facilitators for teacher training don't recognize the differences among teachers. "[They] just don't pay attention . . . to know that there's a difference between an [Adult Basic Education] instructor and a Level 2 electrician instructor" (p. 7, 28-31). Another commented that "we are an anomaly, because we're here in postsecondary education, but it's more about business and sometimes we feel we're on the side in the organization" (p. 12, 20-21).

The demands of apprenticeship training, including more classroom hours than other programs, short (7-8 week) time periods with a student group, and a longer overall academic term create isolation according to participants, as these realities are not recognized or accommodated by the institution. Events meant to bring the faculty together, such as professional development activities or a speech by the president, are often not accessible for trades teachers due to the classroom schedule. "You do feel you're only about 50 % connected to the rest of the community, being from the school of trades," said a participant (p. 37, 6-7). Another commented,

"It's like you're the stepchild – just get the work done – we're going to the ball, Cinderella" (p. 45, 5-6).

One participant saw the low status accorded to trades in the institution as part of a long-standing stereotype:

> The problem at this college is that there is a deep-seated and long-term historical bias against tradespeople that goes back centuries. It's engrained pretty much top to bottom, and in particular, anybody in management, almost invariably, comes from a university background and they've been brainwashed or indoctrinated with this idea that if you're from university, you're up here, and if you're a tradesperson, you're somewhere down here in the dirt, and that's what you're worth. They do not believe in trades. (p. 13, 7-15)

Other comments expressed the view that trades training is seen by management as a "necessary evil" (p. 12, 22) or as "self-propagating money machines" (p. 45, 23) and is used simply for revenue generation. Several comments were made questioning the effect of polytechnic status on the institutions and on trades programs. One participant said:

> We hear the term polytechnic and we think, does that mean we're not a trades school anymore? With the push to be degree granting, you wonder if you'll be part of that whole idea. . . When you're at a satellite campus where there's buckets in the hall because there's rainwater coming through, and you go to the main campus and you see the big building going up for the academic programs. (p. 37, 15-21)

Apprenticeship students, as well as their teachers, were seen as being marginalized within the college setting, cut off from typical activities such as student government, team sports, and even graduation:

> When [apprentices] come here, they can't participate, they're excluded from a lot of things. So [other program students] come here for two years, and they go off on a work practicum, we still call them a student when they're on their work practicum. What's the difference? We just have long periods of work practicum. The college doesn't get that. Every college across Canada is recognizing that if you can build some kind of college culture, we can tap them later for money. We're 25% of the college. Now [apprentices] can go to graduation and walk across the stage, but exactly zero did it. Because they're not made to feel like they're part of the college. (p. 47, 16-22)

6.4.6.4 "Like he hadn't seen me." In the survey, feeling supported by the institution ranked lowest among satisfaction factors and lack of institutional support ranked third among dissatisfying factors. Interpretation panel participants reinforced these views. Participants were asked to define how the institution could show more support to build greater satisfaction.

Numerous comments spoke to a lack of contact with out-of-scope managers such as associate deans and deans.

One participant commented, "I've only been here a little over 5 years. I've never had the dean or the associate dean actually have a conversation" (p.10, 7-8). When contact did occur, any negative remarks or behaviour were clearly remembered: "Do you remember what [the dean] said? 'I didn't recognize you with a suit on.' Like he hadn't seen me, let alone with a suit on" (p.23, 20-21). Others spoke of a ceremony to celebrate graduation from the teacher training program where "the associate dean didn't even come over and shake our hand and congratulate us, or anything. And was gone. Never said a word. Didn't even acknowledge us" (p. 23, 22-24).

Another participant spoke of a problem with discontinued equipment that had been allowed to build up in storage for many years until it was finally tackled.

> It was like it was our fault, because we hadn't taken care of it before. But I worked harder, physically, than I ever have here before because I wanted to take care of this stuff. And there was no thank you, or good job, none of that kind of thing. (p. 9, 28-31)

When positive interactions with management occurred, however, they were also remembered. A breakfast meeting with the dean was noted with appreciation. The implementation of a suggestion regarding teaching software was recalled: "they actually spent money on it" (p. 32, 13).

Increasing the flow of information, particularly through personal contact, was seen by participants as the best way to improve the sense of support from the institution. Comments included:

> If I wanted people to become more satisfied, more valued, I'd provide opportunities for people to be more valued . . . if they had weekly meetings to discuss different topics. I mean, hopefully, not just topics that were meaningless – but meaningful conversations with those instructors, that would give opportunity for those instructors to have a chance to be heard . . . it's making it meaningful, I guess. I've heard of people doing it, but it's just lip service. It's just a meet-and-greet time. (p. 32, 20-29)

> That's the biggest stumbling block – that there is a valid roadblock, and you sit down as a group and come up with a solution, and pass it on, it seems to evaporate somewhere. (p. 8, 1-2)

> We don't see what [senior managers] do. I see what [another instructor] does to support me. But I don't see what [the institution] does for me . . . and how can we appreciate what we don't see? (p. 25, 25-27)

Sometimes it falls on deaf ears and I don't know the whole story. As an instructor, I only see one part of the painting – I don't see the whole painting. My [supervisor] sees a little more, and my head of department sees even more. I don't see everything. And a lot of people don't understand how much it takes to do those jobs. They think they're just sitting in their offices, doing nothing. (p. 32, 13-19)

6.4.7 "We're not invited to the ivory tower."

The sense of isolation and division between trades teachers and administration appears to go beyond the usual worker-management divide in an organization. Set apart by the institution through scheduling and told through mandatory training processes that they are not truly teachers due to lack of academic credentials, participants from all surveyed institutions expressed strong distrust of those with the credentials who make up the management ranks. One commented, "Guys in the trades make fun of academics all the time. But you talk to somebody in administration, you can be 100 % sure he doesn't have a trades background. We're not invited to the ivory tower" (p. 47, 26-27).

A participant at another institution commented, "This place is run by I don't know how many academics sitting in [the administration office] who don't have a clue what we do" (p. 7, 7-8). From the third institution came the comment, "Most trades guys look at academics like they're white collar and we're blue collar, so they're the enemy" (p. 30, 35-36).

Breaking into the credentialed administrative ranks is seen as nearly impossible:

What do college trades instructors resent? That we're not represented in the college. Up to the chair level, we're there, but not beyond that. There's a few of us who have a masters [level degree]. But our dean is a [technologist]. And the last [dean] was a math guy, not a trades guy. (p. 48, 4-6)

Part of the problem is that first you'd have to get a trades designation. It takes a long time. A seamless trades certification, and you're done by 30. Most people who start into university do it while they're teaching. Let's say they started by the time they're 40, they're going part time, by the time they're finished their masters, they've looking at how much more do I have to go? They've already worked 30 years . . . The possibility of a guy getting through to his PhD is practically nil. (p. 47, 29-34)

6.5 Added Understanding from Interpretation Panel Results

The primary purpose of the interpretation panels was to aid the researcher in understanding the survey results; the panels did provide a deeper understanding of the quantitative data and statistical analysis. The themes emerging from the interpretation panels provided confirmation of the survey results, but also added a richer description of the very

human dimensions of the overall research question, and brought forward other aspects of the life of trades teachers that had not been addressed specifically by the survey. The additional information arising from the interpretation panels is presented, briefly, below.

6.5.1 Motivation

Regarding the question of motivation, the personal stories of why people moved from industry practice to teaching confirmed the survey results that ranked *passing on knowledge of the trade* and *better hours* as the most commonly selected options. Beyond confirming agreement with *better hours* as a reason to move to teaching, hearing stories of the price paid by tradespeople and their families for the demands associated with industry work made this survey result poignantly real. On the positive side, the expression of enthusiasm for teaching, built from working with apprentices and clearly embedded in the participants' conception of being a journeyperson, added depth to the motivational factor of *passing on trade knowledge* through full-time teaching.

6.5.2 Becoming a Teacher

Panel participants' expressed conception of journeyperson as teacher also enriched the understanding of teaching competencies and vocational identity results, two aspects of the process of becoming a teacher. Participants linked this theme to responses regarding compensation, teacher training, and institutional support, clearly showing their view of themselves as teachers based on the traditions of apprenticeship, established in their minds long before entering a formal teaching role. Their words also showed that this concept is not supported in the institutional training setting. Comments on this theme also helped to explain the rather ambiguous results in the survey to the question of vocational identity, clarifying that a dual identity as tradesperson and teacher is generally carried throughout the career path, although experienced individually and shifting over time.

6.5.3 Learning to Teach

Discussions in the interpretation panels confirmed survey results that favoured non-formal learning methods, as well as detailing frustrations with some of the teacher training processes used by the three polytechnics within the study. Each of the participating institutions had a mandatory teacher training program for all newly hired teachers; however, the programs varied in format. Panel participants from the institutions with less-formal training programs expressed more positive views on the training, emphasizing the practical nature of what they

learned and the added value to their teaching practice. Participants from the polytechnic with the more-formal program expressed frustration over aspects of the program that did not directly relate to classroom practice, seeing these elements of the program as unnecessarily academic, as further evidence of the low status accorded to trades training, and as a devaluation of their teaching experience gained as a journeyperson.

6.5.4 Organizational Culture and Satisfaction

The strong sense of being low-status teachers in their institutions came across in answers to many questions posed to the participants, as an ever-present, underlying theme in the interpretation panel discussions. None of the survey questions asked specifically about the sense of inclusion in the institution, or comparative rank among programs; however, these feelings were made clear in the comments of participants from all three institutions. Among satisfaction/dissatisfaction factors in the survey, lack of support from the institution emerged as significant; in response to this result, each panel was asked to give suggestions as to how the institution could create a greater sense of support to build satisfaction with teaching. No definitive answers came forward to these questions, but the naturally emerging theme regarding culture and subcultures within the institutions appears to be connected closely to trades teacher satisfaction.

6.6 Summary of Chapter Six

In this chapter, I have presented the themes emerging from the interpretation panel discussions, representing Phase Two of the research process. The themes have been organized according to the sections within the research question and presented in the words of the participants as much as possible. In the following chapter, Phase Three of the research process will be presented, combining the quantitative data of the survey and its analysis, the qualitative data of the survey and the interpretation panels, the interpretation arising from the panel discussions, comparison to previous research, and the researcher's interpretation of the research results.

CHAPTER SEVEN: DISCUSSION OF RESULTS

7.1 Introduction

In the previous three chapters, the Phase One quantitative survey and the Phase Two qualitative interpretation panels have been reported and analyzed. In this chapter, Phase Three of the research plan, the researcher's integration of the collected data, its analysis, plus the interpretation via panel participants, is provided. These results will be compared to each other, as well as to previous research as discussed in the literature review of Chapter Two, to triangulate and confirm results. Answers to the research question emerging from the results will be shared. I will also discuss opportunities for further research suggested by the results, and provide some reflections on the research process.

7.2 Restatement of the Research Question

This research set out to explore the transition of tradespeople to trades teachers, viewing this transition as a movement from the *first apprenticeship* of trades practice, to the *second apprenticeship* of trades teacher. To explore this process, the research question was organized according to the following questions:

1. What motivates experienced tradespeople to move into a second career of teaching?
2. What competencies do tradespeople transitioning to teaching bring to the classroom to support effective learning?
3. Once in the role of teacher, what formal and informal learning helps them to become effective teachers?
4. How does their vocational identity change with the change in career?
5. What factors lead them to a feeling of satisfaction or effectiveness with their work, and to continue as teachers?

These questions will be used as headings to organize the reporting of the discussion in this chapter.

7.3 Methodology Used

This research was an exploratory process, given the small amount of existing research on trades teaching. Based on the literature review, in itself a wide-ranging exploration of the history and philosophy of apprenticeship, teaching competencies, motivation for career change, and vocational identity, a new survey instrument was created and piloted. In Phase One of the research process, the survey was distributed electronically to trades teachers at three Western

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Canadian postsecondary institutions. The data collected via the survey were analyzed using SPSS software. In addition to analysis of the full data set, the survey respondents were grouped by years of teaching experience, and further analysis was done based on these subgroups, to look for possible changes in responses according to length of time in the role of teacher.

After the quantitative analysis of the survey was completed, I shared a summary of the results with those survey participants who had indicated their willingness to participate in follow-up discussions. Interpretation panel meetings were arranged at four locations, including all three institutions. Questions posed during the interpretation panels were based on the analysis of the survey results. The resulting discussions were transcribed and analyzed for themes, comparing the results of this qualitative data set to that of the quantitative survey results.

Using an electronic survey delivered the views of 165 trades teachers from institutions across three provinces, representing more than 28 trades, to be compiled. Those teachers who participated in the face-to-face interpretation panel sessions expressed appreciation for this breadth in data collection, saying they work in relative isolation and have little opportunity to share their thoughts with other teachers in the same field. The combination of the survey for breadth and the interpretation panel discussions for depth allowed me to understand more fully the experience of trades teachers.

7.4 Results and Discussion

In the following section, the results arising from the quantitative and the qualitative data will be discussed and compared to the previous research and theory as documented in the literature review. Where appropriate, I draw upon new sources of research and information to help explain the results of the current study. Key insights from my research will also be presented. The questions within the overall research question are used as headings to organize the results and related discussions.

The overall purpose of the research was to study the transition from the *first apprenticeship* of trades practice to the *second apprenticeship* of trades teaching. Two definitions of transition were provided within this study: "a passing or change from one place, state, condition, etc., to another" (Concise Canadian Oxford Dictionary, 2005, p. 1453); and "any event, or non-event, that results in changed relationships, routines, assumptions, and roles" (Schlossberg, Waters, & Goodman, 1995, p. 27). As viewed through the responses gathered to

the five questions, it appears the participants had made, or were in the process of making, a transition as defined.

The initial event prompting a transition was the decision to move from trades practice to trades teaching, as explored within Question 1 regarding motivation. Changes in state or assumptions can be seen in the results from Questions 2, as participants assessed their competencies for teaching in a retrospective and current state, and from Question 4 regarding the negotiation of a new vocational identity. Question 3 results, looking at learning within the new role, suggest a linkage of old to new through reliance on past routines. The final section, Question 5, in asking participants to rate their satisfaction and the reasons around it, speaks to a successful transition, as measured by satisfaction levels, and to the place of tradespeople within the new state of the college setting, providing insight into the relationships and roles experienced on the other side of the change.

7.4.1 What Motivates Experienced Tradespeople to Move into a Second Career of Teaching?

Responses to survey questions regarding the motivation for the career change from trades practice to trades teaching showed correlations between motivating factors grouped into two categories: factors that are primarily extrinsic, including higher pay, better hours, better benefits, and higher status, shown in Table 7.1 below; and factors that are primarily intrinsic, including higher status, following a family member's career path, continuing an enjoyed volunteer activity, and teaching as a calling, shown in Table 7.2 below.

Table 7.1. Motivation for Teaching: Extrinsic Category Correlations.

Teaching was an opportunity for:		Higher pay	Better benefits	Better hours	Share knowledge	Higher status
Higher pay	Correlation Coefficient	1.000				
	Sig. (2-tailed)	.				
Better benefits	Correlation Coefficient	.380**	1.000			
	Sig. (2-tailed)	.000	.			
Better hours	Correlation Coefficient	.025	.214**	1.000		
	Sig. (2-tailed)	.746	.006	.		
Share knowledge	Correlation Coefficient	-.025	-.030	.002	1.000	
	Sig. (2-tailed)	.748	.700	.977		
Higher status	Correlation Coefficient	.308**	.293**	.093	.033	1.000
	Sig. (2-tailed)	.000	.000	.243	.674	.

Table 7.2. Motivation for Teaching: Intrinsic Category Correlations.

Teaching was an opportunity for:		Share knowledge	Higher status	Follow career path	Volunteer	|Call to teach
Share knowledge	Correlation Coefficient	1.000				
	Sig. (2-tailed)					
Higher status	Correlation Coefficient	.033	1.000			
	Sig. (2-tailed)	.674	.			
Follow career path	Correlation Coefficient	.034	.312**	1.000		
	Sig. (2-tailed)	.666	.000	.		
Volunteer	Correlation Coefficient	.073	.187*	.115	1.000	
	Sig. (2-tailed)	.356	.018	.149	.	
Call to teach	Correlation Coefficient	.084	.288**	.212**	.189*	1.000
	Sig. (2-tailed)	.295	.000	.007	.017	.

The opportunity to share subject matter knowledge received the highest overall level of agreement (95.8%), and seems to stand alone with no significant correlation to any other factors. Better hours, described within comments in the survey and through the interpretation panels as

primarily related to more time with family, received the second highest level of agreement (84.3%). The other six factors received considerably lower levels of agreement, from 49.1% for teaching as *Always something I wanted to do, that I felt called to do* to 13.9% for teaching as *An opportunity for higher pay*. Teaching as a calling was more strongly agreed to by Senior teachers than by other experience categories.

7.4.1.1 Sharing trades knowledge: Continuation and generativity. Lortie (1975) listed five main attractors to teaching: *interpersonal*, the attraction of working with people; *service*, the attraction of helping others; *material benefits*, including salary, pension and working conditions; *time*, the compatibility of the work with family and personal interests; and *continuation,* the attraction of passing on knowledge to a new generation and personal continuation of a place within school and the traditions of schooling. Elements of all five attractors can be seen in the responses within this study; however, the strength of agreement to teaching as *An opportunity to share my knowledge of the trade* suggests *continuation*, in the sense of passing on knowledge to a new generation, is a primary motivator for trades teachers.

Lortie (1975) commented that "widespread contact with each generation is a powerful recruitment resource possessed by few occupations" (p. 29), but that the attraction of *continuation* is not always seen by young recruits to teaching. Unlike sequentially trained elementary and high-school teachers, however, trades teachers typically are not young. As the demographics of the current study show, it is unusual to begin teaching in the trades before 35 years of age, given the lengthy period of training for the first career and expectation that teachers have five to 10 years of experience as a journeyperson before teaching. The most common age of study respondents was 46-55 years, quite different from the 22-year-old new graduate of an elementary or secondary school teacher training program.

The results suggest that motivation to teach may differ by stage of life, not just according to the subject matter taught. The motivation of sharing knowledge with the next generation, highly rated in this study, also connects with Erikson's (1980) theory of life stages. In mid-adulthood, ages 40-65, Erikson theorized that the primary challenge is *generativity vs. stagnation*, including a desire to see one's work continue to the next generation. Given the typical age of trades teachers, the motivation of *continuation* (Lortie, 1975) or *generativity* (Erikson, 1980) may be a particular factor among this group of teachers. Mealyea (1988) also found aspects of altruism motivating the new trades instructors he studied, as they stated a desire

to see knowledge of the trade passed on. The connection between these ideas and the motivations of tradespeople to move into teaching is worthy of further study.

      7.4.1.2 Sharing knowledge and vocational identity. Backes and Burns (2008) studied a group similar to the current study when they surveyed trades and health-science teachers in American high schools regarding motivation for teaching as a second career. Of the 125 participants in their survey, 57% had been in their previous vocation for 8 to 15 years, and ages ranged from 21 to 58 (p. 103). The categorization of motivation factors from their study was used as a source in creating the list of motivation factors presented in my survey; however, the results were quite different, as shown in Table 7.3 below. The ranking from the current study shown here is among these factors only, not among all factors in the survey. As well, Backes and Burns' (2008) study asked respondents to choose one option; the current survey allowed for multiple selections.

Table 7.3. Motivational Factor Comparison: Backes & Burns vs Current Study.

Motivational Factor	Backes & Burns (2008) Rank and % of respondents choosing as primary motivator	Current study Rank and % of respondents in agreement
Call to the profession	1 (31%)	3 (49.1%)
Better hours, more family time	2 (30%)	2 (84.3%)
Pay and benefits	3 (28%)	4 (44.2%)
Sharing subject matter	4 (10%)	1 (95.8%)

Backes and Burns' (2008) study demonstrated the attraction of sharing subject matter expertise, although the strength of agreement with that motivator was much lower in their results than in the current study. They commented:

> Our respondents pointed out that many new [vocational] teachers have a love and respect for their professions. . . . Teaching allows them to make a career change without giving up the identity of being part of their original occupation or profession. These teachers are motivated to prepare others for that profession to provide for the future of the field. These teachers need to feel respected by others for their professions. (p. 109)

Backes and Burns (2008) recommended employing institutions encourage ongoing connections with industry through technical conferences, return to industry leaves from teaching,

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and recognition of continued certification in the field as employee retention measures to support the motivation for teaching found in a continued identity with the previous vocation.

        7.4.1.3 Better hours versus lower pay. Better hours of work as a teacher, as compared to the previous occupation, ranked similarly in the current study and in Backes and Burns' (2008) study. They compared the demands of industry work to teaching:

> Arguably, teachers have more time away from their workplaces than many occupations and professions. Shifts at hospitals, automobile service centers, construction sites, restaurants, and other technical workplaces can be 12 hour days, and sometimes six or seven days a week. (Backes & Burns, 2008, p. 107)

This contrast is reflected in comments by respondents to the current study as well, most poignantly in retrospective musings about lack of time with children and lost marriages linked to work demands.

        The trade-off for better hours, however, is often lower remuneration. Teaching as an opportunity for higher pay was soundly rejected in the current study (77.6% disagreement). Backes and Burns (2008) reported similar results, with only one quarter of respondents choosing higher pay as their primary motivation to change from industry to teaching (p. 108). Their recommendations for retention reflect the reality of limited means for educational institutions, as they suggest greater transparency at the time of hiring regarding wage scales, financial assistance for required certification training, and a focus on enhancing intrinsic motivational factors instead (Backes & Burns, 2008).

        This balancing of extrinsic factors, such as rate of pay, against intrinsic motivators such as sharing knowledge, is also seen in the Factors Influencing Teaching (FIT) Choice scale. The FIT Choice instrument has been used to measure teacher motivation across various teaching situations and countries (Watt et al., 2012). The model theorized that motivation for teaching comes from rational choices based on motivators including personal utility (job security, time for family, and transferability); social utility (making a social contribution, working with young people, and shaping the future); and other considerations such as task demand versus task return; self-perceptions of teaching abilities; fallback career; and socialization influences including prior teaching experiences. Using this model, the researchers found consistency across diverse samples with intrinsic motivators including the desire to make a social contribution and perceived teaching ability drawing high ratings, while job security and time for family were consistently lower (Watt et al., 2012). In the current study, intrinsic motivators of social utility

through sharing knowledge (95.4% agreement) and personal utility of time for family (84.3%) both rated highly, while self-perceived teaching ability, shown through agreement to teaching as *something I tried as a volunteer and enjoyed*, garnered a low rating (35.7%).

The difference between the FIT Choice research and the current study could be explained in terms of the *fallback career* as teachers compare the present and previous vocations. As previously described, the working hours of trades are demanding, particularly when compared to teaching, but the pay is often higher. As well, the opportunity for making a social contribution through sharing knowledge, although part of a journeyperson's role in working with apprentices, is overshadowed by the immediate demands for work progress. Additionally, working with apprentices may not be considered as teaching experience by current teachers, due to its non-formal style. As previously noted, age is another difference between the groups studied that may affect motivation. Watt et al. (2012) call for further research of the FIT Choice model in even more diverse settings; trades teaching would certainly be an additional, under-explored setting for consideration of motivation to teach.

7.4.1.4 Teaching as higher-status work. Gowdy (1987) found a desire for higher status work and the influence of another teacher within the family to be strong motivators for the tradespeople moving to teaching within her study. In the current study, *Higher status, professional employment* ranked as fifth among the eight factors, and teaching as *A career path that others in my family had followed* ranked seventh, suggesting these factors had relatively little influence among this group on the decision to become a trades teacher.

Within the current study, teaching as a higher-status occupation was included in correlation analysis within two groupings: teaching as a calling, a career path of other family members, and something enjoyed as a volunteer; and with higher pay, better benefits, and better hours, as shown in Tables 7.1 and 7.2 above. This dual correlation suggests that the wording chosen for the survey, *Higher status, professional employment,* may have been interpreted in two ways by respondents. Some respondents may have interpreted teaching as a higher status occupation in terms of extrinsic rewards (pay, benefits, and hours), while others viewed it as a higher status occupation in intrinsic terms (teaching as a calling, following a family tradition, and continuing personal enjoyment).

7.4.1.5 Trigger to change. Beyond the general motivating factors for considering a change from trades to teaching, the survey also asked about a specific event that prompted action

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toward this change. The most common choice was that a friend had suggested it, selected by 21% of respondents. Some distinctions were found in statistical analysis, showing that respondents without formal teacher training were more likely to choose this reason, while those with some formal teacher training were more likely to indicate that the triggering event was a personal or family health issue, or dissatisfaction with trade work conditions ($\chi2$ (5, N = 165) = 11.342, p = .045).

Castro and Bauml's (2009) qualitative study of second-career elementary and secondary teachers in American urban schools looked at triggers to change and found similar themes. Knowledge of teaching as a potential career was a necessary resource to the decision, and this knowledge was often provided by a friend or family member working as a teacher. Connected to this sharing of knowledge, they found the support of friends and family in the transition from a first career to teaching was also significant. Other factors included financial readiness to undertake the education necessary to move to teaching, availability of information beyond that supplied by friends, and ready access to a teacher training program when the decision to change was made. Once a personal commitment to change was made, participants wanted to move quickly into the teaching role (Castro & Bauml, 2008).

7.4.1.6 Key insights on motivation. Anecdotal comments from people in various roles within vocational education, including trades teachers themselves, often suggest that people move from trades to teaching for extrinsic, somewhat self-serving rewards, such as working in a temperature-controlled, less physically demanding environment. While this suggestion downplays the demanding work that is good teaching, it may have some truth to it, and there are clearly other motivators that are not often talked about. Most significantly, passing on knowledge to the next generation of apprentices, in a continuation of the role of mentor and teacher as journeyperson, is a strong intrinsic motivation for choosing teaching. Additionally, finding a better work-life balance, for personal and family benefit, is a motivation. The trade-off for choosing teaching rather than continuing in the trades is a loss of extrinsic reward, in remuneration.

7.4.1.7 Further research on motivation. Within the question of motivation, this study suggests further research on several topics. Given the dual correlation of *Higher status, professional employment* as a motivational factor, further research to more clearer define the understanding of this idea among trades teachers would be useful. A better understanding of how

suggestions from friends lead to consideration of a career change could also be derived through further research. Most significantly, this study was delimited to current trades teachers; a study including those teachers who have left this work would provide a comparison that might add to the research on motivational factors, as well as other aspects of second-career teaching practice.

7.4.2 What Competencies do Tradespeople Transitioning to Teaching Bring to the Classroom?

Through an extensive literature review of teaching competency models, a list of 17 competencies, or KSAOs in organizational psychology terms, was developed. In the survey, this list was posed as past-tense statements asking respondents to retrospectively express agreement with them as beginning teachers, and as present-tense statements asking for agreement as current teachers. In the analysis, trends emerged regarding the perceived strengths of trades teachers, as well as growth in confidence over the years of experience.

7.4.2.1 Perceived strengths upon entering teaching. On retrospective self-ratings of competencies as a beginning teacher, respondents agreed most strongly with the statement *I wanted to improve as a teacher*; ratings on enthusiasm for the subject, enthusiasm for teaching, and sense of humour, also garnered general agreement. Respondents agreed least with the statement *I had a good understanding of my students and their learning styles,* and *I understood curriculum development*. Within the KSAO model, the strongly agreed to statements fall within the *Ability* or *Other*, categories representing stable personality traits or characteristics; the perceived weaknesses, as expressed by least agreement, represent learned *Knowledge* or *Skills*, particularly in pedagogy (Landy & Conte, 2007).

Teachers address these weaknesses as they gain experience, it appears, as the self-ratings of current teaching competencies were more homogeneous, with all 17 competencies agreed to by 90% or more of respondents. A comparison of retrospective rating to current rating found significant changes, particularly in the pedagogical knowledge and skills competencies.

7.4.2.1.1 Factors affecting perceived strengths. Significant differences emerged in the self-ratings of retrospective competency when compared by previous teacher training, by number of apprentices supervised in industry, and by age. Having previous teacher training did not correlate significantly with the *Ability or Attitude*, or *Other* characteristics, or with subject knowledge; it did correlate with the pedagogical knowledge and skills competencies. Given that teacher training programs typically focus on these competencies, it appears that having training

could give new teachers greater confidence in their pedagogical knowledge and skills as they enter the classroom.

The survey asked respondents to indicate the number of apprentices supervised while in industry, as the mentoring of apprentices is the key method of teaching within trades (Coy, 1989; Rikowski, 1999). When the retrospective competencies were examined according to the number of apprentices supervised, the somewhat surprising result of a stronger agreement with the statement *I knew how to deliver a lesson in the classroom* came from those respondents who had supervised five or fewer apprentices. This result would need further research to understand.

Age was correlated to the competency *I was able to use the technology available in the classroom*, with respondents in the 56 years and older group more likely to agree than younger respondents. This result may be a reflection of the time when this age group entered teaching. Older respondents are significantly more likely to have entered teaching 12-18 years ago or about 1996-2002, as older age groups are correlated with the Senior and Veteran experience groups. The expectations for use of technology in the classroom were simpler at the time than in more recent times, with the growth in online and other electronic methods of teachings.

7.4.2.2 Perceived strengths as current teachers. Self-ratings of current teaching competencies were more homogeneous than the retrospective view, with all 17 competencies agreed to by 90% or more of respondents. A comparison by previous teacher training and age were associated with some significant differences. Respondents with previous teacher training were less likely to agree with the competency *I show a sense of humour*; this may reflect a more serious approach to teaching, or that they rely more heavily on pedagogical knowledge and skills rather than personal characteristics to manage students. Further research would be needed to understand this result. Age was related to the pedagogical knowledge and skills competencies. Younger (45 years or less) respondents showed lower agreement and more indecision, compared to other age groups, in response to *I have a good understanding of how to teach*, and to *I adapt learning to processes to student needs*. Similarly, Novice teachers showed lower levels of agreement to the pedagogical competencies of *I have a good understanding of my students and their learning styles*, *I know how to deliver a lesson in the classroom*, and *I understand curriculum development*. These results suggest that self-confidence in these competencies is built as teaching experience is gained. An earlier boost in self-confidence, perhaps through targeted

training for trades teachers, might increase teaching effectiveness in a proactive way, rather than allowing Novice teachers to flounder and find their own way.

7.4.2.3 Changes in perceived strengths. A comparison of retrospective rating to current rating found significant changes, particularly in the pedagogical knowledge and skills competencies. Compared as individual competencies, using a Wilcoxon signed-rank test, the largest effect size was found in the pedagogical knowledge and skills, including understanding of how to teach, understanding students' learning styles, use of technology, how to deliver a lesson, assessment, and curriculum development. Other knowledge and skills competencies showed less change over time; *Abilities or Attitude*, and *Other*, competencies were the most stable.

When compared as a whole, through creation of confidence levels via summing the self-ratings, there was a statistically significant change across all groups. Novice and Junior teachers showed the greatest change in overall confidence, as might be expected in the early, high-learning, years of a new role (Chang, 2009; Falk, 2012; Grissmer & Kirby, 1987; Skaalvik & Skaalvik, 2010).

In the interpretation panel discussions, participants reflected on the change from early teaching days to their current level of competence and confidence. The change was described by one participant as not just a *second apprenticeship* but perhaps a third, moving from tradesperson, to being an instructor who can share specific subject matter knowledge, to fully being a teacher with an understanding of the pedagogical theory underlying learning processes in a more general sense. Further research, most likely of a qualitative nature, might help to understand the best sequencing of training in pedagogical skills and knowledge for new teachers. As shown in both survey comments and through the interpretation panel discussions, tradespeople come to teaching with a conception of themselves as teachers, and see themselves as having many of the 17 listed competencies towards being an effective teacher. Finding methods to add to this conception with further competencies, without overwhelming or demeaning the existing conception of being a teacher, could promote effective teaching.

7.4.2.4 Further development of teaching competencies. The self-reflective competencies of *thinking about how to improve my teaching* and *wanting to improve as a teacher* drew nearly unanimous support across all categories. The agreement level changed only slightly from the retrospective to current ratings. When asked what further development of competencies they saw as necessary, respondents' comments were most commonly connected to

learning about technology and adaptive learning, followed by curriculum development and lesson planning.

The desire to improve as a teacher is supported by other aspects of the current study. The section of the survey that asked about teaching satisfaction and changes that might increase satisfaction showed the strongest agreement overall (84.8%) for *More support for developing teaching skills and knowledge*, with even stronger support (97.1%) among Novice instructors. In the interpretation panel sessions, participants reinforced this desire for improvement, both through their expression of frustration with training that they perceived did not provide improvement, and through a desire for more professional development. Clearly, trades teachers are interested in improving as teachers.

7.4.2.5 Key insights on teaching competencies. As shown in the survey, more than 85% of trades teachers do not have formal training in teaching upon entering the occupation. The strengths they do bring to the role, as shown through self-ratings, are the personality traits (humour, professionalism, empathy) and pre-existing abilities (communication, organization, reflective thought) associated with good teaching, as well as subject-matter expertise. What they add through experience and various learning methods are the pedagogical knowledge and skills competencies.

Increased knowledge and skill in pedagogy, whether learned prior to entering teaching or gained with experience and formal or non-formal learning while teaching, is linked to higher confidence levels. This correlation, and the strongly expressed desire to learn and improve as teachers, suggests employing institutions should foster a culture that supports ongoing learning about teaching. Support for learning could be provided through release time from classes for courses or mentoring activities, and financial assistance toward learning and teaching improvement, as well as offering training specific to teaching in a vocational education setting.

7.4.2.6 Further research on teaching competencies. This study asked participants to self-rate their teaching competencies, retrospectively and currently. While this method provided a view of their confidence and its development over time, it did not measure teaching competency by results or through others' perceptions. Further research, to compare these self-ratings to ratings by students, peers, or supervisors, could provide greater insight into the accuracy of these measures. A comparison of a specific teacher's self-ratings to student

achievement within that teacher's class, or by performance on the standardized apprenticeship tests, could also provide greater insight.

Further attention to the pattern of learning to teach, specific to trades training, is also warranted in the pursuit of effective teaching. Capitalizing on the existing competencies brought to the new role and supporting these strengths through additional development of knowledge and skills could provide for a well-rounded skill set and a confident, competent teacher of trades.

7.4.3 What Formal and Informal Learning Helps Tradespeople to Become Effective Teachers?

An evaluation of the learning methods preferred by trades teachers was also part of the current research. This topic is closely connected to the changes in competence and confidence, essentially asking respondents how they increased their knowledge and skills about teaching and gained confidence. Respondents showed a definite preference for non-formal learning over formal learning in answering questions regarding the methods used to learn more about teaching and in rating effectiveness of training methods.

7.4.3.1 Non-formal methods preferred. Survey questions asked what methods of learning had been used during the teaching career, ranging from formal classes at a university to self-study and trial and error. Overall, respondents chose *discussions with other instructors* as the most often used method, with *informal mentoring* as the next most popular method. Formal training through a university or college was the response least often chosen.

Use of training methods clustered in two groups in correlation tests: formal methods, including formal training at the employing institution, workshops and formal mentoring; and non-formal methods, including informal mentoring, discussions, self study, and trial and error. Respondents with formal teacher training prior to being hired as a teacher were more likely to indicate use of formal training methods to continue learning about teaching. Veteran teachers were significantly more likely to report use of formal training while Novices reported the lowest level of formal training ($\chi 2$ (4, N = 165) = 18.936, p = .001). Novice and Junior teachers reported the highest levels of *informal mentoring* and *discussions with other instructors* as learning methods.

7.4.3.2 Non-formal methods rated most effective. Within the survey results, mentoring was rated as the most effective method of learning to teach; workshops were rated as least effective in overall results. Self-study was rated as effective significantly more often by teachers

without previous teacher training. When viewed by experience categories, no significant difference in ratings was found; however, Novices rated mentoring and discussions as effective most often among the experience groups, and gave formal training the lowest effectiveness rating.

Discussions within the interpretation panels supported these results. Participants expressed a strong dislike for academically oriented teacher training delivered in a classroom setting. They spoke in favour of a more practical focus to teacher training, looking for information that could be easily translated into their work with students. Participants praised a specific informal mentorship program operating at one institution as helpful to new teachers and as building on the traditions of trades practice. These ratings of effectiveness were perceptions of individuals, not externally derived connections between particular types of training and the results seen from them; nevertheless, the strongly expressed preference for non-formal methods would suggest these forms of training would be more readily accepted by trades teachers and, thus, might be effective in providing the pedagogical knowledge and skills noted as lacking within the self-ratings of competencies.

7.4.3.3 "The best way" for trades teachers to learn. Within the interpretation panel discussions of learning to teach, one participant commented on the academically oriented formal training provided through his institution and commented, "This is not the best way." The comment naturally leads to the question: What is the best way for trades teachers to learn to teach? Results of this research and comparison to past research suggest some possible paths.

7.4.3.3.1 Build on existing competencies. Tigchelaar et al. (2008) found that second-career teachers wanted to transfer competencies acquired during their earlier careers to teaching and that they felt the greatest gains could be made through recognition of their backgrounds in teacher training. In presenting this finding, the researchers acknowledged the variety of backgrounds brought to teaching by career changers. Almost all teachers within postsecondary vocational training come with a set of occupational competencies; this is the subject matter expertise for which they are hired. A teacher training program that built on this existing knowledge would be consistent with adult learning principles (Knowles, 1990) and with the preferences of the new teachers as students, as evidenced by Tigchelaar et al. (2008) and by the current study. Participants in the interpretation panel discussions within the current study expressed a strong sense of being a teacher within their trades experience, suggesting a pre-

existing occupational competency that could be acknowledged and further developed through specific teacher training.

7.4.3.3.2 Signature pedagogy. The preference for non-formal learning methods shown by trades teachers in the current research appears to align with the traditions of apprenticeship learning: hands-on learning through demonstration and a relationship with a journeyperson as mentor and teacher. Maurice-Takerei and Jesson (2010) explored the concept of a signature pedagogy in trades, but did not define what that pedagogy would look like. The history of apprenticeship, with its emphasis on practical, personal learning (Coy, 1989; Lave & Wenger, 1991), and Pratt's (1998b) definition of the apprenticeship perspective in teaching focused on transmission of tacit knowledge, suggest a signature pedagogy would include direct contact between teacher and learner, such as in a mentorship relationship. Informal story-telling, much like *discussions with other instructors*, has been identified as part of the tradition of the trades (Sharman, 2011; Watt-Malcolm, 2008; Wenger et al., 2002).

If a signature pedagogy does exist in trades training, and it appears one does, it would seem reasonable that this pedagogy would carry through to how trades teachers would approach the new task of learning to teach. The typical path to becoming a tradesperson is apprenticeship training through to certification, followed by years of experience in industry, most often including the supervision of apprentices. The results of the current research, strongly favouring non-formal learning methods, support the idea that trades teachers are recreating this form of learning, or using the undefined signature pedagogy learned through trades practice, in their new journey of learning to teach.

7.4.3.4 Key insights on learning methods. As previously discussed, tradespeople typically come to teaching without formal training in pedagogy; yet, gaining pedagogical knowledge and skills provides greater confidence and, presumably, may improve teaching. Trades teachers want to develop their teaching competencies. Formal methods, emphasizing theory and academic language over the practical, are soundly rejected in favour of non-formal methods more aligned with the traditions of the trades, in what could be termed a *signature pedagogy*.

These findings suggest that, in providing training to trades teachers, employing institutions should focus on practical aspects of teaching, especially in the early stages of the teaching career, to provide a comfortable learning environment and to bolster Novice teachers'

confidence. Non-formal learning methods, including mentoring and encouraging discussion among peers, are more likely to be accepted than formal classroom-based training. Removing any unessential academic trappings such as insistence on APA formatting and university-level research papers, "a disarming of the academic language" (Haycock & Kelly, 2009, p. 10), could encourage engagement in training and development of teaching skills. Such changes might also bolster the identity of teacher, by supporting the idea of journeyperson as teacher rather than defining the role as available only to those with specific academic credentials.

7.4.3.5 Further research on learning methods. Further study to more formally define a *signature pedagogy* of trades, to consider how it could be used in development of trades teaching proficiency, would be needed to confirm this interpretation of the current research. Delving deeper into an understanding of how learning occurs in trades could lead to *generation of theory* (Creswell, 2003) surrounding the learning methods replicated by trades teachers in their teaching, as well as in their own learning to teach.

Additionally, the current research documented trades teachers' opinions of learning method effectiveness; it did not link specific learning methods to external assessments of effectiveness. Further research, comparing learning methods used to teaching effectiveness measured through student, peer or supervisor evaluations, could confirm or negate these ratings.

7.4.4 How Does Their Vocational Identity Change?

Vocational identity was explored within the survey by one question: *Are you a tradesperson, a teacher, or both? If you met someone for the first time today, how would you describe yourself to this person?* Respondents could choose one or more of three options: *I'm a tradesperson (welder, electrician, etc.); I'm a teacher/instructor;* and *I'm a teacher/instructor in (welding, electrical, etc.).* Respondents most often agreed with *I'm a teacher/instructor in my trade*; however, the other two statements were also agreed to in the majority of instances. This result appears somewhat ambiguous; however, discussions from the interpretation panels suggest it is, in fact, correct.

Some variation in the results emerged through statistical analysis of the survey responses. Having another teacher within the immediate family was linked to increased agreement with the statement *I'm a tradesperson,* a result that could be due to increased awareness of the typical teacher identity, as contrasted to that of trades teacher. Previous formal teacher training was linked to increased agreement with the statement *I'm a teacher/instructor* (χ^2 (1, N = 125) =

5.926, $p = .015$), perhaps a reflection of the vocational identity developed during that training period. Further research would be needed to explore these differences.

7.4.4.1 Second career or second phase. Previous research (Haycock & Kelly, 2009; Mealyea, 1988) focused on the development of identity for tradespeople as they first moved to a teaching role and reported dissonance and anger in making this change; in this study, trades teachers of varying experience were surveyed, with no significant difference found between experience groups. This result suggests that trades teachers may reach a balance between the two identities over time, or that the identity is less divided when viewed within this larger group. Nze and Ginestie (2012) found that identity for vocational teachers was created over many years and was linked to the view of vocational education held by the teachers themselves, and by society around them. These findings are supported by the current research, in the integration of identity across the years of experience groupings, and through reflections in the interpretation panels about the status of trades teaching in the college setting.

Interpretation panel participants expressed the view that they saw themselves as teachers while in trades practice and that teaching is an integral part of the role of journeyperson. Several participants said they had considered the move to full-time teaching for a long time prior to making the transition, based on their enjoyment of working with apprentices. The identity of *teacher* appears to be embedded within the identity of *tradesperson* for these people; they see themselves as comfortably both teacher and tradesperson and proudly say they are teachers of their trade.

7.4.4.2 Vocational identity formation. Changes in vocational identity over time, as shown through differences between the experience groups, provides only clues to how this balanced identity is reached. No conclusions can be drawn, given that the differences are not statistically significant, and the study is categorical. The results, as a percentage of those responding to the question, are shown in Figure 7.1 below.

Looking at frequency counts and the calculated percentage, the statement *I'm a teacher in my trade* drew the strongest agreement level overall, as well as in each experience category, peaking as a percentage in the Intermediate and Senior groups. *I'm a teacher* was next in strength of agreement, with the highest percentage agreement in the Novice group. Juniors and Intermediate teachers showed the lowest percentage agreement with this statement. These results suggest the first years of teaching for trades teachers, as with teachers generally, are a time of

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negotiation of the role before settling into teaching as a career (Chang, 2009; Falk, 2012; Grissmer & Kirby, 1987; Skaalvik & Skaalvik, 2010).
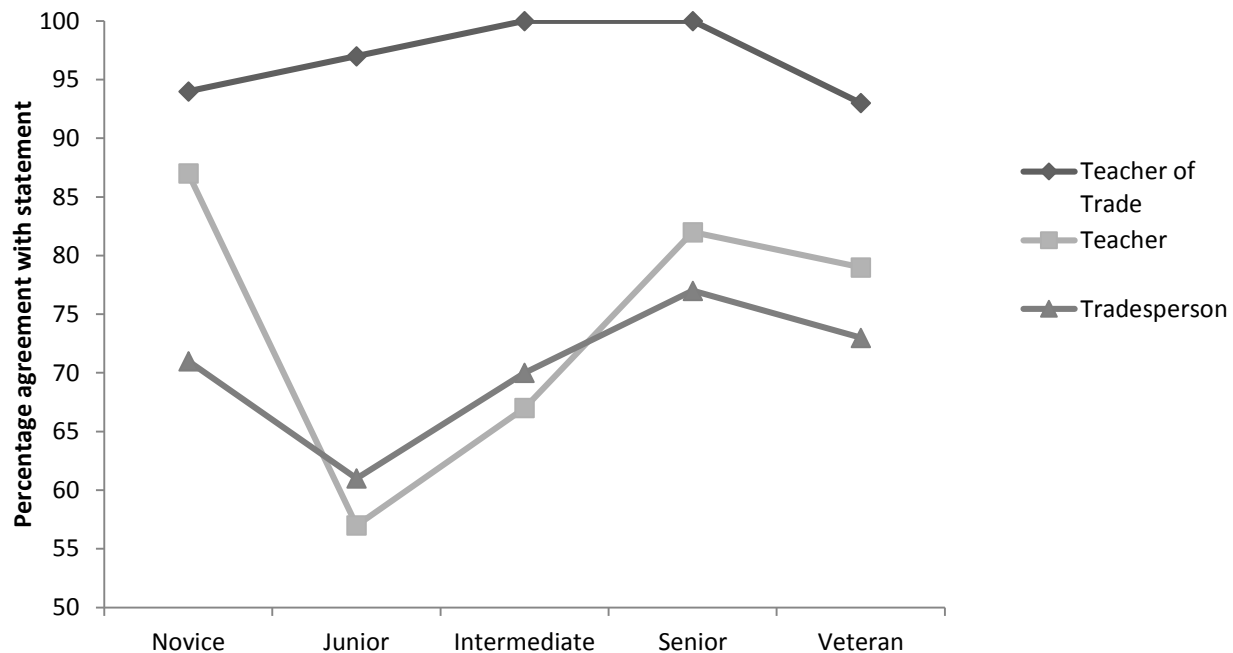
Figure 7.1 Vocational identity by experience groups, percentage agreement among those responding.

7.4.4.3 Models of vocational identity rethought. Within the literature review of Chapter Two, I developed a model of vocational identity based on research and theory. The subsequent results of my study have led me to a revised model. A discussion of the differences between the theories and created model of Chapter Two, and the revised model, is presented below.

7.4.4.3.1 Simpson's theory of socialization. Simpson's (1967) theory of vocational identity included three phases: a change in focus from the broad goals that attract one to the vocation to specific work tasks; a second phase of identification with significant others in the workplace as a reference group; and the third phase of identifying with the values and behaviours of the vocation, and finding identity in the work. This theory is supported by the change in agreement with the statement *I am a teacher* between the Novice and Junior experience categories, suggesting an internal realignment of the conception of *teacher* based on realities of the classroom. This change may also be affected by the teacher training mandated for newly

hired teachers, that is described by some participants in the interpretation panels as "demoralizing," and damaging to an pre-existing view of being a teacher within the trades, as academic aspects of the role are emphasized.

The data from the current study demonstrate a preference for using discussions with other teachers and mentoring to learn about teaching, and a sense of feeling valued by other teachers and supervisors. These results support the concept within Simpson's second phase, in which a novice is accepted into the group. Within my study, however, this reference group appears to be limited to the very specific group of trades teachers, not teachers generally within the employing institution. Qualitative data from the survey and the interpretation panels clearly showed a perceived division between trades teachers and other teachers within the institutions. Simpson (1967) posits that in the third phase of "full internalization of professional values occurs to the extent that the profession accepts the individual into its inner circle so that he is freed from pressures by outsiders" (p. 54). The very specific identification seen within the current study and strongly expressed division between trades and academics suggest that, in this case, the *profession* is trades teacher and the *outsiders* are the academics or other teachers in the institution. The strong agreement for the statement *I am a teacher of my trade*, far beyond agreement for *I am a teacher*, may be explained by this definition of the inside/outside line of the professional circle. Whether this line of division has a positive or negative effect on development of teaching skills, and ultimately on student learning, would require further study.

7.4.4.3.2 Graves' three-stages of trades identity. Graves (1989) presented a similar three-stage theory of vocational identity formation specific to trades including: anticipatory socialization of seeing oneself in the role; learning the technical requirements for practice; and full acceptance into the vocation through a "them and us" (p. 63) distinction and the ability to pass on gained knowledge. The current research supports this theory for trades teachers to some extent. A level of anticipatory socialization is shown in the strong agreement with *I am a teacher* among Novices. A clear distinction between trades teachers and others, including other teachers, is also shown. The ability to pass on knowledge is seen by participants in the current study as both pre-existing, as part of teaching as a journeyperson, but also as something to be developed as one moves from tradesperson to instructor of a trade to fully being a teacher.

7.4.4.3.3 Korthagen's onion model. Korthagen (2004) suggested an onion model of vocational identity for teachers, where theory and competencies are learned, become engrained

and, over time, layers of behaviour and beliefs create a strong core of identification with the role of teacher. This model does not appear to fit with the results of the current study. Trades teachers are typically immersed quickly into the actions of teaching, without explicit knowledge of theory, and then gain the theory over time through non-formal or formal learning methods. The participants in this study also reported a strong sense of identification with the role of teacher before becoming one formally. This suggests an outward movement from a core identity toward full knowledge and practice, rather than an inward movement of adding layers of practiced behaviour toward an identity; or, that the inward movement toward identifying as a teacher has already occurred, to some extent, through the practice of mentoring of apprentices in industry.

 7.4.4.4 Revised model of vocational identity. From the theories of Simpson (1967), Graves (1989) and Korthagen (2004), as well as those of Shulman (2005) and Rikowski (1999), I created a model of vocational identity, linking the *first apprenticeship* of trades training to a *second apprenticeship* of becoming a teacher. This model was visualized as an interaction between two geometric planes, with the current vocational identity of an individual exists in both planes at the same time, without necessarily being aligned. The model suggested a similar path to establishing the two identities, from knowledge to skills, to abilities and other characteristics, and finally, to a firm identity based on mastery of the craft. The model is shown in Figure 7.2 below.
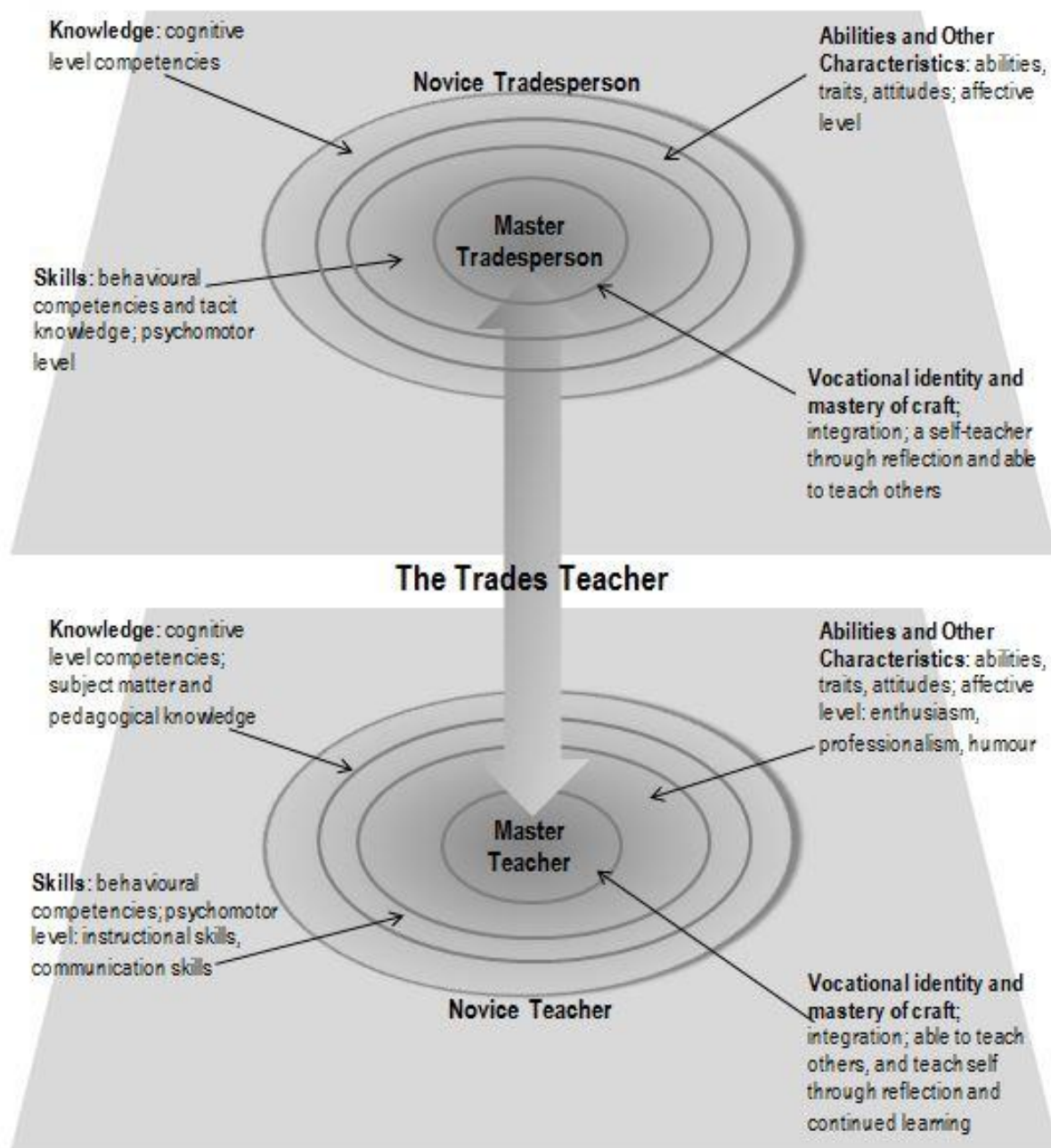
Figure 7.2 Trades teacher vocational identity model, original conception.

The current research suggests a different path to the identity of trades teacher, less linear and distinct, but rather more evolutionary and integrated. Based on the current study, the transition from identifying as tradesperson to identifying as trades teacher is different from the creation of a teacher identity envisioned by Korthagen (2004) or other vocational socialization theorists. Rather than beginning at the outer edge, gaining knowledge and theory, then practicing skills and developing abilities, and finally feeling a sense of mastery and identity as a teacher, tradespeople appear to come to teaching with a pre-existing identity as *teacher*, based on the journeyperson teaching apprentices. This process is represented in Figure 7.3 below.
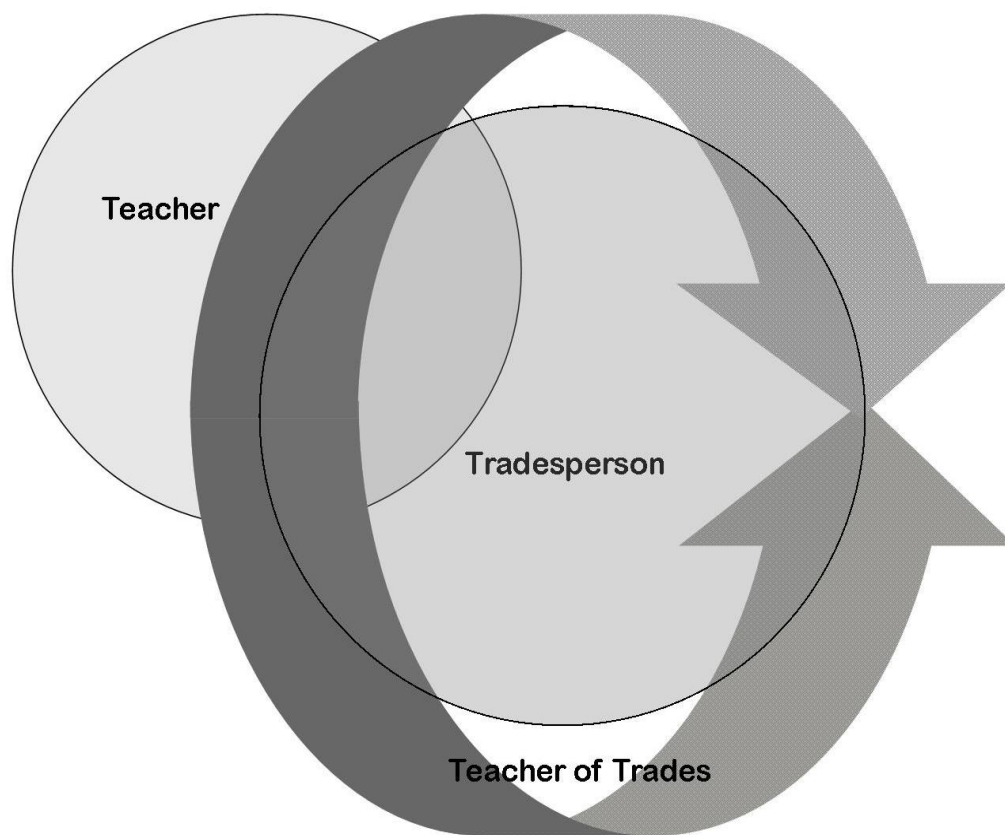
Figure 7.3 Trades teacher vocational identity, revised model.

Entering a formal teaching role with this pre-established identity, they are then thrust into the role full-time, usually with little or no planned preparation. Learning occurs through practice of

behaviours while on the job, and non-formal methods including discussions, self-study, and trial and error. Learning of theory occurs mainly through formal methods, such as courses and workshops; these activities may undermine the initial sense of being a good, or natural, teacher as the person compares this self-identity to the presented ideal of an academically trained teacher. Over time, a sense of being a teacher – a trades teacher – is established. This identity is solidified by establishing divisions from others: not teacher versus non-teacher, but often trades teacher versus other technical/vocational teachers, or trades teacher versus academics.

7.4.4.5 Which identity works? Chappell and Johnson (2003) suggested a dual identity of both tradesperson and teacher is an important part of the overall identity for trades teachers, and what distinguishes these educators from school teachers or university lecturers whose initial careers are often in education, an idea that is supported by the findings of the current research where a clear sense of division between trades teachers and other teachers is apparent. Chappell (1999) theorized that for trades teachers, legitimacy and identity as a teacher is tied to industry expertise, as reflected in the views of students and the trade community. This concept was supported by Arreola (2007) as a part of teaching competencies in the larger postsecondary sense, labelled as a *scholarship of proficiency*. An ongoing tie to the trade becomes a part of the trades teachers' sense of "who they are in the educational project" (Chappell, 1999, p. 218), leading to a need to self-identify as different from other teachers.

If a continued identification with the trade is psychologically necessary to provide a sense of legitimacy in teaching the trade, as Chappell and Johnson (2003) suggested and was reinforced by Haycock and Kelly (2009), then a dual or inclusive identity may be the best choice for a trades teacher. As described by study participants, there is a need to move beyond the trade, of "moving from blue [collar] to white" (p. 31, 3-4) and to take on the work of embracing the professionalism and theory of teaching. Yet, rather than seeing a re-socialization and change to full identification as *teacher* as necessary for trades teachers (Andersson et al., 2013; Mealyea, 1988), perhaps the "Janus-faced occupational identity" suggested by Haycock and Kelly (2009, p. 4) is the best – if somewhat complicated – choice to support continued teaching in the trades.

7.4.4.6 Key insights on vocational identity. The one question on vocational identity within this study provided only a glimpse into what is clearly a complex negotiation of respondents' self-concepts. The process of learning to be a tradesperson, the *first apprenticeship*, and learning to be a teacher, set out in this research as a *second apprenticeship*, is neither as

parallel nor as linear as suggested by the model I first created. The two identities are intertwined, with the concept of *teacher* embedded within the tradition of being a journeyperson, and the identity of being a master tradesperson embedded within the idea of being a trades teacher, as I have tried to show in the revised model.

Understanding the occupational roles as interconnected, rather than distinct, not only helps explain the results of the question on vocational identity, but also offers understanding on questions on motivation, pre-existing competency rating, learning method preferences, and satisfaction factors. Given the delimitations of this study, further research is needed to explore the definition and effects of vocational identity in this educational setting; however, the results found here suggest some ways in which an understanding of this dual identity could be used toward effective teaching.

Fostering an ongoing connection to industry, previously discussed as a means to maintain motivation for teaching and as a part of professional development, could also sustain the sense of legitimacy as a trades teacher. A strong sense of legitimacy could promote both confidence as a teacher, and satisfaction with the role, leading to continued service. This connection could be supported through industry leave, training or professional development related to industry, and through recognition of trades certification as valuable within the employing institution.

7.4.4.7 Further research on vocational identity. Research that followed the same teachers over time, in a longitudinal study, could provide further insight into the development of vocational identity for second-career teachers. A well-formed vocational identity has been linked to job and life satisfaction (Hirschi, 2011; Peterson Park & Seligman, 2005), suggesting that vocational identity could also be linked to attrition, since dissatisfaction with the role of teaching would likely lead to abandoning the career. Research that included trades teachers who chose to leave teaching could provide further insight, by correlating vocational identity to attrition.

7.4.5 What Factors Lead to a Feeling of Satisfaction as Teachers?

The final section within the research question asked about the satisfaction respondents felt as teachers, both currently and in comparison to their beginning days as a teacher. Two lists of factors were presented within the survey, one as potential sources of satisfaction and the other as potential sources of dissatisfaction. Qualitative comments were gathered through the survey and the interpretation panel discussions. The question of satisfaction and its components was not explored specifically in the literature review of Chapter Two, although included to some extent

within the discussion of motivation. The exploration of satisfaction was included in the survey as a means of measuring the success of the transition from tradesperson to trades teacher. The survey questions were created based primarily on the work of Dainty (2012) and Ruhland (2001).

7.4.5.1 High level of satisfaction found. Respondents rated themselves as somewhat satisfied or highly satisfied with teaching in the vast majority of cases. Most respondents said they are as satisfied with the role of teacher today as when they began, or are more satisfied today. No significant differences in satisfaction level were found by comparing the experience groups; however, satisfaction rose from the Novice and Junior groups to a high point among the Intermediate teachers. A lower rate of satisfaction was seen among Senior and Veteran teachers.

The high level of satisfaction reported by participants suggests that the transition from tradesperson to trades teacher has been successful for this sample group. The change in satisfaction from Novice to Intermediate, while not statistically significant, does align with previous research regarding a period of adjustment upon beginning teaching that leads to a sense of equilibrium and being established (Chang, 2009; Falk, 2012; Grissmer & Kirby, 1987; Skaalvik & Skaalvik, 2010). The slightly lower rate of satisfaction among Senior and Veteran teachers is also in keeping with research on teacher satisfaction both in the vocational context and in general (Hrabok, 2003; Skaalvik & Skaalvik, 2011).

7.4.5.2 Sources of satisfaction. From the list of factors that could lead to satisfaction with the role of teacher, respondents most often agreed with the statement *I feel I make a difference in students' lives*. The statement *I feel my work is valued by my institution* received the least agreement. Among factors that could lead to dissatisfaction with teaching, the strongest agreement was in reaction to *Not enough time to do the work*. Finding satisfaction in working with students is consistent with other studies of second-career teachers (Campbell, 2009; Sauder, 2001). Similarly, time pressure is commonly named as a source of dissatisfaction in studies of trade teacher job satisfaction (Kouri, 2009; Sauder, 2001).

7.4.5.2.1 Value within the institution. The sense of not being valued by the institution as a satisfaction/dissatisfaction factor is also seen in teacher satisfaction research. Skaalvik and Skaalvik (2011) saw a sense of belonging as a mediating factor, drawn from relationships with colleagues and supervisors as well as personal value consonance with the institution. When a

sense of belonging is present, teachers are more likely to feel satisfied with the role and continue teaching (Skaalvik & Skaalvik, 2011).

7.4.5.2.2 Reflection of class-based boundaries. The sense of feeling undervalued by the institution to the extent vocalized by participants in the current research may be specific to the group studied: it may be a reflection of the division between manual and intellectual labour in society that often privileges the work of the mind (Rose, 2004). A perceived division between trades programs versus academically-oriented programs, and versus the leadership of the employing institutions, was clearly expressed by interpretation panel participants in this study, as well as through survey comments.

The idea of boundaries has been explored by sociologists Lamont and Molnar (2002), looking at divisions of working class versus middle class and boundaries of profession, both of which may be in play in this situation. Lamont (2000) found distinct boundaries created by blue-collar men that set them apart from white-collar counterparts. Authors Lubrano (2005) and Ryan and Sackrey (1995) have explored the sense of division between individuals with working-class roots and those of middle-class background in university settings. There is little research available regarding trades teaching generally, however, and even less about boundaries affecting it within higher education. Research by Mealyea (1988) saw evidence of a division created and sustained among trades teachers, separating them from other vocational and technical teachers. Chappell and Johnson (2003) saw a self-created distinction, as well. Within the current study, comments from interpretation panel participants regarding the demoralizing effect of academically-focused mandatory teacher training, exclusion from participation in college events, and differences in the physical surroundings of program areas, suggest this boundary is not simply self-created, but is created or reinforced by the institution, as well. More research would be needed to understand the potential importance of these boundaries and how they arise.

For the purposes of this study, boundaries or exclusions are important insofar as they affect job satisfaction. Kitchel et al. (2012) surveyed American agriculture teachers, comparing the choice of reference group to satisfaction level, and found vocational teachers who saw themselves as inferior to a reference group had lower levels of job satisfaction. Hong (2010) recommended fostered collaboration and inclusion in a community of practice as means of mediating a sense of low valuation compared to other teachers.

Dainty (2012) suggested a plan to integrate career and technical teachers in the social environment of the school to build satisfaction and increase retention. De Lay and Washburn (2013) examined job satisfaction and attrition among American agriculture teachers and advocated collaboration, particularly with other teachers in this specialty, as a means to engage and keep agriculture teachers. "[Teachers] were confident they would have continued to entertain leaving if content area isolation continued" (De Lay & Washburn, 2013, p. 114).

7.4.5.2.3 Reflection of continuing psychological contract. Focusing in more narrowly, institutional disregard as a cause of dissatisfaction, as identified in the current survey, may represent ongoing issues within a particular institution or type of institution. Hrabok (2003) studied teachers within one of the three institutions surveyed in the current study and found the psychological contract was based far more on relationships with students than with the institution, which was seen as "faceless" (p. 241) or impersonal. As an example, in survey questions regarding employer recognition of employee contributions, *Not at All* or *Slightly* was chosen in two-thirds of the cases (Hrabok, 2003, p. 108). While the teacher group surveyed by Hrabok (2003) and that of the current study are not directly comparable in a longitudinal way, the similarity in results suggests a continuing pattern within this specific institution.

7.4.5.2.4 Trust in colleagues. From the frequency counts and correlations arising from survey data, it became clear that the relationship with other teachers is important to satisfaction. The relationship with one's supervisor is especially important and is correlated to all other satisfaction factors. The importance of relationships with colleagues is supported in other research on job satisfaction.

Van Maele and Van Houtte (2012) saw trust as key to job satisfaction for teachers, given the interdependent nature of the role. They regarded trust as a major component of social capital within educational institutions, and particularly important to novice teachers' efficacy: "Because teachers usually do lack many extrinsic rewards – high salaries, promotional opportunities, and so forth – they mainly need to derive satisfaction from intrinsic sources, such as their work and interactions with students and other adults in school" (Van Maele & Van Houtte, 2012, p. 881). Similarly, Matzler and Renzl (2006) showed that trust in colleagues and managers were strong predictors of employee satisfaction and loyalty in a team-based business setting, with trust in peers having a greater positive impact on satisfaction than trust in managers.

7.4.5.3 Improving satisfaction levels. While the majority of survey respondents indicated a sense of satisfaction, correlations can be found between levels of expressed satisfaction (highly dissatisfied, somewhat dissatisfied, neutral, somewhat satisfied, highly satisfied) and agreement with the factors listed. The level of satisfaction rose with the level of agreement to statements regarding contact with industry (χ^2 (3) = 5.573, p =.039), feeling valued by a supervisor (χ^2 (3) = 20.607, p = .000), feeling valued by the institution (χ^2 (3) = 21.192, p = .000) and by the public (χ^2 (3) = 9.606, p = .022), suggesting improvements in these particular aspects of the job could have the greatest effect on satisfaction levels.

Satisfaction through improvement in these factors is supported by research. Contact with industry was a necessary means to a sense of legitimacy provided through currency in the subject matter (Chappell, 1999); feeling valued by a supervisor has been linked to a sense of belonging that builds satisfaction (Matzler & Renzl, 2006; Skaalvik & Skaalvik, 2011); and feeling valued or included has been recommended to reduce attrition (De Lay & Washburn, 2013; Hong, 2010).

Suggested changes to increase satisfaction were provided in the survey, and respondents choose *more support for developing teaching skills and knowledge* most often. A Kruskal-Wallis test was used to test for differences in the stated agreement to satisfaction factors, when compared by level of satisfaction with teaching resulted in χ^2(3) = 9.405, p = .024 for this suggested change.

While on the surface this choice suggests more professional development opportunities, given the comments regarding the type of teacher training currently offered, and the expressed divisions between academically trained teachers and trades teachers, *more support* may mean something more than just additional workshops; it may mean support in the sense of recognition of existing skills and building upon them in non-formal ways, such as mentoring. Further study would be needed to fully understand this statement.

7.4.5.4 Key insights on satisfaction. The high level of satisfaction with teaching expressed by survey participants, and reinforced through qualitative portions of the survey and interpretation panel discussions, suggests tradespeople are making the transition to trades teacher successfully. While they experience a period of early adjustment, and further adjustment as they become well-established in the role, this pattern is in keeping with teachers in general. Relationships with colleagues, particularly with a supervisor, are linked to satisfaction levels. The relationship with the institution is a source of dissatisfaction, and would require further

research to understand the reasons and implications. The respondents' desire to continue improving as teachers, expressed in other parts of the study, is reinforced in their agreement that more support for developing teaching skills would increase their sense of satisfaction.

7.4.5.5 Further research on satisfaction with teaching. The delimitation of the current study to trades teachers currently employed by postsecondary institutions provides a view only of those who have persevered and found a level of satisfaction in this work. A study including those teachers who have left the role would provide further insight, and a comparison point, regarding satisfaction and dissatisfaction factors in this setting. The respondents expressed a sense of not being valued within the institution; this satisfaction or dissatisfaction factor could be explored through comparative research in other postsecondary settings.

7.5 Summarized Answer to the Research Question

The research question was posed as an exploration of the transition of tradespeople to trades teachers, viewing this transition as a movement from the *first apprenticeship* of trades practice, to the *second apprenticeship* of trades teacher. The research question was organized into the following questions:

1. What motivates experienced tradespeople to move into a second career of teaching?
2. What competencies do tradespeople transitioning to teaching bring to the classroom to support effective learning?
3. Once in the role of teacher, what formal and informal learning helps them to become effective teachers?
4. How does their vocational identity change with the change in career?
5. What factors lead them to a feeling of satisfaction or effectiveness with their work, and to continue as teachers?

At the end of this exploration, what are the answers that have emerged to the research question? To summarize all the data and analysis of any study is to strip away nuances in favour of generalizations, and to overstate aspects of the research in potentially unsupported fashion. Nevertheless, I will attempt to provide, in summary, the answers as shown through this study, keeping in mind the limitations of the results to the sample population.

7.5.1 Motivation

Tradespeople moving to trades teaching are motivated primarily by two factors. They take pride in their trade and want to see the craft continue through teaching and mentoring

apprentices on a full-time basis. Secondly, they seek an improved work-life balance through teaching and will accept lower remuneration as a teacher in order to have more time for family and life outside of work.

7.5.2 Teaching Competencies

Tradespeople bring a strong sense of having already been a teacher, as a part of being a journeyperson, to the role of trades teacher. They are self-reflective and wish to improve as teachers. They rate themselves as stronger in the general abilities, attitudes and other traits associated with teaching than in the pedagogical knowledge and skills competencies, but learn in these areas to gain confidence in their overall teaching competency over time.

7.5.3 Preferred Learning Methods

In learning to be a teacher, trades teachers prefer to replicate the non-formal learning methods of the apprenticeship model: mentorship, discussions, self-study, and trial and error. They reject overly formal or academic training as impractical, not helpful toward improving teaching, and an expression of the lower status accorded to trades teaching within higher education.

7.5.4 Vocational Identity

The transition from tradesperson to trades teacher is not a distinct change or linear process. It is an evolution, growing from the role of *teacher* embedded within *journeyperson*, and subsuming the trades knowledge gained through apprenticeship and practice, to become a new identity that makes one more than a teacher, more than a tradesperson, but rather a teacher of the trade.

7.5.5 Satisfaction as a Teacher

Trades teachers are satisfied with their work. They find satisfaction primarily through interactions with students and through relationships with colleagues. Dissatisfaction comes from time constraints and from a sense of not being valued within the institution.

7.6 Suggestions for Human Resource Practices

At the beginning of this research process, I stated a wish to integrate my experience in business administration and past studies in organizational behavior into this educational study through providing some measure of recommendations for recruitment and retention of trades teachers.

The results presented within this study are drawn from a limited sample, that of trades teachers at three Western Canadian institutions. Recommendations related to that group, and potentially to other groups employed in similar work, have emerged from the analysis of the data. These recommendations include:

- Recruitment efforts should focus on the motivational factor of *continuity*, both the opportunity to train the next generation and to continue within the trade in a new role.

- Recruitment should promote the work-life balance possible as a teacher.

- Since teaching salaries are not motivators, honest representation of the salary and benefits should be provided upfront, to allow informed decision-making by potential hires.

- Currently employed trades teachers are an important connection to future trades teachers; providing them with guidance on the *Abilities* and *Other* competencies associated with teaching within the KSAO framework could help them identify practicing tradespeople who might fit in well as teachers.

- The opportunity for continued connection to the trade, through sabbaticals or leave for industry practice, should be a part of the employment package. A connection could support job satisfaction as a trades teacher, provide currency in subject matter to the benefit of students, and build on the personal sense of legitimacy as a teacher of one's trade.

- When providing teacher training programs, a focus on practical and non-formal processes is more likely to be accepted by trades teachers than overly academic methods. Practical training in the early days of teaching could be particularly useful in building confidence and skill among new teachers, with more theoretical training provided at a later time. This process would allow experience in teaching practice during the novice stage to be included in reflections and discussions at a later date, building toward greater identification as a teacher.

- Teacher training specifically designed for trades, building on the idea of a *signature pedagogy* within apprenticeship, and utilizing practices of non-formal, tacit learning as in trades, could support the pre-existing identity of teacher while helping tradespeople move toward the full responsibilities of teaching. Opportunities for the recognition of prior learning in teaching knowledge and skills would also support this transition.

- Mentorship is favoured by trades teachers as a learning method. Encouraging mentorship of novice teachers by experienced teachers, through a matching process and allocation of time

for discussions, could be a very effective way to build teaching skills and knowledge in a non-formal and ongoing manner that would be readily accepted.

- Physically grouping teachers of the same subject or trade, through clusters of office space and classrooms, could foster mentoring and discussion.

- Providing for interaction between diverse groups of teachers, such as through professional development activities, would allow trades teachers to learn teaching skills from other disciplines and allow other teachers to learn from trades practice.

- Creating a sense of inclusion, through positive relationships with colleagues and with the institution, could help retain trades teachers. Considering the specific time commitments of this group when planning college events, including them in ceremonies such as graduation, and encouraging informal interaction with other teachers via common meeting spaces, would help build a more-inclusive culture.

- Trades teachers want to see institutional management, particularly at the level of dean or higher, positively recognize their work and the contribution of trades programs to the college. This recognition, whether in the form of a casual conversation, being featured in institutional advertising, through inclusion of journeypersons in the management ranks, or other means, would be welcomed and would encourage retention of teachers.

7.7 Reflections on the Research Process

In conducting this research, I labelled the process as an *exploratory mixed-methods study*; exploratory in the sense of being new within the literature on education. There was no previous study to follow nor were there results to test and replicate in looking at the transition from tradesperson to trades teacher. A new survey tool was created, using pieces of other research but often drawing from studies of elementary and secondary, or postsecondary academic, teachers rather than a directly comparable group of teachers. *Exploratory* was a cautionary term, saying to readers that this study should be considered as something new and should not be judged against other studies as would be done with research in more established areas within education.

The research was also exploratory, I soon found out, in the sense of being uncharted territory within postsecondary education. My interest in studying trades training was welcomed by institutions, deans of trades training, and teachers, often with a comment that no one ever pays attention to this part of education. Both at the institutional and individual level, people not

only agreed to participate but asked that the results be shared back with them, to add to their understanding.

7.7.1 Mixed Methods Design

Mixed methods research, often conducted through the use of a primarily quantitative survey tool followed by a qualitative discussion process, is a common choice for educational research. In this case, the survey was used to strengthen the results, not only by providing an empirical underpinning to the research, but also to cast a wider net across three institutions in three provinces and to strengthen the results through a broadly based sample. While the greatest response to the survey came from one institution, there was sufficient interest at the other two to consider this choice worth the extra effort of seeking ethics approval and access at all three institutions. Participants in the interpretation panels expressed appreciation for the chance to compare their personal responses to colleagues, not only within their home institutions, but across the Prairies.

The timing of the survey invitation was not deliberate but rather was dependent on obtaining ethics approvals, and access to email addresses, to allow the invitation to be sent out. The timing of the invitation proved fortuitous, however, as the emails reached teachers in early June as they were completing a term, and apparently were able to spare a few minutes to reflect on their work in this way, judging by the good response.

Given that trades training is an area of study that is often ignored, I purposely chose a philosophy of Appreciative Inquiry, to centre the research on strengths rather than problems, and chose a constructivist approach that privileged the views of the participants over those of the researcher. Using a mixed methods design, including a survey that limited participant input through pre-stated options to questions, may seem at odds with these intents; however, I believe the study was qualitative dominant and constructivist. The survey questions were designed to explore the reality of trades teachers, rather than measure the participants against any outside standard, and the survey provided opportunity for qualitative comments. The constructivist approach was further supported through the use of interpretation panels.

7.7.1.1 Value of interpretation panels. I am grateful for the suggestion of using interpretation panels as a part of my research. This form of qualitative data gathering and interpretation is not well established, and defining it as something distinct from focus groups or other qualitative methods will require further use and reflection; nevertheless, it was an excellent

fit for this study. I approached this topic with an interest based on family familiarity with trades and observations from teaching in a polytechnic institution, but without personal knowledge of trades teaching. Based on this limited background and other factors as described above, I chose a constructivist approach to the research, attempting to give voice to the self-defined realities of a group.

The interpretation panels, and the additional telephone interviews, allowed for participants' voices to be heard directly through the data gathering; however, this same result might have occurred through other qualitative means. The greater value of using an interpretation panel approach, I believe, was in the ontological and epistemological framework this method encourages. It calls on the researcher to be a medium of transmission for the participants, rather than being the outside expert finding meaning in the provided data. The experience of the studied group becomes privileged over that of the researcher, an important factor when working with a group whose members have been viewed as outsiders to the academy.

7.7.2 Exploration of Personal Values

The study was also exploratory in that it caused an exploration of my own beliefs. I grew up in a family with blue-collar roots. For more than a decade, I have worked in an academic institution that includes trades teachers. Yet, the sense of class-based division expressed by the research participants was shocking to me in its forcefulness. I began to consider the organizational culture of the institution in a new way, seeing it through the eyes of these participants, and comparing it to larger society and its boundaries in a sociological way.

In beginning this research, I saw an opportunity to combine past studies and experience in business administration with education, to provide recommendations, or at least suggestions, on recruitment, development, and retention of effective teachers in a vocational education setting. While the results did offer some recommendations toward these human resource practices, as outlined above, the sociology of the college emerged as more intriguing. In the end, this research is as much or more about the place of trades teachers within postsecondary education as it is about the administrative processes that bring them to, and keep them within, the college.

Participants commented on the transition from tradesperson to teacher as a move from blue-collar toward a white-collar world, and contrasted this expected adaptation with the simultaneous rarity of true inclusion, shown in panel comments such as "We're not invited to the

ivory tower" (p. 47, 26-27). These ideas caused me to consider my own transition as a first-generation postsecondary graduate now on the verge of achieving a doctorate. What traits and values, engrained from childhood through memories of parents working long days, or through doing similar work ourselves, do we as blue-collar scholars bring to this new role? Can we be accepted, or are the norms of academia so set within a middle-class schema as to always leave some at the edges? Certainly others, such as Ryan and Sackrey (1995) and Lubrano (2005), have explored this phenomenon, but I had never considered it in detail before this research was undertaken.

Given this strongly expressed sense of distrust and division between the blue-collar and white-collar worlds within the college, my request to trades teachers to participate in doctoral research might have been met with resistance. In contrast, my experience in talking to the participants was entirely positive and welcoming. They expressed appreciation for the attention to their practice through this study, and a hope that the message might be heard by the academics in power if delivered in an academic form.

In turn, I gained a deeper appreciation of the people involved in this much needed, but understudied, area of postsecondary education. Through my interactions with the participants, I renewed my respect for the intellect inherent in people who have not only mastered their trade, but who have then taken on the task of educating others in it. They wanted to be heard and had valuable insights to share; I am proud to have been a means toward that end.

REFERENCES

Abrami, P.C., Appollonia, S., & Rosenfeld, S. (1997). The dimensionality of student ratings of instruction: what we know and what we do not know. In R.P. Perry & J.C. Smart (Eds.), *Effective teaching in higher education: Research and practice* (pp. 321-367). New York, NY: Agathon Press.

Agresti, A. (1996). *An introduction to categorical data analysis*. New York, NY: John Wiley and Sons.

Algonquin College. (2011). *The professor of the 21ˢᵗ Century framework*. Retrieved from: www.algonquincollege.com

Allen, M. (2003). *Eight questions on teacher preparation: What does the research say?* Denver, CO: Education Commission of the States.

American Institutes for Research. (n.d.). *Promoting teaching effectiveness in adult education project: Draft adult education instructor competencies*. Retrieved from www.teproject.org

Anderson, LW., & Krathwohl, D.R. (Eds.) (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's taxonomy of educational objectives*. New York, NY: Longman.

Andersson, P., Köpsén, S., Larson, A., & Milana, M. (2013). Qualification paths of adult educators in Sweden and Denmark. *Studies in Continuing Education*, 35(1), 102-118. doi: 10.1080/0158037X.2012.712036

Apollonia, S., & Abrami, P.C. (1997). Navigating student ratings of instruction. *American Psychologist*, 52(11), 1198-1208. doi: 10.1037//0003-066X.52.11.1198

Apprenticeship and Trades Certification Act. 1999. Government of Saskatchewan.

Arreola, R.A. (2007). *Developing a comprehensive faculty evaluation system*. San Francisco, CA: Jossey-Bass.

Association of Universities and Colleges of Canada. (2007). *Trends in higher education: Volume 2, faculty.* Retrieved from http://www.aucc.ca

Association of Universities and Colleges of Canada. (n.d.) *Criteria to become a member: AUCC*. Retrieved from http://www.aucc.ca

Backes, C., & Burns, J.Z. (2008). New career-technical teachers – what gets them, and why is it important to know?: Career motivations of trade and industrial and healthcare science

second-career teachers. *Journal of Industrial Teacher Education*, 45(1), 100-112. Retrieved from http://scholar.lib.vt.edu/ejournals/JITE/v45n1/pdf/backes.pdf

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215. doi: 10.1037/0033-295X.84.2.191

Barabasch, A., & Watt-Malcolm, B. (2013). Teacher preparation for vocational education and training in Germany: a potential model for Canada? *Compare: A Journal of Comparative and International Education*, 43(2), 155-183. doi: 10.1080/03057925.2012.661216

Bartlett, J.E., Kotrlik, J.W., & Higgins, C.C. (2001). Organizational research: Determining appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal*, 19(1), 43-50. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/219816871

Becker, H. (1972). A school is a lousy place to learn anything in. *American Behavioral Scientist*, 16, 85-105. doi: 10.1177/000276427201600109

Berger, J., & D'Ascoli, Y. (2012). Becoming a VET teacher as a second career: investigating the determinants of career choice and their relation to perceptions about prior occupation. *Asia-Pacific Journal of Teacher Education*, 40(3), 317-341. doi: 10.1080/1359866X.2012.700046

Billett, S. (2002). Critiquing workplace learning discourses: Participation and continuity at work. *Studies in the Education of Adults*, 34(1), 56-67. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/62302794

Billett, S. (2012). Toward a mature provision of vocational education. *International Journal of Training Research*, 11(2), 184-194. doi: 10.5172/ijtr.2013.11.2.184

Bloom, B. S. (Ed). (1956). *Taxonomy of education objectives, the classification of educational goals, Handbook 1: Cognitive domain*. New York, NY: Longmans, Green.

Bloom, B.S., Krathwohl, D.R., & Masia, B.B. (1973). *Taxonomy of educational objectives: the classification of education goals.* New York, NY: David McKay.

Blyton, P., & Jenkins, J. (2007). *Key concepts in work*. London: Sage Publications.

Bockarie, A. (2002). The potential of Vygotsky's contributions to our understanding of cognitive apprenticeship as a process of development in adult vocational and technical education. *Journal of Career and Technical Education*, 19(1), 47-66. Retrieved from http://scholar.lib.vt.edu/ejournals/JCTE/v19n1/bockarie

Boldt, A. (1998). The transmission perspective: Effective delivery of content. In D.D. Pratt (Ed.), *Five perspectives on teaching in adult and higher education* (pp. 57-82). Malabar, FA: Kreiger Publishing.

Boyer, E.L. (1990). *Scholarship reconsidered: Priorities of the professoriate:* Lawrenceville, NJ: Princeton University Press.

Bransford, J., Darling-Hammond, L., & LePage, P. (2005). Introduction. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 1-39). San Francisco, CA: Jossey-Bass.

British Columbia Ministry of Advanced Education. (2013). *Provincial instructor diploma program: participant handbook*. Retrieved from www.instructordiploma.com

Brookfield, S.D. (2000). The concept of critically reflective practice. In A.L.Wilson & E.R. Hayes (Eds.), *Handbook of adult and continuing education* (pp. 22-49). San Francisco, CA: Jossey-Bass.

Brookfield, S. D. (2006). *The skillful teacher: On technique, trust, and responsiveness in the classroom*. San Francisco, CA: Jossey-Bass.

Brown, J.S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42. doi: 10.3102/0013189X018001032

Cabrera, A.F., Colbeck, C.L., & Terezini, P. T. (2001). Developing performance indicators for assessing classroom teaching practices and student learning: The case of engineering. *Research in Higher Education*, 42(3), 327-352. Retrieved from http://www.education.umd.edu

Cameron, R., & Molina-Azorin, J.F. (2011). The acceptance of mixed methods research in business and management. *International Journal of Organizational Analysis*. 19(3), 256-271. doi: 10.1108/19348831111149204

Campbell, S.J. (2009). *A survey of community college faculty, their teaching methodologies, and congruence with student learning needs* (Doctoral dissertation). Walden University, Minneapolis, MN.

Canadian Apprenticeship Forum. (2011). *Investigating apprenticeship completion in Canada: Reasons for non-completion and suggested initiatives for improving completion*. Retrieved from: www.caf-fac.org

Canadian Apprenticeship Forum. (2014). *Apprenticeship 101*. Retrieved from: www.caf-fac.org

Canadian Council on Education. (2006). *Canadian post-secondary education: a positive record – an uncertain future*. Retrieved from http://www.ccl-cca.ca/

Canadian Council on Learning. (2006). *Apprenticeship training in Canada*. Retrieved from: http://www.ccl-cca.ca/

Canadian Council on Learning. (2009). *Securing prosperity through Canada's human infrastructure: the state of adult learning and workplace training in Canada*. Ottawa, Canada: Canadian Council on Learning.

Canadian Federation of Students. (2012). *Funding for post-secondary education*. Retrieved from http://www.cfs-fcee.ca/

Carlson, N.M., May, W. E., Loertscher, R, & Cobia, C. (2003). Apprenticeship applications in adult education. *Mountain Plains Adult Education Association Journal of Adult Education*, 32(1), 29-43. Retrieved from https://www.mpaea.org/docs/pdf/journal_03_spring.pdf

Castro, A.J., & Bauml, M. (2009). Why now? Factors associated with choosing teaching as a second career and their implications for teacher education programs. *Teacher Education Quarterly*, 36 (3), 113-126. Retrieved from: http://www.jstor.org/stable/23479192

Catano, V.M., & Harvey, S. (2011). Student perception of teaching effectiveness: development and validation of the Evaluation of Teaching Competencies Scale (ETCS). *Assessment & Evaluation in Higher Education*, 36(6), 701-717. doi:10.1080/02602938.2010.484879

Centra. J.A. (1993). *Reflective faculty evaluation*. San Francisco, CA: Jossey-Bass.

Chan, S. Y. (2011). *Belonging, becoming, and being a baker: The role and processes of apprenticeship* (Doctoral dissertation). Griffith University, Australia.

Chang, M. (2009). An appraisal perspective of teacher burnout: Examining the emotional work of teachers. *Educational Psychology Review*, 21, 193-218. doi: 10.1007/s10648-009-9106-y

Chappell, C. (1999). *The policies and discourses of vocational education and training and their impact on the formation of teachers' identities* (Doctoral dissertation). University of Technology, Sydney, Australia.

Chappell, C., & Johnston, R. (2003). *Changing work: Changing roles for vocational education and training teachers and trainers*. Leabrook, Australia: National Centre for Vocational Education Research.

Cheu-Jey, G.L. (2012). Reconsidering constructivism in qualitative research. *Educational Philosophy and Theory*, 44(4), 403-412. doi: 10.1111/j.1469-5812.2010.00720.x

Chong, S., & Low, E. (2009). Why I want to teach and how I feel about teaching – formation of teacher identity from pre-service to the beginning teacher phase. *Educational Research for Policy and Practice,* 8(1), 59-72. doi: 10.1007/s10671-008-9056-z

Clifton, R.A. (2013). *Obtaining better teachers for Canadian public schools: A review of the "teacher effectiveness" research literature*. Retrieved from www.fraserinstitute.org

Coghlan, A.T., Preskill, H., & Tzavaras Catsambas, T. (2003). An overview of appreciative inquiry in evaluation. In H. Preskill and A.T. Coghlan (Eds.), *Using appreciative inquiry in evaluation* (pp. 5-22). San Francisco, CA: Jossey-Bass.

Cohen, J.W. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.) Hillsdale, NJ: Lawrence Erlbaum Associates.

Cohen, P.A. (1981). Student ratings of instruction and student achievement: A meta-analysis of multisection validity. *Review of Educational Research,* 51, 281–309. doi: 10.3102/00346543051003281

Collins, J.B., Jarvis-Selinger, S., & Pratt, D.D. (2010). Journeys toward becoming a teacher: charting the course of professional development. *Teacher Education Quarterly,* 37(2), 69-96. Retrieved from http://www.jstor.org/stable/23479590

Collins, J.B., & Pratt, D.D. (2011). The Teaching Perspectives Inventory at 10 years and 100,000 respondents: Reliability and validity of a teacher self-report inventory. *Adult Education Quarterly*, 61(4), 358-275. doi: 10.1177/0741713610392763

Collins, K.M.T., Onwuegbuzie, A.J., and Sutton, I.L. (2006). A model incorporating the rationale and purpose for conducting mixed-methods research in special education and beyond. *Learning Disabilities: A Contemporary Journal*, 4(1), 67-100. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/61932034

Collins. A., Brown, J.S., & Holum, A. (1991). Cognitive apprenticeship: Making thinking visible. *American Educator: The Professional Journal of the American Federation of Teachers*, 15(3), 6-11. Retrieved from http://elc.fhda.edu/transform/resources/collins_brown_holum_1991.pdf

Commonwealth of Australia. (2013a). *Carpenter: ANZSCO 331212*. Retrieved from www.training.gov.au

Commonwealth of Australia. (2013b). *TAE50111 Diploma of Vocational Education and Training*. Retrieved from www.training.gov.au

Conant, J. B. (1947). *On understanding science*. New Haven, CN: Yale University Press.

Concise Canadian Oxford Dictionary. (2005). Don Mills, Canada: Oxford University Press.

Conference Board of Canada. (2013). *Return on investment in tertiary educati*on. Retrieved from http://www.conferenceboard.ca/hcp/details/education/tertiary.aspx

Cooperrider, D.L., & Whitney, D. (1999). *Appreciative inquiry*. San Francisco, CA: Berrett-Koehler.

Council of Ministers of Education, Canada. (2008). *Education in Canada*. Retrieved from http://www.cmec.ca/

Couper, M. P. (2000). Web surveys – A review of issues and approaches. *Public Opinion Quarterly*, 64, 464–494. doi:10.1086/318641

Coy, M.W. (1989). *Apprenticeship: From theory to method and back again*. Albany, NY: State University of New York Press.

Crawford, M.B. (2009). *Shop class as soulcraft: An inquiry into the value of work*. New York, NY: Penguin Books.

Crawford, S. D., Couper, M. P., & Lamias, M. J. (2001). Web surveys: Perceptions of burden. *Social Science Computer Review*, 19, 146–162. doi:10.1177/089443930101900202

Creswell, J.W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage Publications.

Creswell, J.W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research.* Boston, MA: Pearson.

Creswell, J. W., & Plano Clark, V.L. (2011). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage Publications.

Cully, M., & Curtain, R. (2001). *Reasons for new apprentices' non-completion*. Leabrook, Australia: National Centre for Vocational Education Research.

Currall, S. C., & Towler, A.J. (2003). Research methods in management and organizational research toward integration of qualitative and quantitative techniques. In A. Tashakkori and C. Teddlie (Eds.), *Handbook of Mixed Methods in Social and Behavioral Research* (pp. 513-526). Thousand Oaks, CA: Sage Publications.

Dainty, J. (2012). *Predicting factors of secondary career and technical education teachers' intent to stay in the profession* (Doctoral dissertation). University of Arkansas, Fayetteville, AR.

Darling-Hammond, L. (2006). *Powerful teacher education: Lessons for exemplary programs.* San Francisco, CA: Jossey-Bass.

Darling-Hammond, L. (2012). *Creating a comprehensive system for evaluating and supporting effective teaching.* Stanford, CA: Stanford Center for Opportunity Policy in Education.

Dave, R. H. (1975). *Developing and Writing Behavioural Objectives.* Tucson, AZ: Educational Innovators Press.

De Lay, A.M., & Washburn, S.G. (2013). The role of collaboration in secondary agriculture teacher career satisfaction and career retention. *Journal of Agriculture Education*, 54 (3), 104-120. doi: 10.5032/jae/2013.04104

Delaney, J., Johnson, A., Johnson, T. & Treslan, D. (2008). *Students' perceptions of effective teaching in higher education.* St John's, Canada: Memorial University. Retrieved from www.mun.ca

Deming, W.E. (1986). *Out of the crisis*. Cambridge, MA: MIT Press.

Dennison, J.D., & Gallagher, P. (1986). *Canada's community colleges: A critical analysis*. Vancouver, Canada: UBC Press.

Denzin, N. K. & Lincoln, Y. S. (2005). Introduction: The discipline and practice of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage Handbook of Qualitative Research*, (pp. 1–32). Thousand Oaks, CA, Sage Publications.

Dewey, J. (1938; 1997). *Experience and Education*. New York, NY: Touchstone.

Dillman, D. A., & Smyth, J. D. (2007). Design effects in the transition to Web-based surveys. *American Journal of Preventive Medicine*, 32(5S), 90–96. doi: 10.1016/j.amepre.2007.03.008

Dommeyer, C. J., & Moriarty, E. (2000). Comparing two forms of an e-mail survey: Embedded vs. attached. *International Journal of Market Research*, 42, 39–50. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/214804671

Eifler, K., & Potthoff, D.E. (1998). Nontraditional teacher education students: a synthesis of the literature. *Journal of Teacher Education*. 49(3), 187-195. doi: 10.1177/0022487198049003004

Elbow, P. (1986). *Embracing contraries: Explorations in learning and teaching*. New York, NY: Oxford University Press.

Elliott, A.C., & Woodward, W.A. (2007). *Statistical analysis: Quick reference guidebook with SPSS examples.* Thousand Oaks, CA: Sage Publications.

Epstein, S.R. (1998). Craft guilds, apprenticeship, and technological change in preindustrial Europe. *The Journal of Economic History*, 58(3), 684-713. doi: 10.1017/S0022050700021124

Erikson, E. (1980). *Identity and the life cycle*. New York, NY: W.W. Norton and Company.

Falk. B. (2012). Ending the revolving door of teachers entering and leaving the teaching profession. *The New Educator*, 8(2), 105-108. doi: 10.1080/1547688X.2012.670565

Fan, W., & Yan, Z. (2010). Factors affecting response rates of the web survey: A systematic review. *Computers in Human Behavior*, 26, 132-139. doi:10.1016/j.chb.2009.10.015

Farnsworth, V., & Higham, J. (2012). Teachers who teach their practice: the modulation of hybridised professional teacher identities in work-related educational programmes in Canada. *Journal of Education and Work*, 25(4), 473-505. doi: 10.1080/13639080.2012.708726

Field, A.P. (2009). *Discovering statistics using SPSS.* Thousand Oaks, CA: Sage Publications.

Finch, H., & Lewis, J. (2003). Focus groups. In J. Ritchie & J. Lewis (Eds.), *Qualitative research practice: A guide for social science students and researchers* (pp. 170-198). Los Angeles, CA: Sage Publications.

Flanagan, J.C. (1954). The critical incident technique. *Psychological Bulletin*, 51(4), 327-358. doi: 10.1037/h0061470

Flores, E. (2011). *Becoming a researcher: A qualitative study of the apprenticeship model in doctoral education* (Doctoral dissertation). Retrieved from Proquest (1-124-84279-9)

Frels, R.K., & Onwuegbuzie. A.J. (2013). Administering quantitative instruments with qualitative interviews: A mixed research approach. *Journal of Counseling & Development,* 91(2), 184-194. doi: 10.1002/j.1556-6676.2013.00085.x

Fricker, R.D., & Schonlau, M. (2002). Advantages and disadvantages of internet research surveys: Evidence from the literature. *Field Methods*, 14(4), 347–367. doi:10.1177/152582202237725

Fuller, A., & Unwin, L. (2010). Learning as apprentices in the contemporary UK workplace: Creating and managing expansive and restrictive participation. *Journal of Education and Work*, 16(4), 407-426. doi: 10.1080/1363908032000093012

Gibb, S. J., Fergusson, D.M., & Horwood, L.J. (2008). Gender differences in educational achievement to age 25. *Australian Journal of Education,* 52(1), 63-80. doi: 10.1177/000494410805200105

Gilbreth, L.M. (1914). *The psychology of management: the function of the mind in determining, teaching and installing methods of least waste*. New York, NY: MacMillan Company.

Glazer, E.M., & Hannafin, M. J. (2006). The collaborative apprenticeship model: Situated professional development within school settings. *Teaching and Teacher Education*, 22, 179–193. doi:10.1016/j.tate.2005.09.004

Goldhaber, D. (2002). The mystery of good teaching. *Education Next*, 2(1), 50-55. ProQuest document ID: 1237764529

Government of Canada. (2013). *National Occupational Analysis: Carpenter*. Retrieved from: www.red-seal.ca

Government of Saskatchewan. (2013). *Ministry of Advanced Education: Plan for 2013-14*.Retrieved from: www.finance.gov.sk.ca/

Gowdy, E.F. (1987). *Teaching as a second career choice: A study of industrial education students* (Doctoral dissertation). University of British Columbia, Vancouver, Canada.

Graves, B. (1989). Informal aspects of apprenticeship in selected American occupations. In M. W. Coy (Ed.), *Apprenticeship: From theory to method and back again* (pp 51-64). Albany, NY: State University of New York Press.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11(3), 255–274. doi:10.3102/01623737011003255

Grissmer, D.W., & Kirby, S.N. (1987). *Teacher attrition: The uphill climb to staff the nation's schools*. Washington, DC: Center for Education Statistics.

Grollman, P., & Rauner, F. (2007). *International perspectives on teachers and lecturers in technical and vocational education*. Dordrecht, Netherlands: Springer.

Grossman, P.L. (1990). *The making of a teacher: Teacher knowledge and teacher education*. New York, NY: Teachers College Press.

Grubb, W.N. (1999a, May). *Edging toward effectiveness: examining postsecondary occupational education*. Presentation to National Assessment of Vocational Education, Washington, DC.

Grubb, W.N. (1999b). *Honored but invisible: an inside look at teaching in community colleges*. New York, NY: Routledge.

Guile, D., & Young, M. (1999). Beyond the institution of apprenticeship: Towards a social theory of learning as the production of knowledge. In P. Ainley & H. Rainbird (Eds.), *Apprenticeship: Towards a new paradigm of learning*, (pp. 111-128). London: Kagan Press.

Gurung, R.A., Chick, N.L., & Haynie, A. (2009). *Exploring signature pedagogies: Approaches to teaching disciplinary habits of mind.* Sterling, VA: Stylus Publishing.

Halpern, R. (2009). *The means to grow up: reinventing apprenticeship as a developmental support in adolescence.* New York, NY: Routledge.

Hanushek, E.A. (1989). The impact of differential expenditures on school performance. *Educational Researcher*, 18(4), 45-62. Retrieved from: http://www.jstor.org/stable/1176650

Hardie, R. (2011). *Principals' perceptions of the essential components of sustainable leadership and implications for succession planning at the elementary school level: A mixed methods research study* (Doctoral dissertation). University of Saskatchewan: Saskatoon, Canada.

Harms, B.M., & Knobloch, N.A. (2005). Preservice teachers' motivation and leadership behaviors related to career choice. *Career and Technical Education Research*, 30(2), 101-124. doi: 10.5328/CTER30.2.101

Harteis, C., & Gruber, H. (2008). Intuition and professional competence: Intuitive versus rational forecasting of the stock market. *Vocations and Learning*, 1, 71–85. doi: 10.1007/s12186-007-9000-z

Haycock, J., & Kelly, D. (2009). *From 'trade teacher' to 'critically reflective practitioner': The relationship between theory and occupational identity formation in TAFE teachers*. Retrieved from www.avetra.org.au

Henard, F. (2010). *Learning our lesson: Review of quality teaching in higher education*. OECD Publishing. Retrieved from www.oecd.org

Henderson, B. (1970). *The product portfolio*. Retrieved from bcgperspectives.com.

Herzberg, F. (1966). *Work and the nature of man*. Cleveland, OH: World Publishing.

Herzberg, F. (1987). One more time: How do you motivate employees? *Harvard Business Review*, 65(5), 109-120. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/227852950

Highet, G. (1963). *The art of teaching*. London: Methuen.

Hirschi, A. (2011). Vocational identity as a mediator of the relationship between core self evaluations and life and job satisfaction. *Applied Psychology: An International Review*, 60(4), 622–644. doi: 10.1111/j.1464-0597.2011.00450.x

Hong, J.Y. (2010). Pre-service and beginning teachers' professional identity and its relation to dropping out of the profession. *Teaching and Teacher Education*, 26, 1530-1543. doi: 10.1016/j.tate.2010.06.003

Hrabok, E.M. (2003). *The psychological contracts of experienced college instructors* (Doctoral dissertation). Retrieved from Proquest Dissertations and Theses (NQ80957)

Human Resources and Skills Development Canada. (2011). *National occupational classification 2011*. Retrieved from http://www5.hrsdc.gc.ca/NOC/English/NOC/2011/Welcome.aspx

Ingersoll, R.M., & Strong, M. (2011). The impact of induction and mentoring programs for beginning teachers: A critical review of the research. *Review of Educational Research*, 8(1), 201-233. doi: 10.3102/0034654311403323

International Business Machines. (2014, Aug. 15). *IBM SPSS missing values 22*. Retrieved from http://library.uvm.edu/services/statistics/SPSS22Manual

Jackson, N. (1993). Rethinking vocational learning. In R.P. Counter & I.F. Goodson (Eds.), *Rethinking Vocationalism: Whose work/life is it?* (pp. 166-180). Toronto, Canada: Our Schools/Our Selves Education Foundation.

Johnson, J., & Pratt, D.D. (1998) The apprenticeship perspective: Modelling ways of being. In D.D. Pratt, (Ed.), Five *perspectives on teaching in adult and higher education* (pp. 83-104). Malabar, FA: Kreiger Publishing.

Johnson, R.B., & Onwuegbuzie, A. J. (2004). Mixed methods research: a research paradigm whose time has come. *Educational Research*, 33(7), 14-26. doi: 10.3102/0013189X033007014

Jurasaite-Harbison, E., & Rex, L.A. (2010). School cultures as contexts for informal teacher learning. *Teacher and Teacher Education*, 26, 267-277. doi:10.1016/j.tate.2009.03.012

Kane, T.J., McCaffrey, D.F., Miller, T., & Staiger, D.O. (2013). *Have we identified effective teachers?:Validating measures of effective teaching using random assignment*. Retrieved from www.metproject.org

Karmel, T. (2010). An overview of vocational education and training. In B. McGaw, E.L. Baker, & P.L. Peterson (Eds.), *International encyclopedia of education* (pp. 229-239). Elsevier Publishing.

Keeley, J., Smith, D., & Buskist, W. (2006). The teacher behaviors checklist: Factor analysis of its utility for evaluating teaching. *Teaching of Psychology,* 3, 84–91. doi: 10.1207/s15328023top3302_1

Kelley, K., Clark, B., Brown, V., & Sitzia, J. (2003). Good practice in the conduct and reporting of survey research. *International Journal for Quality in Health Care*, 15(3), 261-266. doi: 10.1093/intqhc/mzg031

Kemmis, R.B., & Green, A. (2013). Vocational education and training teachers' conceptions of their pedagogy. *International Journal of Training Research*, 11(2), 101-121. doi: 10.5172/ijtr.2013.11.2.101

Kitchel, T., Smith, A.R., Henry, A.L., Robinson, J. S., Lawver, R.G., Park, T.D., Schell, A. (2012). Teacher job satisfaction and burnout viewed through social comparisons. *Journal of Agricultural Education*, 53:1, 31-44. doi: 10.5032/jae.2012.01031

Knowles, J.G. (1992). Models for understanding pre-service and beginning teachers' biographies: Illustrations from case studies. In I. F. Goodson, (Ed*.), Studying teachers' lives* (pp. 99-152). London: Routledge.

Knowles, M. (1990). *The adult learner: A neglected species*. Houston, TX: Gulf Publishing.

Kolb, D.A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs, NJ: Prentice Hall.

Kolb, A. Y., & Kolb, D.A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning and Education*, 4(2), 193-212. doi: 10.5465/AMLE.2005.17268566

Korthagen, F.A.J. (2004). In search of the essence of a good teacher: towards a more holistic approach in teacher education. *Teaching and Teacher Education*, 20, 77-97. doi: 10.1016/j.tate.2003.10.002

Kouri, D.A. (2009). *A narrative exploration of how second career community college teachers develop professional competence* (Doctoral dissertation). University of Toronto, Toronto, Canada.

Krathwohl, D. R., Bloom, B. S., & Masia, B. B. (1973). *Taxonomy of educational objectives, the Classification of educational goals. Handbook II: Affective domain*. New York: David McKay Co.

Lambert, M., Zeman, K., Allen, M., & Bussiere, P. (2001). *Who pursues postsecondary education, who leaves and why: Results from the Youth in Transition survey*. Ottawa, Canada: Culture, Tourism and the Centre for Education Statistics Division.

Lamont, M. (2000). *The dignity of working men: Morality and the boundaries of race, class, and immigration.* Cambridge, MA: Harvard University Press.

Lamont, M., & Molnar, V. (2002). The study of boundaries in the social sciences. *Annual Review of Sociology*. 28: 167-195. doi: 10.1146/annurev.soc.28.110601.141107

Landy, F.J. & Conte, J.M. (2007). *Work in the 21st Century: An introduction to industrial and organizational psychology.* Malden, MA: Blackwell Publishing.

Laporte. C., & Mueller, R.E. (2011). *The completion behaviour of registered apprentices: Who continues, quits or completes programs?* Ottawa, Canada: Statistics Canada.

Laporte, C., & Mueller, R.E. (2013). The completion behaviour of registered apprentices in Canada: who continues, who quits, and who completes programs? *Empirical Research in Vocational Education and Training,* 5(1), n.p. doi:10.1186/1877-6345-5-1

Lave, J. (1991). Situated learning in communities of practice. In L.B. Resnick, J.M. Levine, & S.T. Teasley (Eds.), *Perspectives on socially shared cognition* (pp. 63-84). Washington, DC: American Psychological Association.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York, NY: Cambridge University Press.

Layne, L. (2012). Defining effective teaching. *Journal on Excellence in College Teaching, 23*(1), 43-68. Retrieved from http://search.proquest.com/docview/1037908335

Lefebvre, R., Simonova, E., & Wang, L. (2012). *Labour shortages in skilled trades – The best guestimate?* Ottawa, Canada: Certified General Accountants Association of Canada.

Lehmann, W. (2005). Choosing to labour: Structure and agency in school-work transition. *The Canadian Journal of Sociology*, 30(3), 325-359. Retrieved from http://www.jstor.org/stable/4146145

Levinson, H. (1970). Managing by whose objectives?. In *Harvard Business Review on appraising employee performance,* (pp. 1-28). Boston, MA: Harvard Business School Publishing Corp.

Lopez-Fernandez, O., & Molina-Azorin, J.F. (2011). The use of mixed methods research in interdisciplinary educational journals. *International Journal of Multiple Research Approaches,* 5(2), 269-283. doi: 10.5172/mra.2011.5.2.269

Lortie, D.C. (1975). *Schoolteacher*. Chicago, IL: University of Chicago Press.

Lubrano, A. (2004). *Limbo: Blue-collar roots, white-collar dreams*. Hoboken, NJ: John Wiley.

Lucas, B., Spencer, E., & Claxton, G. (2012). *How to teach vocational education: A theory of vocational pedagogy*. Winchester, England: City & Guilds Centre for Skills Development.

Luthans, F. (2002). The need for and meaning of positive organizational behavior. *Journal of Organizational Behavior*, 23, 695–706. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/224879449

Lyons, J.E., Randhawa, B.S., & Paulson, N.A. (1991). The development of vocational education in Canada. *Canadian Journal of Education*, 16(2), 137-150. doi:10.2307/1494967

Macnaughten, P., & Myers, G. (2004). Focus groups. In C. Seale, G. Gobo, J. Gubrium & D. Silverman (Eds.), *Qualitative research practice* (pp. 65-79). Thousand Oaks, CA: Sage.

Manfreda, K. L., Bosnjak, M., Berzelak, J., Haas, I., & Vehovar, V. (2008). Web surveys versus other survey modes. *International Journal of Market Research*, 50, 79–104. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/214808455

Marcia, J. E. (1980). Identity in adolescence. In J. Adelson (Ed.), *Handbook of adolescent psychology* (pp. 158-187). New York: Wiley.

Marsh, H.W., & Roche, L.A. (1997). Making students' evaluation of teaching effectiveness effective: The critical issues of validity, bias, and utility. *American Psychologist*, 52(11), 1187-1197. doi: 10.1037//0003-066X.52.11.1187

Maslow, A. (1962). *Toward a psychology of being*. Princeton, NJ: Van Nostrand.

Matzler, K. & Renzl, B. (2006). The relationship between interpersonal trust, employee satisfaction, and employee loyalty. *Total Quality Management and Business Excellence*, 17(10), 1261-1271. doi: 10.1080/14783360600753653

Maurice-Takerei, L., & Jesson, J. (2010). Nailing down an identity: The voices of six carpentry educators. *New Zealand Journal of Teachers' Work*, 7(2), 156-170. Retrieved from http://www.teacherswork.ac.nz/journal/volume7_issue2/maurice-takerei.pdf

McGregor, D. (1960; 2006). *The human side of enterprise*. New York, NY: McGraw-Hill.

McKeachie, W. J. (1990). Research on college teaching: the historical background. *Journal of Educational Psychology* 82(2), 189-200. doi: 10.1037//0022-0663.82.2.189

Mealyea, R.J. (1988). *Confirmed tradies: A study of a mature-age technical teacher education program (*Doctoral dissertation). Monash University, Melbourne, Australia.

Mealyea, R. (1989). Humour as a coping strategy in the transition from tradesperson to teacher. *British Journal of Sociology of Education*, 10(3), 311-333. doi: 10.1080/0142569890100303

Meredith, J. (2011). Apprenticeship in Canada: Where's the crisis? *Journal of Vocational Education and Training*, 63(3), 323-344. doi: 10.1080/13636820.2011.570453

Merriam, S.B. (2009). *Qualitative research: A guide to design and implementation.* San Francisco, CA: John Wiley.

Merriam, S.B., & Brockett, R.G. (1997). *The profession and practice of adult education: An introduction.* San Francisco, CA: John Wiley and Sons.

Mokyr, J. (Ed.). (2003). *The Oxford encyclopedia of economic history*. Oxford University Press, ebook.

Molina-Azorin, J.F. (2011). The use and added value of mixed methods in management research. *Journal of Mixed Methods Research,* 5(1), 7-24. doi: 10.1177/1558689810384490

Moodie, G. (2002). Identifying vocational education and training. *Journal of Vocational Education & Training*, 54(2), 249-266. doi: 10.1080/13636820200200197

Munck, B. Kaplan, S.L., & Soly, H. (2007*). Learning on the shop floor: Historical perspectives on apprenticeship*. New York, NY: Berghahn Books.

National Association of Home Builders. (2003). *Building trades: Carpentry standards and competencies*. Retrieved from: http://cengagesites.com/academic

Nesbit, T. (1998). Teaching in adult education: Opening the black box. *Adult Education Quarterly*; 48(3), 157-171. doi: 10.1177/074171369804800303

No Child Left Behind Act, PL 107-110 (2001).

Noonan, B. (2002). Interpretation panels and collaborative research. *Brock Education*, 12(1), 89-100.

Northern Alberta Institute of Technology. (2013, Aug. 10). *Job posting: Instructor, welding school of trades*. Retrieved from http://ch.tbe.taleo.net/CH06/ats/careers/

Northern Alberta Institute of Technology. (n.d.). *Becoming a Master Instructor.* Retrieved from www.nait.ca

Norton, R.E. (1997). *DACUM Handbook*. Columbus, OH: Center on Education and Training for Employment.

Nze, J.S., & Ginestie, J. (2012).Technical and vocational teaching and training in Gabon: how future teachers build their vocational identity? *International Journal of Technology in Education*, 22, 399–416. doi: 10.1007/s10798-010-9143-3

Ong, W.J. (1958). *Ramus: Method, and the decay of dialogue*. Cambridge, MA: Harvard University Press.

Onwuegbuzie, A.J. (2012). Putting the MIXED back into quantitative and qualitative research in educational research and beyond: Moving toward the radical middle. *International Journal of Multiple Research Approaches*, 6(3), 192-219. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/1492257444

Organization for Economic Co-operation and Development. (2002). *Thematic review on adult learning: Canada*. Retrieved from http://www.oecd.org

Oxford English Dictionary Online. (2013). Oxford University Press. 2 February 2014. Retrieved from http://www.oed.com.cyber.usask.ca/view/Entry/9816.

Pallant, J. (2013). *SPSS survival manual* (5th ed.) New York, NY: McGraw-Hill.

Palmieri, P. (2004). *Approaches to the idea of the 'good teacher' in vocational education and training*. Paper presented at the Australian Association for Research in Education, Melbourne, Australia.

Parker, P. J. (1998). *The courage to teach*: *Exploring the inner landscape of a teacher's life*. San Francisco, CA: Jossey-Bass.

Peterson, C., Park, N., & Seligman, M. (2005). Orientations to happiness and life satisfaction: The full life versus the empty life. *Journal of Happiness Studies*, 6, 25-41. doi: 10.1007/s10902-004-1278-z

Polanyi, M. (1958/1998). *Personal knowledge. Towards a post critical philosophy*. London: Routledge.

Polytechnics Canada. (2012). *Statement to the House of Commons Committee on Human Resources, Skills and Social Development and the Status of Persons with Disabilities*. Retrieved from www.polytechnicscanada.com.

Prairie Research Associates. (2012). *2011-12 survey of 2009-10 Saskatchewan post-secondary graduates.* Retrieved from http://www.saskapprenticeship.ca

Pratt, D.D. (1998a). Analyzing perspectives: Identifying commitments and belief structures. In D.D. Pratt, (Ed.), *Five perspectives on teaching in adult and higher education* (pp. 217-255). Malabar, FA: Kreiger Publishing.

Pratt. D.D. (1998b). *Five perspectives on teaching in adult and higher education*. Malabar, FA: Kreiger Publishing.

Pratt, D.D., & Nesbit, T. (2000). Discourses and cultures of teaching. In A.L.Wilson & E.R. Hayes (Eds.), *Handbook of adult and continuing education* (pp. 117-131). San Francisco, CA: Jossey-Bass.

Prawat, R. (1999). Cognitive theory at the crossroads: Head fitting, head splitting, or somewhere in between? *Human Development*, 42(2), 59-77. doi: 10.1159/000022611

Rahilly, T.J., & Saroyan, A. (1997, March). *Characterizing poor and exemplary teaching in higher education: implications for faculty development*. Paper presentation at American Educational Research Association, Chicago, IL.

Ralph, E.G. (2003). *Effective college teaching: Fresh insights and exemplary practices*. Hauppauge, NY: Nova Science Publishers.

Ralph, E.G. (2004). *Pursuing instructional effectiveness in higher education: it's about time!* Hauppauge, NY: Nova Science Publishers.

Red River College. (1999). *Adult educator: DACUM*. Retrieved from http://air.rrc.mb.ca/

Rikowski, G. (1999). Nietzche, Marx and mastery: The learning unto death. In P. Ainley & H. Rainbird (Eds.), *Apprenticeship: Towards a new paradigm of learning* (pp. 62-73). London: Kogan Page.

Robertson, I. (2008). VET teachers' knowledge and expertise. *International Journal of Training Research,* 6(1), 1-22. doi:10.5172/ijtr.6.1.1

Robinson, W. (2004). *Power to teach: learning through practice*. New York, NY: Routledge Falmer.

Rockoff, J. E., & Speroni, C. (2011). Subjective and objective evaluations of teacher effectiveness: Evidence from New York City. *Labour Economics* 18, 687–696. doi: 10.1016/j.labeco.2011.02.004

Rose, M. (2004). *The mind at work: Valuing the intelligence of the American worker*. New York, NY: Penguin Group.

Ruhland, S. K., (2001, December 16). *Factors influencing the turnover and retention of Minnesota's secondary career and technical education teachers*. Presented at the Annual Meeting of the Association for Career and Technical Education, New Orleans, LA.

Ryan, J., & Sackrey, C. (Eds.) (1996). *Strangers in paradise: Academics from the working class*. Boston, MA: South End Press.

Sadler, D.R. (2013). Making competent judgments of competence. In Blömeke, S., Zlatkin-Troitschanskaia, O., Kuhn, C., & Fege, J. (Eds.), *Modeling and Measuring Competencies in Higher Education: Tasks and Challenges* (pp. 13-28). Rotterdam, Netherlands: Sense Publishers.

Saldana, J. (2013). *The coding manual for qualitative researchers*. Thousand Oaks, CA: Sage Publications.

Salkind, N.J. (2011). Statistics for people who (think) they hate statistics (4th ed.) Thousand Oaks, CA: Sage Publications.

Saskatchewan Apprenticeship and Trades Commission. (2013). *Carpenter.* Retrieved from www.saskapprenticeship.ca

Saskatchewan Apprenticeship and Trades Commission. (2014). *Frequently asked questions.* Retrieved from www.saskapprenticeship.ca, Feb. 9, 2014.

Saskatchewan Institute of Applied Science and Technology. (2013, Aug. 10). Job posting: Plumbing instructor. Retrieved from https://careers.gosiast.com/postings/2892.

Saskatchewan Ministry of Advanced Education. (2011). *Saskatchewan Higher Education Quality Assurance Board: Quality assurance review process, organizational self-evaluation—draft*. Retrieved from http://www.quality-assurance-sk.ca, July 11, 2013.

Saskatchewan Polytechnic. (2014). *Saskatchewan Polytechnic instructor competencies: Outlining excellence in instruction at Saskatchewan Polytechnic.* Saskatoon, Canada.

Saskatchewan Provincial Building and Construction Trades Council. (2012). *Trades training: Investing in Saskatchewan's economy*. Retrieved from http://www.saskbuildingtrades.com/

Saskatchewan Teachers Federation. (2013, May 15). Marchuk addresses teachers' concerns about standardized testing. *Saskatchewan Bulletin.* Retrieved from http://www.stf.sk.ca

Saskjobs. (2013, Aug. 13). Search result: trades, transport and construction. Retrieved from http://www.saskjobs.ca/

Sauder, K.P. (2001). *The journey from newcomer to old-timer: The orientation and professional development requirements of new instructors at the Saskatchewan Institute of Applied Science and Technology* (Masters thesis). University of Regina, Regina, Canada.

Schacter, J., & Thum, Y.M. (2004). Paying for high- and low-quality teaching, *Economics of Education Review* 23, 411–430. doi: 10.1016/j.econedurev.2003.08.002

Schein, E.H. (1988). *Organizational Psychology.* Englewood Cliffs, NJ: Prentice Hall:

Schlossberg, N. K., Waters, E., & Goodman, J. (1995). *Counseling adults in transition: Linking practice with theory*. New York, NY: Springer.

Schon, D. (1983). *The reflective practitioner: How professionals think in action*. U.S: Basic Books.

Schulman, L. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4-14. doi:10.3102/0013189X015002004

Schulman, L. (2005a). Signature pedagogies in the professions. *Dædalus,* Summer, 52-59. doi: 10.1162/0011526054622015

Schulman, L. (2005b, February). *The signature pedagogies of the professions of law, medicine, engineering, and the clergy: Potential lessons for the education of teachers.* Paper presented at the Teacher Education for Effective Teaching and Learning conference, National Research Council's Centre for Education, Irvine, CA.

Schwandt, T.A. (1996). Farewell to criteriology. *Qualitative Inquiry*, 2(1), 58-72. doi: 10.1177/107780049600200109.

Scott, G. (1992). Challenges facing vocational teachers and trainers in the 1990s. In A. Gonczi (Ed.), *Developing a competent workforce: Adult learning strategies for vocational*

educators and trainers (pp. 44-73). Leabrook, Australia: National Centre for Vocational Education Research.

Seidel, T., & Shavelson, R.J. (2007). Teaching effectiveness research in the past decade: The role of theory and research design in disentangling meta-analysis. *Review of Educational Resear*ch, 77(4), 454-499. Stable URL: http://www.jstor.org/stable/4624908 .

Sennett, R. (2008). *The Craftsman*. New Haven, CT: Yale University Press.

Sharman, K. (2011). The narrative process of improving vocational classroom practice. *Ontario Action Research*, 11(2), n.p. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/1011399131

Shepherd, K. M. (2009). *Effective teaching in higher education: the community college connection* (Doctoral dissertation). Oakland University, Auburn Hills, MI.

Simmons, T.M. (2009). *The Preparing Future Faculty (PFF) program: Examining relationships and regressions among professional identity, career expectations, and teaching efficacy* (Doctoral dissertation). Howard University, Washington, DC.

Simpson, I.H. (1967). Patterns of socialization into professions: the case of student nurses. *Sociological Inquiry*, 37(1), 47-54. doi: 10.1111/j.1475-682X.1967.tb00637.x

Skaalvik, E.M., & Skaalvik, S. (2010). Teacher self-efficacy and teacher burnout: A study of relations. *Teaching and Teacher Education*, 26, 1059-1069. doi:10.1016/j.tate.2009.11.001

Skaalvik, E.M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education*, 27, 1029-1038. doi:10.1016/j.tate.2011.04.001

Snell, K.D.M. (1996). The apprenticeship system in British history: the fragmentation of a cultural institution. *History of Education*, 25(4), 303-321. doi: 10.1080/0046760960250401

Sorcinelli, M.D. (1992). New and junior faculty stress: Research and responses. *New Directions for Teaching and Learning*, 50(Summer), 27-37. doi: 10.1002/tl.37219925005

Sorcinelli, M.D. (1994). Effective approaches to new faculty development. *Journal of Counseling and Development*, 72(5), 474-479. doi: 10.1002/j.1556-6676.1994.tb00976.x

Sorcinelli, M.D. (2007). Faculty development: the challenge going forward. *American Association of Colleges and Universities Peer Review*, 9(4), p 4-8. Retrieved from http://www.aacu.org/peerreview/pr-fa07/pr-fa07_FacDev.cfm

Statistics Canada. (2008). *Statistics Canada's Definition and Classification of Postsecondary and Adult Education Providers in Canada.* Retrieved from http://www.statcan.gc.ca/

Statistics Canada. (2013a). *Table 477-0033 -Postsecondary enrolments, by program type, credential type, age groups, registration status and sex, annual (number)*, CANSIM database. Retrieved from www.statcan.gc.ca

Statistics Canada. (2013b). *Registered apprenticeship training programs, 2011 (final)*. Retrieved from www.statcan.gc.ca

Statistics Canada. (2013c). *Canadian postsecondary enrolments and graduates, 2011/2012*. Retrieved from www.statcan.gc.ca

Stonechild, B. (2006). *The new buffalo: The struggle for Aboriginal post-secondary education in Canada*. Winnipeg, Canada: University of Manitoba Press.

Suchman, L.A. (1983). Office procedure as practical action: models of work and system design. *ACM Transactions on Office Information Systems,* 1(4), 320-328. doi: 10.1145/357442.357445

Swain, G., Schmertzing, L., & Schmertzing, R. (2011). A qualitative investigation of the impact of early-career experience on teachers with alternative certification. *Delta Kappa Gamma Bulletin*, 77(4), 59-66. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/905838568

Tashakkori, A. and Teddlie, C. (Eds.). (2003). *Handbook of mixed methods in social and behavioral research.* Thousand Oaks, CA: Sage Publications.

Tashakkori, A., & Teddlie, C. (2010). Putting the human back in "human research methodology": The researcher in mixed methods research. *Journal of Mixed Methods Research*, 4, 271-277. doi: 10.1177/1558689810382532

Taylor, F.W. (1911). *The principles of scientific management*. Retrieved from www.gutenberg.org

Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Thousand Oaks, CA: Sage Publications.

Tigchelaar, A., Brouwer, N., & Korthagen, F. (2008). Crossing horizons: Continuity and change during second-career teachers' entry into teaching. *Teaching and Teacher Education*, 24, 1130-1550. doi:10.1016/j.tate.2008.03.001

Trede, F., Macklin, R.M., & Bridges, D. (2011). Professional identity development: a review of the higher education literature. *Studies in Higher Education*, 37(3), 365-384. doi: 10.1080/03075079.2010.521237

Tschannen-Moran, M., Woolfolk Hoy, A., & Hoy, W.K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research* 68, 202-248.

Vajoczki, S. (2008). *Effective teaching and teaching evaluation practices: Canadian university geography departments* (Doctoral dissertation). Wilfred Laurier University, Waterloo, Canada.

Van Maele, D., & Van Houtte, M. (2012). The role of teacher and faculty trust in forming teachers' job satisfaction: Do years of experience make a different? *Teaching and Teacher Education*, 28, 879-889. doi:10.1016/j.tate.2012.04.001

Volmari, K., Helakorpi, S., & Frimodt, R. (2009). *Competence framework for VET professions: Handbook for practitioners*. Sastamala, Finland: Finnish National Board of Education.

Vorhaus, J. (2010). Learning styles in vocational education and training. In B. McGaw, E.L. Baker, & P.L. Peterson (Eds.), *International Encyclopedia of Education* (pp. 376-382). Academic Press. Oxford, England: Elsevier.

Vygotsky, L.S. (1978). *The mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Walker, G.E., Golde, C.M., Jones, L., Conklin Bueschel, A., & Hutchings, P. (2008). *The formation of scholars: rethinking doctoral education for the twenty-first century*. Stanford, CA: The Carnegie Foundation for the Advancement of Teaching.

Walston, J. T., Lissitz, R. W., & Rudner, L. M. (2006). The influence of web-based questionnaire presentation variations on survey cooperation and perceptions of survey quality. *Journal of Official Statistics*, 22, 271–291. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/1266792622

Warshauer Freedman, S., & Appleman, D. (2008). "What else would I be doing?": Teacher identity and teacher retention in urban schools. *Teacher Education Quarterly*, 35 (3), 109-126. Retrieved from http://www.jstor.org/stable/23478984

Watson, A. (1991) Competency-based vocational education: Is this the answer? *The Vocational Aspect of Education*, 42(114), 133-145. doi: 10.1080/10408347308003621

Watt, H.M.G., & Richardson, P.W. (2007). Motivational factors influencing teaching as a career choice: Development and validation of the FIT-Choice scale. *Journal of Experimental Education*, *75*, 167–202. doi:10.3200*/*JEXE.75.3.167-202

Watt-Malcolm, B. (2008). *Women in trade: Policy in theory and policy in practice.* (Doctoral dissertation). University of Alberta, Edmonton, Canada.

Watt-Malcolm, B., & Taylor, A. (2007). "Get them young and train them right": Negotiations in a VET partnership. *The Canadian Journal for the Study of Adult Education*, 20(2), 57-70. Retrieved from http://search.proquest.com.cyber.usask.ca/docview/1346912836

Wenger, E. (2006). *Communities of practice: A brief introduction*. Retrieved from: http://www.ewenger.com/theory/

Wenger, E., McDermott, R., & Snyder, W.M. (2002). *Cultivating communities of practice: A guide to managing knowledge*. Boston, MA: Harvard Business School Press.

Westera, W. (2001). Competences in education; a confusion of tongues. *Journal of Curriculum Studies*, 33(1), 75–88. doi: 10.1080/00220270150039255

Wheelwright, P. (1951). *Aristotle.* New York, NY: Odyssey Press.

Wilson, J. (2007). *An examination of the relationship of interaction, learner styles, and course content on student satisfaction and outcomes in online learning* (doctoral dissertation). University of Southern Queensland: Toowoomba, Australia.

Winch, C. (2012). Research in vocational education and training. *British Journal of Educational Studies*, 60(1), 53-63. doi: 10.1080/00071005.2011.650944

APPENDIX A:
INFORMATION LETTER TO PARTICIPANTS AND SURVEY

Online Survey Information Letter to Participants

Dear Instructor;

My name is Barb Gustafson, and I am a student in the doctoral program for the Department of Educational Administration at the University of Saskatchewan. I am also a faculty member at the Saskatchewan Institute of Applied Science and Technology. As a part of the requirements for my degree, I am conducting a survey of instructors in trades training in Western Canada. The title of my study is **The Second Apprenticeship: An Exploratory Study of the Transition from Tradesperson to Teacher.**

The purpose of this study is to better understand the career path of trades instructors from industry to teaching in postsecondary technical institutions, including what motivates people to make this career change, how they learn to teach, and what keeps them motivated as teachers.

Trades training is an area within education that has not been studied extensively; the aim of this survey is to add to the understanding of this important sector within postsecondary education. Your participation may benefit yourself, your colleagues, the institution at which you teach, and other similar institutions, in understanding the concerns of trades instructors as they begin their teaching careers. There are no known or anticipated risks to you by participating in this study.

Your institution has agreed to help me to contact trades instructors to participate in this survey, but has not provided any information beyond email addresses. Your participation is completely voluntary. All responses to the survey are anonymous and will remain confidential; information you provide in this survey will not be shared with your employing institution, except as a part of consolidated responses from several institutions in a final report. Data from this study will be kept for at least five years in a secure location at the University of Saskatchewan.

I hope you will participate, by completing the online survey through the link below. This survey will take about 15 minutes to complete. Most questions can be completed quickly; however, there are also opportunities to provide more information if you wish. You are not required to answer any questions that you are not comfortable answering. Once you have submitted the survey, your information will be consolidated with others' submissions, and cannot be removed.

This research project has been approved on ethical grounds by the University of Saskatchewan Research Ethics Board on May 1, 2014. This approval has also been reviewed by the research office of your institution. Any questions regarding your rights as a participant may be addressed to the Research Ethics Office ethics.office@usask.ca (306) 966-2975 or toll free (888) 966-2975. If you have any questions or concerns about this study, please contact me at barb.gustafson@usask.ca or via phone at 306-922-2150, or my supervisor, Dr. David Burgess, at david.burgess@usask.ca.

Thank you in advance for your participation in this study.

Barb Gustafson   Dr. David Burgess
PhD Candidate   Research Supervisor
University of Saskatchewan   University of Saskatchewan

Trades Instructors Survey

This survey is being conducted as a part of graduate studies research through the University of Saskatchewan. The purpose is to gain a better understanding of the career path of trades instructors at Western Canadian postsecondary institutions.

Questions in this survey ask your opinion on teaching; there are no right or wrong answers. You will not be asked to identify yourself in connection with this survey, and the responses will remain confidential. Your responses will be reported in the final research analysis anonymously, compiled with other responses.

If you would like to see a report on the results, you will be able to do so by providing an email address at the end of the survey.

Consent

I agree to voluntarily participate in this survey and to share my knowledge through it, understanding that my responses will be anonymous and confidential. *(required answer)*

      Yes   No

      (Answering *No* will send participant to exit page)

Confirmation

Do you hold journeyperson certification in one or more trades? *(required answer)*

      Yes   No

      (Answering *No* will send participant to exit page)

In what trade(s) are you a journeyperson?

    Agricultural Equipment Technician
    Appliance Service Technician
    Auto Body Technician
    Automotive Service Technician
    Baker
    Boilermaker
    Bricklayer
    Cabinetmaker
    Carpenter
    Cook
    Electrician
    Gasfitter
    Hairstylist
    Heavy Equipment Technician
    Ironworker
    Machinist
    Millwright
    Parts Technician
    Plumber
    Refrigeration and Air Conditioning Mechanic
    Roofer
    Sheet Metal Worker
    Welder
    Other, please specify …

In what year did you become a journeyperson?

In what year did you begin teaching?

Instructor Knowledge, Skills and Abilities

The next two sections ask you to rate yourself on your teaching knowledge, skills and abilities. The first section is a rating based on how you taught when you first began. The second section is similar in format, but is a rating of your teaching abilities today.

Instructor Knowledge, Skills and Abilities – Initial

Instructors are expected to have a variety of knowledge, skills, and abilities to use in the classroom. Think back to your first days, or months, of teaching. At that time, how would you have rated yourself on the following statements about teaching?

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I had a good understanding of course content or subject matter					
I had a good understanding of how to teach					
I had a good understanding of my students and their learning styles					
I had a good understanding of how to use technology in the classroom					
I knew how to deliver a lesson in the classroom					
I knew how to assess student learning achievement					
I understood curriculum development					
I was able to use the technology available in the classroom					
I had good communications skills, including verbal, demonstration, listening, and feedback					
I was organized					
I adapted processes to student needs					
I was professional in appearance and behaviour					
I was enthusiastic about my subject and teaching					
I showed a sense of humour					
I was sensitive to diversity in the classroom					
I was self-reflective, thinking about how to improve my teaching					
I wanted to improve as a teacher					

Instructor Knowledge, Skills and Abilities - Current

Now, think of yourself as an instructor today. Rate yourself on the following statements.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I have a good understanding of course content or subject matter					
I have a good understanding of how to teach					
I have a good understanding of my students and their learning styles					
I have a good understanding of how to use technology in the classroom					
I know how to deliver a lesson in the classroom					
I know how to assess student learning achievement					
I understand curriculum development					
I am able to use the technology available in the classroom					
I have good communications skills, including verbal, demonstration, listening, and feedback					
I am organized					
I adapt processes to student needs					
I am professional in appearance and behaviour					
I am enthusiastic about my subject and teaching					
I show a sense of humour					
I am sensitive to diversity in the classroom					

I am self-reflective, thinking about
how to improve my teaching

I want to improve as a teacher

Choosing from the list above, or from other aspects of teaching not listed here, in what area(s) do you believe you need to develop further, in order to become a highly effective teacher? *(open answer)*

Learning to Teach

Comparing your first days as an instructor to now, what methods did you learn more about teaching? Please check all that apply.

	I used this method	I did not use this method
Formal training for teachers (classes at a university or college)		
Formal training through your own institution (15 hours/2 days or more)		
Workshops (less than 2 days in length)		
Formal mentoring by an experienced instructor or supervisor		
Informal mentoring by an experienced instructor or supervisor		
Discussions with other instructors		
Self study (searching for information about teaching in books, articles, or online)		
Trial and error in the classroom		
Other methods: please describe		

Which of these methods of learning did you find to be effective? Please rate them

	Very effective	Somewhat effective	Neutral	Somewhat ineffective	Not effective
Formal training					
Workshops					
Mentoring					
Discussions					
Self-study					
Trial and error					

Motivation to Teach

What reasons led you to move from practicing your trade to teaching your trade?

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Teaching offered an opportunity for higher pay					
Teaching offered better benefits and pension					
Teaching offered better hours and more time for family					
Teaching offered an opportunity to share my knowledge of the trade					
Teaching offered higher-status, professional employment					
Teaching was a career path that others in my family had followed					
Teaching was something I had tried as a volunteer and enjoyed					
Teaching was always something I wanted to do, that I felt called to do					
Other: Please describe					

Trigger to Change

Thinking back to when you made the choice to apply for a teaching job, what one factor most influenced you to make the change at that particular time?

     A friend suggested it
     I couldn't find other work
     Personal or family health issues
     Recruitment (ads, job fair)
     Dissatisfaction with trade work conditions
     Other, please specify …

Satisfaction with Teaching

Thinking about your work as an instructor today, how would you rate your level of satisfaction with teaching?

     Highly Satisfied
     Somewhat satisfied
     Neutral
     Somewhat dissatisfied
     Highly dissatisfied

Is this level of satisfaction different than when you began teaching?

     Higher
     Same
     Lower

What aspects of teaching help you feel good about the work?

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I feel rewarded when students succeed					
I feel I make a difference in students' lives					
I am able to stay in contact with industry, and stay up to date on developments in my trade					
I enjoy working with the other instructors in my department/program and in my institution					
I feel my work is valued by my supervisor					
I feel my work is valued by my institution					
I feel my work is valued by the public					
Other: please describe					

Dissatisfaction Factors

Every job has its negatives as well as positives. What aspects of teaching cause you to be dissatisfied at times with the job?

	Strongly disagree	Disagree	Undecided	Agree	Strongly Agree
Not enough time to do the work					
Unclear expectations					
Students are unco-operative					
Lack of resources (textbooks, tools, space)					
Lack of support from other instructors					
Lack of support from my supervisor					
Lack of support from my institution					

What changes to your working environment (not including rate of pay) do you believe would increase your sense of satisfaction in teaching? Choose as many as apply.

	Yes	No
More support for developing teaching skills and knowledge		
More feedback from your supervisor		
More control over your own classroom schedule		
More time to discuss teaching concerns with other instructors		
More control over curriculum (timing, lesson plans)		
Fewer hours in the classroom; more time to prepare		
More time to meet with students		
More help for students through counselling, learning support services		
Other: please describe		

Are you a Tradesperson, a Teacher, or Both?

If you met someone for the first time today, how would you describe yourself to this person?

	Agree	Disagree
I'm a tradesperson (welder, electrician, etc.)		
I'm a teacher/instructor		
I'm a teacher/instructor in (welding, electrical, etc.)		

Comments:

Your Background

Total years of experience teaching your trade, at this institution and any other postsecondary institution(s).

      1 year or less
      2-3 years
      4-5 years
      6-10 years
      11-15 years
      More than 15 years

What is your age?

      25 or under
      26-35
      36-45
      46-55
      56 or older

Are you:

                              Female
                              Male

Did you have formal teacher training before coming to your current job?

      No formal teacher training
      Bachelor of Education
      Bachelor of Education (Vocational)
      Certificate in Adult Education
      Bachelor of Adult Education
      Masters of Education or other graduate level
      Other: please specify

When you worked in industry, did you supervise apprentices? If so, please estimate the total number supervised during all years of work.

      5 or fewer
      6-10
      11-15
      16-20
      21-25
      26 or more
      I did not supervise apprentices

Is anyone else in your immediate family a teacher, in either K-12 or postsecondary education?

Yes   No

Focus Group Participation

As a follow up to this survey, small group discussions will be held to talk about the results. Would you be willing to participate in a group discussion?

Yes   No

If yes, please provide your email address:

Comments

Please add any comments you would like to make about your experience as a trades instructor, or about this survey.

Emailed Report

Would you like to receive a short report of the survey results? This report will not be available for several months, but can be emailed to you if you provide an email address below. Your address will only be used for this purpose, and will not be connected to the specific responses provided by you in this survey.

Thank You

Thank you for completing this survey, and assisting in this research project. Your input will help build understanding of the career path of trades instructors in Western Canada.

APPENDIX B:

LETTER AND CONSENT FORM

FOR INTERPRETATION PANEL PARTICIPANTS

Interpretation Panel Information Letter to Participants

Dear Instructor;

My name is Barb Gustafson, and I am a student in the doctoral program for the Department of Educational Administration at the University of Saskatchewan. I am also a faculty member at Saskatchewan Polytechnic (formerly SIAST). As a part of the requirements for my degree, I am conducting a study of instructors in trades training in Western Canada. The title of my study is **The Second Apprenticeship: An Exploratory Study of the Transition from Tradesperson to Teacher.**

The purpose of this study is to better understand the career path of trades instructors from industry to teaching in postsecondary technical institutions, including what motivates people to make this career change, how they learn to teach, and what keeps them motivated as teachers. You are being contacted to participate in the interpretation panel portion of this study because you indicated your interest when completing the survey portion.

Trades training is an area within education that has not been studied extensively; the aim of this survey is to add to the understanding of this important sector within postsecondary education. Your participation may benefit yourself, your colleagues, the institution at which you teach, and other similar institutions, in understanding the concerns of trades instructors as they progress through their teaching careers. There are no known or anticipated risks to you by participating in this study.

Your participation is completely voluntary. All responses will remain confidential; information you provide in this study will not be shared with your employing institution, except as a part of consolidated responses from several institutions in a final report. Data from this study will be kept for at least five years in a secure location at the University of Saskatchewan.

I hope you will participate, by attending a discussion session to be held in [place] during [time] on [date]. This session will take about 1 to 2 hours. The topics will be based on responses to the survey already completed among trades instructors from your institution and others. You will receive a summary of the survey results before the discussion date.

In this discussion, you and approximately five other instructors will have an opportunity to provide further information about the transition from tradesperson to teacher, based on your experience and in response to the results of the previously completed survey. You are not required to answer any questions that you are not comfortable answering.

The discussion will be recorded and transcribed. After it is transcribed, I will provide you with a copy. You may make corrections at that point, or choose to withdraw specific remarks from the record up to the point of publication of results. Your name will not be used in any published information, and any details from the discussion that might identify you will be changed to protect your privacy. You may obtain a summary of the final report by contacting me. Your institution will also receive a copy of the final report.

This research project has been approved on ethical grounds by the University of Saskatchewan Research Ethics Board on (insert date). This approval has also been reviewed by the research office of your institution. Any questions regarding your rights as a participant may be addressed to that committee through the Research Ethics Office ethics.office@usask.ca (306) 966-2975. Out of town participants may call toll free (888) 966-2975.

If you have any questions or concerns about this study, please contact me at barb.gustafson@usask.ca or via phone at 306-922-2150, or my supervisor, Dr. David Burgess, at david.burgess@usask.ca.

Thank you in advance for your participation in this study.

Barb Gustafson   Dr. David Burgess
PhD Candidate   Research Supervisor
University of Saskatchewan   University of Saskatchewan

Consent Form

(to be signed before interpretation panel session begins)

Your signature below indicates that you have read and understand the description provided.

I have had an opportunity to ask questions and my questions have been answered. I consent to

participate in the research project. A copy of this consent form has been given to me for my

records.

Name of Participant	Signature	Date

Researcher's Signature	Date

APPENDIX C:
SURVEY RESULTS SUMMARY

The Second Apprenticeship: An Exploratory Mixed Methods Study
of the Transition from Tradesperson to Teacher
Research Project

TRADES INSTRUCTOR SURVEY

RESULTS SUMMARY

Barbara Gustafson, PhD Candidate

University of Saskatchewan

Educational Administration

August 2014

Overview

During June 2014, instructors in trades programs at three Western Canadian polytechnics were invited to participate in an electronic survey regarding the transition from being a tradesperson to being a trades instructor. More than 165 people responded, representing all three institutions and a range of ages, trades, and levels of teaching experience. Approximately 45% of the participants indicated their willingness to participate in a follow-up discussion group, or interpretation panel, to add further insight into this topic. This summary is intended to provide a synopsis of the survey results and to generate discussion at the interpretation panels to be held this fall.

Within this summary, the results are organized around the research question. The overall research objective is to explore the transition from the *first apprenticeship* of trades learning and practice, to the *second apprenticeship* of learning to become a trades instructor. This objective is divided into the following questions:

1. What motivates experienced tradespeople to move into a second career of teaching?
2. What competencies do tradespeople transitioning to teaching bring to the classroom to support effective learning?
3. Once in the role of instructor, what formal and informal learning helps them to become effective instructors?
4. How does their vocational identity change with the change in career?
5. What factors lead them to a feeling of satisfaction or effectiveness with their work, and to continue as instructors?

Background to the Research

This research is being conducted with ethics approval from the University of Saskatchewan, as well as approval from each of the participating polytechnics. Participation in the survey and interpretation panels is voluntary, and participants are free to withdraw from the study up to the point of publication. All responses and comments are recorded anonymously and without reference to the institution of employment. The information gathered through the survey, and through the discussions of the interpretation panels, will be used in the thesis that is part of the doctoral degree program, and also may be published in journals or used in presentations. The researcher is a doctoral candidate in Educational Administration at the University of Saskatchewan, as well as a faculty member at the Saskatchewan Institute of Applied Science and Technology (SIAST). Any questions regarding this research can be directed to:

Barb Gustafson, student researcher
PhD candidate, Educational Administration
University of Saskatchewan
Email: barb.gustafson@usask.ca
Phone: 306-922-2150

Dr. David Burgess, research supervisor
Department Chair, Educational Administration
University of Saskatchewan
Email: david.burgess@usask.ca

The survey questions and results are provided in detail in Appendix One for reference.

Profile of Survey Participants

Invitations to participate in this survey were distributed by email to instructors in trades programs at three Western Canadian polytechnics. The overall response rate was 27%. Responses came from all three institutions, representing 25 trades, and experience averaging 12 years as a journeyperson prior to becoming a teacher. The number of apprentices supervised while in industry ranged from none to 26 or more, with 29% of survey participants saying they had supervised more than 26 apprentices.

The age of participants ranged from 26 years to 56+ years, with the majority in the 46 or older range. Male participants made up 98% of the total group. Teaching experience ranged from one year to more than 18 years. About 84% of participants indicated no previous teacher training prior to becoming a trades instructor. Approximately one-third said they have another teacher within their immediate family.

Motivation for Second Career

Teaching in trades programs is a career that requires a previous career: instructors are typically hired as experienced journeypersons in one or more trades, credentials that take many years to achieve. Survey questions asked about general reasons for making the career change to teaching, as well as what the specific event was that led to applying for a teaching job. Responses showed that:

- The strongest agreement was to the statement that *teaching was **an opportunity to share knowledge of the trade***, (96% agreement) followed **by *better hours and more time for family*** (84% agreement).
- The strongest disagreement was in response to the statement that ***teaching was an opportunity for higher pay*** (77% disagreement).
- The most commonly stated event that triggered an application was a friend's suggestion.
- Survey participants who had some formal teacher training before becoming a full-time instructor were more likely to indicate that the triggering event was a personal or family health issue, or dissatisfaction with trade work conditions.

Teaching Competencies

When tradespeople move to teaching, what skills are they bringing with them to the new role? Survey participants were asked to rate themselves on 17 teaching competencies, including subject matter knowledge, theory of teaching, skills for the classroom, and personal attributes. (See Appendix One, pages 7 and 8 for full list). Two ratings were requested, one as the participant remembered being a new instructor, and one as an instructor today. The responses to questions regarding teaching competencies showed:

- Rating themselves as a beginning instructor, participants agreed most strongly with the statement ***I wanted to improve as a teacher*,** followed by ***enthusiasm for the subject and teaching*,** and ***sense of humour***. They agreed least with the statement ***I had a good understanding of my students and their learning styles***, and ***I understood curriculum development***.

- Participants with previous teacher training agreed more strongly that they had teaching knowledge and skills (Competencies 2-8) as beginning instructors.
- When rating their current teaching ability, all 17 competencies were agreed to by at least 90% of participants.
- Survey participants with no previous training rated themselves higher on *sense of humour*.
- Participants in the 45 years and under age group were less likely to agree to the statements *I have a good understanding of how to teach*, and *I adapt learning processes to student needs*.
- A comparison of ratings as beginning instructors and current rating as an instructor found significant changes, particularly in the competencies related to teaching knowledge and skills.
- Confidence in their teaching skills rose significantly from beginner to current level for all instructors surveyed, with the largest change among the most experienced instructors.
- When asked what further development they saw as necessary, participants' comments were most commonly connected to learning about technology and how to adapt to students' learning styles.

Methods of Learning to Teach

Instructors clearly feel more confident about their teaching skills as the years progress: how did they learn what they needed to gain knowledge, skills, and confidence? Participants were asked to choose the methods of learning they had used and to rate the effectiveness of these methods. Responses showed the following:

- *Discussions with other instructors* was the most often used method (96%). *Formal training through a university or college* was the method least often chosen (39%).
- Participants with some formal teacher training prior to being hired as an instructor were more likely to use formal training methods to continue learning about teaching once in that role.
- *Mentoring* and *discussions with other instructors* were rated as the most effective methods of learning to teach; *workshops* and *formal training* received the lowest ratings on effectiveness. *Self-study* was rated as effective more often by experienced instructors and by those without previous teacher training.

Vocational Identity

Unlike teachers in elementary or secondary systems, postsecondary instructors typically have a strong connection to a career or vocation before becoming a teacher. For trades instructors, this identity is built through years of apprenticeship and then practice as a journeyperson. Some research has suggested this strong identity with a trade makes the transition to teaching more difficult for tradespeople than for other teachers. Participants in this survey were asked *if you met someone today, how would you introduce yourself?* with choices of *I'm a tradesperson*, *I'm a teacher/instructor*, or *I'm a teacher/instructor in my trade* to see which identity was strongest for them. The responses showed that:

- Participants most often agreed with *I'm a teacher/instructor in my trade*; however, the other two statements were also agreed to in the majority of instances. The number of participants

agreeing with the statement *I'm a teacher/instructor in my trade* increased with years of teaching experience.

- Having another teacher within the immediate family was linked to increased agreement with the statement *I'm a tradesperson*. Previous formal teacher training was linked to increased agreement with the statement *I'm a teacher/instructor*.

Satisfaction with Teaching

Once into the second career of teaching, what aspects of the job create a sense of satisfaction and encourage continuing to teach? What aspects of the job create a sense of dissatisfaction? The responses to questions regarding satisfaction showed the following:

- Participants rated themselves as satisfied or highly satisfied with teaching in the vast majority of cases. Most said they are as satisfied with the role of teaching today as when they began, or are more satisfied today.
- When presented with a list of factors that could lead to satisfaction with teaching, participants most often agreed with the statement *I feel I make a difference in students' lives*. The statement *I feel my work is valued by my institution* received the least agreement.
- The presence of another teacher in the family was linked to a lower level of agreement to the statement *I feel my work is valued by the public*.
- Among factors that could lead to dissatisfaction with teaching, the strongest agreement was in reaction to *Not enough time to do the work,* followed by *Unclear expectations*. Lack of support from supervisors and the institution were strongly correlated to lower satisfaction.
- Suggested changes to increase satisfaction were provided, and participants most often chose *More support for developing teaching skills and knowledge*. Comments in this section were focused on professional development, pay, and less negativity from peers and supervisors.

Questions for Discussion

The interpretation panel group discussions are meant to help the researcher understand the results of the survey. Rather than an outside researcher simply looking for answers in the data, this process gives instructors an opportunity to help answer the question of why the patterns shown in the results are there.

These discussions can include any topic from the survey, or other aspects of trades teaching that relate to the overall question of how people move from industry to teaching; however, to give some food for thought, the following questions are put forward:

1. Research suggests people become teachers for intrinsic reasons: they want to do good, share their knowledge of the subject matter, and help others. Research also suggests people leave teaching because of extrinsic reasons: low pay and poor working conditions. In your experience, is this true? Why do people become trades instructors? Why do they quit teaching in trades? Why do they stay?
2. When you started teaching, what was your biggest concern? Was there a particular person or style of teaching you tried to follow? Who helped you through the first year? If you could give advice to a new instructor coming in today, what would it be?

3. The survey results show formal learning situations – classes and workshops – are rated least effective and are less used than other methods of learning. Do you think this pattern is related specifically to trades instructors? Why?
4. The survey results show instructors want to continue improving their teaching, and would like more support for developing teaching skills and knowledge. What is the best way to do this? Are there barriers that keep instructors from improving?
5. *Lack of support from my institution,* or a sense of teaching being undervalued by the institution, was noted as a factor leading to dissatisfaction. Do you think this is related to this type of work, in particular, or is this something most people would say about their employer? What could your institution do that would show support and valuing instructors' work?
6. Do you feel your vocational identity – seeing yourself primarily as a tradesperson or a teacher – has changed over your years of teaching? If trades instructors do have two identities, is this positive or negative?
7. To be a journeyperson is to be recognized as competent in your trade. Thinking about learning to teach, at what point did you feel you were a "journeyperson" in teaching?
8. Knowing what you know today, would you make the same choice to leave industry and become an instructor? Why?

Conclusion

This report has been provided to you because you indicated in your survey responses an interest in participating in an interpretation panel discussion group, or in receiving a report of the survey results.

If you have indicated being willing to take part in the discussion groups, I look forward to hearing your feedback about the survey results. These sessions will be held during the fall of 2014. An invitation will be sent to you shortly, via the email address you provided, for the session in your location.

If you find you are not able to attend, or you have received this report but do not wish to attend a discussion group, feedback is still welcomed. Please feel free to send your comments via email to: barb.gustafson@usask.ca. Reporting of any comments provided will be anonymous and institutional affiliation will not be revealed.

Thank you for participating in the survey and for your interest in this research.

Appendix One

Survey Questions and Responses

Journeyperson Credentials

In what trade(s) are you a journeyperson?

Response	Count
Agricultural Equipment Technician	3
Appliance Service Technician	1
Auto Body Technician	5
Automotive Service Technician	18
Baker	2
Boilermaker	3
Cabinetmaker	3
Carpenter	13
Cook	7
Crane Operator/Scaffolder	5
Electrician	23
Gasfitter	2
Heavy Equipment Technician	9
Instrumentation Technician	4
Ironworker	3
Machinist	4
Millwright	9
Parts Technician	5
Plumber	6
Power Engineer	1
Refrigeration and Air Conditioning Mechanic	2
Roofer	3
Sheet Metal Worker	3
Steamfitter/Pipefitter	5
Welder	20
Other, please specify...	6

Instructor Knowledge, Skills and Abilities – Initial

Instructors are expected to have a variety of knowledge, skills and abilities to use in the classroom. Think back to your first days, or months, of teaching. At that time, how would have rated yourself on the following statements about teaching?

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I had a good understanding of course content or subject matter	0.6%	11.5%	11.5%	53.3%	23.0%
I had a good understanding of how to teach	3.0%	26.7%	28.5%	35.2%	6.7%
I had a good understanding of my students and their learning styles	4.9%	36.2%	31.9%	23.3%	3.7%
I had a good understanding of how to use technology in the classroom	9.3%	29.0%	22.2%	35.8%	3.7%
I knew how to deliver a lesson in the classroom	2.5%	32.1%	25.9%	32.1%	7.4%
I knew how to assess student learning achievement	1.8%	31.7%	28.7%	31.7%	6.1%
I understood curriculum development	8.6%	38.9%	21.6%	25.9%	4.9%
I was able to use the technology available in the classroom	1.8%	16.4%	12.7%	52.1%	17.0%
I had good communications skills, including verbal, demonstration, listening, and feedback	0.0%	4.9%	12.9%	55.8%	26.4%
I was organized	0.6%	9.8%	11.6%	53.7%	24.4%
I adapted learning processes to student needs	0.6%	12.7%	20.0%	49.1%	17.6%
I was professional in appearance and behaviour	0.0%	3.7%	4.3%	58.5%	33.5%
I was enthusiastic about my subject and teaching	0.0%	1.2%	1.8%	40.2%	56.7%
I showed a sense of humour	0.0%	0.6%	3.7%	47.0%	48.8%
I was sensitive to diversity in the classroom	0.0%	2.4%	12.1%	52.1%	33.3%
I was self-reflective, thinking about how to improve my teaching	0.6%	1.2%	4.8%	39.4%	53.9%
I wanted to improve as a teacher	0.0%	0.6%	0.6%	26.1%	72.7%

Instructor Knowledge, Skills and Abilities – Current

Now, think of yourself as an instructor today. Rate yourself on the following statements.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I have a good understanding of course content or subject matter	0.0%	0.0%	0.0%	27.0%	73.0%
I have a good understanding of how to teach	0.0%	0.0%	1.2%	42.3%	56.4%
I have a good understanding of my students and their learning styles	0.0%	0.0%	7.4%	44.8%	47.9%
I have a good understanding of how to use technology in the classroom	0.0%	0.0%	3.7%	47.2%	49.1%
I know how to deliver a lesson in the classroom	0.0%	0.0%	2.5%	37.4%	60.1%
I know how to assess student learning achievement	0.0%	0.0%	6.1%	47.9%	46.0%
I understand curriculum development	0.0%	2.5%	7.4%	43.2%	46.9%
I am able to use the technology available in the classroom	0.0%	0.6%	1.2%	45.7%	52.5%
I have good communications skills, including verbal, demonstration, listening, and feedback	0.0%	0.0%	0.6%	35.6%	63.8%
I am organized	0.0%	0.0%	4.9%	46.6%	48.5%
I adapt learning processes to student needs	0.0%	0.0%	1.2%	54.9%	43.8%
I am professional in appearance and behaviour	0.0%	0.0%	1.9%	40.1%	58.0%
I am enthusiastic about my subject and teaching	0.0%	0.6%	3.1%	32.1%	64.2%
I show a sense of humour	0.0%	0.6%	3.1%	36.2%	60.0%
I am sensitive to diversity in the classroom	0.0%	0.0%	0.6%	41.0%	58.4%
I am self-reflective, thinking about how to improve my teaching	0.0%	0.0%	0.6%	32.9%	66.5%
I want to improve as a teacher	0.0%	0.0%	0.0%	28.7%	71.2%

Learning to Teach

Thinking about your first days as an instructor to now, what methods did you use to learn more about teaching? Please check all that apply.

Training Method	Used	Not Used
Formal training for teachers (classes at a university or college)	38.8%	61.2%
Formal training through your own institution (15 hours/2 days or more)	68.5%	31.5%
Workshops (less than 2 days in length)	69.1%	30.9%
Formal mentoring by an experienced instructor or supervisor	58.8%	41.2%
Informal mentoring by an experienced instructor or supervisor	87.9%	12.1%
Discussions with other instructors	96.4%	3.6%
Self study (searching for information about teaching in books, articles, or online)	87.9%	12.1%
Trial and error in the classroom	90.9%	9.1%

Effectiveness of Training

Which of these methods of learning did you find to be effective? Please rate them.

	Not effective	Somewhat ineffective	Neutral - Does not apply	Somewhat effective	Very effective
Formal training	3.6%	6.1%	26.1%	42.4%	21.8%
Workshops	1.8%	7.9%	21.2%	52.7%	16.4%
Mentoring	1.2%	1.2%	10.9%	27.9%	58.8%
Discussions	0.0%	1.8%	3.0%	39.4%	55.8%
Self-study	0.0%	1.8%	8.5%	47.9%	41.8%
Trial and error	1.8%	3.0%	6.1%	50.3%	38.8%

Motivation to Teach

What reasons led you to move from practicing your trade to teaching your trade?

	Strongly disagree	Disagree	Undecided	Agree	Strongly Agree
Teaching offered an opportunity for higher pay	46.1%	31.5%	8.5%	10.9%	3.0%
Teaching offered better benefits and pension	22.4%	21.2%	12.1%	32.7%	11.5%
Teaching offered better hours and more time for family	1.2%	4.8%	9.7%	43.0%	41.3%
Teaching offered an opportunity to share my knowledge of the trade	0.6%	0.6%	3.0%	35.2%	60.6%
Teaching offered higher-status, professional employment	9.7%	18.2%	32.1%	30.3%	9.7%
Teaching was a career path that others in my family had followed	35.8%	34.5%	9.7%	12.1%	7.9%
Teaching was something I had tried as a volunteer and enjoyed	15.2%	30.3%	18.8%	22.4%	13.3%
Teaching was always something I wanted to do, that I felt called to do	9.1%	12.1%	29.7%	29.1%	20.0%

Trigger to Change

Thinking back to when you made the choice to apply for a teaching job, what one factor most influenced you to make the change at that particular time?

Response	Percentage
A friend suggested it	21.2%
I couldn't find other work	3.0%
Personal or family health issues	15.2%
Recruitment (ads, job fair)	15.2%
Dissatisfaction with trade work conditions	20.6%
Other, please specify...	24.8%

Satisfaction with Teaching

Thinking about your work as an instructor today, how would you rate your level of satisfaction with teaching?

Response	Percentage
Highly satisfied	60.0%
Somewhat satisfied	34.5%
Neutral	2.3%
Somewhat dissatisfied	3.1%
Highly dissatisfied	0.0%

Is this level of satisfaction different than when you began teaching?

Response	Percentage
Higher	38.2%
Same	45.5%
Lower	16.4%

Satisfaction Factors

What aspects of teaching help you to feel satisfied with the job?

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I feel rewarded when students succeed	0.6%	0.0%	0.0%	30.3%	69.1%
I feel I make a difference in students' lives	0.6%	0.0%	1.8%	45.5%	52.1%
I am able to stay in contact with industry, and stay up to date on developments in my trade	4.2%	7.3%	10.3%	57.0%	21.2%
I enjoy working with the other instructors in my department/ program and in my institution	1.8%	4.2%	4.8%	54.5%	34.5%
I feel my work is valued by my supervisor	4.8%	8.5%	13.3%	48.5%	24.8%
I feel my work is valued by my institution	10.3%	15.2%	26.7%	34.5%	13.3%
I feel my work is valued by the public	4.2%	6.1%	23.6%	44.8%	21.2%

Dissatisfaction Factors

Every job has its negatives as well as positives. What aspects of teaching cause you to be dissatisfied at times with the job?

	Strongly disagree	Disagree	Undecided	Agree	Strongly Agree
Not enough time to do the work	4.8%	21.8%	18.8%	43.6%	10.9%
Unclear expectations	7.3%	25.5%	26.7%	36.4%	4.2%
Students are unco-operative	10.3%	41.2%	18.8%	23.6%	6.1%
Lack of resources (textbooks, tools, space)	9.7%	34.5%	18.2%	27.3%	10.3%
Lack of support from other instructors	23.6%	47.3%	14.5%	10.3%	4.2%
Lack of support from my supervisor	20.6%	47.9%	11.5%	11.5%	8.5%
Lack of support from my institution	10.9%	26.7%	22.6%	24.2%	14.5%

Suggestions for Improving Satisfaction

What changes to your working environment do you believe would increase your satisfaction with teaching? Choose as many as apply.

	Yes	No
More support for developing teaching skills and knowledge	84.8%	15.2%
More feedback from your supervisor	47.3%	52.7%
More control over your own classroom schedule	33.3%	66.7%
More time to discuss teaching concerns with other instructors	53.3%	46.7%
More control over curriculum (timing, lesson plans)	50.3%	49.7%
Fewer hours in the classroom; more time to prepare	46.1%	53.9%
More time to meet with students	53.9%	46.1%
More help for students through counselling, learning support services	57.6%	42.4%

Are you a Tradesperson, a Teacher, or Both?

If you met someone for the first time today, how would you describe yourself to this person?

	Agree	Disagree
I'm a tradesperson (welder, electrician, etc.)	69.9%	30.1%
I'm a teacher/instructor	73.6%	26.4%
I'm a teacher/instructor in (welding, electrical, etc.)	96.6%	3.4%

Background

Total years of experience teaching, at this institution and any other postsecondary institution(s).

Response	Percentage
1 year or less	7.2%
2 -3 years	12.0%
4-5 years	12.0%
6-10 years	28.9%
11-15 years	13.9%
More than 15 years	25.9%

What is your age?

Response	Percentage
25 or under	0.0%
26-35	6.7%
36-45	15.2%
46-55	46.1%
56 or older	32.1%

Are you:

Response	Percentage
Female	2.4%
Male	97.6%

Did you have formal teacher training before coming to your current job?

Response	Percentage
No formal teacher training	85.5%
Bachelor of Education	2.9%
Bachelor of Education (Vocational)	2.5%
Certificate in Adult Education	7.9%
Masters of Education or other graduate level	1.2%

When you worked in industry, did you supervise apprentices? If so, please estimate the total number supervised during all years of work.

Response	Percentage
5 or fewer	18.8%
6 - 10	14.6%
11-15	12.7%
16-20	7.6%
21-25	6.9%
26 or more	29.1%
I did not supervise apprentices	10.3%

Is anyone else in your immediate family a teacher, in either K-12 or postsecondary education?

Response	Percentage
Yes	33.3%
No	66.7%